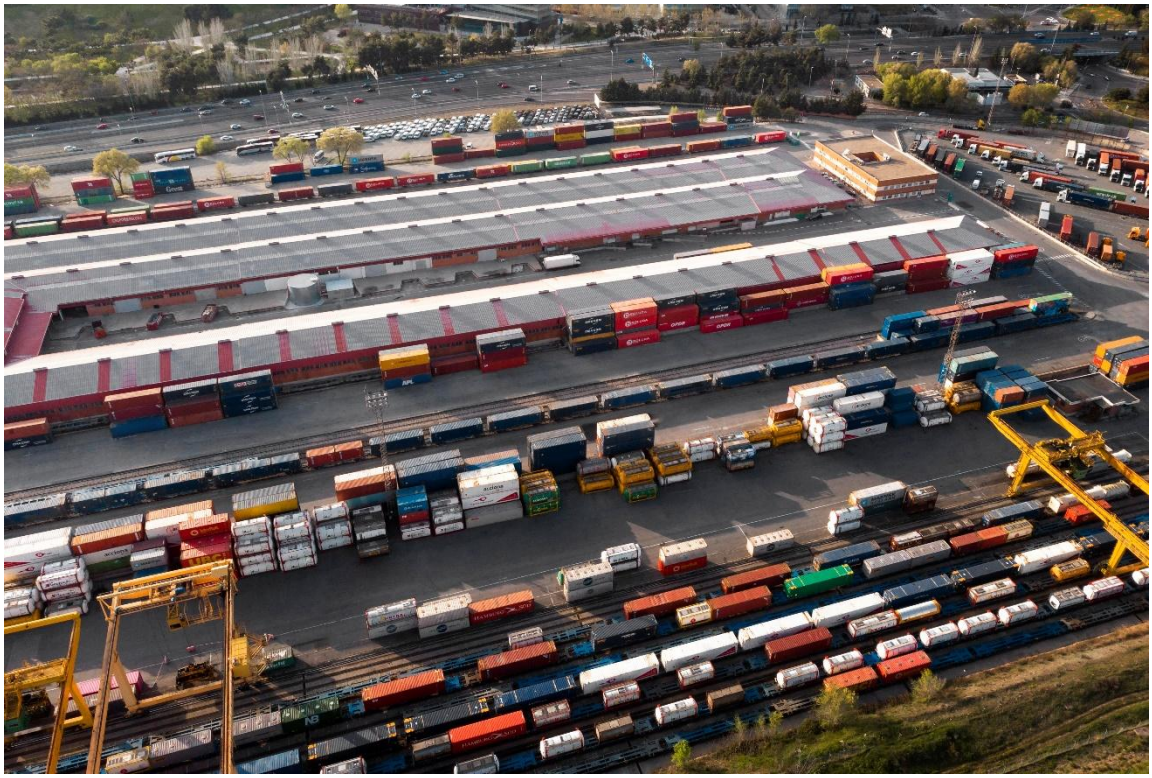
Technical Assistance on Multimodality, Terminal Assessment, and Digitalisation



Report on market and prospective analysis on multimodal freight terminals - Action plan for development of a multimodal freight terminal network

December 2024

Consortium led by I.E.C.C. MARIOS MILTIADOU & ASSOCIATES

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List of Abbreviations

AADT	Annual Average Daily Traffic
BCP/ CCP	Border Crossing Point/ Common Crossin Point
CA	Contracting Authority (TCT Permanent Secretariat)
CBA	Cost-Benefit Analysis
CEF	Connecting Europe Facility
CEFTA	Central European Free Trade Agreement
CF	Cohesion Fund
CONNECTA	Technical Assistance to connectivity in the Western Balkans EuropeAid/13785/IH/SER/MULTI
EC	European Commission
eFTI	Electronic Freight Transport Information
EBRD	European Bank for Reconstruction and Development
ERDF	European Regional Development Fund
ERTMS	European Rail Traffic Management System
ETC	European Transport Corridor
EU	European Union
GDP	Gross Domestic Product
ICT	Information – Communication Technology
IMO	International Maritime Organization
IT	Information Technology
ITS	Intelligent Transport Systems
IWW	Inland Waterways
MS	Member States (of EU)
NUTS	Nomenclature of Territorial Units for Statistics
RFC	Rail Freight Corridor
RIS	River Information Services
RP	TCT Regional Partner/ Regional Party/ Regional Participant: Albania – ALB/AL, Bosnia and Herzegovina – BIH/BA, Kosovo – KOS/XK, Montenegro – MNE/ME, North Macedonia – MKD/MK, Serbia – SRB/XS
RRT	Rail-Road Terminal
SEE	South East Europe
SSMS	Sustainable and Smart Mobility Strategy - Technical Assistance for the Deployment of Smart and Sustainable Mobility in the Western Balkans (CONNECTA-TRA-CRM-REG-MOB-07)
TA	Technical Assistance
TCT	Transport Community Treaty
TEN-T	Trans-European Transport Networks
TEU	Twenty-foot equivalent unit
UN	United Nations
VTMIS	Vessel Traffic Management Information System
WB	Western Balkans
WBIF	Western Balkans Investment Framework

1 Introduction

The Service Contract "Technical Assistance on Multimodality, Terminal Assessment, and Digitalisation" was assigned to a Joint Venture led by "I.E.C.C. Marios Miltiadou and Associates" (herein after "the Consultant") in December 2023 and it became effective after the relevant notification of the Contracting Authority (CA) the Transport Community Treaty Permanent Secretariat (herein after "TCT Secretariat") on 15 January 2024.

The general objective of the assignment is to contribute to the fulfilment of the obligations derived from the Transport Community Treaty signed by the Regional Parties (herein after "the RPs"), related to Annex 1 of the Treaty, by implementing the Sustainable and Smart Mobility Strategy (SSMS) for Western Balkans (WB) [1]. Improving multimodality has been identified by the SSMS impact assessment[2] as one of the three groups of important measures for green and digital transition.

The specific objective of the assignment is to assist the WB Parties of the Transport Community to align with relevant EU acquis, by, among others, examining the problems hindering development of multimodality (e.g. infrastructure, policy, digitalisation issues), conducting a market and prospective analysis on multimodal freight terminals, and elaborating an action plan for the development of a multimodal freight terminal network.

The current report, as foreseen by the Technical Specifications and the Service Contract, presents the Identification of the multimodal freight terminals in the WB region, which was carried out in the framework of Task 3 of this TA assignment.

After this introduction, the background and methodology are presented in **Chapter 2**, separately presenting general aspects on multimodality in the context of EU and in the WB region, providing information and main results of the relevant previous studies, current policy context at RP level – strategies & policies – and regional/ TCT level – strategic documents and action plans.

The analysis of the current freight flows, the trends and future transport flows are presented in **Chapter 3** at RP and regional level.

Chapter 4 deals with the existing multimodal freight terminals identification, their characteristics, capacities, locations and descriptions.

In **Chapter 5**, the main industrial areas are identified, needs from the perspective of users collected through survey and interviews are presented, as well as identified infrastructural, regulatory and organizational needs. Furthermore, multimodal capacities and needs are discussed. At the end of this chapter, the results of Multi-criteria spatial analysis of locations are presented, conducted for defining the priorities for the development of a multimodal freight terminals network in the region. The proposed list of locations is presented in **Chapter 6**.

[1] Strategy for Sustainable and Smart Mobility in the Western Balkans (TCT Secretariat, 2021)
[2] Sustainable and Smart Mobility in the Western Balkans – Impact Assessment and Cost Effectiveness Analysis – Component 1 – Final Report (CONNECTA, 2023)

An Action plan for multimodal freight terminals network and last-mile connectivity development, including the projects necessary and measures required for promoting and boosting multimodality, is presented in **Chapter 7**.

The report closes with **Chapter 8**, where the most important conclusions from the Task 3 activities are drawn.

2 Background and Methodology

2.1 Multimodality in the context of EU

According to the European Green Deal, a substantial part of the 75% of inland freight carried today by road, needs to be shifted to rail and inland waterways. According to statistics, multimodal transport can improve transportation efficiency by 30%, reduce cargo damage by 10%, reduce transportation costs by 20%, reduce highway congestion by more than 50%, and promote energy savings and emissions reduction by more than one third. Multimodal transport has been vigorously promoted and developed all over the world. As a new mode of transport organization, container-based multimodal transportation can improve transport efficiency, achieve "door-to-door" transport, reduce the damage and loss of goods caused by intermediate links and replacement, and has become the main development form of multimodal transport [3].

The EU transport policy aims at a form of transport and mobility that is sustainable, energy-efficient and respectful of the environment. These goals can be achieved by using multimodal transport that combines optimally the various modes of transport, exploiting each one's strength and minimising the weaknesses. The European Commission hence pursues a policy of multimodality by ensuring better integration of the transport modes and establishing interoperability at all levels of the transport system. Also, the European Commission is working together with stakeholders to support the creation of a favourable framework for the logistics services in the EU [4].

The promotion of multimodal transport along the European Transport Corridors also requires fulfilment of the requirements set in the TEN-T Regulation in what concerns the deployment of ICT systems for traffic management along the rail, road and IWW links and nodes of the Core Network (ERTMS, VTMIS, RIS, ITS) and for multimodal transport the eFTI (electronic Freight Transport Information). For further development of multimodality and intermodality between rail and other modes of transport in the WB, one of the important issues is further development and cooperation within Railway Freight Corridors, especially the extension of EU Railway Freight Corridors to the WB, which will be from now on pursued through the establishment of the integrated European Transport Corridor Western Balkans – Eastern Mediterranean.

Intermodal freight transport consists of transporting goods in a single loading unit (such as a container) using a combination of modes of transport: road, rail, waterways or air. It has the potential to optimize the relative strengths of each of the modes in terms of flexibility, speed, costs and environmental performance. For the period 2014-2020, total EU funding through the European Regional and Development Fund (ERDF), the Cohesion Fund (CF) and the Connecting Europe Facility (CEF) committed to projects supporting intermodality stood at around €1.1 billion. The EU's regulatory and financial support on intermodal freight transport was not sufficiently effective as there was still no level playing field for intermodal freight transport in the EU due to regulatory and infrastructure barriers. This means that intermodal freight transport can still not compete on equal grounds with road transport. The Commission did not have a dedicated EU strategy on intermodality. Instead, intermodality was part of broader strategies on greening freight transport and modal shift. The

[3] Optimizing Multimodal Transportation Routes Considering Container Use, 2019, Dandan Chen, Yong Zhang, Liangpeng Gao and Russell G. Thompson

[4] https://transport.ec.europa.eu/transport-themes/logistics-and-multimodal-transport_en

provisions of the Combined Transport Directive[5] – the only piece of EU legislation specific to intermodal transport – are outdated. The Commission made several attempts to revise the directive, but did not succeed in obtaining Member States agreement. There are also EU regulatory provisions, particularly those governing road transport, which partially counteract the aim of rendering intermodality attractive. Lastly, the Commission took steps to simplify State aid rules for schemes aimed at a modal shift away from road involving rail, inland waterways or multimodal transport [6].

Figure 1 shows the evolution from 2010 to 2020 of the relative shares of each mode of transport for inland freight (i.e. excluding air and maritime freight). In 2010, rail and inland waterways represented around 25% of the total, and by 2020, their share had further decreased to below 23% by 2020 [7]. A modal shift in transport away from roads and an increased use of intermodal transport can play a key role in making freight transport in Europe more environmentally friendly. In a 2011 White Paper, the Roadmap to a Single European Transport Area, the Commission set a target for reducing greenhouse gas emissions from the transport sector for the first time, aiming for a 60% reduction by 2050 compared with 1990 figures. However, contrary to other economic sectors, CO_2 emissions from the transport sector did not decrease, but increased by 24% between 1990 and 2019. While the efficiency of heavy-duty vehicle transport (vehicles and logistics) improved during this period, increases in demand for freight transport outpaced these efficiency gains.

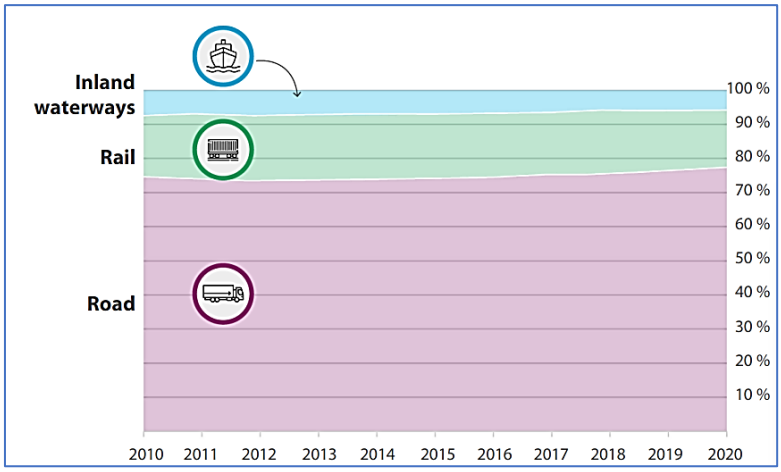

Figure 1 - Modal split of EU inland freight transport (% of total ton-kilometers)[8]

There are various modes of transport, such as road, rail, sea, or air. According to UN transport terminology, multimodal transport involves the carriage of goods using two or more modes of transport. Intermodal transport refers to the movement of goods within a single loading unit or road vehicle across two or more modes of transport without handling the goods themselves during the transfer.

[5] Directive 92/106/EEC on the establishment of common rules for certain types of combined transport of goods between Member States

[6] Intermodal freight transport, Special report (European Court of Auditors, 2023), available at https://op.europa.eu/webpub/eca/special-reports/intermodal-freight-transport-08-2023/en/

[7] Intermodal freight transport, Special report (European Court of Auditors, 2023)

[8] Intermodal freight transport, Special report (European Court of Auditors, 2023)

2.1.1 EU relevant regulation in the area of combined/ intermodal/ multimodal transport

Directive 92/106/EEC on the establishment of common rules for certain types of combined transport of goods between Member States: the Combined Transport Directive from 1992, is the only EU legislative act specific to multimodal/intermodal/combined freight transport. Combined transport is a type of intermodal transport but with limitations on the type of transport unit allowed and a maximum length for the road leg. The directive covers all cross-border intermodal transport flows unless they cross a border with a non-EU country. The Combined Transport Directive aims to increase the competitiveness of the combined transport (defined as intermodal transport with a strictly limited road leg) and to reduce the negative side effects of freight transport (i) on the environment (caused by CO_2 and other pollutant emissions) and (ii) on society (such as road congestion, accidents, noise - also called negative externalities), while (iii) offering enhanced safety and security to shippers through supporting the shift from long distance road haulage to railroad, inland waterway and maritime transport on the grounds that these cause considerably fewer negative externalities.

The Combined Transport Directive seeks to promote combined transport operations through the elimination of authorisation procedures and quantitative restrictions for combined transport operations and provides financial support through fiscal incentives for certain combined transport operations. To be eligible for the provisions within the directive, the movement of goods must meet a number of specific criteria as regards type of load units and distances. The directive has helped to shift freight away from road, but shortcomings in its implementation (ambiguous language, outdated provisions and limited support measures) have diminished its impact [9].

In the Sustainable and Smart Mobility Strategy of December 2020, the European Commission has foreseen a review of the Combined Transport Directive. The revision proposed in November 2023 aims to make intermodal transport more efficient and competitive, focusing support on operations that reduce by at least 40% the negative externalities compared to road-only operations between the same starting and end points.

With the aim of improving the use of terminal and other infrastructure capacity, the proposal introduces an exemption from temporary driving bans, such as weekend driving bans for combined transport. It also requires EU MS to put in place the policies so that a new competitiveness target to reduce by at least 10% the average door-to-door cost of combined transport operations within 7 years can be achieved [10].

Regulation 2020/1056 on electronic freight transport information: eFTI Regulation establishes a legal framework for the electronic communication of regulatory information between the economic operators concerned and competent authorities in relation to the transport of goods on the EU territory. For that purpose, this Regulation:

- lays down the conditions based on which competent authorities are required to accept regulatory information when that information is made available electronically by the economic operators concerned;
- lays down rules on the provision of services related to making regulatory information available electronically by the economic operators concerned to competent authorities.

[9] Review of Directive 92/106/EEC on combined transport of goods between Member States

[10] Press release: EU Commission adopts new proposal on combining transport modes for more sustainable freight, November 2023, Brussels

The purpose of the eFTI Regulation is to encourage the digitalisation of freight transport and logistics within the EU. The movement of goods involves a significant amount of information exchange, often still done using paper documents. This paper-based system creates administrative burdens for logistics operators, additional costs for businesses, and has a negative environmental impact. The regulation aims to reduce administrative costs, enhance enforcement capabilities of competent authorities, and improve the efficiency and sustainability of transport.

The regulation establishes a legal framework that allows economic operators (such as logistics companies) to share relevant freight transport information with enforcement authorities in an electronic format. By promoting electronic information exchange, the Regulation aims to streamline processes, improve communication, and contribute to a more efficient and sustainable freight transport system. The Regulation is important for multimodality, bearing in mind that for supporting the digitalisation process and improving multimodality in freight transport, the integration of multimodal terminals and hinterland goods transport requires smooth information flows between chain actors via electronic forms.

Regulations (EU) 1315/2013 (TEN-T Guidelines), and (EU) 1316/2013 (Connecting Europe Facility 1): In 2013, the TEN-T network was defined on three levels: the Comprehensive network and the Core network, and there in the 9 Core Network Corridors. With the indicative extension of the TEN-T Core Network Corridors to the WB, closer integration with the EU was sought as well as setting the basis for leveraging investment in infrastructure, such as EU support through the Western Balkans Investment Framework (WBIF) and the Connecting Europe Facility (CEF). Improving connectivity within the Western Balkans, as well as between the Western Balkans and the European Union, is a key factor for growth and jobs and will bring clear benefits for the region's economies and citizens.

The indicative extension of TEN-T Comprehensive and Core network in the Western Balkans was made official through Commission Delegated Regulation 2016/758 amending Regulation 1315/2013 for the Development of the Trans-European Transport Network. The indicative extension of TEN-T in Western Balkans includes:

- 5,287 km of TEN-T roads, out of which 3,540 km on the Core Network
- 3,857 km of TEN-T railways, out of which 2,602 km on the Core Network
- 1,345 km of TEN-T Core Network Inland Waterways
- 3 seaports, 4 inland waterways ports, and 10 airports

In July 2021, with the Regulation (EU) 2021/1153 (Connecting Europe Facility 2), the 9 Core Network Corridors were extended, partially significantly (e.g. Atlantic, North-Sea Baltic, Scand-Med), while the North Sea-Med - because of Brexit - was changed to Ireland–Belgium-Netherlands and Ireland–France.

In December 2021, the European Commission's proposal for a new Regulation on TEN-T guidelines (COM 2021/821) proposed among others the dissolution of selected Core Network Corridors (Orient/East–Med, North Sea–Mediterranean), their integration in other Corridors (Rhine–Danube, North Sea–Alpine) and the creation of new Corridors (Baltic–Black–Aegean Seas, Western Balkans).

On 13 June 2024, the **Regulation (EU) 2024/1679 of the European Parliament and of the Council on Union guidelines for the development of trans-European transport network, amending Regulations (EU) 2021/1153 and (EU) 913/2010 and repealing Regulation (EU) 1315/2013** was adopted [11].

The new map with the alignment of the **European Transport Corridors**, which integrates the former Core Network Corridors and the Rail Freight Corridors established on the basis of Regulation (EU) 913/2010, is presented in Figure 2, as included in the Annex III of the new Regulation.

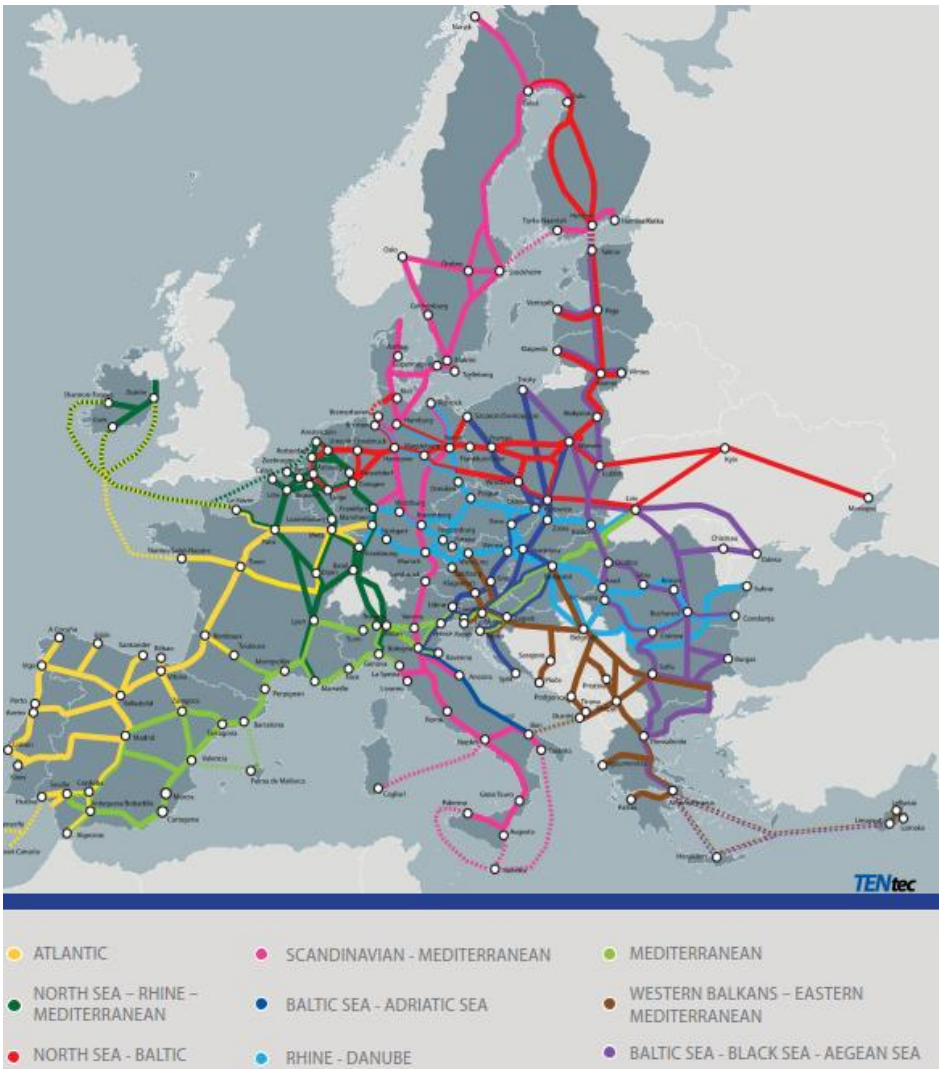

Figure 2 - Map Finder Chart for European Transport Corridors[12]

The indicative extension of TEN-T Comprehensive and Core network in the Western Balkans is presented in the figures below, as included in Annex IV for of the same regulation. It should be noted that, compared to the dual layer TEN-T of Core and Comprehensive networks defined by the previous regulation with completion horizon by 2030 and 2050, respectively, another intermediate layer has been added as "Extended Core" with completion horizon by 2040. The only link of the extended core in the Western Balkans region is on the connection Durres – Skopje (Figure 3).

[11] Regulation (EU) 2024/1679 of the European Parliament and of the Council on Union guidelines for the development of trans-European transport network, amending Regulations (EU) 2021/1153 and (EU) 913/2010 and repealing Regulation (EU) 1315/2013 (OJ L, 28.6.2024)

[12] https://www.transport-community.org/ten-t-and-european-transport-corridors-maps/

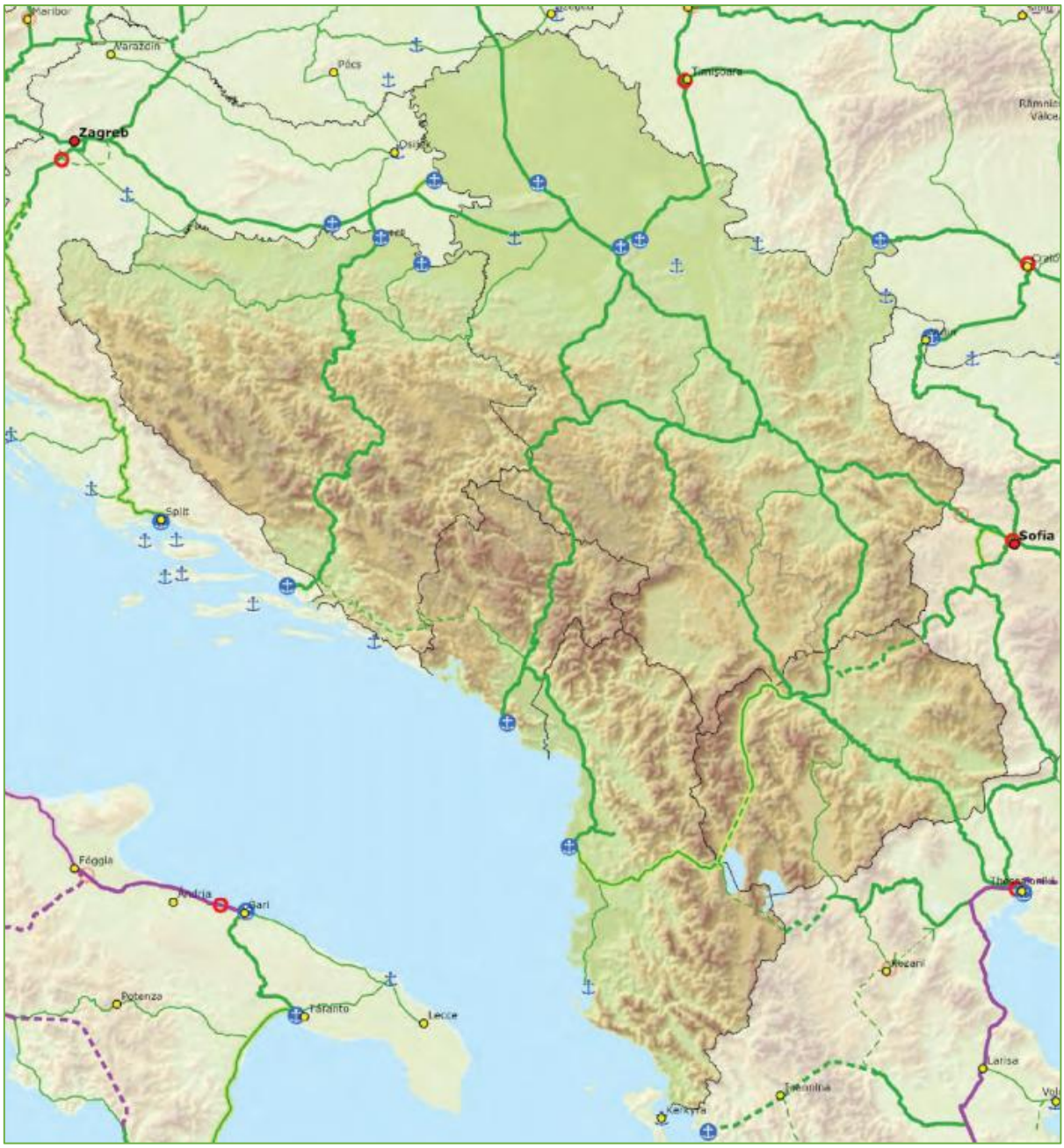

Figure 3 - Core & Comprehensive Networks: Rail (freight), ports and rail-road terminals

It should be noted that despite of the title of the map provided on the figure above, **no rail-road terminals are defined in the WB region**, as it happens with EU Member States (see Figure 3, locations in neighbouring countries, e.g. Dragoman and Sofia in Bulgaria, Thessaloniki and Kozani in Greece, Timisoara and Craiova in Romania, and Zagreb in Croatia).

Figure 4 - Comprehensive & Core Networks: Inland Waterways and Ports

Figure 5 - Comprehensive & Core Networks: Roads, ports, rail-road terminals and airports

As previously noted, **the indicative extension of the TEN-T to the Western Balkans does not include rail-road terminals**. According to Section 6, Article 36 of the TEN-T Regulation, the **multimodal freight terminals are defined as those that are open to all operators and users in a non-discriminatory way and which are: located in or adjacent to the TEN-T maritime ports; located in or adjacent to the TEN-T inland ports; located in the TEN-T airports; and classified as TEN-T Rail-Road terminals (RRTs) or terminals along the TEN-T inland waterways**.

According to the same Article, EU MS shall make all possible efforts to ensure that there is sufficient multimodal freight terminal capacity along the TEN-T that serves the current and will serve the future traffic flows, especially those serving urban nodes, industrial centers, ports and logistics hubs. For identifying the current and future freight flows, for assessing the existing terminals and the needs for new facilities or additional capacity and for adequately distributing the terminals geographically in their territories to accommodate the current and future demand, a market and prospective analysis on multimodal freight terminals should be conducted by each MS by mid-2027, i.e. 3 years after the new regulation enters into force. Under Task 3 of this assignment, the TCT Secretariat is aiming at assisting the RPs to proactively undertake the aforementioned actions, towards the preparation of an Action Plan for the development of multimodal freight network at RP and regional level, considering also the respective multimodal infrastructure in adjacent countries' border areas.

It should be noted that one of the European Court of Auditors recommendations to the EC [13] regarding intermodal freight transport was to lay the groundwork for a coordinated assessment by MS of intermodal terminal needs, by providing clear guidelines on how to perform the market study and how to draw up a terminal development plan, with particular regard to cross-border aspects and along the Core Network Corridors. In its response the EC [14] accepted this recommendation by stating that within one year after the entry into force of the revised TEN-T Regulation, the Commission will develop guidelines for MS on how to perform the market study on multimodal freight terminals on their territory. Therefore, the planning exercise conducted for the WB region in the framework of this assignment precedes the release of these guidelines of the EC for the MS, as well as any planning at MS level to fulfill this future obligation.

Regarding the rail-road terminals to be defined and included-listed in Annexes I and II of the revised TEN-T Regulation (Article 36), a rail-road terminal should at least meet one of the following conditions:

- its annual transshipment of freight exceeds 800,000 tonnes of non-bulk cargo or for bulk cargo 0.1% of the corresponding total annual cargo volume handled in all EU maritime ports.
- it is the main rail-road terminal designated by a MS for a NUTS 2 region, where there is no RRT complying with the above criterion.
- it is proposed by a MS in the framework of an Action Plan for the development of a multimodal freight terminal network with proposed locations where needs for new terminals or additional transshipment capacity in existing terminals have been identified, based on the market and prospective analysis.

[13] Intermodal freight transport, Special report (European Court of Auditors, 2023), available at https://op.europa.eu/webpub/eca/special-reports/intermodal-freight-transport-08-2023/en/

[14] https://www.eca.europa.eu/Lists/ECAReplies/COM-Replies-SR-23-08/COM-Replies-SR-2023-08_EN.pdf

2.2 Multimodality context in the WB Region

2.2.1 Relevant previous studies in the area of multimodality in WB Region

According to the SSMS for WB, multimodal transport is in an early stage of development and it is a crucial segment for the expected shift of goods from road to rail transport in the WB region. The Region experience's very low volumes of multimodal transport. From the standpoint of the performance of intermodal transport service, missing infrastructure facilities for the successful development of intermodal transport are reflected primarily in the lack of appropriate terminals. Terminal infrastructure is one of the key factors for modal connections, but unfortunately there is a very low intermodal terminal density in RPs with 0 to 1 intermodal terminal per 10,000 km^2. Also, the region still needs to develop its policy, institutions and, legal and regulatory framework in this area [15].

In the previous period, a number of studies that dealt with the development of multimodality and of a more balanced and integrated transport system in the WB Region were prepared, of which the following were used as relevant for further analysis within this Report: Western Balkans Intermodal Study - Support to the Transport Dimension of the SEE 2020 strategy (2016); Study of intermodal transport users' needs in the Danube Region (2018); Sustainable and Smart Mobility Strategy (SSMS) for the Western Balkans, Technical Assistance to connectivity in the Western Balkans EuropeAid/13785/IH/SER/MULTI (2023); Assessment of the rail market in the Western Balkans in terms of capacities, policies, economic and technical level of development of freight and passenger transportation segments (2023).

Multimodal infrastructure links should be further developed to eliminate all missing connections and bottlenecks. Based on calculation from the **Deployment of Smart and Sustainable Mobility in the Western Balkans, 2023**, EUR 7.66 billion is needed for road and railway Mature Priority Projects [16]. Ensuring road/rail connectivity with all ports/airports/terminals in the region and developing modern inland terminals and transshipment serving the market needs are key preconditions for developing multimodal transport in WB region.

According to the SSMS for WB, the main problems that the development of multimodality in the region is facing, refer to the following issues:

- Institutional issues such as weak institutions, inadequate organization, non-existence of relevant associations, limited strategic foresight.
- Planning process issues - insufficient support to the comprehensive and wide-ranging planning process in the logistic transport chains.
- Operational issues, which comprise weak coordination and cooperation among stakeholders in the transport chain, as well as a lack of policy initiatives by governments for intermodal transport organization.
- Lack of infrastructure facilities - inadequate and weakly developed suitable infrastructure or superstructure, old mechanization and equipment.
- Economic constraints - lack of concentration of considerable transport volumes at a reduced number of terminals to enhance multimodality in the region.
- Tariff policy issues, which do not stimulate the use of multimodal transport.

[15] The statements made here are taken from SSMS for WB and do not reflect the positions and conclusions of this study
[16] Impact scenarios of the Sustainable and Smart Mobility Strategy (SSMS) for the Western Balkans, Technical Assistance to connectivity in the Western Balkans EuropeAid/13785/IH/SER/MULTI, 2023

- Awareness issues - underdeveloped awareness about the benefits that an intermodal transport system provides and inadequate marketing of the benefits.
- Policy questionnaires and check-lists - to enable WB to better track the progress of the transport reforms at RP level, to ensure greater visibility in front of the EC and international stakeholders and to assess the capacities and needs for future assistance in the field of intermodal transport.

Concerning the multimodal freight terminals identification for the needs of the analysis, the "Western Balkans Intermodal Study" [17] identified 46 multimodal facilities, out of which fifteen facilities had attributes of intermodal terminals, and the main holders of intermodal services were the Ports of Durres, Bar and Ploče (relevant to BIH), the IWW Ports of Belgrade and Novi Sad and six RRTs: in BIH the Intereuropa RTC "Alipašin most" in Sarajevo, the Logistic Centre Tuzla and the Logistic Centre Banja Luka; in MKD the Container terminal Tovarna Skopje; in KOS the Container terminal Miradi; and in SRB the Logistics Centre Belgrade ZIT. The "Intermodal study for the Danube Region" [18] identified 12 terminals in Serbia, 1 in Montenegro and 7 in Bosnia and Herzegovina, while the main providers of intermodal transport service identified were 7 in Serbia (Port of Belgrade, Makis-ZIT, Nelt Co. Dobanovci, Port of Smederevo, Port of Novi Sad, Port of Leget Sremska Mitrovica), 4 in Bosnia and Herzegovina (Sarajevo, Mostar, Banja Luka, Tuzla) and 1 in Montenegro (Port of Bar), i.e. 12 in total, only in RPs of the Danube region (thus excluding Albania, Kosovo and North Macedonia). The list of terminals analyzed under this assignment has been updated using information from most recent studies and sources. Findings were supplemented with research conducted by the consulting team, as well as data from the "Assessment of the rail market in the Western Balkans in terms of capacities, policies, economic and technical level of development of freight and passenger transportation segments", which identified 22 potential terminals that could be potentially considered for inclusion in a future Action Plan for the development of a multimodal freight terminals network in the WB Region.

Also, for the planning it is necessary to take into consideration the RPs' strategies, plans and actions ongoing or underway, such as the preparation of documentation for multimodal node Trubarevo in North Macedonia, and the development of a cargo port in Porto Romano by Albania. Referring to the strategies, the Consultant used data and information from the strategic documents in force in each RP, as well as from the ones recently completed or being drafted (e.g. new Transport Strategy for Serbia, the initial draft of which was presented in March 2024).

2.2.2 Legal and institutional framework for multimodality in the WB

To improve the greening of cargo transport in the region, the existing framework for multimodal transport could be more effective. The option of introducing adequate economic incentives for both operations and infrastructure should be investigated to promote multimodality.

During the Connectivity Summit 2023, that took place on 15-16 May in Budva, Montenegro, Ministers of Transport and directors of Customs endorsed Joint CEFTA-TCT Declaration "Taking Forward the Green Lanes". The declaration includes piloting and deploying digital transport corridors. It is important to note that intersectoral consultations and agreements for digital transport corridors preceded the adoption of this declaration.

[17] Western Balkans Intermodal Study - Support to the Transport Dimension of the SEE 2020 strategy, Final Report (CITY NET Scientific Research Center for the Regional Cooperation Council Secretariat, 2016)

[18] Study of intermodal transport users' needs in the Danube Region (Faculty of Transport and Traffic Engineering, University of Belgrade for the Ministry of Construction, Transport and Infrastructure of the Republic of Serbia, 2018)

The relevant framework at RP level, according to the RPs transport strategies currently in force, is summarized as follows:

Albania – In the Transport strategy (2018) the creation of intermodal logistics centers is identified as a priority to facilitate multimodal transport. Also, for the Albanian transport system priority is to define a Multimodal National ITS Strategy. The Combined Transport Directive (92/106/EEC) is not transposed, neither the eFTI Regulation 2020/1056 [19].

Bosnia & Herzegovina – The Framework Transport Strategy 2016-2030 identifies specific objective to develop multimodality of road-railway-IWW transport. Moreover, the improvement of river Ports connectivity, construction of intermodal terminals and creating of legal framework for intermodal transport operations and incentives for multimodality are set as specific actions. The Combined Transport Directive (92/106/EEC) is not transposed. Neither the eFTI Regulation 2020/1056.

Kosovo – Aiming at successful implementation of strategic objectives for sustainable economic development, Kosovo has adopted the Multi-Modal Transport Strategy for the period 2023-2030. The Multi-Modal Transport Strategy 2030 is an update of the Transport strategy 2022-2027 that aims for the further development of the road, rail and air transport sector in Kosovo by laying grounds for new prosperous infrastructure projects, especially for developing the rail sector and dry port, thus creating better regional connectivity and better interconnectivity among transport modes within Kosovo. The Combined Transport Directive (92/106/EEC) is not transposed. Neither the eFTI Regulation 2020/1056.

North Macedonia – The National Transport Strategy 2018-2030 sets some of objectives contributing to the development of the multimodality: Strengthening EU integration and promotion of regional cooperation; Improvement of the economic sustainability at the national level; introducing green mobility and logistic focused to environmental performance of the Transport Sector. The Combined Transport Directive (92/106/EEC) is not transposed. Neither the eFTI Regulation 2020/1056.

Montenegro – The Transport Development Strategy of Montenegro 2019-2035 is a strategic document that identifies all aspects of transport development. The focus is set to infrastructure development, but also to transport facilitation, border crossings efficiency, road safety, ITS and combined transport. The strategy identifies the need for improvement of intermodal connections of Port of Bar and construction of inland multimodal terminals. Combined transport is set as one of seven priority areas and one of the specific objectives is to strengthen the creation of an efficient integrated transport system through multimodality. Montenegro has partially implemented the Combined Transport Directive (92/106/EEC). The eFTI Regulation 2020/1056 is not transposed.

Serbia – Serbia recognizes intermodal transport as an independent sector. The primary goal of the new coherent National Multimodal Transport Strategy and Action Plan to guide the sustainable development of the transport sector during the period 2023-2030 is expanded, improved, innovative and safer transport that leads to new investments in underdeveloped regions, improving the quality of life in the regions, improving trade and relations with neighboring countries. Serbia has adopted Regulation on stimulative measures for the purpose of improving combined transport. Partial alignment has been achieved with Directive 92/106/EEC. The application of the Regulation on stimulation measures aimed at the promotion of combined transport begun on 1 January 2018 with allocation of EUR 1 million for the implementation of the said Regulation

[19] Action Plans and the EU Acquis progress report 2023 (TCT Secretariat, 2023) – same source for the relevant information for all the RPs in these paragraphs.

through the national budget. Since then, a public call for stimulation measures is being conducted annually. The eFTI Regulation 2020/1056 is not transposed.

2.2.3 TCT strategic documents and action plans

The TCT Secretariat has developed several documents and action plans in order to encourage the development of multimodality in the WB Region. Here, it is particularly important to refer to the comprehensive "Sustainable and Smart Mobility Strategy (SSMS) for the Western Balkans" and "Five Year Rolling Work Plan for Development of Indicative TEN-T-Extension of the Comprehensive and Core Network in Western Balkans" as well as the Actions Plans for Waterborne Transport and Multimodality, for Transport Facilitation and for Rail.

The SSMS for WB identified, like many previous analyses, that there is an extremely low volume of multimodal transport in the region (something more than 200,000 Twenty-foot equivalent unit (TEU) - in total). This is far below the EU average, where the share of intermodal transport in total land transport is around 4%. Therefore, for all RPs, it will be challenging to achieve the goal set by the SSMS that "By 2035, rail and waterborne-based intermodal transport to compete on equal footing with road-only transport in the WB". Some of the key observations related to multimodal transport within the Impact Assessment of the SSMS for WB were:

- In the WB region, multimodal transport is in an early stage of development, and it is a crucial segment for the expected shift to rail or IWW.
- Extremely low volume of transported intermodal transport units in the WB region.
- In most of the RPs, legislation is not harmonized with EU legislation in multimodal transport.
- Terminal infrastructure is one of the key factors for modal connections, but multimodal terminal density in RPs is very low (0 to 1 intermodal terminal per 10,000km^2).
- Existing infrastructure links with TEN-T ports/airports, freight terminals are with numerous bottlenecks, infrastructural and procedural, which represents one of the obstacles for the development of multimodal transport.
- The first phase of the development of missing infrastructure facilities in the WB would include:
    - Reconstruction of 4 intermodal terminals: Port of Durres, Albania; Intermodal terminal Sarajevo and Intermodal terminal Tuzla/Brcko, Bosnia and Herzegovina; and intermodal terminal Miradi-Pristina, Kosovo.
    - Construction of 5 new terminals: Intermodal terminal Banja Luka, Bosnia and Herzegovina; Intermodal Terminal Skopje, North Macedonia; New Intermodal Terminal Batajnica (Belgrade), Port of Novi Sad, Intermodal Terminal Nis, Serbia.

  It was estimated that this could increase intermodal/ combined transport by 100% by 2035 in the WB region – though as a share of overall transport this would still remain low. With construction/ reconstruction of the mentioned multimodal/ intermodal/ combined terminals, the capacity of terminals in WB would increase from 400,000 to 600,000 TEU.

The Five-year Rolling Work Plan for Development of the Indicative TEN-T Extension of the Comprehensive and Core Network in Western Balkans identified the Mature Priority Projects for road and railway infrastructure. Ensuring road/rail connectivity with all ports/airports/terminals and developing modern inland terminals and transshipment facilities serving the market needs are key preconditions for developing multimodal transport in WB Region.

As stated in the Action Plan for Waterborne Transport and Multimodality, the promotion of multimodal transport solutions and modal shift, through targeted policies, including investment in inland waterways and

maritime ports, will give RPs possibilities for new development and growth. On the path to green recovery of the Western Balkans, water is the way to go. In addition to the identified regulatory framework, this Action Plan also identified specific activities that RPs should undertake in order to develop multimodality, such as: Infrastructure improvement or expansion of the road and rail last-mile connections within and outside the node areas; Construction of the Intermodal terminals and purchase of related equipment; Introduction of digital solutions to improve multimodality.

The purpose of the Action Plan for Transport Facilitation is to provide a list of short and medium-term activities aimed at addressing certain rail and road border/ common crossings issues and promote a more efficient use of ports (Maritime and Inland waterways) and terminals. In addition to the identified regulatory activities related to the facilitation of the intermodal/multimodal transport, it is important to emphasize that this Action Plan highlighted as important to define the activity of intermodal transport as an economic activity of special interest, which will enable implementation of incentive measures, and also the harmonization of the standards and rules on transport vehicle dimensions, reloading equipment and transport units, as well as terminals and terminal equipment.

The Action plan for rail contains guidelines for the development of certain areas of railway transport, which, bearing in mind the important role of railways, also lead to the development of multimodality such as rail market opening, interoperability, improving rail border/ common crossings operations and modernization of rail network infrastructure.

2.3 Methodology

The following activities have been prescribed by the Consultant's overall methodology in the Inception Report that were according to the Technical Specifications of the assignment and have been performed under Task 3:

1. Conduct a market and prospective analysis on multimodal freight terminals on their territory.
   As part of this analysis, the Consulting Team followed the guidelines set by TCT and implemented the following activities:
   - Analyses of current and future transport flows - The Consultant analyzed in detail the available data in the field of economy, production and trade, at regional and at RP level. Also, the Consultant analyzed with special attention the freight transport flows by commodity, mode of transport and by corridor for each of the RPs. Based on the analysis of RPs transport flows, statistical data, including global, European and regional statistics, the Consultant assessed and described the current transport flows in the WB region and identified trends in the future multimodal and intermodal freight flows.
   - Identification of the existing multimodal freight terminals of the TEN-T in the WB region, and assessment of the need for new multimodal freight terminals or additional transshipment capacity in existing terminals – the Consultant analyzed the transport performed in all RPs and, through the analysis of existing multimodal freight terminals per RP, identified the necessary capacities and network of multimodal terminals for further development of multimodality in each of the RPs. Here it was important to consider not only the existing multimodal terminals capacities, but also their position within the RPs related to the industrial and urban areas, bearing in mind that the coverage of the territory of each of the RPs is important for the development of multimodality and last mile connectivity.

- Geographical distribution of multimodal freight terminals – The most important intermodal and multimodal terminals have been identified as one of the prerequisites for the development of multimodality in WB. In addition, the terminals are summarized and tabulated with their most important features. Bearing in mind that in addition to the number of terminals and available capacity, their adequate geographical distribution is also necessary, in order to have terminals at all potential transport generators, the most important economic and industrial zones in the region were identified and a comparative review of terminals locations in relation to the major economic and industrial zones was carried out, using Multi-Criteria Analysis and considering spatial aspects.

To support all of the above listed activities, the Consultant consulted shippers, transport and logistics operators which operate on Western Balkans territory, through the activities of Task 2, where beside the survey and interviews about users' satisfaction, covered questions related to this specific task of this assignment.

2. Action Plan – The Consultant prepared an action plan with proposals for the development of a multimodal freight terminals network in the WB region, including the provision of last-mile multimodal connectivity, together with a proposed list of rail-road terminals which the RPs will consider proposing to EC to add in Annexes I and II in line with the new TEN-T Regulation. The action plan comprises also actions in the field of digitalisation, namely applications that have been identified under Task 4 of this assignment as the most needed and which, if implemented, they would be beneficial for advancing multimodal transport in the WB region.

3 Status of multimodality in WB region – Current and future transport flows

3.1 Analysis of current trade and transport flows at RP level

The current flows analysis was carried out by combining data from the COMEXT database of Eurostat, data obtained from the Customs administrations of certain regional economies with corrections made on the basis of data available from statistical services and data from the CEFTA statistical portal. Internal flows (domestic transport) were not fully analyzed due to lack of available data. Detailed analysis by mode of transport, origin – destination and commodity group was performed on a sample that represents about 91% of the total amount of goods that regional economies exchange in international trade. This analysis is presented in **Appendix I** per RP. For the remaining 9%, i.e. about 6 million tons, the data is partially available - the total quantities and destinations are known, but the breakdown per destination for this part of the data by transport mode and commodity was not available.

3.1.1 Albania

International trade

Main trade partner of Albania is the EU. Albania has significant trade deficit with Türkiye, China, Greece and other far markets (rest of the world). Trade value with WB partners is not significant compared to EU. Albania has trade surplus with Kosovo. Generally, Albania's trade balance is structurally in deficit, mainly because exports are neither sufficiently diversified nor competitive in terms of price, and because of the country's narrow production base. Trade balance, trends and share of main trade partners of Albania are presented in Appendix I.

Given that Albania has a constant trend of growth in international trade, it can be expected that growth in international trade will continue, and consequently the transport demand and the need to increase transport capacities will increase. In addition, Albania's current and planned investments in transport infrastructure will further attract economic activities and additional needs for the transport of goods, which will lead to the intensification of transport flows, both within Albania and internationally.

Analysis by commodity is made according to Standard classification of goods in transport (NST 2007).

Regarding import and export flows of goods per commodity group, the most represented quantities in Albanian exports are goods from the commodity groups of Coal, lignite, crude oil & gas; Other non-metallic and mineral products; Metal ores, mining products; Basic metals and products, except machinery and Coke and petroleum products. On the other hand, in import flows, the highest quantities of goods are from the commodity groups of Coke and petroleum products; Other non-metallic and minerals; Basic metals and products, except machinery; Food, drinks, tobacco; Agriculture, animals, fish; Coal, lignite, crude oil & gas; and Wood, paper, printed, recorded media. A detailed overview of quantities per commodity is presented in Appendix I.

What may be concluded is that among the main commodities, except Food, drinks, tobacco (represented with about 6% in import and about 1.3% in export), all other goods are suitable for multimodal/ intermodal transport.

Table 1 presents the transport modal share of each group of commodities in Albanian international trade. It can be seen that for each commodity group, both maritime and road transport are involved. Maritime transport is extremely significant in the case of transport of Coke and petroleum products, while road transport is dominant in the case of Food, drinks, tobacco; Agriculture, animals, fish; and Chemicals, fibers, rubber, and plastics.

Table 1 - Modal share of international trade of Albania by commodity group

NST classification of goods		Maritime	Railway	Road
9	Other non-metallic, minerals	51.7%	0.0%	48.3%
7	Coke and petroleum products	90.2%	0.0%	9.7%
10	Basic metals and products, except machinery	60.5%	0.0%	39.4%
2	Coal, lignite, crude oil & gas	67.5%	0.0%	32.5%
3	Metal ores, mining products	64.5%	1.5%	34.0%
4	Food, drinks, tobacco	30.0%	0.1%	69.9%
1	Agriculture, animals, fish	30.4%	0.0%	69.6%
8	Chemicals, fibers, rubber, plastic	28.2%	0.0%	71.7%
6	Wood, paper, printed, recorded media	38.5%	0.0%	61.4%
12	Transport equipment	68.2%	0.4%	31.3%
11	Machinery and equipment, electronics	56.1%	0.1%	43.5%
5	Textile & leather products	66.7%	0.2%	33.1%
14	Secondary raw mat., waste	73.7%	0.0%	26.2%
13	Furniture, manufactured goods	48.2%	0.1%	51.6%
20	Other goods	0.1%	0.0%	85.6%
17	Goods in removals, baggage, non-market goods	0.0%	0.0%	78.4%
19	Unidentifiable goods	18.8%	0.0%	78.3%

The analysis by trade partners is performed according to the quantities of goods in import and export, by transport mode, for the 20 most important trade partners of Albania with exchange of over 88.3% of the total quantities in international trade, which represents a sufficiently significant sample for analysis of flows. Most important export flows are to towards Italy by sea and Kosovo by road.

It is possible to recognize the separation of flows into maritime transport to countries that have access to the sea and road transport to countries in the hinterland. The only partner of Albania where there is a significant presence of both maritime and road transport is Greece, where road transport dominates due to proximity of the market and of course due to total absence of railway connections.

The biggest trade partners of Albania in terms of imports are India, Türkiye and Italy by sea, Greece and Serbia by road. Detailed structure of the transport flows per trade partner is given in Appendix I.

Regarding trading partners, the analysis is performed for the quantities of goods by commodity group for the 20 most important trading partners. In the exchanges with the largest trading partner, Italy, all commodity groups are represented, with a slight dominance of Other non-metallic, minerals and Food, drinks, tobacco. Second in order is Kosovo, with which Albania exchanges the most Other non-metallic, minerals and Basic metals and products, except machinery, mainly in exports. The next two partners in terms of quantity of goods are Türkiye and India: Albania mainly imports Other non-metallic and minerals from Türkiye, and goods from the Coke and petroleum products group from India. Detailed structure of the transport flows per trade partner and commodity group is given in Appendix I.

The analysis of transport flows according to the mode of transport was partially presented in the analysis per commodity group and trade partner. Figures 6 and 7 below show the total modal share by volume in international trade. In relation to the total quantities, maritime transport is dominant, while from the

directions it can be seen that maritime transport is particularly dominant in import, while road transport has the advantage in export flows.

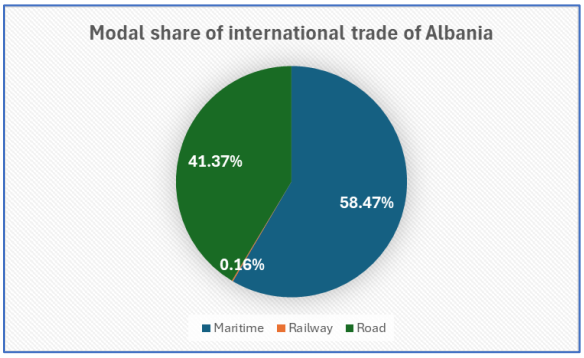

Figure 6 - Modal share in international trade of Albania, 2023[20]

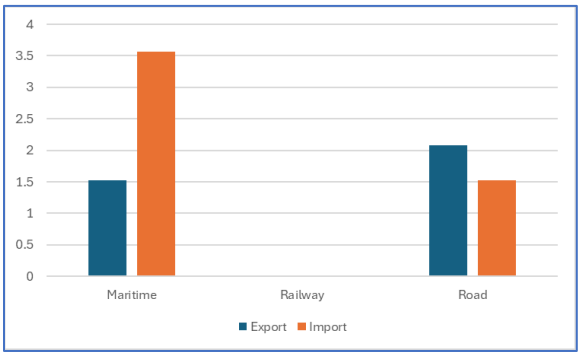

Figure 7 - Quantities in international trade of Albania (million tons) per mode of transport and direction, 2023[21]

Table 2 presents the quantities of the top 5 commodity groups in international trade, per mode of transport and direction. Other non-metallic products and minerals are equally represented in maritime and road transport, while other commodities are mainly in maritime transport. The extremely low representation of rail transport is clearly visible.

Significant import flows of Other non-metallic products and Coke and petroleum products in maritime transport can be distinguished, as well as the export flows of Other non-metallic products, Basic metals and Coal, lignite and crude oil in road transport.

Table 2 - Top 5 commodity groups per mode of transport and direction in international trade of Albania (million tons)

NST*/mode /flow	9	7	10	2	3
Maritime	***0.861***	***1.278***	***0.730***	***0.800***	***0.524***
Export	0.124	0.130	0.127	0.453	0.495
Import	0.736	1.147	0.604	0.347	0.028
Railway	***0.000***		***0.000***		***0.012***
Export			0.000		0.012
Import	0.000		0.000		0.000
Road	***0.804***	***0.138***	***0.476***	***0.385***	***0.275***
Export	0.639	0.077	0.359	0.385	0.169
Import	0.165	0.061	0.117	0.000	0.107
Total	**1.665**	**1.416**	**1.207**	**1.185**	**0.811**

*
9 - Other non-metallic, minerals
7 - Coke and petroleum products
10 - Basic metals and products, except machinery
2 - Coal, lignite, crude oil & gas
3 - Metal ores, mining products

[20] Customs administration of Albania, data provided for top 25 commodities.
[21] Source: Consultant elaboration based on COMEXT Eurostat, Customs and statistics data

Rail transport flows of international trade

In 2022, the volume of goods traded by rail (export and import) was only 4,604 tons, of which 3,000 tons were exchanged with Hungary. The same year, freight transport carried out by private entities occupies the largest share of rail freight transport in the country with 99% in tons and 98% in t-km.

Goods transported by rail are coal and lignite, crude oil and natural gas 99.1%; Only 0.5% are food, beverage and tobacco products; 0.2% are metal and mining products and other products of quarries and 0.2% are secondary raw materials; municipal wastes and other wastes.

The main reason for the almost negligible volume of railway transport in Albania is the condition of the railway network, infrastructure and connections.

Specific of railway transport in Albania is the short line between port of Vlore and Fier railway station, where a private operator (Albrail) is operating, transporting crude oil between the port and oil refinery in Fier. Transported annual quantities are over 0.15 million tons.

Maritime transport flows of international trade

Albania has four seaports, which serve for the transport of freights, which are the Ports of Durres, Vlore, Shengjin and the port of Limjon (Saranda). In 2022, the volume of goods traded by seaports (export and import) was 6.25 million tons (Table 3), of which from port of Durres 95.7% or 5.98 thousand tons.

Table 3 - Volume of freight transported by seaports of Albania, 2021-2022 (million tons)[22]

	2021	2022
Total	**4.84**	**6.25**
Port of Durres	**4.44**	**5.98**
-Import	3.09	4.58
-Export	1.35	1.40
Port of Vlore	**0.12**	**0.11**
-Import	0.07	0.07
-Export	0.05	0.04
Port of Limjoni (Sarande)	**0.04**	**0.04**
-Import	0.015	0.025
-Export	0.025	0.015
Port of Shengjin	**0.24**	**0.12**
-Import	0.18	0.06
-Export	0.06	0.06

As shown in Figure 8, Coke and refined petroleum products; Other non-metallic products and minerals; and Coal, lignite and crude oil and gas, represent the majority of goods transported by sea, with more than 57% of the total.

[22] Source: Institute of Statistics Albania, Transport in figures 2022

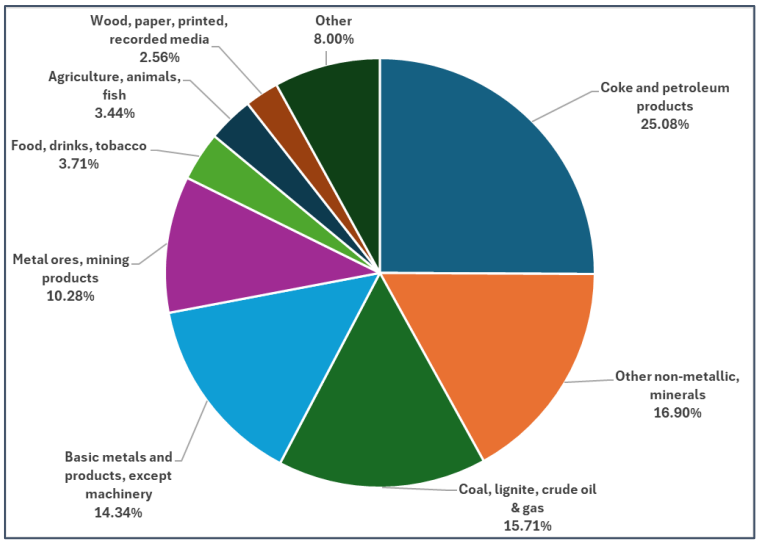

Figure 8 - International Maritime transport in Albania - share by commodity group[23]

Road transport flows of international trade

Regarding road freight transport, the Institute of Statistics Albania does not keep official data. Having in mind the poor availability of railway transport services and small quantities, it is clear that the majority of the goods coming through seaports are transported by road to/from inland destinations in the hinterland, including domestic and international movements.

In international road transport the share by commodity group is shown in Figure 9. Groups of goods suitable for multimodal transport which are transported internationally by road are Other non-metallic products and minerals; Basic metals except machinery; products of Agriculture, animals and fish; and Coal, lignite and crude oil and gas. These main four groups represent more than 57% of international road transport of Albania.

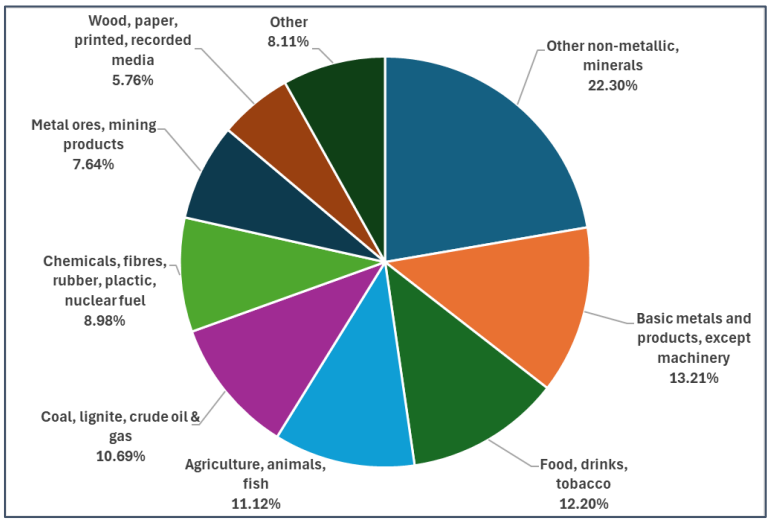

Figure 9 - International Road transport in Albania - share by commodity group[24]

[23] Consultant elaboration based on COMEXT Eurostat, Customs and statistics data
[24] Consultant elaboration based on COMEXT Eurostat and Customs data

Intermodal transport flows of international trade

Intermodal transport in Albania is fully dependent on Port of Durres operations, where containerized goods are coming or leaving Albania by container vessels. Since the port is not connected to the railway system, there is no railway container lines or services and a total quantity of about 150,000 TEU is transported by road, from/to the Port of Durres to locations in Albania, mostly to Tirana area and from industrial zones (metal ore) and to Kosovo. According to data provided by Kosovo administration, about 40,000 TEU are transported to/from Kosovo to the Port of Durres by road.

On the other hand, the volume of containerized goods in Albanian international trade is 0.73 million tons, which is estimated to 96,000 TEU to/ from Albania.

It can be estimated that about 14,000 TEU are transported by road to other markets, mostly North Macedonia, and Serbia, as destinations in the catchment area of the Port of Durres.

Out of 96,000 TEU in Albania, about 55,000 TEU are export of metal ores and mining products, mostly to China, then Italy, United Arab Emirates, Switzerland, Hong Kong and India.

In import direction, there are about 31,000 TEU, where majority of about 20,000 TEU are other non-metallic products and minerals, mostly coming from India, Spain and Türkiye.

However, this structure is currently not affecting the multimodal flows in Albania, considering that there is no functional railway connection to the Port of Durres and containers from/to the port are transported by road.

On the other side, with 96,000 TEU from/to Albania, by far the largest quantities of intermodal units in the WB region, the potential for development of intermodal transport is huge.

Figure 10 illustrates the distribution of commodities in intermodal international transport of Albania (containerized goods). The majority of commodities are from the group Metal ores, mining products and Other non-metallic products and minerals, which are also identified in maritime and road transport. Considering the advantages of intermodal transport in terms of reliability and safety, it should be expected that the share of other goods in containerized transport could be increased.

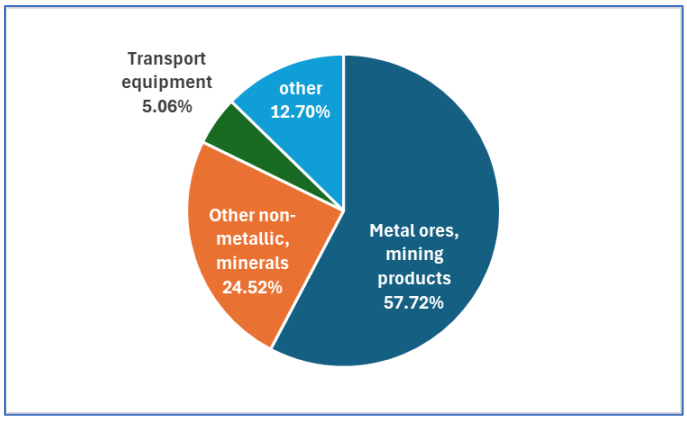

Figure 10 - International Intermodal transport in Albania - share by commodity group (containerized goods)

3.1.2 Bosnia and Herzegovina

International trade

Bosnia and Herzegovina's trade-to-GDP ratio stands at 97%. However, trade development is hindered by low productivity levels, limited access to finance, and administrative barriers. While Customs duties are relatively low for most products, non-tariff barriers remain a significant challenge [25]. Main trade partners of Bosnia and Herzegovina are Germany, Croatia, Italy and Serbia. Trade balance, trends and share of trade partners of Bosnia and Herzegovina are presented in Appendix I.

Bosnia and Herzegovina has a constant growth trend in international trade, especially since 2020. Despite a decrease in 2023 compared to 2022, it can be expected that international trade will have a growing trend, leading to further growth of transport flows and improved transport capacities needs.

Since the trade relations expressed in monetary terms do not necessarily reflect the traffic flows, further analysis is done based on traded quantities of goods, according to available data. **Analysis by commodity** is made according to Standard classification of goods in transport (NST 2007).

Detailed analysis of import and export flows of goods per commodity group is provided in Appendix I. It shows that in exports of Bosnia and Herzegovina, the most represented quantities are goods from the groups of Metal ores, mining products; Chemicals, fibers, rubber, plastic; Coal, lignite, crude oil & gas; Basic metals and products, except machinery; Other non-metallic products and minerals; and Wood, paper, printed, recorded media.

In import flows the highest quantities of goods are from the groups of Food, drinks, tobacco; Agriculture, animals, fish; Other non-metallic products, minerals; Coke and petroleum products; and Chemicals, fibers, rubber, plastic. It is important to highlight that the majority of quantities exchanged in international trade are suitable for multimodal/ intermodal transport. The goods which may be questionable in case of multimodal/ intermodal transport belong to the group Food, drinks, tobacco, which share is about 10% of export and 21% of import quantities. The modal share per group of commodities is shown in Table 4.

Table 4 - Modal share of international trade of Bosnia and Herzegovina by commodity group

NST classification of goods		IWW	Railway	Road	n/a
3	Metal ores, mining products	4.66%	2.12%	90.10%	3.12%
9	Other non-metallic, minerals	0.00%	0.75%	98.89%	0.36%
8	Chemicals, fibers, rubber, plastic	0.00%	6.98%	91.99%	1.03%
10	Basic metals and products, except machinery	2.02%	3.09%	92.26%	2.64%
4	Food, drinks, tobacco	0.00%	1.24%	95.21%	3.55%
1	Agriculture, animals, fish	0.13%	4.66%	93.33%	1.88%
6	Wood, paper, printed, recorded media	0.00%	0.40%	96.78%	2.81%
7	Coke and petroleum products	0.49%	38.34%	60.54%	0.63%
2	Coal, lignite, crude oil & gas	0.00%	10.50%	89.18%	0.32%
14	Secondary raw mat., waste	0.00%	21.82%	77.54%	0.64%
11	Machinery and equipment, electronics	0.04%	0.02%	98.05%	1.89%
12	Transport equipment	0.04%	0.08%	97.33%	2.55%
13	Furniture, manufactured goods	0.00%	0.01%	98.94%	1.05%
5	Textile & leather products	0.00%	0.01%	98.04%	1.95%
20	Other goods	0.00%	80.48%	17.80%	1.72%
19	Unidentifiable goods	0.00%	0.00%	100.00%	0.00%
17	Goods in removals, baggage, non-market goods	0.00%	0.00%	100.00%	0.00%

It can be seen, that for certain commodity groups (i.e. NST 7, 2, 14), the road transport is dominant but with significant share of rail transport, suggesting that shift from road to railway transport is possible and should

[25] https://www.lloydsbanktrade.com/en/market-potential/bosnia-and-herzegovina/trade-profile#classification_by_products

be facilitated through development of railway infrastructure and establishment of Rail-Road Terminals network.

The **analysis by trade partners** refers to the quantities of goods in international trade by transport mode, for the 20 most important trade partners of Bosnia and Herzegovina. Trade partners where road transport is dominant and where possibilities for shift from road to railway transport are evident with few regional economies and neighboring EU MS (Serbia, North Macedonia, Italy, Croatia, Hungary, and Romania). Detailed overview is presented in Appendix I.

To recognize the possibility for increase of multimodal/ intermodal transport to/ from the most important trade partners, analysis of distribution by commodity group for the 20 most important trading partners was performed. In the exchanges with the largest trading partners, Croatia and Serbia, all commodity groups are represented, with a dominance of Metal ores and mining products and Other non-metallic products and minerals in the case of Croatia and Coal, lignite, crude oil and gas in the case of Serbia. These 3 groups create the most significant part of the flows of goods which are suitable for railway transport. Detailed overview is presented in Appendix I.

The analysis of **transport flows according to the mode of transport** was partially presented in the analysis per commodity group and trade partner. Figures 11 and 12 show the modal share of international trade of Bosnia and Herzegovina as percentages of total quantities and by volume per direction. Road transport per direction (export and import) is quite balanced, while in railway transport, imports are more than 3 times higher compared to exports.

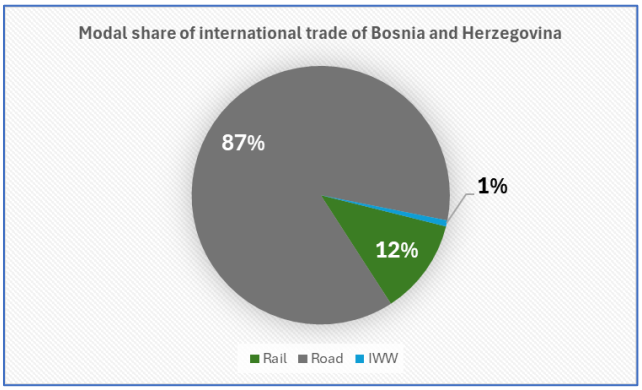

Figure 11 - Modal share in international trade of Bosnia and Herzegovina 2023[26]

[26] Source: Customs administration of Bosnia and Herzegovina

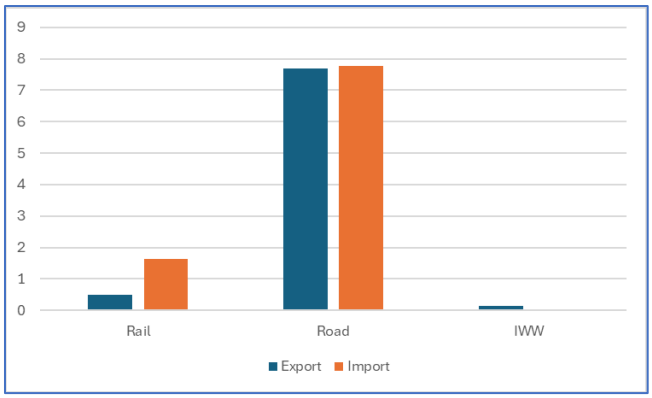

Figure 12 - Quantities in international trade of Bosnia and Herzegovina (million tons) per mode of transport and direction, 2023[27]

Domination of road transport in international flows is unquestionable but comparing the shares on the total level including domestic transport, where railway transport share is slightly higher than road, it may be expected that the share of railway in the future can be significantly increased in international flows as well.

Quantities for the top 5 commodity groups per mode of transport are presented in Table 5. For most transported commodities in international flows, road transport is dominant. The only significant portion of rail involvement is in transport of Chemicals, fibers, rubber and plastics.

Table 5 - Top 5 commodity groups per mode of transport and direction in international trade of Bosnia and Herzegovina (million tons)

NST*/mode /flow	3	9	8	10	4
IWW	0.10			0.03	
Export	0.10			0.03	
Import					
Railway	0.05	0.01	0.12	0.05	0.02
Export	0.05	0.01	0.01	0.04	0.02
Import	0.00	0.00	0.11	0.00	0.00
Road	2.00	1.70	1.57	1.42	1.38
Export	1.89	0.83	0.96	0.80	0.32
Import	0.11	0.87	0.61	0.62	1.06
Grand Total	2.20	1.71	1.69	1.50	1.41

*
3 - Metal ores, mining products
9 - Other non-metallic, minerals
8 - Chemicals, fibers, rubber, plastic
10 - Basic metals and products, except machinery
4 - Food, drinks, tobacco

Rail transport flows of international trade

A specific of the railway transport organisation in Bosnia and Herzegovina is its division to Railways of Federation of Bosnia and Herzegovina (ZFBH) and Railways of Republika Srpska (ZRS), both responsible for managing infrastructure and delivering operations. According to information gathered from surveys and interviews with users, ZFBH is responsible for about 70% and ZRS for 30% of total quantities transported by rail.

Total quantities of goods transported in Bosnia and Herzegovina in 2022 was 12.7 million tons, which include international trade, domestic transport and transit. Out of this total quantity, the most common products transported were: 49.5% coal and lignite, crude oil and natural gas, 26.6% metal ores and other mining and quarrying products; and 5% Coke and refined petroleum products. Quantity in international trade in 2022 was 2.91 million tons, which is about 23% of the total. In 2023, the total quantities in international trade by rail were 2.12 million tons.

Detailed structure per commodity group in internationally traded and transported goods by rail was known for about 50% of quantities. For this sample, most common commodities with share of 57% were Coke and petroleum products and Secondary raw materials. Considering that analyzing such a sample cannot provide

[27] Source: Customs administration of Bosnia and Herzegovina

the full picture, Figure 13 shows the share of commodities in railway transport including international trade, transit and domestic transport together.

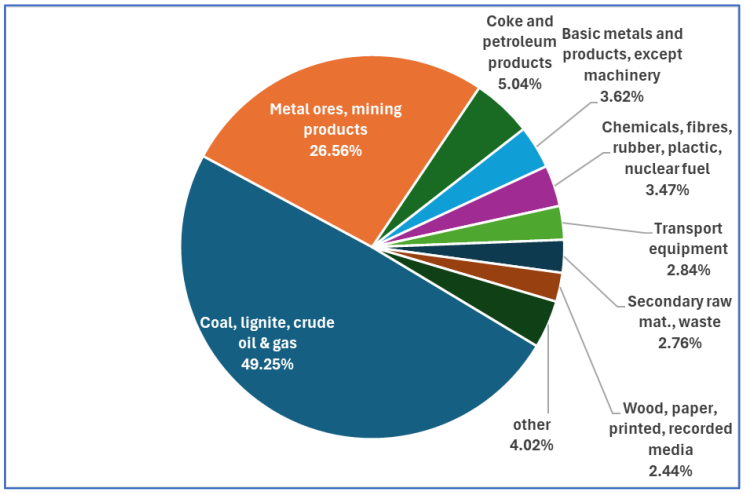

Figure 13 - International Railway transport in Bosnia and Herzegovina - share by commodity group

Some of the important users of railway transport services in Bosnia and Herzegovina are the Chemical industry and mining in Tuzla industrial area, the Iron factory Arcelor Mittal in Zenica and Aluminij in Mostar.

Main railway flows are oriented to railway stations Sarajevo, Mostar, Zenica, Doboj and Banja Luka. However, data on the transshipped quantities was not made available.

Road transport flows of international trade

According to the official statistics, Road transport is the second mode of transport, carrying lower quantities compared to railway. In 2022, the total quantity of goods transported by road, were 10.35 million tons, including domestic and transit transport.

Given that for 2023, the structure of international road transport was almost entirely provided, the total quantities were estimated by combining COMEXT Eurostat, Customs and statistics data. Figure 14 presents the structure of international road transport per commodity group.

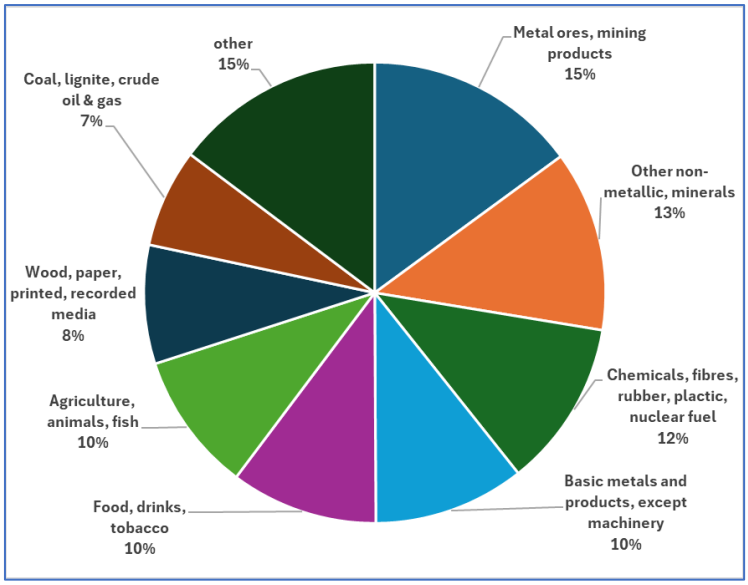

Figure 14 - International Road transport in Bosnia and Herzegovina - share by commodity group

What is visible from this analysis, is that 47% of commodities (Metal ores, mining products; Non-metallic products and minerals; Chemicals, rubber, basic metals; and Coal, lignite and crude oil and gas) are transported by road transport, while these commodities in bulk form are more suitable for railway or water means of transport.

Inland Waterway transport flows of international trade

In 2022, only 0.09% of imports and 1.11% of exports were transported by inland waterway. IWW transport in Bosnia and Herzegovina is negligibly small, despite of the presence of the international river Sava. According to information from interviews, the reason for this is the poor navigation conditions on the Sava River, where complete rehabilitation needs to be carried out, from the mouth of the Danube, all the way upstream to the IWW ports of Bosnia and Herzegovina.

Figure 15 illustrates the distribution of 0.14 million tons of commodities internationally transported by the Sava River IWW.

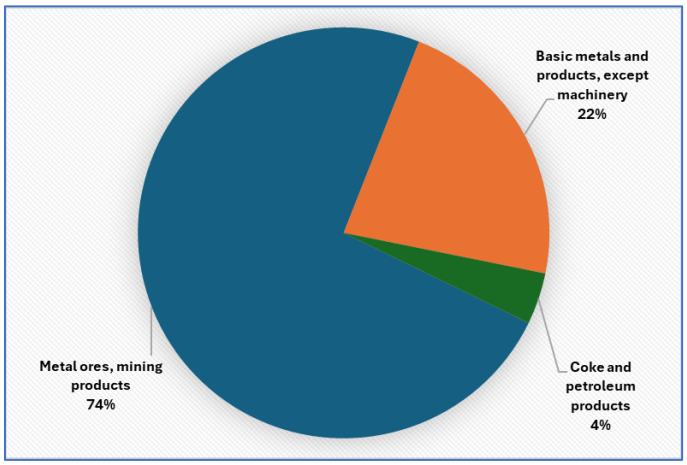

Figure 15 - International IWW transport in Bosnia and Herzegovina - share by commodity group

Intermodal transport flows

Analysis of intermodal transport flows in international trade were mainly not supported by detailed data, especially missing the structure of import/export flows from/to China, United States, Türkiye, Brazil, India and Russian Federation. Total quantity of these flows are about 2.5 million tons, where it can be assumed that transport to/from far markets should be significantly containerized. However, there is no data to justify such an assumption.

Total quantity of containerized goods, converted to TEU, reaches a total volume of 56,200 TEU. In exports 20,500 TEU and in import direction about 35,700 TEU. According to available data from COMEXT Eurostat, other regional Customs administrations and statistics, about 8,000 TEU is exported by road, to Italy and Serbia.

On the other hand, based on independent private analysis of data from Port of Ploče and Port of Rijeka (container terminal AGCT)[28], the intermodal transport market of Bosnia and Herzegovina is divided between the major flows of about 27,000 TEU to/from Port of Rijeka - mainly to the northern part of Bosnia and Herzegovina - and about 26,000 TEU to/from Port of Ploče - to southern part of Bosnia and Herzegovina. The rest of about 3,000 TEU is transported from/to Serbia and other European countries, mostly by road.

[28] Results presented during interviews, the source is known to the Consultant and asked to remain anonymous

According to the same source, dominant commodities in imports are machinery, textile, technical goods, furniture and food and consumer goods. In exports, the main commodities are wood and wooden products, agriculture products, minerals, stone, granulates, etc.

Out of total quantity transported in international trade, intermodal transport is at the level of 1.62% in export and 3.25% in import flows.

3.1.3 Kosovo

International trade

Trade-to-GDP ratio in Kosovo is 110% [29]. The main export sectors include base metals, miscellaneous manufactured articles, plastics, rubber, mineral products, and prepared foodstuffs. On the import side, mineral products, prepared foodstuffs, machinery, and base metals are the leading categories, expressed in monetary trade value. Main trade partners of Kosovo in terms of export are North Macedonia, Albania, Germany and Serbia. On the import side, main trade partners of Kosovo are Germany, Serbia and Greece. The trade balance, trends and share of trade partners of Kosovo are presented in Appendix I.

Kosovo has constant growth in international trade, significantly from 2020 onwards and particularly in imports, which leads to the expectation that this trend will continue, consequently causing further growth of freight transport demand and increased needs for improved transport capacities.

Analysis by commodity is made according to Standard classification of goods in transport (NST 2007).

In exports of Kosovo the most common commodities are Basic metals and products, except machinery; Food, drinks, tobacco; Coal, lignite, crude oil & gas; and Other non-metallic, minerals. On the other hand, import flows are more than 6 times higher than export flows and consist mainly of Other non-metallic, minerals; Coke and petroleum products; Food, drinks, tobacco; and Basic metals and products, except machinery. Detailed presentation of the import and export flows of goods by commodity group is provided in Appendix I. It is important to highlight that the majority of quantities exchanged in international trade are suitable for multimodal/intermodal transport.

The modal share per commodity group is shown in Table 6.

Table 6 - Modal share of international trade of Kosovo by commodity group

NST classification of goods		Railway	Road
9	Other non-metallic, minerals	0	100%
7	Coke and petroleum products	0	100%
4	Food, drinks, tobacco	0	100%
10	Basic metals and products, except machinery	0.4%	99.6%
8	Chemicals, fibers, rubber, plastic	0	100%
1	Agriculture, animals, fish	0	100%
3	Metal ores, mining products	0	100%
6	Wood, paper, printed, recorded media	0	100%
2	Coal, lignite, crude oil & gas	0	100%
11	Machinery and equipment, electronics	0	100%
5	Textile & leather products	0	100%
12	Transport equipment	0	100%
14	Secondary raw mat., waste	0	100%
13	Furniture, manufactured goods	0	100%
19	Unidentifiable goods	0	100%
17	Goods in removals, baggage, non-market goods	0	100%

[29] https://www.lloydsbanktrade.com/en/market-potential/kosovo/trade-profile

It is obvious that the entire international trade of Kosovo is done by road transport. Further analysis of flows per mode of transport is redundant. Expected completion of construction works on railway infrastructure towards North Macedonia and eventual future opening of services to Serbia could significantly change the situation, but until then, Kosovo is limited to road transport as only available option.

The **analysis by trade partners** refers to the quantities of goods in international trade for the 20 most important trade partners of Kosovo per direction. Detailed volumes are presented in Appendix I. Most of the flows in exports are to North Macedonia and Albania, while import flows are from Albania, North Macedonia, Türkiye, Greece and Serbia. Compared to other regional economies, here there's no analysis of modal share. The transport flows per trade partner and per commodity show that significant flows of Other non-metallic products and minerals are to/from North Macedonia, Albania, India and Türkiye. Basic metals and metal products except machinery are exchanged with Albania and Türkiye. Food, drinks and tobacco are the main flows from North Macedonia and Serbia. Products of agriculture, animals and fish are to/from Serbia, while Coke and petroleum products are mainly coming from Greece and India. Detailed analysis per trade partner and commodity group is presented in Appendix I.

Intermodal transport flows

Main flows of containerized goods transported in international trade of Kosovo are to/from the Port of Durres. About 36,000 TEU find their way to/from Kosovo through this South-Adriatic gate.

In addition to this number, trade of containerized goods with partners from other directions is about 1,000 TEU, making the total number of TEU at around 37,000.

Considering the fact that currently there are no functional international railway links, all containers are transported by road, as happens with all other goods traded internationally.

Data on the breakdown of containerized goods per partner and commodity is available only for the part of trade of Kosovo with the EU, from the COMEXT Eurostat database. Main trade partners regarding containerized goods are Spain (over 57%), followed by France, Poland, Belgium, Italy and Malta.

At the same time, the main commodity group is Other non-metallic products and minerals (57.2%) followed by Food, drinks and tobacco (20.7%).

3.1.4 Montenegro

International trade

Montenegro is a country open to foreign trade, with trade-to-GDP ratio of 126%[30]. Expressed in monetary values, main trade partners who import goods from Montenegro are Serbia, Bosnia and Herzegovina and Slovenia. On the import side, main trade partners who export goods to Montenegro are Germany, Serbia, Greece, and North Macedonia. Trade balance, trends and share of main partners of Montenegro are presented in Appendix I.

Given that Montenegro has a constant trend of growth in international trade, especially since 2020, it can be expected that this trend will continue, leading to further growth of freight transport demand and the need to improve transport capacities. It should be noted though that the analysis per mode of transport, commodities and trade partners is based on data extracted from COMEXT database and data provided by Montenegrin

[30] https://www.lloydsbanktrade.com/en/market-potential/montenegro/trade-profile

Customs on trade with CEFTA partners, while data related to trade with the rest of the world was not available. Therefore, the results of the analysis should be taken with reservation to this limitation.

Analysis by commodity is made according to Standard classification of goods in transport (NST 2007).

On the export direction, the flows are mainly consisted of the commodity groups of Metal ores, mining products; Coal, lignite, crude oil & gas; and Wood, paper, printed, recorded media. All these commodities are suitable for multimodal/intermodal transport. Regarding the import direction, main commodities are Other non-metallic products and minerals; Food, drinks, tobacco; Coke and petroleum products; Chemicals, fibers, rubber, plastic; Metal ores, mining products; Basic metals and products, except machinery; and Agriculture, animals, fish. Beside the group of Food, drinks and tobacco with a share of 17%, all other mentioned main groups of commodities are suitable for multimodal transport as well. Detailed quantities per commodity and direction are presented in Appendix I.

The modal share per group of commodities, based on the data sample limited to trade partners from EU MS and CEFTA parties is presented in Table 7.

Table 7 - Modal share of international trade of Montenegro by commodity group

NST classification of goods		Maritime	Railway	Road
9	Other non-metallic, minerals	20.7%	0.0%	79.3%
4	Food, drinks, tobacco	1.3%	0.0%	98.7%
3	Metal ores, mining products	64.2%	4.9%	30.9%
7	Coke and petroleum products	82.2%	0.0%	17.8%
8	Chemicals, fibers, rubber, plastic	0.5%	0.0%	99.5%
2	Coal, lignite, crude oil & gas	0.5%	0.0%	99.5%
6	Wood, paper, printed, recorded media	7.0%	0.0%	93.0%
10	Basic metals and products, except machinery	13.8%	0.0%	86.2%
1	Agriculture, animals, fish	2.3%	2.9%	94.8%
12	Transport equipment	5.5%	1.5%	93.0%
11	Machinery and equipment, electronics	1.2%	0.0%	98.8%
14	Secondary raw mat., waste	0.7%	0.0%	99.3%
13	Furniture, manufactured goods	2.6%	0.0%	97.4%
5	Textile & leather products	3.6%	0.0%	96.4%
19	Unidentifiable goods	0.0%	0.0%	100.0%
20	Other goods	6.9%	0.0%	93.1%
17	Goods in removals, baggage, non-market goods	0.1%	0.0%	99.9%

Commodities from the groups of Metal ores, mining products; and Coke and petroleum products are mainly transported by sea, while there's still significant share on road, which could be shifted to rail and/or maritime transport. Agriculture products and Transport equipment are mainly transported by road, with a small share of railway and maritime transport, suggesting that further shift from road is possible. A similar situation is with the biggest group of commodities – Other non-metallic products and minerals, and Basic metals and products, where road transport is dominant, while significant quantities are also met in maritime transport.

The group of commodities Coal, lignite, crude oil & gas, which is typically suitable for railway or maritime transport, in case of Montenegro is almost fully transported by road.

Here it should be noted that the presented figures are much lower compared to the quantities reported by the Port of Bar (over 2 million tons of bulk), suggesting that the majority of the goods handled in the Port of Bar are in transit.

The **analysis by trade partners** refers to the limited quantities of goods in international trade, by transport mode, for the 20 most important trade partners of Montenegro among EU MS and CEFTA parties. Main output of this analysis is related to the possibilities for modal shift in the case of the three main trade partners, namely Serbia, Albania and Croatia. Trade with Serbia is almost fully performed by road. In the cases of Albania and

Croatia, the exported goods are not transported by sea, even if it is possible and visible in case of imports from Croatia and total trade with Greece, where majority of goods are transported by maritime transport. In addition to this, imports from Italy are mainly by road, even exports are more oriented to maritime transport. Detailed figures and analysis of quantities per trade partner are given in Appendix I.

In order to analyze all the quantities per all the trade partners, the data related to the missing part of trade partners is needed. However, considering that from the data from the statistics office presented in the following paragraphs, the majority of the missing data are related to maritime transport, this does not affect the data on flows from/to neighboring trade partners and inland freight flows per trade partner listed.

To recognize the possibility for increase of multimodal/intermodal transport to/from most important trade partners, it is important to analyze distribution of flows per commodity group for each trade partner as well. Analysis is performed on the sample of the top 20 trade partners per commodity group.

Most traded group of commodities with the main trade partners Serbia, Albania and Croatia is Other non-metallic products and minerals. These products are currently transported mostly by road from/to these 3 markets. In the case of Greece, where goods are mostly transported by sea, main quantities are related to the goods from the groups Metal ores, mining products and Coke and petroleum products.

The products from the group Food, drinks and tobacco, are mostly traded with Serbia and transported by road. This flow is most significant in international trade of Montenegro in import direction and significantly affects the modal share of international trade of Montenegro. Detailed data on quantities per trade partner and commodity are presented in Appendix I.

The analysis of **transport flows according to the mode of transport** was partially presented in the previous paragraphs, where the modal share was presented for all commodity groups and the top 20 trade partners among EU MS and CEFTA parties. Figure 16 shows the modal share of international trade of Montenegro in volumes per direction.

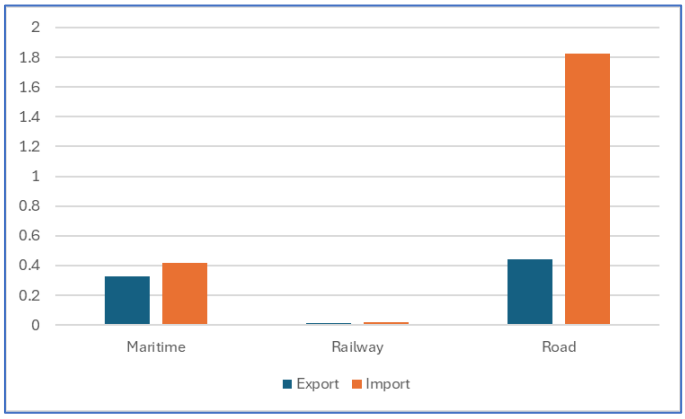

Figure 16 - Partial quantities in international trade of Montenegro (million tons) per mode of transport and direction, 2023

This figure does not reveal the real situation completely, but only partially, considering that it refers to partial data on trade with EU Member States and CEFTA, while data on trade with other partners is not available.

The share of maritime transport in trade with EU Member States and CEFTA parties is at low level. Also, the quantities imported by road transport are significantly higher than the quantities exported, as well as the quantities that occur in maritime transport. However, when other trading partners that are not covered by Eurostat data and the provided data on trade with CEFTA are considered, the modal share changes significantly.

Based on the official data of MONSTAT, where total quantities per mode of transport include domestic transport and transit, as well as transport of goods traded with all international partners, the modal share is significantly in favor of maritime transport and is presented in Figure 17.

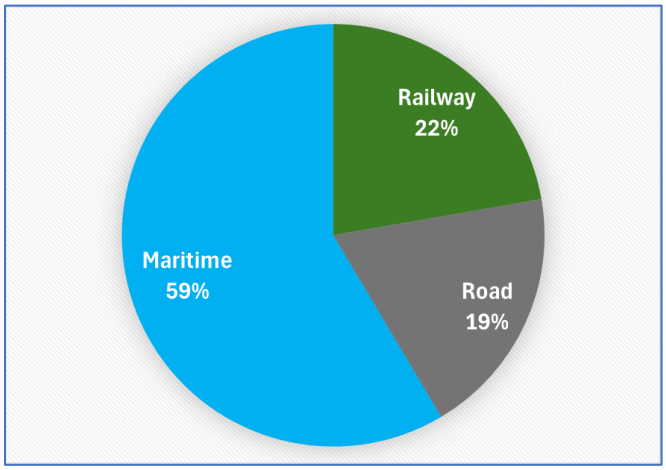

Figure 17 - Modal share of total quantities of goods transported in Montenegro[31]

On the other hand, when looking at export and import only, due to huge import of goods mainly from Serbia and Albania by road (in total about 1.8 million tons) and considering that port operations concern mainly goods transiting Montenegro, the modal share is quite different and presented in Figure 18.

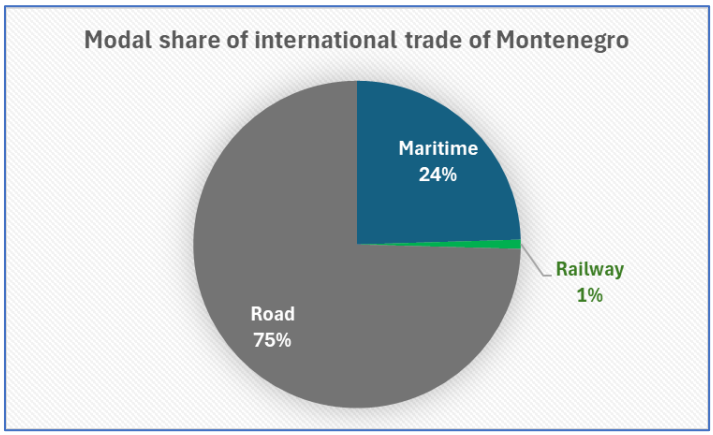

Figure 18 - Modal share of quantities transported in international trade of Montenegro (export and import only)[32]

Based on the fact that all data on trade with neighboring trade partners is available, as well as that a significant volume of transshipment in the Port of Bar and of volume of rail transport is related to transit movements, it can be said that the missing data does not significantly affect recognition of flows that are important for the network of multimodal terminals. Additionally, the amount of goods related to Montenegro, that is, the amount of transported goods related to the missing data, does not represent a significant deficiency in the regional context.

Given the above, the analysis was performed using data on the quantities in trade with the EU Member States and CEFTA parties, especially bearing in mind that data on the breakdown by country of origin and destination and by commodity group is not available in the official statistics.

[31] Source: MONSTAT – Annual statistics of transport, warehousing and connections 2023
[32] Source: Consultant calculation base on COMEXT Eurostat and Customs data

Rail transport flows of international trade

Total quantities of goods transported in Montenegro in 2023 reached 1.11 million tons, a figure that includes international trade, domestic transport and transit. As already mentioned, the breakdown of this quantity per country of origin/destination and per commodity is not available.

Main directions of transport flows are defined by the existing railway infrastructure: the main corridor from the Serbian border to the Port of Bar, and connections from Nikšić to Podgorica and from Podgorica to Albanian border. The main railway stations for goods transshipment are four: Niksic, Podgorica, Bar and Tuzi. The biggest share of the flows is oriented to Bar and Niksic. Bar station is connected to the Port of Bar and represents the starting/ending station of flows related to Port of Bar, and Niksic is the station located near the biggest industrial area of Montenegro. Transshipment quantities at the main freight railway stations in Montenegro are presented in Table 8.

Table 8 - Quantities of goods transshipped in main freight railway stations in Montenegro 2022 (million tons)

Railway freight station	Transshipped quantities (million tons) in 2022
Nikšić	0.615
Bar	0.718
Podgorica	0.011
Tuzi	0.004

Detailed structure per commodity group in internationally traded and transported goods by railway transport was known for about 50% of quantities. For this sample, most common commodities with share of 57% were Coke and petroleum products and Secondary raw materials. Analyzing such a sample would not give the full picture, so Figure 19 depicts the share of commodities in railway transport by including international trade, transit and domestic transport all together.

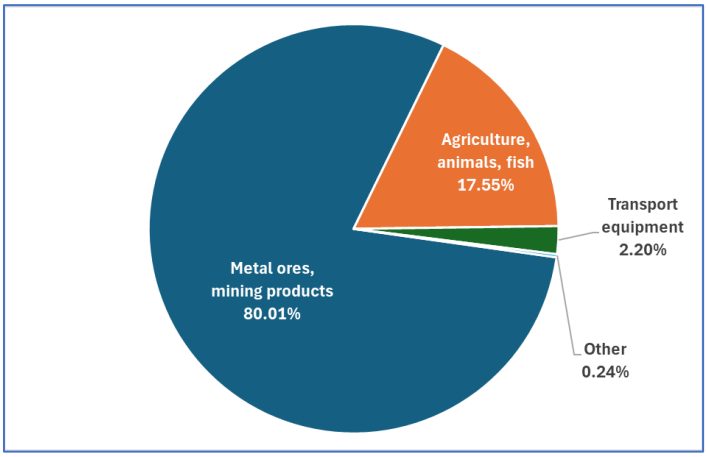

Figure 19 - International Railway transport in Montenegro – share by commodity croup[33]

Maritime transport flows of international trade

The majority of the transported goods by sea are transshipped in the Port of Bar. Major freight flows in bilateral trade by sea are presented by Table 9, showing the quantities for the top 10 origin-destination countries.

[33] Limited to trade with EU MS and CEFTA parties

Table 9 - Quantities of main maritime flows in Montenegrin ports in 2023 per O/D country (million tons)[34]

O/D	GR	HR	EG	IT	LT	TR	MT	ES	SG	MY	Total
mt	0.5	0.4	0.27	0.21	0.14	0.11	0.1	0.1	0.09	0.09	2.01

The share per main commodity group in maritime transport in trade with EU MS and CEFTA parties is presented in Figure 20.

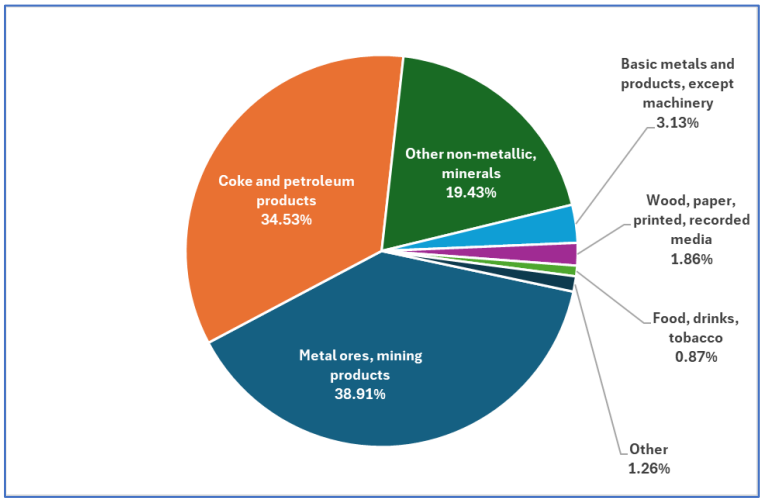

Figure 20 - International Maritime transport in Montenegro - share by commodity group

The biggest maritime flows to/from Montenegro are coming from Greece and Croatia, mainly consisting of Metal ores, mining products and Coke and Petroleum products. These commodities are suitable for further transport in multimodal transport from the port to the hinterland and vice versa.

Maritime transport in Montenegro is mostly performed through Port of Bar, with reported about 2 million tons of goods handled in 2023. According to information provided by port, around 30% of total handled quantities is originated from Serbia and around 25% from Montenegro. At the same time, according to COMEXT Eurostat data, almost half of inbound quantities is originated from Greece and Croatia. Comparing these quantities with volume of goods in foreign trade, it is identified that about 1.4 million tons in maritime transport is transiting Montenegro.

Road transport flows of international trade

Main road transport flows in international trade of Montenegro in import direction are coming from Serbia, Albania, Bosnia and Herzegovina, Croatia, Kosovo and Slovenia. In export direction, main quantities are transported to Serbia, Kosovo and Albania.

The structure of goods transported by road per group of commodities is presented in Figure 21.

[34] MONSTAT - Annual statistics of transport, warehousing and connections 2023

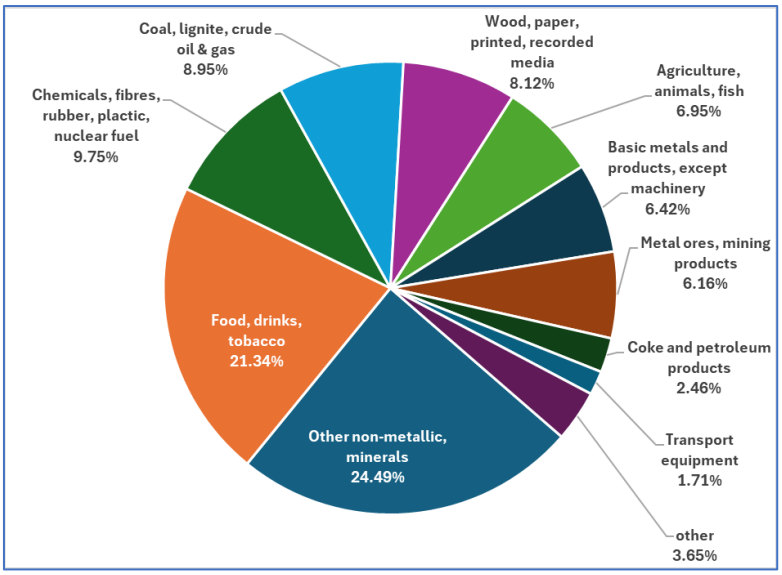

Figure 21 - International Road transport in Montenegro - share by commodity group[35]

Main groups of commodities are Other non-metallic products and minerals; Food, drinks, tobacco, Chemicals, fibers, rubber, plastic; Coal, lignite, crude oil & gas; and Wood, paper, printed, recorded media. Apart from Food, drinks and tobacco, all other commodities (51.3%) are suitable for multimodal transport.

Intermodal transport flows of international trade

Since Montenegro does not have inland intermodal terminals nor services established, flows of containerized goods from the Port of Bar to the hinterland in Montenegro are transported by road.

Main flows of containerized goods are transshipped in the Port of Bar, where about 50,000 TEU is performed annually. There is no available data on the structure of this flow. It can be assumed that majority of containers transiting Montenegro are transported by road, since there are no regular container services by rail from Serbia.

Total quantity of containerized goods from to EU MS and CEFTA parties is estimated to 3,000 TEU[36], while volumes of flows from/to far markets (China, USA, India, etc.) are not available.

3.1.5 North Macedonia

International trade

North Macedonia is highly integrated into international trade, with a total trade-to-GDP ratio of over 171%[37]. According to data from the State Statistical Office, in 2022, expressed in monetary value, thanks to the strong supplier base for automotive industry, the country mainly exported supported catalysts containing precious metals or their compounds as active substances, ignition wiring sets, other wiring sets used in vehicles and other supported catalysts. Regarding imports, the key products comprise petroleum oils derived from bituminous minerals (excluding crude), other metals of the platinum group and their alloys in unwrought or powdered form, unwrought or powdered platinum and platinum alloys, and motor vehicles. Main trade partners in monetary terms, trade balance and trends are provided in Appendix I.

[35] Limited to trade with EU MS and CEFTA parties
[36] Based on limited data on trade with EU MS and CEFTA parties
[37] https://www.lloydsbanktrade.com/en/market-potential/north-macedonia/trade-profile

Trade balance of North Macedonia is in deficit. North Macedonia has a trend of growth in international trade, especially after the recovery since 2020. Despite a decrease observed in 2023, it can be expected that international trade will return to growth and the transport demand and the need to improve transport capacities will grow as well.

Analysis by commodity is made according to Standard classification of goods in transport (NST 2007).

In exports of North Macedonia, the most represented quantities are goods from the groups of Basic metals and products, except machinery; Metal ores, mining products; and Other non-metallic products and minerals. In Import flows, the highest quantities of goods are from the groups of Coal, lignite, crude oil & gas; Coke and petroleum products; and Basic metals and products, except machinery. Detailed quantities per commodity group and direction are presented in Appendix I.

To recognize the flows, it is important to analyze each commodity group per transport mode, aiming to recognize the commodities which are transported significantly by road and another transport mode, suggesting that shift from road transport is possible in short term period of time if the network and transshipment capacities allow it.

The modal share for each group of commodities is presented in Table 10.

Table 10 - Modal share in international trade of North Macedonia by commodity group[38]

NST classification of goods		Railway	Road
2	Coal, lignite, crude oil & gas	0.0%	100.0%
10	Basic metals and products, except machinery	3.3%	92.9%
7	Coke and petroleum products	5.1%	94.9%
3	Metal ores, mining products	0.0%	100.0%
9	Other non-metallic, minerals	0.0%	100.0%
4	Food, drinks, tobacco	0.6%	97.4%
8	Chemicals, fibres, rubber, plastic	0.0%	100.0%
1	Agriculture, animals, fish	0.0%	100.0%
14	Secondary raw mat., waste	34.7%	54.5%
6	Wood, paper, printed, recorded media	0.0%	100.0%
11	Machinery and equipment, electronics	0.1%	99.9%
5	Textile & leather products	0.0%	100.0%
12	Transport equipment	0.0%	100.0%
13	Furniture, manufactured goods	0.0%	100.0%
19	Unidentifiable goods	0.0%	100.0%
20	Other goods	0.7%	99.3%
17	Goods in removals, baggage, non-market goods	0.0%	100.0%

Commodities from the groups Coke and petroleum products; Basic metals and products, except machinery; and especially Secondary raw mat., waste, are transported mainly by road, but with positive share of railway transport, suggesting that shift from road to railway transport is possible. In addition to this, it is questionable that Coal, lignite and crude oil and gas are fully transported by road.

The **analysis by trade partners** refers to the quantities of goods in international trade, by transport mode, for the 20 most important trade partners of North Macedonia. The majority of goods are transported by road, with notable share of railway only in case of Bulgaria and Romania, showing that such flows are possible. It is interesting that in trade with Serbia, where railway transit flows are significant, the share of railway is only 4.4% in import direction, while export from North Macedonia to Serbia is fully by road. Detailed volumes are presented in Appendix I.

[38] Limited to trade with EU MS and certain regional economies

To recognize the possibility for increase of multimodal/intermodal transport to/from the most important trade partners, it is important to analyze flows per commodity group as well. Main flows of Coal, lignite, crude oil & gas are from direction of Greece and Albania, while Petroleum products are coming from Greece mainly. Basic metals and products, except machinery are transported from/to Greece and Türkiye, while Other non-metallic products and minerals are transported from/to Kosovo, Bulgaria and Serbia. Metal ores and mining products are mainly from Cote de Ivoire. Food, drinks, tobacco and Agriculture products are mainly exchanged with Serbia. All of those groups of commodities are suitable for multimodal transport, even Food, drinks and tobacco on shorter distances from-to Serbia. Detailed data per partner and commodity are given in Appendix I.

The analysis of **transport flows according to the mode of transport** was partially presented in previous paragraphs, where in detail modal share is presented for all commodity groups and the top 20 trade partners. Figures 22 and 23 show the modal share of international trade of North Macedonia as percentages of total quantities and by volume per direction. Road transport is extremely dominant, and import direction is almost twice as high as export. Railway transport is at very low level, even operations are possible and exist, but mainly in transit of goods through North Macedonia.

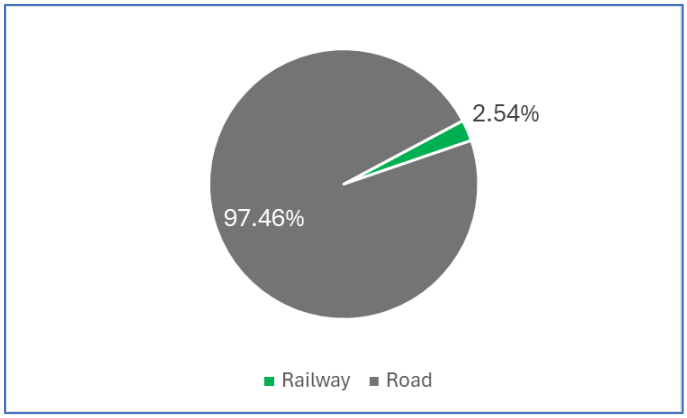

Figure 22 - Modal share of international trade of North Macedonia 2023[39]

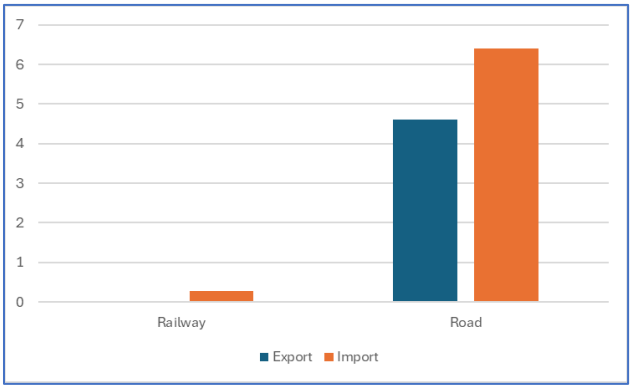

Figure 23 - Quantities in international trade of North Macedonia (million tons) per mode of transport and direction, 2023[40]

Rail transport flows of international trade

Most of the railway flows are realized over the Corridor X parts of the network in North Macedonia, connecting Serbia on the North-west and Greece on South-east. Significant internal flows are to the south, on the line

[39] Consultant elaboration based on COMEXT Eurostat and Statistics data of North Macedonia
[40] Official statistics database MAKSTAT

Veles-Prilep-Bitola. An overview of transshipped quantities in main railway freight stations is provided in Table 11.

Table 11 - Transshipped quantities in main railway freight stations of North Macedonia in 2022 (million tons)[41]

Railway freight station	Loaded	Unloaded	Total
Bitola	0.195	0.518	0.713
Skopje Jug	0.079	0.267	0.347
Ilinden	0.052	0.110	0.162
Skopje Tovarna	0.007	-	0.007
Kumanovo	0.002	-	0.002
Krivolak	-	0.031	0.031
Sivec	-	0.028	0.028

During 2022, a total of 1.42 million tons of goods were transported by rail [42]. In 2023, based on COMEXT data and data from Statistics database MAKSTAT, the total volume of railway transport in international trade was 0.3 million tons, leading to the conclusion that railway flows are mainly domestic and transit.

Railway transport has a strong decreasing trend, reaching its minimum in 2022 from 2007, when total quantities were 4.7 million tons.

The structure of railway transport per commodity group is shown in Figure 24.

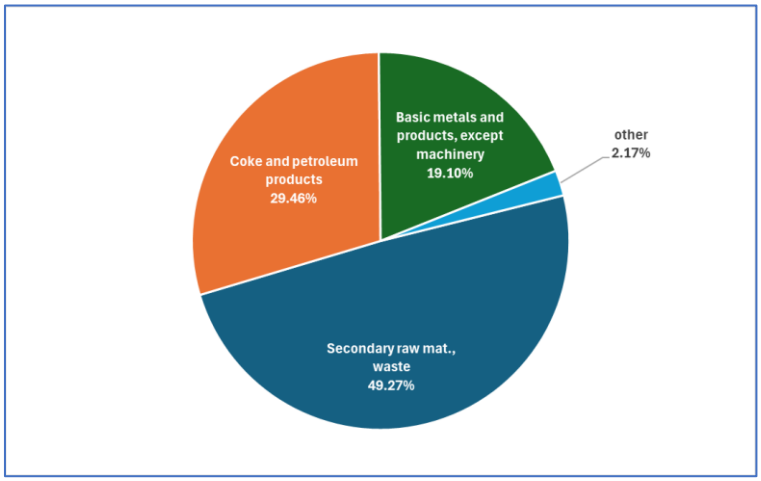

Figure 24 - International Railway transport in North Macedonia - share by commodity group[43]

Almost half of current quantities in international railway transport are Secondary raw materials coming from Bulgaria.

Road transport flows of international trade

Road transport covers the majority of movements of goods internationally, as well as in domestic transport and transit movements. According to official statistical data, in 2023 there were 11.04 million tons of goods in import and export transported by road.

Analysis per commodity was performed on 95% of that quantity. Figure 25 shows the structure of international road transport (import and export) per group of commodities.

[41] Source: Railways of North Macedonia
[42] Official statistics of North Macedonia
[43] Consultant elaboration based on COMEXT Eurostat and Statistics data of North Macedonia for 2023

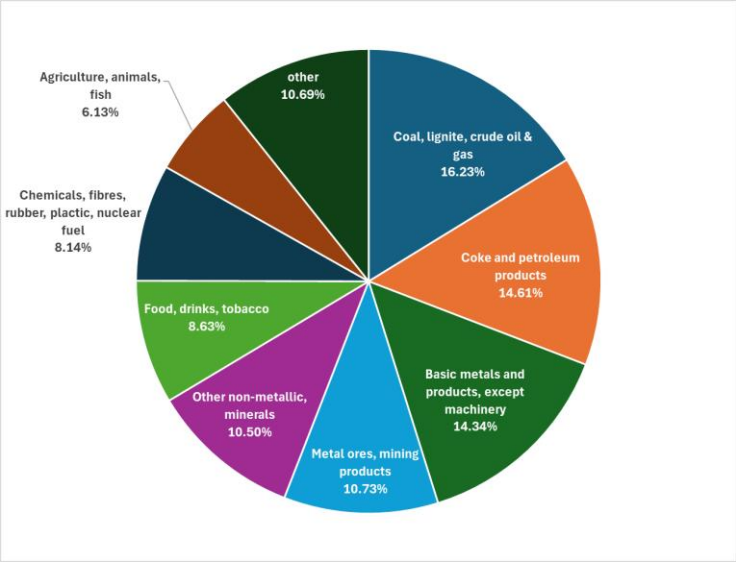

Figure 25 - International Road transport in North Macedonia – share by commodities[44]

Considering that road transport serves most of the international movement of goods, all commodity groups are represented in relation to the quantities traded. Practically all commodity groups that are suitable for multimodal transport can be shifted from road to rail transport, once the conditions and capacities of railway services are met.

Intermodal transport flows of international trade

According to Official statistics, intermodal transport flows in 2022 were on the level of 23,400 TEU, but 22,000 TEU in transit. Only 1,480 TEU was meant for the market of North Macedonia. Even from this quantity, 500 TEU were empty containers.

According to COMEXT database, the estimated number of containers in 2023 was 2,000 TEU, mainly to Greece and Italy.

This data matches the information gathered through the survey and interviews, where it was identified that about 2,500 TEU was approximately the current performance of a private intermodal terminal located in Skopje. According to the same source, majority of transit is coming from China, through the Ports of Piraeus and Thessaloniki on the way to Serbia and further to Central Europe.

3.1.6 Serbia

International trade

Serbia is gradually becoming more open to international trade, with trade-to-GDP ratio at 139% [45]. Expressed in monetary values, Serbian main exports are electrical machines and apparatus, metal ores and residues, power engines and motors, iron and steel, and fruit and vegetables. Imports are led by oil and oil derivatives, electrical machines and apparatus, natural gas, electricity, and medical and pharmaceutical products. Main export partners of Serbia are Germany, Bosnia and Herzegovina, Italy, Hungary and Romania. On the import side, Serbia brings the goods mainly from Germany, Italy and Hungary. Details on the share of main trade partners, trade balance and trends are provided in Appendix I.

[44] Consultant elaboration based on COMEXT Eurostat and Statistics of North Macedonia

[45] https://www.lloydsbanktrade.com/en/market-potential/serbia/trade-profile#classification_by_products

Serbia has a constant trend of growth in international trade, especially between 2020 and 2022. It can be expected that international trade will continue to grow, and consequently transport demand and the need for improved transport capacities will increase too.

Analysis by commodities is made according to Standard classification of goods in transport (NST 2007).

In exports of Serbia, the most represented quantities are goods from the groups of Food, drinks and tobacco and products of Agriculture, animals and fish, followed by Chemicals, fibers, rubber, and plastic; Metal ores, mining products; and Basic metals and products, except machinery. Regarding Import flows, the far highest quantity imported belongs to the group Coal, lignite, crude oil & gas. Significant quantities over one million tons annually are from the groups of Metal ores, mining products; Chemicals, fibers, rubber, and plastic; Basic metals and products, except machinery; Other non-metallic, minerals; Coke and petroleum products; Wood, paper, printed, recorded media and Food, drinks and tobacco.

Detailed datasets were not made available and therefore the analysis was performed based on COMEXT Eurostat database, combined with data from Official statistics, CEFTA trade portal and other sources. In those terms, for certain trade partners the structure per commodity or by mode of transport was unknown. Figures on quantities per commodity are presented in Appendix I.

The modal share per commodity groups is shown in Table 12.

Table 12 - Modal share of international trade of Serbia by commodities

NST classification of goods		IWW	Railway	Road
2	Coal, lignite, crude oil & gas	48.7%	24.0%	27.2%
8	Chemicals, fibers, rubber, plastic	17.1%	9.1%	73.8%
3	Metal ores, mining products	52.4%	29.0%	18.6%
4	Food, drinks, tobacco	0.7%	5.0%	94.3%
1	Agriculture, animals, fish	25.2%	10.3%	64.4%
10	Basic metals and products, except machinery	7.7%	18.3%	74.1%
9	Other non-metallic, minerals	0.7%	8.7%	90.6%
6	Wood, paper, printed, recorded media	0.2%	4.1%	95.8%
7	Coke and petroleum products	32.6%	35.8%	31.6%
11	Machinery and equipment, electronics	1.3%	0.5%	98.2%
19	Unidentifiable goods	5.2%	3.5%	91.4%
14	Secondary raw mat., waste	34.7%	3.4%	61.9%
12	Transport equipment	8.9%	3.9%	87.2%
5	Textile & leather products	0.0%	0.3%	99.7%
13	Furniture, manufactured goods	0.0%	0.4%	99.6%
17	Goods in removals, baggage, non-market goods	0.0%	0.0%	100.0%

Based on the distribution shown for each commodity group, it is noticeable that the groups Chemicals, fibers, rubber, and plastic; Agriculture, animals, fish; Basic metals and products, except machinery; Other non-metallic products and minerals; and Secondary raw materials have a dominant share in road transport, but also a significant share in rail and/or IWW transport, which suggests that it is possible to shift these types of products from road to rail transport.

The **analysis by trade partners** refers to the quantities of goods in international trade, by transport mode, for the 20 most important trade partners of Serbia. The volumes are presented in Appendix I.

The largest partners of Serbia in 2023 in terms of the quantity of goods were Bosnia and Herzegovina and Bulgaria, where the structure by mode of transport indicates the possibility of shifting goods from road to other modes of transport, i.e. multimodal transport. The situation is similar with all neighboring countries,

except Romania, where the largest quantities are transported by IWW transport. In exports to Italy, the participation of railway transport is significant, but in import flows road transport is completely dominant.

The distribution by transport mode is not known for some important trading partners such as China, Indonesia, the Russian Federation, South Africa and Ukraine. Based on the conducted interviews and collected information, it can be confirmed that road transport dominates imports from China, while exports are dominated by rail, in both cases from/to seaports (mostly Port of Rijeka). In the case of Indonesia, it is mostly about the import of coal by sea, and then by IWW transport to the river ports in Serbia. For other trading partners, the Consultant did not have enough information on flows structure.

To recognize the possibility for increase of multimodal/intermodal transport to/from most important trade partners, it is important to analyze distribution by commodity group as well. The largest quantities of goods that Serbia trades are from the Coal, lignite, crude oil & gas commodity group, where flows are mainly focused on Bosnia and Herzegovina, Bulgaria and Indonesia. The second largest group consists of Chemicals, fibers, rubber, and plastic, where no large flows are observed with a single trading partner, but the largest part of flows belongs to Bulgaria, Romania, Germany and Hungary. Metal ores, mining products is the third group in which trade with China leads. According to information from the surveys, it is mainly about the export of ores through the port of Bar. Traditionally, Serbia exchanges large quantities of grain with Romania, while other products from the Agriculture, animals, fish group are exchanged mostly with Bosnia and Herzegovina and Italy. Detailed structure of available data on quantities per trade partner and commodity is presented in Appendix I.

Having in mind that Serbia trades the largest quantities of goods and has largest number of neighboring countries and connections, it is difficult to estimate main flows and assign trade quantities on the corridors network based on country of origin or destination, especially in case of far markets where goods are going through seaports, and where it is impossible to estimate which port is chosen. Data on quantities in seaports per country of origin or destination is not publicly available.

The analysis of **transport flows according to the mode of transport** was partially presented in the above and more details are provided in Appendix I, for all commodity groups and the top 20 trade partners. Figures 26 and 27 present the modal share of international trade of Serbia as percentages of total quantities and by volume per direction. Road and railway transport per export and import directions are quite balanced, while in IWW transport, import is the dominant direction.

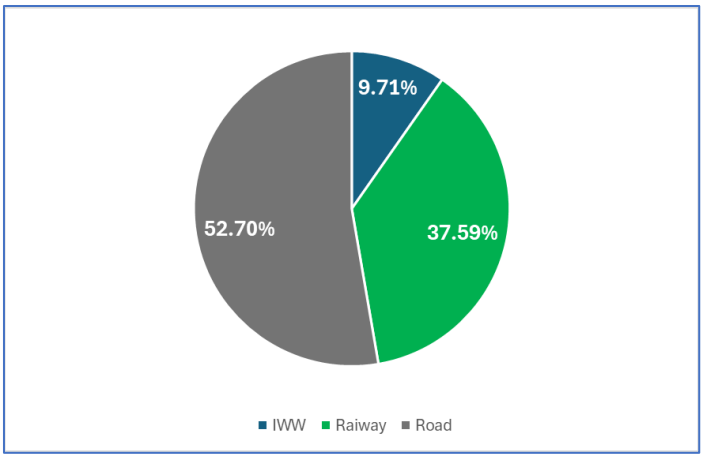

Figure 26 - Modal share of international trade of Serbia 2022[46]

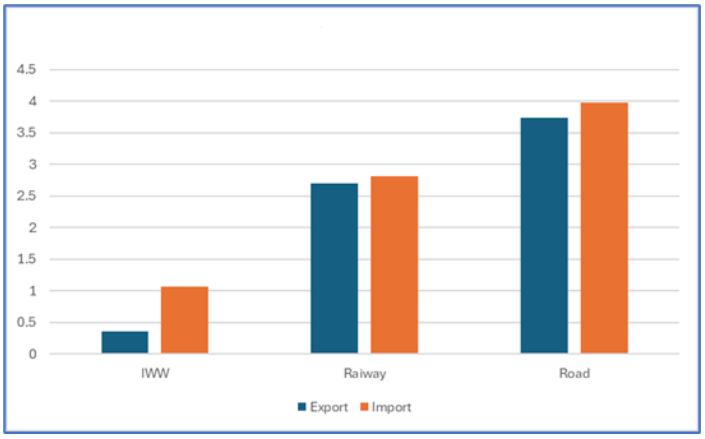

Figure 27 - Quantities in international trade of Serbia (million tons) per mode of transport and direction, 2022

Here it must be mentioned that official statistics at RP level do not fully match the COMEXT data, where the share of IWW transport is significantly higher, reaching up to 20%, while the railway transport share is lower. However, it is not clear whether the available data on exports and imports includes some portion of transit movements or not.

Rail transport flows

In 2022, the volume of goods transported by rail (national, export and import) was 10.16 million tons, while in 2023 that quantity decreased to 8.8 million tons.

According to available data from the Statistical office of Serbia regarding the main railway freight flows per country, the largest railway flows are to the ports of Rijeka and Bar, then to Bulgaria and Hungary on the branches of Corridor X, as well as to Bosnia and Herzegovina. The total volume of railway traffic in 2022 is approximately evenly distributed by types of movement, where the largest volume is in the import direction, while the smallest volume corresponds to transit. Domestic transport and export are equally represented.

[46] Statistical office of Serbia - Statistical report on transport 2022

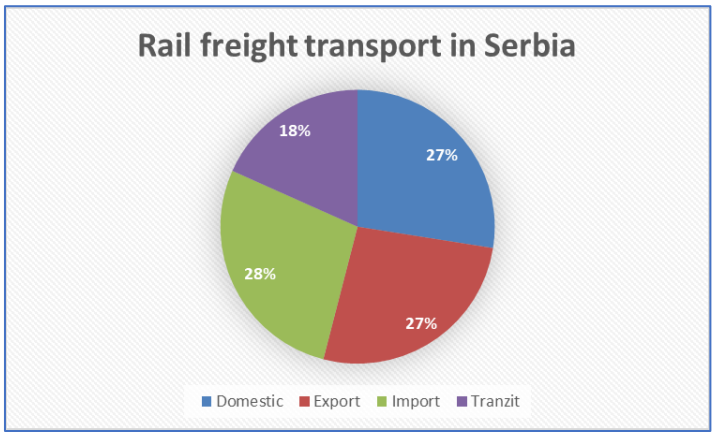

Figure 28 - Rail freight transport in Serbia, share of quantities in domestic and international transport[47]

A breakdown of transported freight by rail per commodity group is provided in Figure 29.

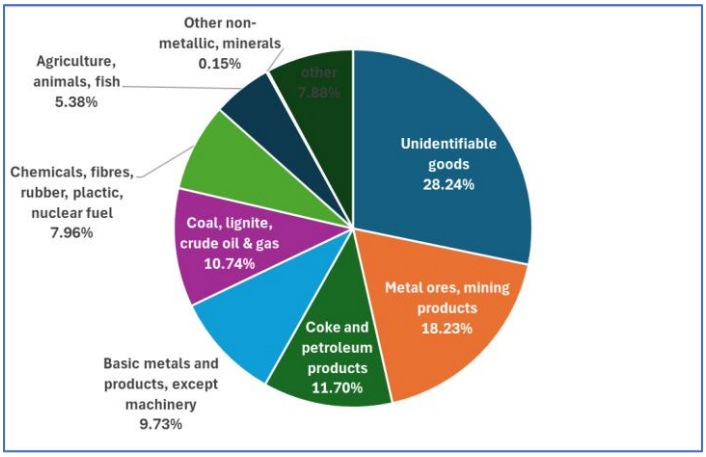

Figure 29 - International Railway transport in Serbia - share by commodity group[48]

The largest quantities by commodity group are represented in the groups Metal ores and mining products, Coke and petroleum products, Basic metals and Chemistry fibers, rubber and plastics. The largest commodity group corresponds to Unidentifiable goods.

Based on data from Statistical office Serbia, the goods transported by rail in transit through the territory of Serbia in 2022 were calculated and presented in Appendix I.

Table 13 shows the load of main freight railway stations in Serbia, which is important for the estimation of multimodal transport flows and identification of possible locations of Rail-Road Terminals.

[47] Source: Consultant's calculation based on data from Statistical office Serbia
[48] Source: Consultant's calculation based on data from Statistical office Serbia and COMEXT data

Table 13 - Quantities in railway freight transport at main stations in Serbia (million tons)

Station	Loaded	Unloaded	Total
Radinac (Smederevo)	0.81	1.60	2.42
Pancevo	0.77	0.40	1.17
Bor	0.69	0.10	0.79
Svilajnac	0.03	0.68	0.71
Smederevo	0.36	0.19	0.55
Nis-Trupale	0.15	0.33	0.48
Sabac	0.16	0.28	0.45
Sremska Mitrovica	0.18	0.24	0.42
Pozega	0.19	0.19	0.38
Prahovo	0.15	0.19	0.34
Vreoci	0.20	0.13	0.33
Beograd-Surcin	0.17	0.15	0.31
Beograd-marshalling yard	0.13	0.16	0.29
Novi Sad marshalling yard	0.05	0.12	0.17
Sid	0.09	0.05	0.14
Jagodina	0.11	0.00	0.11
Subotica	0.04	0.06	0.09

The largest quantities are registered at the railway freight station Radinac, which is located in the area of largest iron factory in Serbia, HBIS. Then at station Pančevo Varoš, which is connected to Pančevo industrial zone, and where a significant chemistry industry and oil refinery are located. Other important freight stations are: station Bor, located in the area of copper mining and production ZiJin; Svilajnac and Vreoci stations, located next to the Power plants; Smederevo, which serves the industrial zone and Port of Smederevo; and Trupale station, which serves the industrial zone of the city of Niš, where various industries are located.

Road transport flows

In the 2022, the total volume of goods transported by road (export, import and domestic) was 20.31 million tons [49]. The breakdown of this quantity per type of movement is shown in Figure 30.

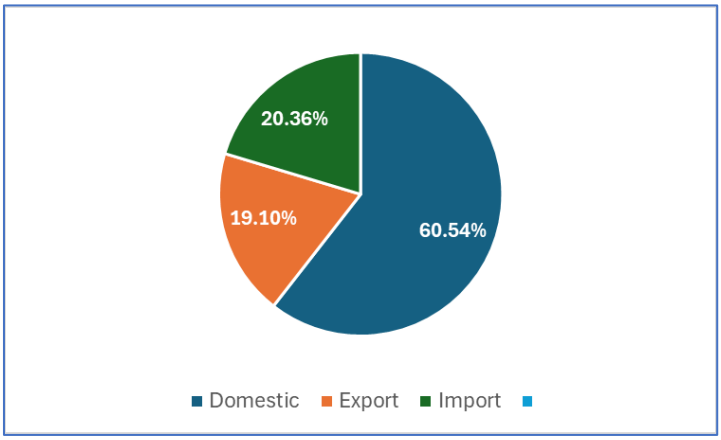

Figure 30 - Road transport – breakdown of quantities per type of movement in Serbia

Internationally transported quantities were about 39.5%, or 8 million tons. The breakdown of these flows per location inside Serbia is unknown.

The breakdown of transported freight by road in international flows per commodity group is given in Figure 31.

[49] Agency for Statistics of Serbia, Transport 2023

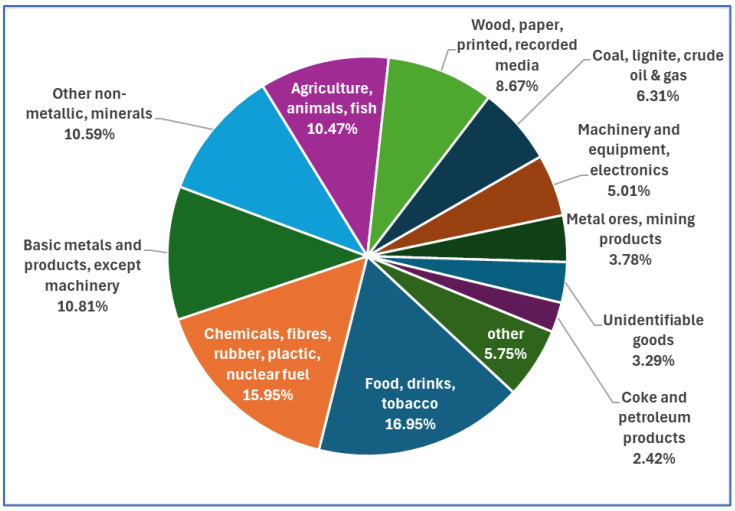

Figure 31 - International Road transport in Serbia - share by commodity group[50]

The most represented groups of goods in road transport are Food, drinks, tobacco; Chemicals, fibers, rubber, plastics; Basic metals and products, except machinery; and Other non-metallic products and minerals, which make up over 54% of the quantities transported by road and, in relation to the proximity of the largest trading partners, all are suitable for multimodal transport, including the Food, drinks and tobacco products group.

IWW transport flows

In 2022, the volume of goods transported by inland waterways (national and international) was 6.74 million tons. Majority of this quantity (5.05 million tons) concerns the domestic transport, leaving about 1.6 million tons for international IWW transport[51].

According to official statistics, the breakdown of total quantities per type of movement in IWW transport in 2022 is shown in Figure 32, where domestic transport is about 76%.

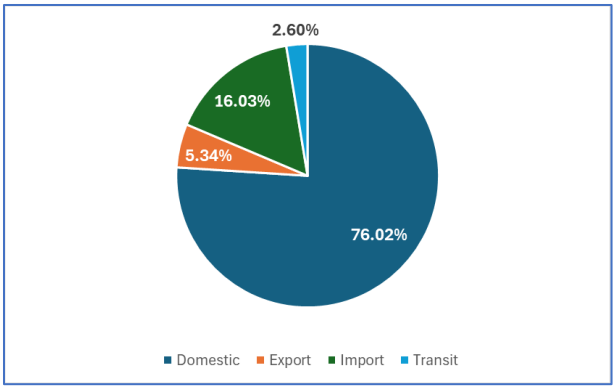

Figure 32 - IWW transport – breakdown of quantities per type of movement in Serbia

On the other hand, according to the COMEXT Eurostat data, quantities traded internationally and transported by IWW transport are much higher, reaching 2.5 million tons, mostly in trade with Romania and Bulgaria in 2023. Also, high quantities of imported Coal from far markets are identified from unofficial sources (about 1.5 million tons), which changes the picture of the flows of IWW transport in Serbia.

[50] Source: Consultant calculation based on data from Statistical office Serbia and COMEXT data, 2023
[51] Agency for Statistics of Serbia, Transport 2023

For estimation of flows on IWW, it is important to present the volumes of cargo handled in river ports (approximately, handled quantities are two times higher than throughput). The total volumes of handled quantities in Serbian ports are presented in Figure 33.

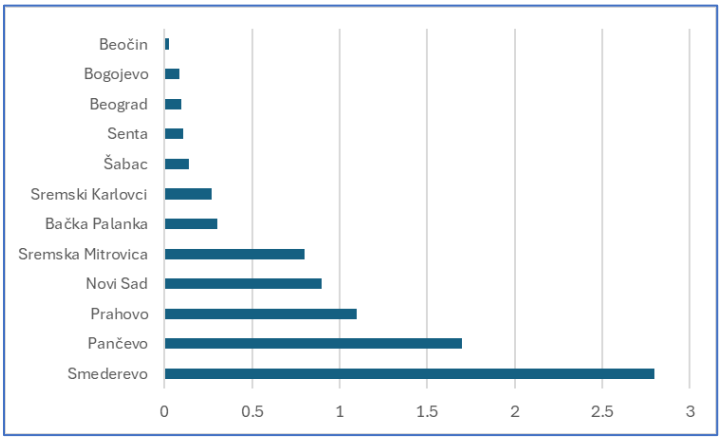

Figure 33 - Cargo handled in Serbian river ports, 2023 (million tons)[52]

The IWW flows are strongest at the Ports of Smederevo and Port of Pančevo, where significant metal and chemistry industries are located, respectively.

Intermodal transport flows

According to combined data from COMEXT Eurostat database, official Statistics, information gathered from intermodal transport terminals and other relevant sources, the estimated total flows of containerized goods in Serbia is 161,000 TEU.

Approximately half of this quantity is transported by rail, which represents the sum of the reported throughput of all the Serbian intermodal terminals in 2023. The other half is transported by road.

Established regular intermodal services from different intermodal terminals are:

- Belgrade – Port of Rijeka
- Belgrade – Budapest
- Belgrade – Piraeus
- Belgrade – Trieste
- Belgrade – Koper
- Nis – Ljubljana
- Nis – Port of Rijeka
- Nis – Wels

Exact quantities are not available, but according to the survey and interviews, most container flows are towards the Port of Rijeka. Besides these regular lines, containers are transported by rail from/to the Port of Bar, the Port of Burgas and the Port of Thessaloniki on an occasional basis.

[52] Port Governance Agency of Serbia

3.2 Analysis of current trade and transport flows at regional level

Figure 34 presents the volume of goods in total goods exchange for each of the regional economies, expressed in millions of tons of origin and destination.

The total amount of goods exchanged by the 6 regional economies in international trade is over 70 million tons, excluding the quantities transported by air, postal, power and pipelines. Bearing in mind that in intra-regional exchange, quantities double (in direct exchange between regional economies, what is an import for one RP, is an export for another RP and vice versa), the analysis was performed separately, for intra-regional trade and trade of regional economies with the rest of the world.

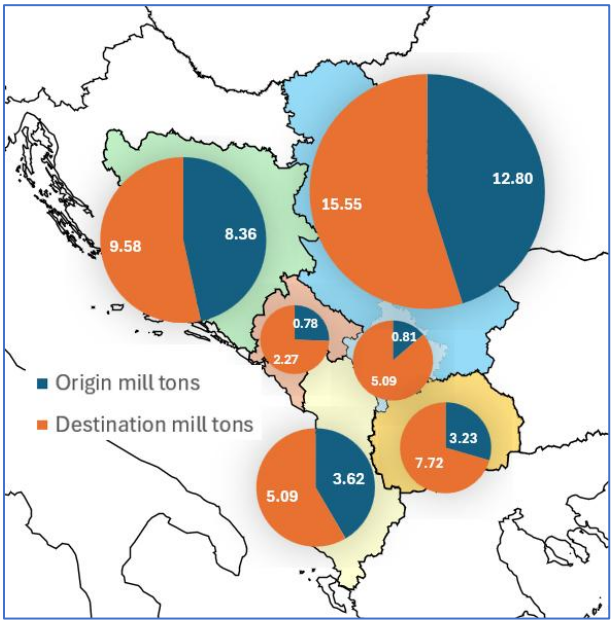

Figure 34 - Volume of internationally traded goods (million tons) per regional economy, origin and destination (export and import)[53]

The infographic presents the quantities of goods in exports and imports of each regional economy, including mutual exchange. It can be seen that all regional economies import more goods than they export, which is an identical trend to the trade balance expressed in monetary value of exchange. Bosnia and Herzegovina and Serbia have a more balanced ratio of quantities in imports and exports, while other regional economies are characterized by significantly larger quantities of goods in imports compared to exports.

Regionally, this indicates that transport flows are more pronounced towards the region, which results in worse utilization of transport means and lower transport demands in the direction from the region to the rest of the world.

Three quarters of the total amount of goods in transport, i.e. transport flows of the region, were generated to/from Bosnia and Herzegovina and Serbia, which is in accordance with the population and economic strength of the regional economies. Figure 35 illustrates the share of quantities traded between the six WB economies with non-WB partners in 2023. It is noticeable that the EU is the main trading partner of all regional economies, as well as that half of the volume in the international trade of the region concerns trade of Serbia.

[53] Source: Consultant elaboration based on COMEXT Eurostat, Customs, statistics and CEFTA data

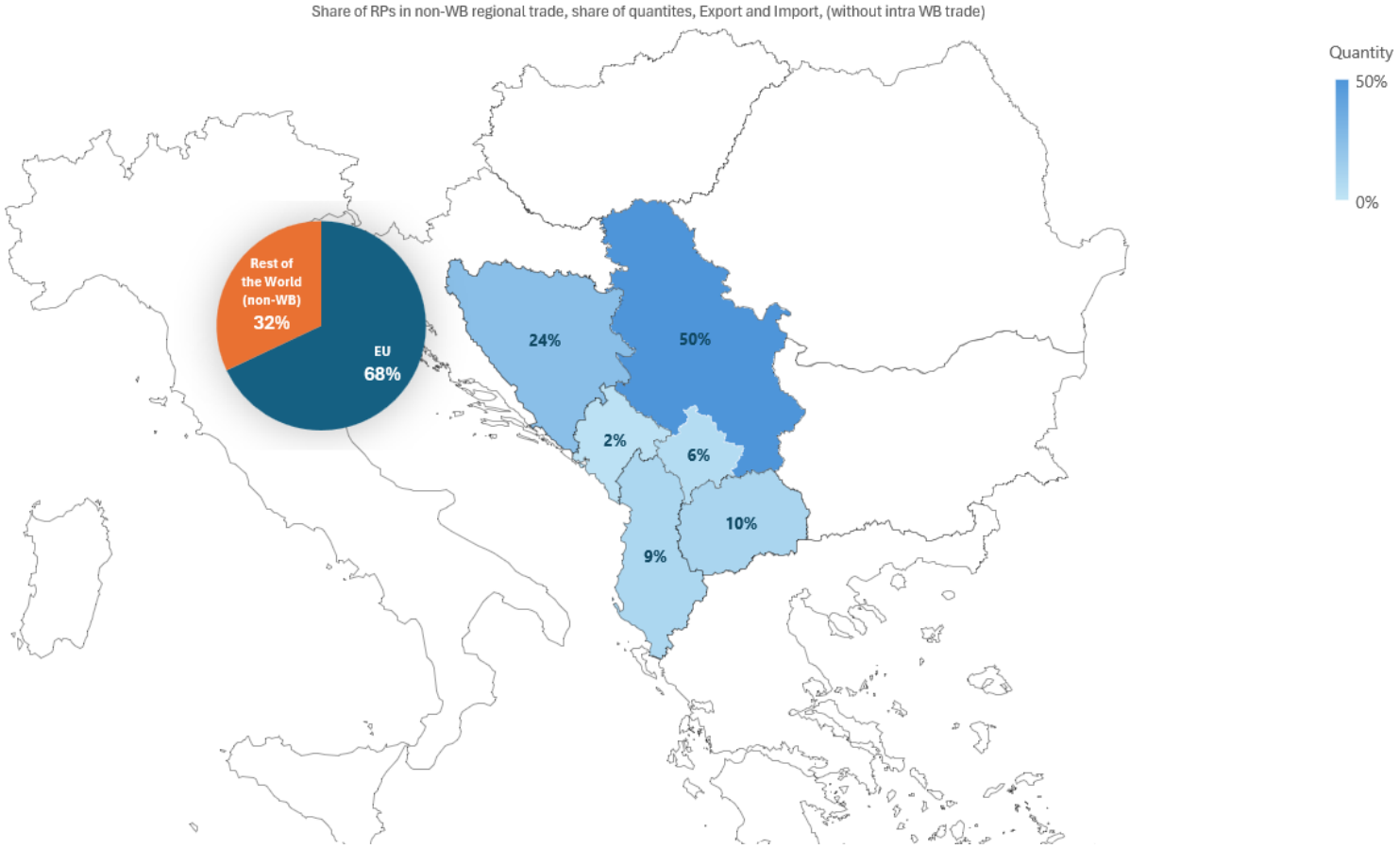

Figure 35 - Trade share of WB economies with partners outside the WB region, share of quantities[54]

[54] Source: Consultant elaboration based on COMEXT Eurostat, Customs, statistics and CEFTA data

The transport modal share in the trade of the 6 regional economies with the EU and other countries outside the WB region differs by RP. Figure 36 shows the modal share by RP, where transit flows and domestic transport are excluded from the analysis.

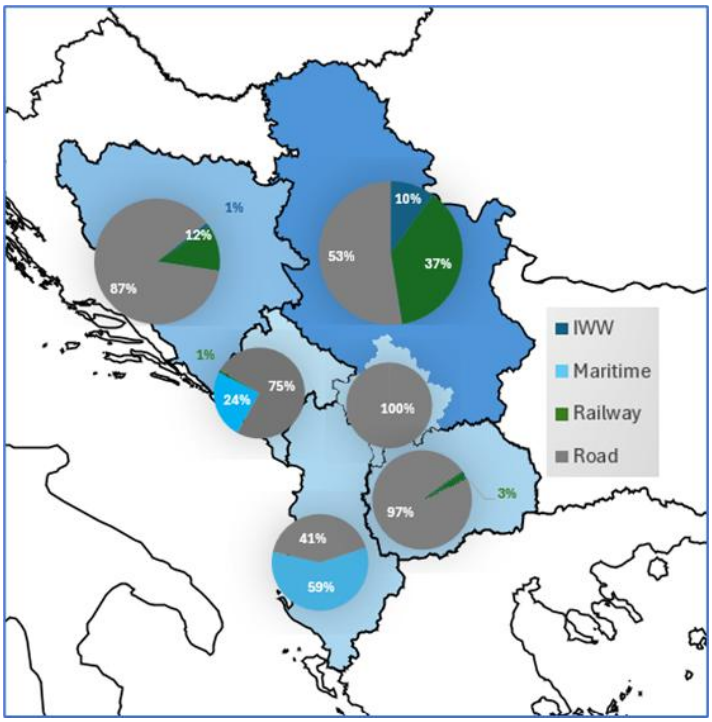

Figure 36 - Transport modal share per RP of trade outside the region[55]

In addition to the dominance of road transport, it can be seen that Albania and Montenegro use their ports, with Albania dominating maritime transport in international trade. However, here it should be noted that total maritime flows are assessed by throughput of goods through ports which include transit of goods, while here are presented only share of quantities traded per each RP. The opposite is with North Macedonia and Kosovo, where there is complete dominance of road transport. Bosnia and Herzegovina uses rail transport in international trade to a slightly greater extent (24%), primarily thanks to flows towards the port of Ploče, while in Serbia a slightly larger share of transport by inland waterways (10%) is observed, which represents a significant increase compared to the previous period. However, when intra-regional trade, transit and domestic transport are taken into account, the share of railway and IWW transport decreases significantly in both Serbia and Bosnia and Herzegovina. In the following analysis per RP, the commodities that dominate the international flows with partners outside the WB region will be dealt with in more detail.

In addition to the international flows outside the region, it is important to analyze the volume and modal share in trade between the 6 regional economies, that is, within the region. In contrast to the flows with the EU and the rest of the world, road transport is extremely dominant in intra-regional trade, where the volume of trade expressed in quantities is not negligible, representing about 16.8% of the total amount of goods in the international trade of the region. Intra-regional trade figures (2023) are provided in Table 14.

[55] Source: Consultant elaboration based on COMEXT Eurostat, Customs, statistics and CEFTA data

Table 14 - Intra-regional trade (million tons) 2023[56]

From/to	ALB	BIH	KOS	MNE	MKD	SRB
ALB		0.02	0.80	0.39	0.53	0.16
BIH	0.03		0.79	0.20	0.79	2.15
KOS	0.17	0.01		0.74	0.31	0.05
MNE	0.04	0.02	0.08		0.03	0.26
MKD	0.08	0.08	0.75	0.02		0.39
SRB	0.32	1.80	0.42	0.78	0.80	

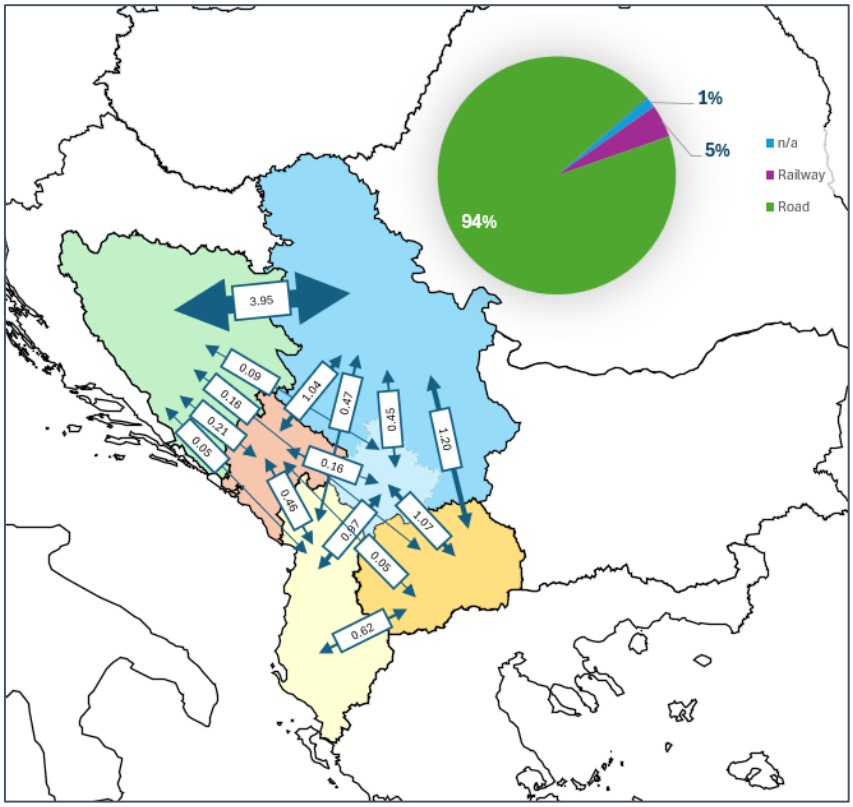

Figure 37 - Trade of the WB regional economies inside the region (million tons) and intra-regional transport modal share[57]

Figure 37 shows the total volume of goods traded during 2023 between regional economies, as well as the transport modal share of total trade realized in the region, based on the quantities by mode of transport. Apart from the dominance of road transport, it is noticeable that the largest quantities of goods are transported in trade between Serbia and other regional economies, with trade between Bosnia and Herzegovina and Serbia being by far the largest in terms of goods and amounting to almost 4 million tons in 2023.

More significant quantities of about a million tons during 2023 were between Albania and Kosovo, North Macedonia and Kosovo, Montenegro and Serbia, and between North Macedonia and Serbia. The smallest quantities, below 100 thousand tons in 2023, were realized between Albania and Bosnia and Herzegovina, Kosovo and Bosnia and Herzegovina, and between Montenegro and North Macedonia.

Bearing in mind that the 6 regional economies significantly exchange goods with neighboring EU Member States (41%), it is important to analyze the flows of goods with neighbors. Figure 38 illustrates the flows (in lines) with neighboring countries (most significant - over 0.25 million tons) during the year 2023, as well as the

[56] Source: Consultant elaboration based on COMEXT Eurostat, Customs and statistics data
[57] Source: Consultant elaboration, transit and domestic flows excluded

distribution of total quantities in international trade with neighboring countries, intra-regionally and with the rest of the world.

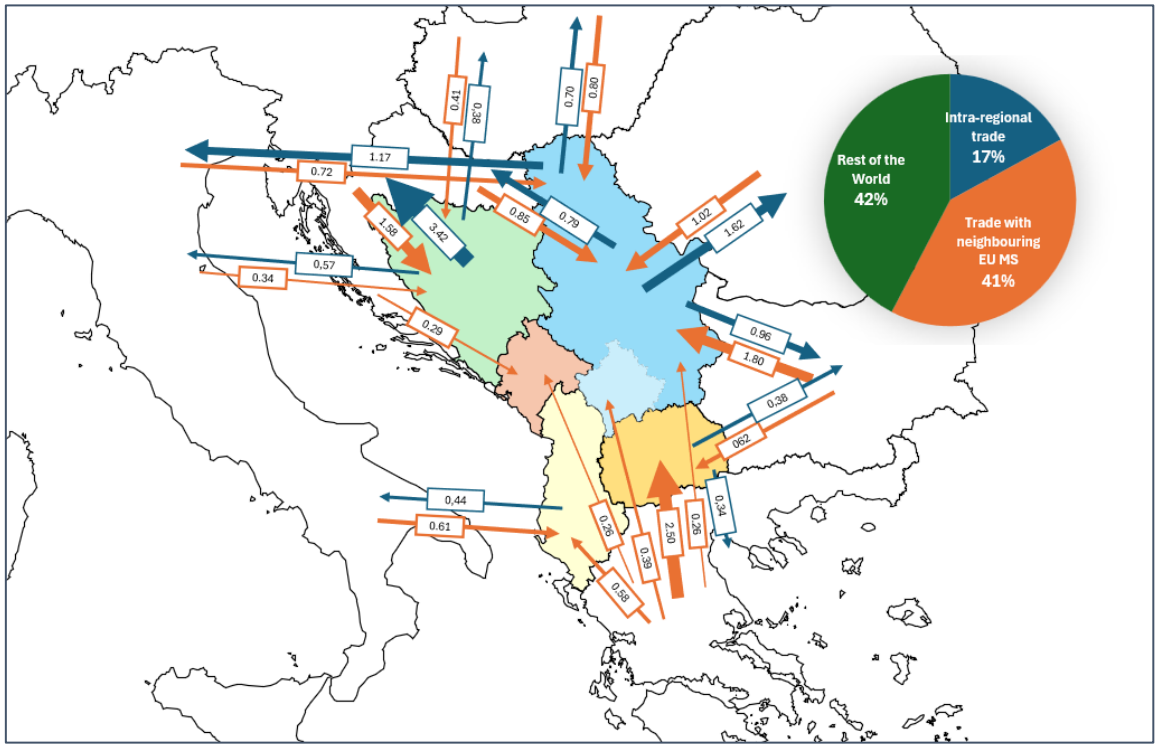

Figure 38 - Main trade flows with neighboring EU Member States (million tons) in 2023 and share per region[58]

It can be seen that the largest flows of goods appear between Bosnia and Herzegovina and Croatia, Serbia and Romania, Serbia and Bulgaria as well as North Macedonia and Greece. There are significant flows on the route Serbia - Croatia - Italy, and Albania - Italy. The most significant flows concern Serbia and Bosnia and Herzegovina. A detailed overview of import and export volumes of the 6 regional economies with the neighboring EU MS is given in Tables 15 and 16.

Table 15 - Exports of regional economies to neighboring EU MS (million tons, 2023)

Export							
RP/MS	HR	IT	RO	BG	HU	GR	Total
ALB	0.039	0.442	0.012	0.041	0.008	0.175	**0.717**
BIH	3.423	0.507	0.069	0.034	0.377	0.010	**4.419**
KOS	0.008	0.023	0.005	0.010	0.001	0.004	**0.052**
MKD	0.079	0.089	0.097	0.384	0.036	0.339	**1.024**
MNE	0.006	0.023	0.000	0.002	0.001	0.146	**0.178**
SRB	0.789	1.168	1.618	0.956	0.695	0.239	**5.465**
Total	**4.345**	**2.253**	**1.801**	**1.426**	**1.117**	**0.913**	**11.855**

Table 16 - Imports of regional economies from neighboring EU MS (million tons, 2023)

Import							
RP/MS	HR	IT	RO	BG	HU	GR	Total
ALB	0.037	0.612	0.032	0.052	0.028	0.578	**1.340**
BIH	1.582	0.340	0.065	0.049	0.414	0.036	**2.486**
KOS	0.100	0.170	0.055	0.121	0.056	0.392	**0.895**
MKD	0.076	0.085	0.089	0.623	0.053	2.504	**3.429**
MNE	0.291	0.059	0.010	0.010	0.011	0.263	**0.644**
SRB	0.849	0.716	1.026	1.798	0.805	0.260	**5.455**
Total	**2.936**	**1.982**	**1.277**	**2.653**	**1.367**	**4.034**	**14.249**

[58] Consultant elaboration based on COMEXT Eurostat, Customs and statistics data, domestic and transit flows excluded

Regional economies mostly have a surplus of imports over exports, both in terms of value and quantity of goods. Serbia is in the first place in terms of the total amount of goods in import and export, where the ratio is even. Only in the case of Bosnia and Herzegovina, due to the considerable number of exports to Croatia, there is a significantly higher export than import. However, in the overall international exchange, Bosnia and Herzegovina still has a slight surplus of import over export, expressed in quantity of goods. A detailed analysis of these flows by the most important commodities is given in the analyses for each RP.

Apart from the neighboring EU Member States, Germany, Türkiye, Slovenia and China are also in the top 10 trade partners of all regional economies together, according to the volume of goods. Together, the regional economies exchange about 66% of the total volume in international trade with these 10 largest partners (without mutual exchange). An overview of the total quantities and modal share by partner countries for all 6 regional economies together with the top 10 partners is given in Table 17.

Table 17 - Top 10 partners of joint regional trade (in million tons) and modal share of regional trade per partner[59]

TOP 10 Partners	Air	IWW	Maritime	Railway	Road	Total Quantity (million tons)
HR	0.0%	2.4%	2.1%	1.6%	93.9%	7.28
GR	0.0%	0.2%	11.8%	2.3%	85.7%	4.95
IT	0.0%	0.0%	28.0%	13.0%	59.0%	4.24
BG	0.0%	28.0%	0.1%	16.1%	55.8%	4.08
RO	0.0%	47.8%	0.0%	5.3%	46.8%	3.08
TR*	0.2%	3.9%	31.5%	10.4%	54.0%	2.80
DE	0.3%	3.9%	1.1%	3.4%	91.2%	2.73
HU	0.8%	16.8%	0.1%	10.3%	72.1%	2.48
CN*[60]	0.1%	2.5%	16.8%	30.2%	50.4%	2.47
SI	0.0%	0.0%	1.4%	7.0%	91.5%	2.22

It can be seen from the table that road transport is extremely dominant in the exchange of regional economies with Croatia, Greece, Germany and Slovenia, with over 85% participation. The smallest share of road transport is recorded in the exchange with Romania and Bulgaria, where the volume of exchange between Serbia and Romania in IWW transport is significant. Exchange with Türkiye and China is also carried out with a significant participation of maritime and rail transport, but this data is taken with a reservation considering that for about 14% of the quantities the modal share is not known - the data is not available. When it comes to China, the USA, India, as well as other distant markets, most of the transport route is carried out by sea transport, but the land transport is used for delivery from/to seaports, where road transport still dominates, even for containers (specifically, in the case of China, 50.4% of the volume is transported by road).

Concerning the commodities in the international trade of regional economies (jointly) without intra-regional trade, Table 18 shows the quantities in millions of tons, while Table 19 shows the quantities in exchange between the regional economies.

[59] Consultant elaboration based on COMEXT Eurostat, Customs and Statistics data
[60] Modal share for Türkiye and China is estimated based on about 86% of traded quantities.

Table 18 - Total trade of regional economies with partners outside the region per commodity group (million tons) and modal share

Commodity group (NST 2007 classification)	Export	Import	Total	IWW	Maritime	Railway	Road
Metal ores, mining products	4.60	2.78	7.38	32.4%	12.0%	17.9%	**37.8%**
Chemicals, fibers, rubber, plastic	2.75	3.86	6.61	12.1%	2.4%	8.1%	77.4%
Coke and petroleum products	0.44	5.05	5.49	9.7%	28.0%	8.1%	53.2%
Coal, lignite, crude oil & gas	0.47	4.99	5.46	44.5%	14.7%	21.8%	**19.0%**
Basic metals and products, except machinery	2.44	3.00	5.43	5.3%	14.8%	11.1%	68.7%
Other non-metallic and mineral	1.50	3.72	5.22	0.4%	19.5%	4.4%	75.7%
Food, drinks, tobacco	1.94	2.62	4.56	0.6%	4.9%	4.7%	89.8%
Agriculture, animals, fish	2.46	1.67	4.12	21.5%	4.6%	10.2%	63.7%
Wood, paper, printed, recorded media	1.23	1.81	3.04	0.1%	5.0%	2.7%	92.2%
Machinery and equipment, electronics	0.72	1.04	1.77	0.8%	3.8%	0.3%	94.8%
Secondary raw mat., waste	1.05	0.42	1.47	13.7%	6.0%	20.1%	60.1%
Transport equipment	0.25	0.69	0.95	4.3%	11.0%	2.0%	82.5%
Unidentifiable goods	0.01	0.75	0.76	5.3%	0.0%	3.6%	91.0%
Textile & leather products	0.24	0.39	0.63	0.0%	11.7%	0.2%	88.0%
Furniture, manufactured goods	0.25	0.14	0.38	0.0%	3.6%	0.2%	96.2%
Other goods	0.02	0.01	0.03	0.0%	1.5%	67.8%	29.9%
Goods in removals, baggage, non-market goods	0.00	0.00	0.00	0.0%	0.0%	0.0%	99.1%

Goods that are suitable for multimodal/ intermodal transport in the trade of regional economies with countries outside the WB region (Metal ores, mining products; Chemicals, fibers, rubber, and plastic; Coke and petroleum products; Coal, lignite, crude oil & gas; Basic metals and products; Other non-metallic products and minerals; Wood, paper, recorded media) make up 83% of the total.

It is important to highlight two groups that include Metal ores, mining products and Coal, lignite, crude oil & gas, where road transport is not dominant and which are mostly transported by IWW, rail and sea transport.

Table 19 - Intra-regional trade between regional economies per commodity group (million tons) and modal share

Commodity group (NST 2007 classification)	Total	IWW	Maritime	Railway	Road
Other non-metallic mineral	1.85	0.0%	0.0%	0.0%	99.8%
Coal, lignite, crude oil & gas	1.78	0.0%	0.0%	3.2%	96.8%
Food, drinks, tobacco	1.73	0.0%	0.0%	0.1%	97.3%
Agriculture, animals, fish	1.27	0.0%	0.0%	0.4%	98.0%
Basic metals and products, except machinery	1.23	0.0%	0.0%	3.0%	94.4%
Chemicals, fibers, rubber, plastic	0.84	0.0%	0.0%	0.3%	98.5%
Coke and petroleum products	0.71	0.6%	0.0%	46.9%	49.8%
Metal ores, mining products	0.68	0.0%	0.0%	1.9%	96.1%
Wood, paper, printed, recorded media	0.57	0.0%	0.0%	0.1%	95.2%
Secondary raw mat., waste	0.10	0.0%	0.0%	0.0%	99.3%
Machinery and equipment, electronics	0.08	0.0%	0.0%	0.2%	95.4%
Furniture, manufactured goods	0.03	0.0%	0.0%	0.0%	98.5%
Textile & leather products	0.03	0.0%	0.0%	0.0%	97.2%
Transport equipment	0.02	1.3%	0.0%	0.7%	96.1%
Unidentifiable goods	0.02	0.0%	0.0%	0.0%	100.0%
Goods in removals, baggage, non market goods	0.00	0.0%	0.0%	0.0%	100.0%

In intra-regional exchange, commodity groups suitable for multimodal/ intermodal transport (Other non-metallic and minerals; Coal, lignite, crude oil & gas; Agriculture, animals, fish; Basic metals and products, except machinery; Chemicals, fibers, rubber, and plastic; Coke and petroleum products; Metal ores, mining products; Wood, paper, printed, recorded media; and Secondary raw mat., waste) make up over 82% of the total volume. Road transport is extremely dominant in all commodity groups, except in the case of Coke and petroleum products where in intra-regional trade this commodity group in 2023 was transported by road 49.8%.

Observing the WB region intra-trade expressed in quantities, the extremely dominant role of road transport in almost all RPs is unquestionable.

Taking into account the total international transport, the estimated transport modal share of the WB regional economies is presented in Figure 39.

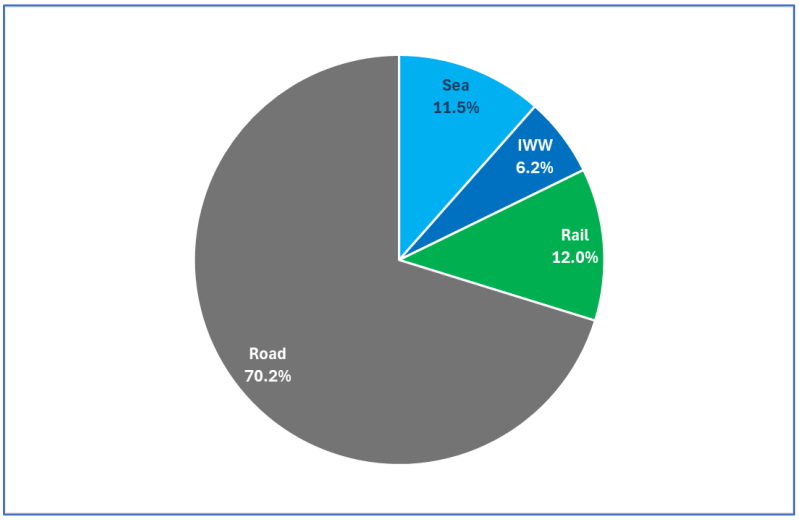

Figure 39 - Estimated modal share of WB region in % of tons[61]

It is important to note that due to lack of available data, reliability and differences among different sources, this estimation is based on an elaboration of data collected from different sources. In order to have an exact modal share, regional economies should provide standardized data, clearly showing the quantities in import, export, transit and domestic movements for each mode of transport. Even requested, such data was not provided or it was partially provided. This note refers to the entire analysis presented in this report.

3.3 The main international flows on Corridors in the region

Since data on freight Average Annual Daily Traffic (AADT) were not available for all RPs, as well as number of freight vehicles and trains at main BCPs/CCPs, a provisional assignment of flows of quantities of goods identified in the previous sub-chapter has been performed on the Core and Comprehensive Railway and Road networks. On the basis of such a provisional assessment of the load on the transport network, the parts of the network with the highest load, i.e. flows of goods in international trade, were identified. It is important to note that domestic flows were not available and analysis is based on international flows.

The main flows along the regional network according to the estimated flows of goods in export and import of regional economies is presented in Figure 40.

[61] Source: Consultant's calculation

Figure 40 - International freight flows on Corridors in the region (quantities assigned to Core and Comprehensive network)

The main multimodal corridors of the TEN-T network extension in the WB coincide with the sections of the Western Balkans - Eastern Mediterranean and Rhine - Danube European Transport Corridors.

Based on the analyzed statistical data of freight transport, the main extensions of the Core and Comprehensive of TEN-T in the Western Balkans for accommodating multimodal transport are: Corridor Vc, Corridor VIII, Corridor VII, Corridor X and its branches Xb and Xc, Route 4, Route 7, Route 9A, Route 2 (a, b) and Route 6a.

If we look at the RPs, the following TEN-T European Transport Corridors' sections have been identified as the most important, which coincide with the formerly defined Pan-European Corridors and other Routes in the WB that the TEN- T indicative extension covers:

- For Albania, the Western Balkans-Eastern Mediterranean Corridor is the only extension of the TEN-T European Transport Corridors in its territory. Corridor VIII is the main Corridor in Albania. The most important freight routes, with estimated highest load of freight transport, are the following:
    - Tirana-Durres (Core Rail network)
    - Port of Durres (Core Port)
    - Tirana-Pristina (Core Road network)
    - Durres-Tirana-Elbasan-Qafe Thane-Skopje (Core Road network)
    - Tirana-Podgorica (Core and Comprehensive Road network)

- In Bosnia and Herzegovina, the main route of multimodal transport is Branch C of Corridor V (Vc). Corridor Vc is part of TEN-T Western Balkans-Eastern Mediterranean Corridor section coming from Croatia (Osijek) and crosses the country via Doboj, Zenica, Sarajevo and Mostar, and ends in the south, at the Croatian port of Ploče, which serves as the primary seaport for BIH. The most important freight routes, with estimated highest load of freight transport, are the following:
    - Samac-Sarajevo-Mostar-Capljina-Ploce (Core Rail network)
    - Samac-Sarajevo-Mostar-Bijaca-Ploce (Core Road network)
    - Novi Grad-Banja Luka-Doboj-Tuzla-Zvornik-Loznica (Comprehensive Rail network)
    - Gradiska-Banja Luka-Lasva (Core Road network)
    - Novi Grad-Banja Luka-Doboj-Tuzla-Zvornik (Comprehensive Road network)
    - Tuzla-Brcko (Comprehensive Road and Rail network)
    - Gorazde-Visegrad-Uzice (Comprehensive Road network)
- For Kosovo, the Western Balkans-Eastern Mediterranean Corridor is the only extension of the TEN-T Core network in Kosovo. The Corridor crosses Kosovo from the north to the south on Route 10, from the border with North Macedonia to the Common Crossing Point with Serbia and constitutes Kosovo's connection to the wider region by rail. The most important freight routes, with estimated highest load of freight transport, are the following:
    - Pristina-Skopje (Core Road network)
    - Pristina-Nis (Core Road network)
    - Pristina-Tirana (Core Road network)
- Main land corridors in Montenegro are those connecting the Port of Bar with the Podgorica and the border with Serbia, and the coastal corridor leading to Croatia and Bosnia & Herzegovina in the North and Albania in the South. Route 4, between Serbia and Montenegro is part of the Western Balkans-Eastern Mediterranean Corridor. The most important freight routes, with estimated highest load of freight transport, are the following:
    - Bar-Podgorica-Belgrade (Core Rail network)
    - Bar-Podgorica-Belgrade (Core Road network)
    - Podgorica-Sarajevo (Comprehensive Road network)
    - Port of Bar (Core Port)
- For North Macedonia, the Western Balkans-Eastern Mediterranean Corridor is the only extension of the TEN-T in its territory. Corridor VIII and Corridor X are parts of the TEN-T Western Balkans-Eastern Mediterranean Corridor and part of Core or Comprehensive Network extension to the Western Balkans. The most important freight routes, with estimated highest load of freight transport, are the following:
    - Belgrade-Tabanovce-Skopje-Gevgelija (Core Rail network)
    - Belgrade-Nis-Skopje-Bogorodica (Core Road network)
    - Durres/Tirana-Kjafasan-Kicevo-Skopje-Kumanovo-Beljakovci (Core Road network)
- For Serbia, the Western Balkans-Eastern Mediterranean and the Rhine-Danube Corridors are the extension of the European Transport Corridors in its territory. Corridor X belongs to the TEN-T Western Balkans-Eastern Mediterranean Corridor. The most important freight routes, with estimated highest load of freight transport, are the following:
    - Sid-Belgrade-Skopje (Core Rail network)
    - Kelebija-Novi Sad-Stara Pazova (Core Rail network)
    - Nis-Dimitrovgrad (Core Rail network)

- Batrovci-Belgrade-Nis-Skopje (Core Road network)
- Horgos-Subotica-Novi Sad-Belgrade (Core Road network)
- Nis-Gradina (Core Road network)
- Brasina-Sabac-Ruma (Comprehensive Rail network)
- Visegrad-Uzice-Cacak (Comprehensive Road network)
- Doboj-Tuzla-Mali Zvornik-Sabac-Ruma (Comprehensive Road network)
- Belgrade-Pancevo-Vrsac-Timisoara (Core Road and Rail network)
- Port of Novi Sad, Port of Pancevo (Core Ports)
- Port of Smederevo, Port of Prahovo, Port of Sremska Mitrovica (Comprehensive Ports)

3.4 Trends and future freight flows forecast

Current figures on volumes of multimodal/ intermodal transport in the WB region are hard to come by. The WB RPs do not possess a uniform methodology for sharing multimodal/ intermodal transport data, making the available figures estimates with a relatively large margin of uncertainty.

3.4.1 Trends and future multimodal freight flows

The potential of railway terminals in the WB region depends on the future demand for multimodal transport. To better understand this, a prospective analysis (forecast) has been made regarding the expected rail volumes in the WB region.

Historical rail transport figures in the WB region

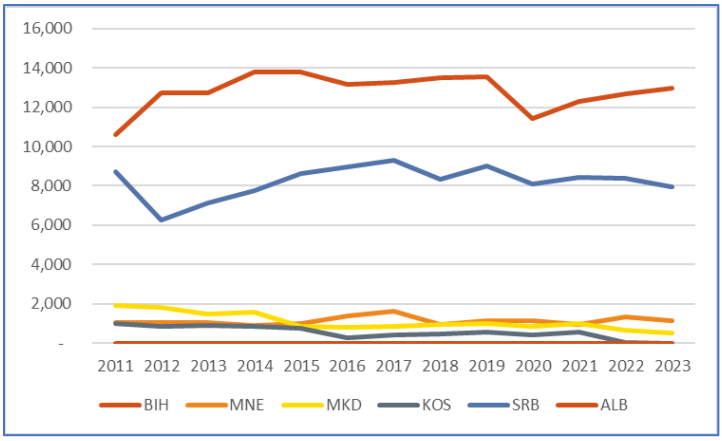

Figure 41 - Transport volumes (domestic and international) by rail for each RP (in thousand tons)[62]

The share of rail transport in the total transported volume varies by Regional Partner. Figure 42 illustrates the modal split of hinterland transport (excluding maritime transport).

[62] Source: RPs' Statistical offices and European Commission (2023) Statistical Pocket Book

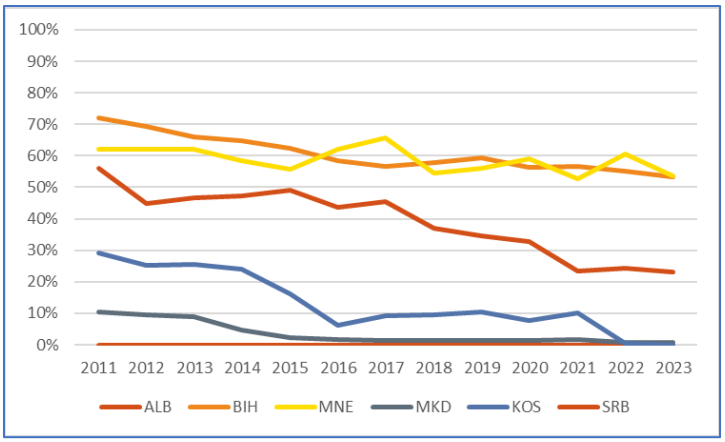

Figure 42 - Share of rail transport in the modal split (international and domestic) of the hinterland transport per RP

Prospective analysis methodology

Several approaches exist for making traffic forecasts. Common methods include projecting historical trends into the future using regression analysis or basing the projections on other variables, such as GDP. Another option is to use a fixed growth rate.

In addition to trend-based forecasts, contextual factors can influence future transport demand, even if they do not appear in trends. Examples include the rehabilitation of the Tirana - Durres railway line, the opening of various railway lines in Serbia, Bosnia and Herzegovina or Kosovo after years of work, or political rapprochement leading to the reopening of a rail connection. These developments are not captured in trends and need to be considered separately.

For this market study, a mix of multiple forecasting methods has been employed. The actual future transport volumes are expected to lie somewhere between the outcomes of these different methods, thereby also providing insight into the range of uncertainty.

The following three forecasting methods were used:

- GDP-based linear regression, which is commonly the standard approach in forecasting.
- Applying expected GDP growth as a fixed growth factor.
- Considering the market potential for rail transport per Regional Partner.

The last method requires further explanation. Market potential refers to the maximum share that rail transport could achieve within the total transport volumes of a Regional Partner. Currently, goods in the WB region are primarily transported by road, even though rail would be more cost-efficient in an optimal scenario. The reliance on road transport is mainly due to ongoing railway construction in the region. In an ideal situation, with strong political support and well-developed rail connections, these goods would be transported by rail. Goods that are currently being transported by road but, from a cost perspective, may also be transported by rail, represent the market potential for rail transport.

To estimate this potential, the highest historical share of rail transport in the total modal split for each Regional Partner has been examined. The assumption is that if a certain modal share has been achieved in the past, it is likely attainable again in the future. For example, in 2011, Serbia's rail modal split reached 56%, the highest share between 2011 and 2023. By 2023, this share had dropped to 23%. Therefore, it is assumed that currently, the market potential for rail in Serbia is around 56%.

Table 20 compares the market potential of rail transport with the current modal split for each regional partner.

Table 20 - Market potential of rail transport per regional partner[63]

Regional partner	Modal share in 2023	Estimated modal share market potential	Year in which market potential was reached
ALB	0%	>1%	2019
BIH	53%	72%	2011
MNE	54%	66%	2017
MKD	1%	5%	2014
KOS	>1%	59%	2011
SRB	23%	56%	2011

The same growth factors used in the Impact Assessment of the Sustainable and Smart Mobility Strategy for the Western Balkans were applied for GDP growth. These figures can be found in Table 21.

Table 21 - Annual GDP growth per regional partner for the period 2024 to 2030[64]

Regional partner	2023
ALB	3.2%
BIH	2.5%
MNE	3.3%
MKD	3.1%
KOS	4.7%
SRB	2.9%

Finally, the forecast has been adjusted for expected developments. It is anticipated that the Tirana-Durres railway line in Albania will be operational by 2027. Similarly, it is expected that railway projects in Serbia will be completed by 2027, leading to an increase in rail transport.

Forecasting multimodal transport flows in WB by rail

The forecast for each Regional Partner is illustrated in Figures 43 to 48. For illustrative purposes, the target for rail transport specified in the Sustainable and Smart Mobility Strategy for the Western Balkans is included in the figures [65].

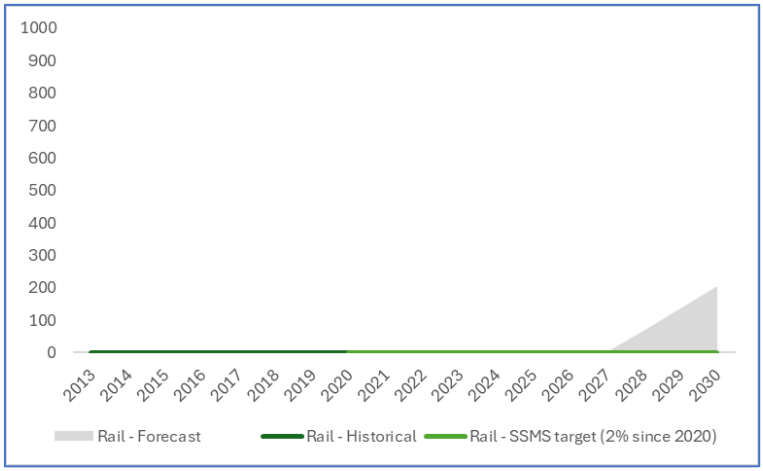

Figure 43 - Forecast of rail transport volumes in Albania (domestic and international, in thousand tons)

In Albania, rail transport is currently not a significant mode of transportation. However, with the rehabilitation of the Vore-Hani i Hotit and Tirana-Durres railway line, it is expected to play a role in the future, facilitating

[63] Source: authors, calculated based on data from RPs' statistical offices and Statistical Pocketbook
[64] Source: Sustainable and Smart Mobility Strategy for the Western Balkans
[65] The SMSS sets the following target under Flagship 4: "By 2030, rail freight traffic is to increase by 20%, with a goal to double by 2050." The strategy does not specify the base year for this 20% increase. For this, 2020 is assumed. Moreover, the 20% growth target applies to the entire WB region, with specific targets per RP remaining unspecified.

the movement of goods between the port and the capital. A 2024 cost-benefit analysis by the International Institute for Development projects that the total transported volumes on this line will reach nearly 300,000 tons by 2040 and 450,000 tons by 2053. It is not clear when the railway within the Port of Durres or to new Porto Romano will be constructed. Construction of railway connection to Tirana is ongoing. The expected start of increase of railway flows is likely around 2027.

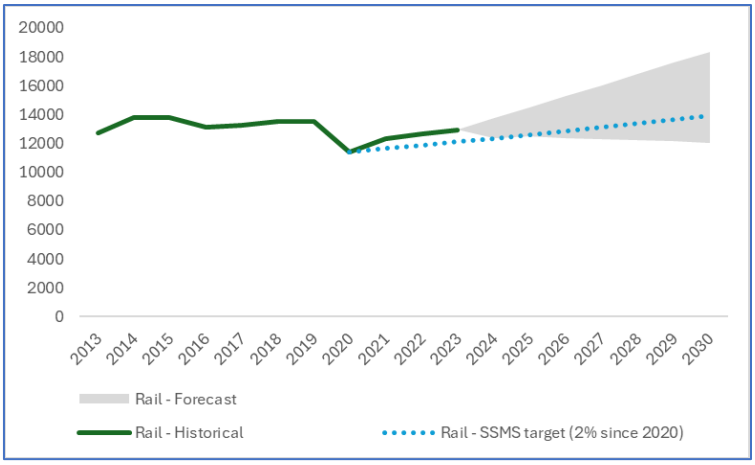

Figure 44 - Forecast of rail transport volumes in Bosnia and Herzegovina (domestic and international, in thousand tons)

In Bosnia and Herzegovina, rail transport is mainly domestic, with about 12% being international. Since 2013, there has been a slight decline in the volumes of rail transport. If Bosnia and Herzegovina fully utilizes its rail transport potential by 2030, transported volumes could increase to 18 million tons. However, if the current downward trend continues, volumes might drop to 12 million tons annually.

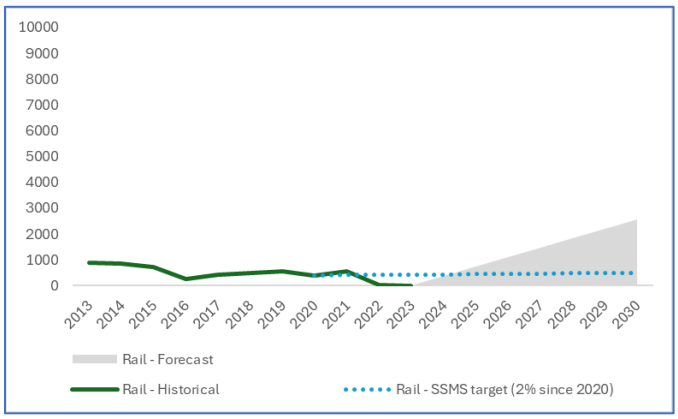

Figure 45 - Forecast of rail transport volumes in Kosovo (domestic and international, in thousand tons)

Rail transport in Kosovo, which saw almost a million tons in 2013, has nearly disappeared. Nevertheless, there is potential for about 2.5 million tons of rail transport by 2030, especially after completion of works and opening of Pristina-Skopje line.

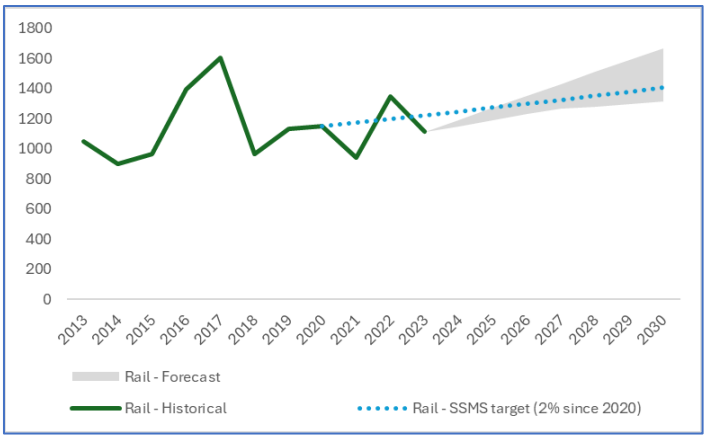

Figure 46 - Forecast of rail transport volumes in Montenegro (domestic and international, in thousand tons)

In Montenegro, rail transport volumes have varied since 2013, though there is an overall upward trend. Projections for rail transport volumes suggest a range of 1.3 to 1.7 million tons by 2030.

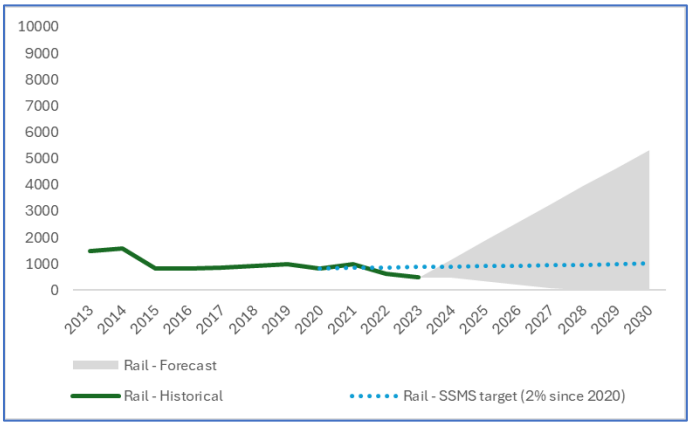

Figure 47 - Forecast of rail transport volumes in North Macedonia (domestic and international, in thousand tons)

North Macedonia has experienced a modest decline in rail transport share since 2013. However, due to its strong rail links to Greece and Serbia, there is considerable market potential for rail transport. In 2011, rail accounted for around 5% of the volumes transported to and from North Macedonia. If this market share is regained by 2030, it could amount to approximately 5 million tonnes, compared to just over 1 million tonnes today. Serbia also benefits from the rail network of North Macedonia, as it serves as a crucial transit route. By 2022, over 50% of the rail volumes in North Macedonia were in transit[66].

[66] National Statistical Office of North Macedonia

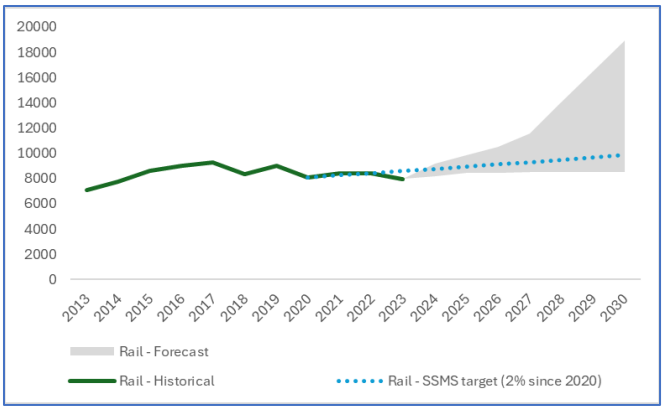

Figure 48 - Forecast of rail transport volumes in Serbia (domestic and international, in thousand tons)

In Serbia, rail transport is a significant component of the modal split. However, overall rail volumes have remained stable compared to other modes of transport. This stagnation is largely due to several railway projects currently underway, including the Belgrade-Budapest line and the connection to the Bulgarian border. Additionally, work on the Belgrade-Niš line is anticipated to begin next year.

If these projects are completed on schedule and the full market potential is realized, rail volumes could see considerable growth, potentially reaching up to 19 million tons by 2030. Most of the construction is expected to finish around 2027, marking the period of most significant growth. Conversely, if there are delays in the projects or if support for rail start-up is insufficient, rail volumes may remain limited to about 6.5 million tons.

3.4.2 Trends and future intermodal freight flows

Figures on intermodal transport in tons, shown in Table 22 and as presented in the "Action Plans and National Targets for each Regional Party of the Western Balkans" published in April 2023 [67], are mainly based on an Intermodal Study from 2016 [68]. The figures indicate that Serbia accounts for about half of the intermodal transport in the WB.

Table 22 - Reported volumes of intermodal transport in WB[69]

RP	Volume of intermodal transport (in million tons)
Albania	1.48 (for 2017)
Bosnia and Herzegovina	0.66 (for 2013)
Kosovo	0.32 (for 2013)
Montenegro	0.87 (for 2013)
North Macedonia	0.56 (for 2019)
Serbia	3.70 (for 2020)

COMEXT is a statistical database on trade of goods managed by Eurostat which separates containerized from non-containerized trade. The total trade volumes between EU countries and WB are shown in Figure 49.

[67] Action Plans and National Targets for each Regional Party of the Western Balkans (2023). Technical Assistance to connectivity in the Western Balkans, EuropeAid/13785/IH/SER/MULTI
[68] Western Balkans Intermodal Study (2016). Support to the Transport Dimension of the SEE 2020 Strategy, Final Report
[69] Source: Action Plans and National Targets for each Regional Party of the Western Balkans (2023).

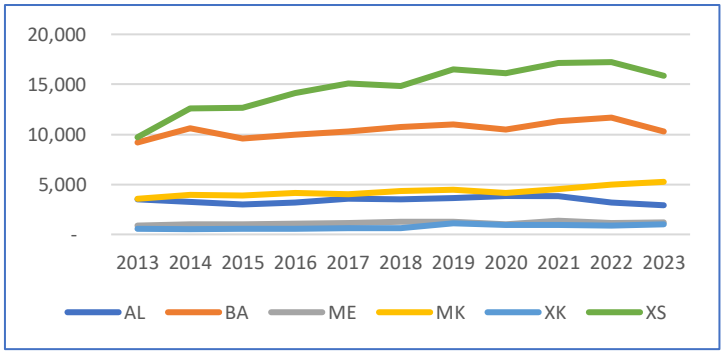

Figure 49 - Total trade volume (import + export) between EU and WB RPs in thousand tons[70]

In 2022, the EU was responsible for around 60% of the value in trade with the WB region, while the rest of the world is responsible for almost a third. Trade between the WB RPs accounts for 11% of the total value in 2022.

Notably, the share of internal trade between the WB RPs seems to be decreasing slightly, from 13% in 2012 to 11% in 2022. The share with the EU remains more or less constant, while trade with the rest of the world increases, from 28% in 2012 to 32% in 2022.

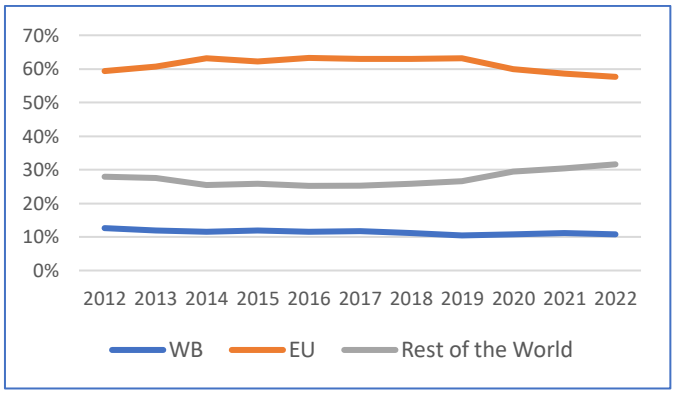

Figure 50 - Share of WB RPs' main trade partners in the total value of trade[71]

When containerized trade between the WB region and the EU is considered, volumes reached 550,000 tons in 2022.

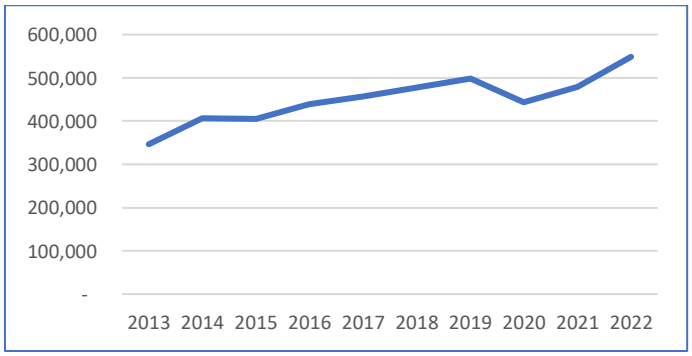

Figure 51 - Traded containerized volume (import + export) between EU and WB RPs in tons[72]

[70] Source: Own elaboration, based on COMEXT
[71] Source: Own elaboration, based on CEFTA
[72] Source: Own elaboration, based on COMEXT

Although the EU is the main trading partner for the WB region, most container trade occurs with countries outside Europe. For longer distances, containers are the most cost-efficient form of transport. Data collected from various available sources (Statistical offices, Customs and relevant studies) show that approximately 15% of trade with containers is with the EU, 83% with the rest of the world, and 2% with other RPs in the WB region. Based on these proportions, it is possible to extrapolate the figures on containerized trade from COMEXT for the entire WB region. The result is shown in Figure 52. According to the estimations, intermodal trade has grown from nearly 300,000 TEU in 2013 to around 460,000 TEU in 2023.

For the conversion to TEU, an average of 7.6 tons per TEU was used [73], considering that the volumes from COMEXT exclude the weight of containers and empty containers.

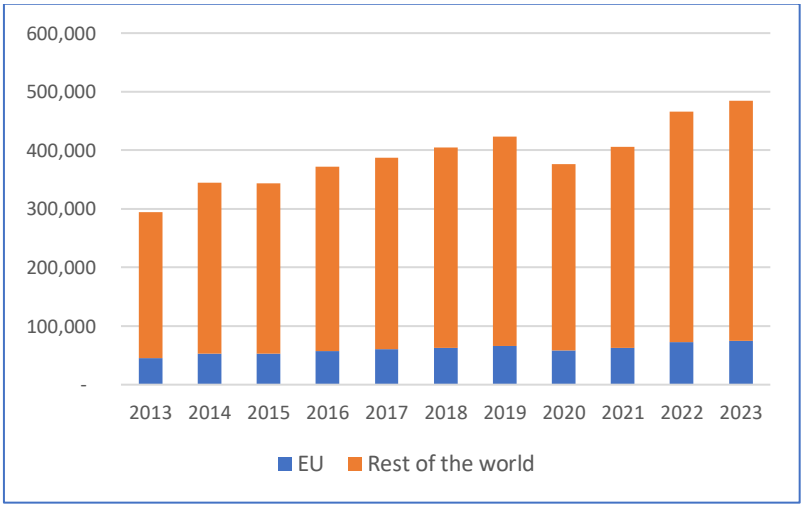

Figure 52 - Estimated total TEU (import + export) in WB by trade partner[74]

A forecast of intermodal transport volumes in the WB region has been made based on the expected growth in GDP and trade. For consistency, the same assumptions on GDP growth were used in this study as were used in the "Impact Scenarios of the Sustainable and Smart Mobility Strategy for the Western Balkans" [75] (see Table 21). For trade growth, the average growth in export and import from COMEXT was used (see Table 23). The future expected volume of intermodal transport was then estimated using Multi Linear Regression (MLR).

Table 23 - Average annual growth rates in trade (import + export) for the WB region until 2030[76]

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024 - 2030
Growth rate	3.20%	6.30%	7.20%	5.50%	1.50%	7.50%	-2.90%	6.20%	0.50%	-4.10%	14.00%	3.20%

As shown in Figure 54, it is expected that by 2030, the total volume of intermodal transport in the WB region will be around 620,000 TEU. This equates to an average annual growth rate of 3.7%. However, this expected growth falls short of the ambition outlined in the "Sustainable and Smart Mobility Strategy for the Western Balkans". One of the actions in this strategy aims to increase intermodal transport in the region by 100% by

[73] CE Delft (2021). STREAM Freight Transport 2020. Emissions of freight transport mode
[74] Source: Own elaboration
[75] Impact scenarios of the Sustainable and Smart Mobility Strategy (SSMS) for the Western Balkans (2023). Technical Assistance to connectivity in the Western Balkans, EuropeAid/13785/IH/SER/MULTI
[76] Source: Own elaboration, based on COMEXT

2035 compared to 2020. To be on track to achieve this ambition, around 700,000 TEU will be needed by 2030. This means an increase of 67% compared to current levels.

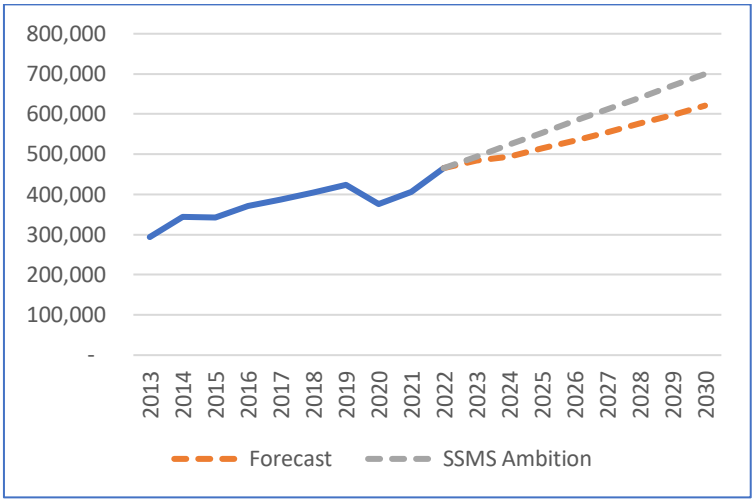

Figure 53 - Forecasted intermodal transport in WB in TEU and comparison with the SSMS ambition[77]

Relevant to the intermodal terminals is the share of containers transported by rail to the hinterland in the WB region. However, data availability is limited as WB RPs do not produce such statistics on a regular basis. Only COMEXT provides figures for the volume of containers transported by rail, as shown in Figure 54. The figures from Serbia have been adjusted based on volumes collected by the Consultant from various available sources (Statistical offices, Customs and previous relevant studies) data for 2022 and 2023.

In addition, these figures have been calibrated using the observed transshipment numbers for 2022 and 2023 at intermodal rail terminals. Interviews with all terminals in the WB region revealed that approximately 90,000 TEU were transshipped in 2022, and around 100,000 TEU in 2023. Based on these figures, it was found that the COMEXT data underestimates the actual transshipment numbers by about 30%.

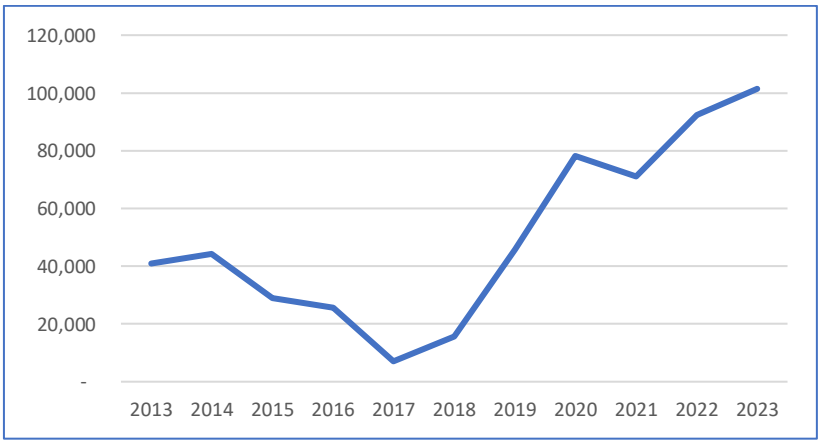

Figure 54 - Traded containerized volume by rail (import + export) between EU and WB RPs in tons[78]

[77] Source: Own elaboration

[78] Source: Own elaboration, based on COMEXT, statistical and Customs data

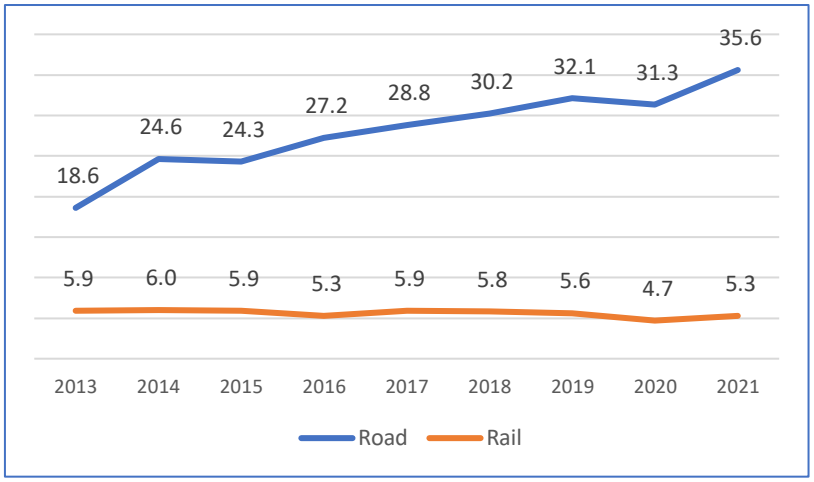

Figure 55 - Transport performance road & rail in WB (in bn tkm)[79]

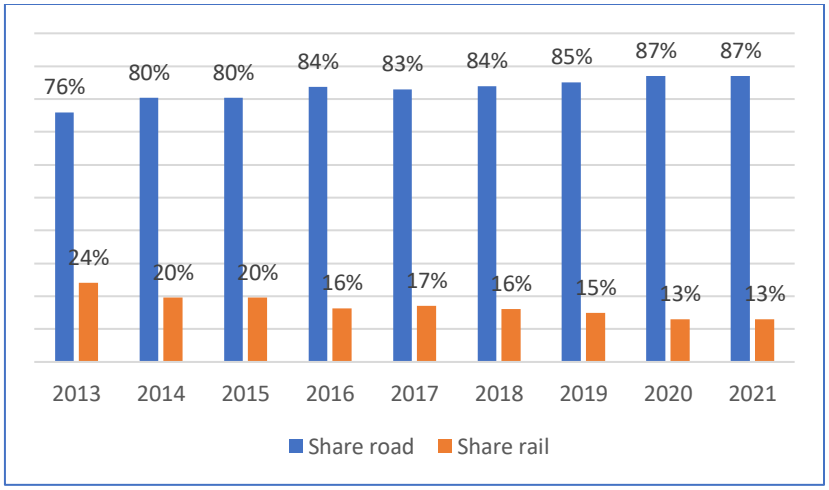

Figure 56 - Transport performance road & rail in WB (in %)[80]

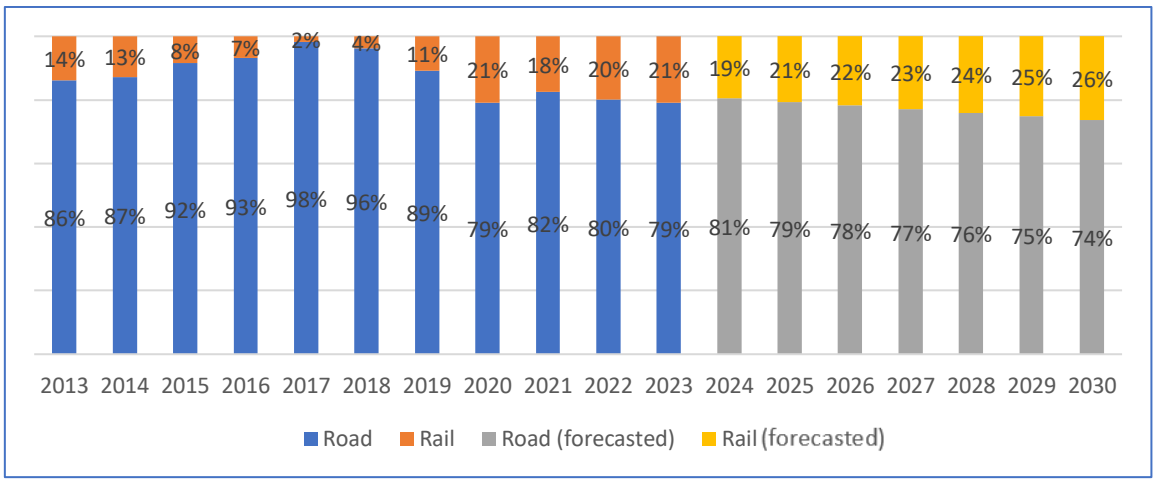

Figure 57 - Current and expected modal split of hinterland transport in the WB region[81]

[79] Source: European Commission. Statistical Pocket Book 2023

[80] Source: European Commission. Statistical Pocket Book 2023

[81] Source: Authors, based on COMEXT, statistical and Customs data

In recent years, the rail share of freight transport in the WB region has declined, from 24% in 2013 to 13% in 2021 (see Figures 56 and 57). But while the share of rail transport is decreasing in the WB region, the opposite applies to the transport of containers to the hinterland. When the volume of containers transported by road is compared to rail, the trend suggests that rail is gaining a larger share of intermodal transport (see Figure 59). In recent years, the share of rail has been around 13%–16%. A regression analysis of this data shows that if this upward trend continues, it is expected that by 2030, over 18% of containers in the WB region will be transported by rail to the hinterland.

Due to the positive modal shift to rail for intermodal transport, transshipment at intermodal terminals in the hinterland is expected to increase more strongly than the overall growth in containers. Figure 58 shows the modal split forecast applied to the expected growth in intermodal transport. With a current estimated transshipment volume of around 100,000 TEU at intermodal terminals in the hinterland of the WB region, this is expected to increase to around 164,000 TEU in 2030. This represents a 65% increase over current figures.

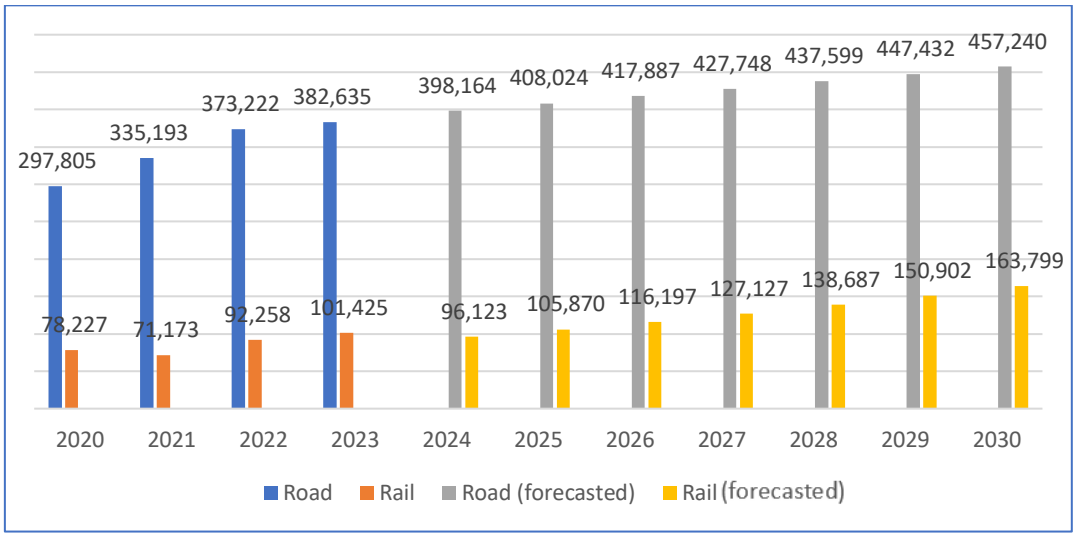

Figure 58 - Forecasted intermodal transport in WB in TEU for road and rail as hinterland transport[82]

The estimated current volume of 100,000 TEU is likely conservative. Based on responses on current transshipment volumes during interviews with intermodal terminals in the WB region, it is estimated that around 90,000 TEU is currently being transshipped in the hinterland of the region. Assuming a 70% growth by 2030, the expected transshipment figures could reach up to 150,000 TEU.

If the ambition of the region's SSMS - a doubling of the intermodal transport in the region by 100% by 2035 compared to 2020 - is to be reached, a further increase is required. Growth at intermodal terminals at seaports is more modest due to the major role road transport plays in the final leg to the origin and destination.

In support of the aforementioned analysis and modeling of data through a scenario based on GDP growth and a conservative approach in the possibilities of modal shift from road to rail, aiming to compensate the gap between forecasted volumes and ambition of Sustainable and Smart Mobility Strategy for Western Balkans, it is necessary to exploit a several sources of additional potential for the growth of intermodal transport.

Increase of railway infrastructure capacities is one of the preconditions to development of multimodality in general, but crucial for intermodal transport growth. Currently, the most of Core and Comprehensive part of the network are in poor condition, in some cases with serious bottlenecks or even out of operation, or under

[82] Source: Authors, own elaboration

rehabilitation and construction works, or planned for rehabilitation. Generally, regional railway infrastructure is in a cycle of rehabilitation started in the past 2-3 years, and it will last for several years more. Once the railway infrastructure quality increases, it will enable efficient and competitive intermodal transport in the region, and its growth consequently.

Another potential that can be particularly pronounced in RPs that lack intermodal terminals is the attraction effect, similar to the construction of a new road. The construction of new intermodal terminals capacities creates a service offer that did not exist, thus defining the attraction of users who did not have the opportunity to use intermodal transport as a service. Such an effect is expected especially in locations of new terminals in Albania, Bosnia and Herzegovina and North Macedonia.

Also, one of the measures that is defined by this document and represents additional potential in relation to the model applied in the analysis of this chapter, are soft measures, which primarily refers to the creation of a framework for incentives and stimulating measures, in such a way that intermodal transport is defined as an activity of general importance. This would allow for the rapid implementation of various incentive measures that would contribute to greater competitiveness of intermodal transport, and thus greater attraction of new users and consequently an increase in volumes.

The last but not the least important potential in the long term is general economic growth. Not in the sense of GDP growth, which is already included in the model, but in the sense of creating a balance between imports and exports. Intermodal transport, unlike other conventional modes, is specific in that it requires the delivery of empty intermodal units for loading. This has the consequence that if the transport demand is predominantly one-way, there is an increased need for the movement of empty containers and their shortage, which increases costs and makes this form of transport less financially viable. Creating the aforementioned balance leads to greater utilization of equipment and thus to full utilization of the benefits of intermodal transport and its growth.

Finally, it is important to highlight that modeling and analysis was done based on very limited data, with certain levels of assumptions and a conservative approach. If we follow the case of Serbia, where intermodal transport increased significantly in recent years, and only in last few months private initiative established number of intermodal services, with plans for further expansion of number of terminals, we can assume that the numbers showed in this modeling exercise are conservative and that in reality intermodal transport will grow faster.

4 Identification of existing multimodal freight terminals

4.1 Main existing multimodal terminals infrastructure at RP level

By 2021, it could be rightly said that multimodal freight terminals in WB almost do not exist. This situation has changed almost overnight, with a considerable number of terminals opened during the last three years. It is important to note also that in recent months, we have witnessed a significant expansion in the offering of multimodal/ intermodal transport services in the region, particularly in Serbia. Several noteworthy developments took place during the last 12 months: In December 2023, Nelt opened its second intermodal terminal in Serbia, located in Kruševac; the newly constructed intermodal terminal in Batajnica, owned by the Republic of Serbia, was officially opened; Adria Kombi and Dry Port Terminal Pančevo established a regular container line from Pančevo to Trieste; M-BOX Terminals, in cooperation with Kombiverkehr, launched a new line from Niš to Wels; and Transfera formed a joint venture with Rail Cargo Group (Austrian OBB) aimed at developing intermodal transport.

The identification of existing multimodal freight terminals was conducted in two levels, focusing first on intermodal terminals with active operations, including maritime and IWW ports with existing container manipulations and recently completed intermodal terminals. Then, railway stations and IWW ports recognized by transshipment volumes or their position on Core and Comprehensive railway network are identified as potential multimodal nodes and points of importance for future development of multimodality in the region.

Detailed description of the identified intermodal and multimodal freight terminals infrastructure per RP is provided in Appendix III.

The identified terminals, ports and railway stations that are recognized as important for the development of multimodality in each RP and the region are briefly presented in the following paragraphs per RP.

4.1.1 Albania

As regards intermodal transport, Albania has one main intermodal terminal, the Port of Durres container terminal. According to strategic documents, construction of a bimodal terminal in Lezhe (future connection to Port of Shengjin, not analyzed under this assignment) was planned[83]. The most important multimodal terminals identified in Albania (as existing railway stations and main ports) are presented in Table 24 and their position on the network in Figure 59.

[83] Republic of Albania, Ministry of Infrastructure and Energy, Intermodal transport performance strategy and Action plan (2021-2026), 2021

Table 24 - Main multimodal terminals in Albania

No.	Location	Terminal/freight station	Modality
1	Durres	Port of Durres container terminal	Trimodal (Rail-Road-Maritime)
2	Vlore	Port of Vlore bulk terminal	Trimodal (Rail-Road-Maritime)
3	Tirana	Freight station	Planned Bimodal (Rail-Road)
4	Milot	Freight station	Planned Bimodal (Rail-Road)
5	Durres	Freight station	Potential Bimodal (Rail-Road)
6	Fier	Freight station	Potential Bimodal (Rail-Road)
7	Elbasan	Freight station	Potential Bimodal (Rail-Road)
8	Vlore Freight	Freight station	Potential Bimodal (Rail-Road)
9	Bajze	Freight station	Potential Bimodal (Rail-Road)

Figure 59 - Locations of existing freight terminals on Core and Comprehensive freight railway network in Albania[84]

The Port of Durres handles about 78% of the country's seaborne trade in tonnage terms and 75% of all the export and import trade of the country. This makes the Port of Durres the most important seaport in Albania, also as gateway of Corridor VIII. The port is located 38 km west of Tirana. In 2023, the total volume freights transshipped in the port was 6.76 million tons[85].

The container terminal in the Port of Durres is the only container terminal in Albania. It encompasses around 50,000 m² with a capacity of 180,000 TEU/year[86]. The TEU number processed in 2022 and 2023, consists in a volume of almost 150,000 TEU annually.

One main shortcoming of the Port of Durres is the lack of railway connection. The ongoing construction of railway connection to Tirana is related to passenger transport, while freight will be moved to the new planned

[84] Background map source: Transport Community TEN-T freight rail network
[85] Statistical office Instat Albania. From 2022, the volume of loading-unloading for Port of Durres includes also the volume of goods transported by MBM port (Porto Romano Durres Concessionaire Company).
[86] Source: Durres Port Authority website

Porto Romano, 9 km to the north from Durres. Planned capacities for new container terminal reach 500,000 TEU [87]. It was anticipated that the first port operations could begin in 2025.

Since the Container terminal in the Port of Durres is not connected to the railway system, intermodal (rail-maritime) transport capacities are absent, and prerequisite for development of intermodality is the connection of the Port of Durres (and/or of the future Porto Romano) to the railway network, provided that the Port of Durres after the full implementation of the Porto Romano project will be destined for passenger transport operations only.

The port of Vlore is the 2nd largest in Albania and is defined as the second entrance gate to Corridor VIII. This port covers about 10% of import-export of goods. The processing capacity of the port of Vlore reaches up to 0.6 million tons per year [88].

A more detailed description and maps with the location of each of the terminals listed above are provided in Appendix III, while an overview of technical characteristics is given in the following paragraphs.

Other multimodal freight transport facilities – Railway stations

Railway operations in Albania are at very low level and identification by transshipment volumes was not possible, except for Fier railway station, where the station and the line for crude oil transport from Fier to Port of Vlore are operated by private company. Other railway stations identification was performed based on their position on the network and plans in strategic documents. The stations identified as potentially important or planned for development of multimodality in Albania are Durres, Fier, Elbasan, Vlore freight and potentially Bajze, if the project variant of the planned new railway connection to Kosovo via Shkoder will be selected (Feasibility Study is currently under elaboration).

The basic characteristics of railway stations that are important for the development of multimodality in Albania are shown in Table 25.

Table 25 - Main railway stations in Albania and characteristics

No.	Railway station	Location on the network	Number of tracks	Track length (m)	Max permitted load (t/axle)
1	Milot	Route 2	2		
2	Durres	Corridor VIII	n/a		
3	Fier	Corridor VIII	4	910	20
4	Elbasan	Corridor VIII	4+4		
5	Vlore Freight	Corridor VIII	4+3	1,205	20
6	Bajze	Route 2	4+4		

More detailed description of the listed terminals and railway stations in Albania is provided in Appendix III, while the characteristics of intermodal terminals and port container terminals are provided in Chapter 4.2 together with the map of all other terminals in the WB region.

[87] Blue Connectivity: Maritime and Inland Waterways in the Balkans Peninsula, 2022
[88] Blue Connectivity: Maritime and Inland Waterways in the Balkans Peninsula, 2022

4.1.2 Bosnia and Herzegovina

The existing transport infrastructure network (road, rail, IWW) still presents considerable bottlenecks and therefore, multimodal/intermodal transport is not yet developed. Although intermodal options exist, the poor integration among the different available modes is a major barrier to its development. Multimodality should be supported by adequate inland infrastructures, primarily multimodal terminals.

Table 26 lists the most important multimodal terminals identified in Bosnia and Herzegovina, based on available data and freight transport flows and available relevant studies and strategic documents.

Table 26 - Main multimodal terminals in Bosnia and Herzegovina

No.	Location	Terminal/freight station	Modality
1	Brčko	Port of Brčko	Under-developed Trimodal (Rail-Road-IWW)
2	Šamac	Port of Šamac	Under-developed Trimodal (Rail-Road-IWW)
3	Tuzla	Terminal	Bimodal (Rail-Road)
4	Sarajevo	Freight station/terminal	Bimodal (Rail-Road)
5	Sarajevo	Rajlovac freight station	Planned Terminal (Rail-Road)
6	Banja Luka	Freight station/terminal	Bimodal (Rail-Road)
7	Doboj	Freight station	Planned Bimodal (Rail-Road)
8	Mostar	Freight station	Planned Bimodal (Rail-Road)
9	Zenica	Freight station	Under-developed Bimodal (Rail-Road)
10	Bihać	Freight station	Potential Bimodal (Rail-Road)
11	Kreka	Freight station	Potential Bimodal (Rail-Road)

Figure 60 shows the listed terminals on the Core and Comprehensive railway network in Bosnia and Herzegovina.

Figure 60 - Locations of existing multimodal terminals on the Core and Comprehensive freight railway network in Bosnia and Herzegovina[89]

[89] Background map source: Transport Community TEN-T freight rail network

Port of Brčko

One of the important transit points in Bosnia and Herzegovina is the Port of Brcko. The Port of Brčko is located in the north-eastern part of Bosnia and Herzegovina, on the right riverbank of the Sava River waterway. It is the only international port in Bosnia and Herzegovina. The port is listed here since the existing container handling is performed mostly in rail-road regime, while river container lines do not exist. The port is connected to the main railway station of Brčko by a single track. Along the operational shore there are four shunting tracks with a total length of 2,586 m. Container terminal is small with an area of 5,000 m². The container terminal started operating in 2019, and its initial capacity was limited, but it has been expanded. The scope of container operation in the Port of Brčko in 2021 was 1,204 TEU, while in 2023 it reached 3,804 TEU.

The mechanization consists of two cranes of the Ganz type (6 t, l = 30 m) and one of 27 t capacity. In 2023, the Port of Brčko handled 40,843 t of bulk and general cargo. Daily capacity of the port for bulk cargo is 1,800-2,000 t, while for general cargo is 1,500-2,000 t.

Terminal Tuzla

This intermodal terminal is located at the freight railway station "Bosanska Poljana", owned and operated by private company "Robni Terminal Tuzla". The terminal is equipped with 2 reach stackers, capable of handling 20- and 40-feet containers up to 40 t. The annual capacity of the terminal is estimated at 10,000 TEU, while current throughput is much lower. The terminal is located at the railway station with the possibility of use of 3-5 sidings. Currently the last siding of the station is used for loading and unloading. The maximum permitted length of train is 500 m, weight is limited to 2,000 tons and maximal axle load is 22.5 t. The total number of tracks is five, while the length of loading track is 630 m. The open storage capacity of the terminal is 30,000 m^2 and warehouse capacities are 3,000 m^2. The container storage capacity is 1,300 TEU. Shunting operations are done by the public railway operator, Railways of Federation of Bosnia and Herzegovina.

Within the complex of the private intermodal terminal, Customs terminal is established as well as other logistics services, including warehousing, road transport and distribution.

Container terminal Sarajevo

The terminal is located at the freight railway station Sarajevo, near the main passenger railway station in the urban area of the City of Sarajevo. According to the information from interviewed freight forwarding companies, the terminal is facing issues related to road connections and accessibility for trucks. The operation volumes are low and mainly based on container trains coming from Port of Ploče. The total number of tracks is seven, and the length of loading track is 430 m.

The Sarajevo freight station is managed by Railways of Federation of Bosnia and Herzegovina (ŽFBH) and operations at the container terminal are also performed by this state-owned company. Freight station Sarajevo also handles general cargo, bulk and other types of cargo which may occur in railway transport. Details on capacities, quantities handled, and equipment were not made available. Estimation based on interviews and survey conducted under Task 2, is that current volumes are below 5,000 TEU annually.

According to the recent information, a new intermodal terminal is planned to be constructed at Rajlovac railway station described below.

A more detailed description and location of each of the terminals listed above are provided in Appendix III, while an overview of technical characteristics is given in the following paragraphs.

Other multimodal freight transport facilities – railway stations

The basic characteristics of railway stations that are important for the development of multimodality in Bosnia and Herzegovina are provided in Table 27.

Table 27 - Main railway stations in Bosnia and Herzegovina and characteristics

No.	Railway station	Location on the network	Number of tracks	Track length (m)	Max permitted load (t/axle)
1	Doboj	Corridor Vc/Route 9	15+10	750	22.5
2	Rajlovac	Corridor Vc	17+20	645	22.5
3	Mostar	Corridor Vc	5+3		
4	Zenica	Corridor Vc	3+3		
5	Kreka	Route 9	9		
6	Sarajevo Freight	Corridor Vc	7	430	22.5
7	Bosanska Poljana	Route 9	5	650	22.5
8	Banja Luka	Route 9	8+8	550	22.5

Doboj railway station is located at the crossroad of Corridor Vc and Route 9, enabling connection from the Port of Ploče to Mostar-Zenica-Doboj-Šamac, and Novi Grad-Banja Luka-Doboj-Tuzla-Zvornik lines, i.e. at the crossroad of Core and Comprehensive railway network in Bosnia and Herzegovina. The station is located close to the city and the industrial zone of Doboj, directly connected to limestone quarrying and distribution facilities.

Details on capacities, quantities handled, and equipment was not available. The total number of tracks is 25, the length of loading track is 750 m. The station is equipped with a side loading ramp.

Railway station Doboj is defined as important in strategic documents and also mentioned as point of interest of users given its relative proximity to all cities and industrial areas of north and central parts of Bosnia and Herzegovina. In the past 6 years, the representatives of the Republika Srpska have on several occasions-initiated discussions with foreign investors for building an Intermodal Terminal at the Doboj railway station, bearing in mind that strategic documents identify the need for the construction of this terminal, but to date, implementation has not started.

Railway station Rajlovac is located on the west part of the City of Sarajevo, on the railway Core network – Corridor Vc, near the Rajlovac industrial zone, and near the highway connection to Corridor Vc motorway. According to information received during consultations, Rajlovac is a planned location for development of intermodal/multimodal terminal. Official information on Rajlovac railway station development plans are not submitted to the Consultant or publicly available. Given its proximity to the industrial zone, underdeveloped land use and possibility for connection to road network, Rajlovac has a strong potential for further development. The station has 17 direct tracks and 20 sidings, with a maximum allowed train length of 645 m and maximal axle load of 22.5 t.

Banja Luka railway station, even declared as intermodal terminal in previous studies, during the interviews the Consultant received information that there are no container operations in Banja Luka station or any other railway station of Republika Srpska. Details on capacities, quantities handled, and equipment were not made available. The total number of tracks is 16, the length of loading track is 550 m.

Other freight railway stations recognized, serving mostly industrial activities in their proximity, are Mostar in the south and Zenica in the central part of the country, both located along Corridor Vc, and railway station Kreka in the industrial zone of the city of Tuzla in the eastern part of Bosnia and Herzegovina.

Another node which may play a role in the future development of multimodality is the Port of Samac. Currently, the port has modest transshipment and capacities for bulk cargo, even it has the basic equipment

for other types of goods. The port is connected to the railway system with a single track of 1,630 m, connecting it to the Samac railway station. Even stated that container handling in the port is possible, details regarding capacities, equipment and handled volumes were not available. Also, interviewed freight forwarding companies didn't include the Port of Šamac as a node that intermodal transport activities take place.

It is important also to mention, although it is not located in Bosnia and Herzegovina, the Port of Ploče in Croatia, since the majority of goods transshipped are meant for the market of Bosnia and Herzegovina. About 90% of cargo traffic and 98% of container traffic are coming from/to Bosnia and Herzegovina. Container traffic volume at the Port of Ploče is at the level of about 25,000 TEU. The port does serve important bulk commodity markets, and functions as a critical gateway for shippers in Bosnia and Herzegovina via Corridor Vc.

More detailed description of the listed terminals and railway stations in Bosnia and Herzegovina is provided in Appendix III, while the characteristics of intermodal terminals and port container terminals are provided in Chapter 4.2 together with the map of all other terminals in the WB region.

4.1.3 Kosovo

In Table 28, the most important multimodal terminals in Kosovo are listed, based on available data and available relevant studies and strategic documents.

Table 28 - Main multimodal terminals in Kosovo

No.	Location	Terminal/freight station	Modality
1	Miradi	Terminal	Bimodal terminal (Rail-Road)
2	Pristina	Freight station	Potential Bimodal (Rail-Road)
3	Mitrovice	Freight station	Planned Bimodal (Rail-Road)
4	Hani i Elezit	Freight station	Potential Bimodal (Rail-Road)
5	Peje	Freight station	Planned Bimodal (Rail-Road)
6	Prizren	Freight station	Planned Bimodal (Rail-Road)

The locations of the listed terminals are shown in Figure 61.

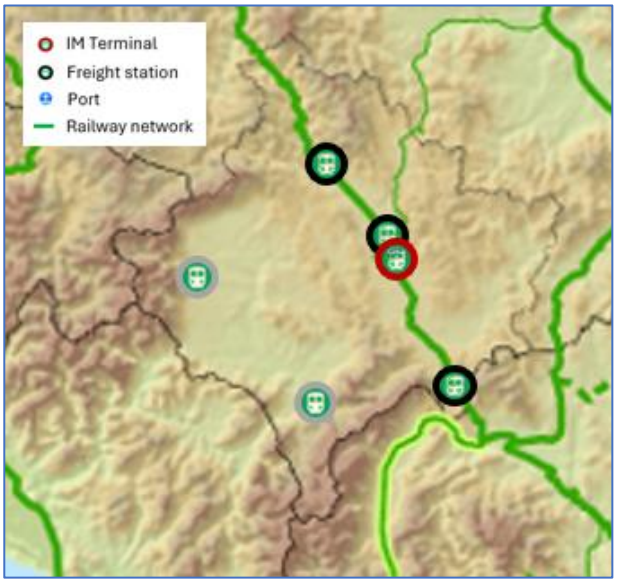

Figure 61 - Locations of existing multimodal terminals on the Core and Comprehensive freight railway network in Kosovo[90]

[90] Background map source: Transport Community TEN-T freight rail network

In terms of infrastructure, Miradi terminal in Pristina is currently the main multimodal terminal, while other terminal locations shall be considered in parallel to the modernization projects of railway Route 10 and future development of railway network.

The terminal is connected to the Miradi Railway Station, which at the same time serves as the main station for the composition of the freight trains. It has a 5,250 m^2 surface for operation of containers and manipulation of other goods. It is equipped with one reach stacker with load capacity up to 40 t. Warehouses exist for loading the freight on a surface of 120 m^2, the maximum permitted train length is 700 m, while the total weight of trains is limited to 1,500 t.

Miradi terminal is currently out of operation due to the reconstruction of railway tracks in Kosovo.

For the total current capacity for intermodal transport in Kosovo, the only terminal in possibility to provide the services is terminal Miradi, with estimated transshipment capacity of 25,000 TEU annually.

A more detailed description and location of each of the terminals are provided in Appendix III, while an overview of technical characteristics is given in the following paragraphs.

Other multimodal freight transport facilities – railway stations

The basic characteristics of railway stations that are important for the development of multimodality in Kosovo are shown in Table 29.

Table 29 - Main railway stations in Kosovo and characteristics

No.	Railway station	Location on the network	Number of tracks	Total track length (m)	Max permitted load (t/axle)
1	Mitrovice	Route 10	8	3,962	22.5
2	Hani i Elezit	Route 10	4	284	22.5
3	Peje		8		
4	Prizren		3+1		

Railway station Mitrovice is recognised as important station on Route 10, serving the industrial complex, while railway station Hani Elezit as a border station to North Macedonia is in proximity to Ferizaj, where industrial area is located.

Railway station Peje is located near the border with Montenegro, while Prizren railway station is located in the south part of Kosovo, towards Albania but connected to Pristina only. Both stations are recognized as planned terminals by Kosovo authorities. However, Peje and Prizren railway stations are out of indicative extension of TEN-T network to the Western Balkans.

A more detailed description of the listed terminals and railway stations in Kosovo is provided in Appendix III, while the characteristics of intermodal terminals are provided in Chapter 4.2 together with the map of all other terminals in the WB region.

4.1.4 Montenegro

The only intermodal terminal in Montenegro is established in the Port of Bar. Railway connecting segments between the port piers and the railway network are sufficient and all berths are connected. Infrastructure for transshipment from the sea to road and rail and vice versa exists, but for direct transshipment between rail and road transport it is missing. This implies that the capacity of railway lines is not fully exploited. To utilize this potential, improvements in the port or construction of a Rail-Road terminal adjacent to port is needed.

The most important multimodal terminals in Montenegro, identified based on available data and freight transport flows and available relevant studies and strategic documents, are listed in Table 30 and their locations are illustrated in Figure 62.

Table 30 - Main multimodal terminals in Montenegro

No.	Location	Terminal/freight station	Modality
1	Bar	Port of Bar	Trimodal terminal (Rail-Road-maritime)
2	Podgorica	Freight station	Planned Bimodal (Rail-Road)
3	Bijelo Polje	Freight station	Potential Bimodal (Rail-Road)
4	Tuzi	Freight station	Potential Bimodal (Rail-Road)
5	Nikšić	Freight station	Potential Bimodal (Rail-Road)

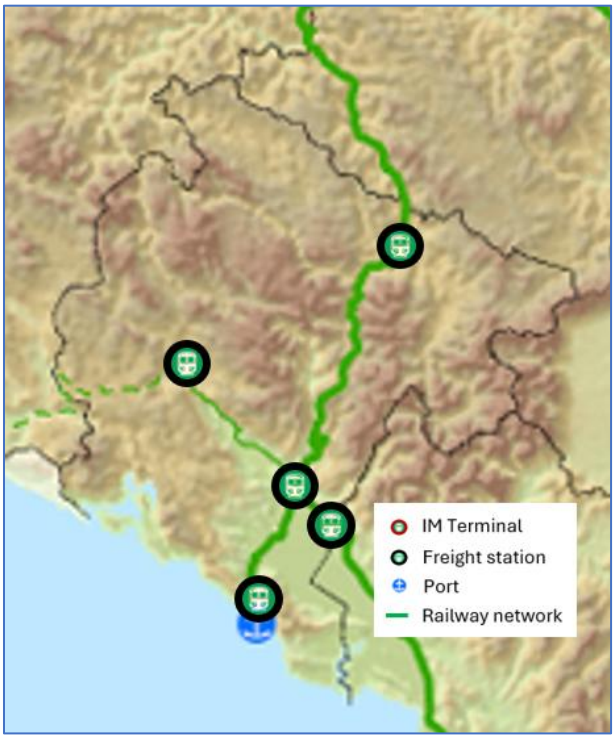

Figure 62 - Locations of existing multimodal terminals on the Core and Comprehensive freight railway network in Montenegro[91]

The most important port in Montenegro is the Port of Bar, where about 95% of all port activities of the country are performed [92]. The activities at the Port of Bar are performed by two port operators:

- Port of Bar JSC, state owned, covering the bulk, liquid cargo and general cargo terminals; and
- Port of Adria JSC, private company, covering the container terminal, cruise terminal and general cargo

The port can handle dry cargo, liquid cargo, general cargo, cruise ships, Ro-Ro ships and containers. Almost 95% of products coming from the sea to Montenegro are transported through this port. According to the provisions of the valid spatial planning documentation, the planned capacity of the port of Bar for the future is 12 million tons/ year. Major barriers for port valorization from regional markets are the high travel times for accessing the port by road and rail and the non-competitive costs [93].

[91] Background map source: Transport Community TEN-T freight rail network
[92] Blue Connectivity: Maritime and Inland Waterways in the Balkans Peninsula, 2022
[93] Kapidani N, Tijan E, Jović M, Kočan E. National Maritime Single Window – Cost-Benefit Analysis of Montenegro Case Study

The container terminal is connected to the railway network to Bar railway station, by 2 tracks of total length of 880 m (2x440m). The port is connected to the railway station Bar. The estimated capacity of the container terminal is 100,000 TEU annually, while current utilization is not known. Latest available data are from 2018, where the volume handled was 50,044 TEU. According to recent estimates received from Montenegrin stakeholders based on publicly available information, the transshipment in 2024 will reach 55,000 TEU.

A more detailed description and location of each of the terminals listed above are provided in Appendix III, while an overview of technical characteristics is given in the following paragraphs.

Other multimodal freight transport facilities – railway stations

Table 32 presents the main railway stations in Montenegro and their characteristics. Stations are identified according to their positions on the network and current transshipment volumes.

Table 31 - Main railway stations in Montenegro and characteristics

No.	Railway station	Location on the network	Number of tracks	Track length (m)	Max permitted load (t/axle)
1	Podgorica	Route 4	19	791	22.5
2	Bijelo Polje	Route 4	8	730	22.5
3	Tuzi	Route 2b	5	704	22.5
4	Niksic	Route 2b	13	616	22.5
5	Bar	Route 4	14		22.5

The stations in Podgorica, Bijelo Polje and Bar are located on Route 4, on the railway Core network. Railway station Tuzi is serving as a border station to Albania, with modest transshipment volumes. Nikšić railway station is located on railway Comprehensive network, connected to the largest industrial complex in Montenegro and with second highest transshipment volume that exceeds 0.6 million tons in 2023.

The largest quantities transshipped are registered in Bar railway station, where over 0.7 million tons were handled in 2023.

All listed railway stations are D4 category, allowing 22.5 t/axle and 80 t/m.

A more detailed description of the listed terminals and railway stations in Montenegro is provided in Appendix III, while the characteristics of intermodal terminals are provided in Chapter 4.2 together with the map of all other terminals in the WB region.

4.1.5 North Macedonia

Table 32 lists the most important multimodal terminals in North Macedonia, as identified based on available data and freight transport flows and available relevant studies and strategic documents.

Table 32 - Main multimodal terminals in North Macedonia

No.	Location	Terminal/freight station	Modality
1	Madzari	Container Terminal Blue Bell Warehouse	Bimodal terminal (Rail-Road)
2	Tabanovce	Freight (border) station	Potential Bimodal (Rail-Road)
3	Gevgelija	Freight (border) station	Potential Bimodal (Rail-Road)
4	Skopje Tovarna	Freight station	Potential Bimodal (Rail-Road)
5	Trubarevo Marshalling Yard	Freight station	Planned Bimodal (Rail-Road)
6	Bitola	Freight station	Potential Bimodal (Rail-Road)
7	Skopje Jug	Freight station	Potential Bimodal (Rail-Road)

The position of the listed multimodal terminals on the Core and Comprehensive railway network is presented in Figure 63.

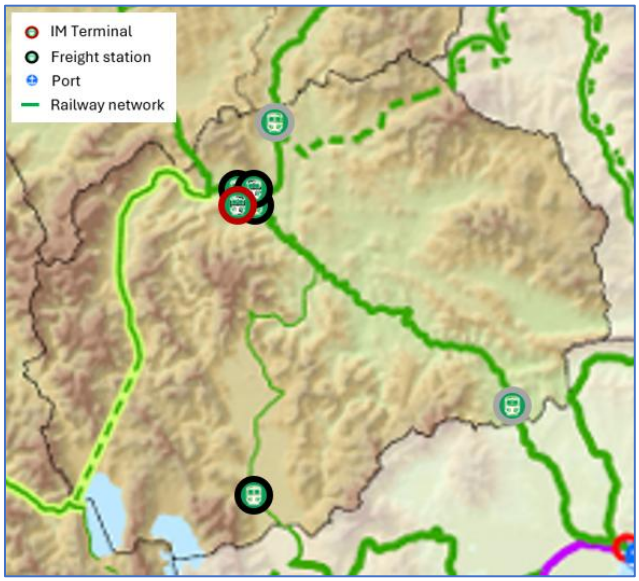

Figure 63 - Locations of existing multimodal terminals on the Core and Comprehensive freight railway network in North Macedonia

The Feasibility Study and Cost Benefit Analysis for Development of strategic multimodal transport nodes in the country, completed 10 years ago, recommended the existing marshalling yard in Trubarevo near Skopje as optimal location for the development of Intermodal terminal. Based on that, further support to multimodal transport development was foreseen and the construction of Container terminal Trubarevo – Skopje was one of the priority interventions. However, after 10 years and the urban development that took place in the meantime, there have been changes in the possibilities of connecting the potential terminal Trubarevo with the road network, as well as other complications identified in the phase of options analysis of the Feasibility Study which is currently ongoing for the development of the Trubarevo terminal. Analysis will show if Trubarevo will be the location of the new terminal to be developed or whether this decision must be changed.

The intermodal terminal "Blue Bell Warehouse" is currently the only active container terminal in North Macedonia. It is a privately operated terminal connected to the railway station Madzari in Skopje, located between the railway stations Skopje Tovarna and Trubarevo. The terminal is equipped with 2 sidings (one operational), 2 reach stackers, allowing acceptance of trains of maximum length of 740 m. The terminal has 30,000 m^2 capacity for open storage, container storage for 915 TEU and 6,500 m^2 of warehouse capacity. The estimated capacity of this intermodal terminal is 50,000 TEU annually, and current utilization is under 20% [94].

A more detailed description and location of each of the terminals listed above are provided in Appendix III, while an overview of technical characteristics is given in the following paragraphs.

Other multimodal freight transport facilities – railway stations

The basic characteristics of railway stations that are important for the development of multimodality in North Macedonia are summarized in Table 33.

[94] Annual capacity reported during the interview with terminal operator is higher. The estimate of the current capacity provided here is based on the number of tracks, the loading front length and the available equipment.

Table 33 - Main railway stations in North Macedonia and characteristics

No.	Railway station	Location on the network	Number of tracks	Total track length (m)	Max permitted load (t/axle)
1	Madzari	Corridor X	8	4,500	22.5
2	Tabanovce	Corridor X	6	3,305	22.5
3	Gevgelija	Corridor X	27	9,293	22.5
4	Skopje Tovarna	Corridor X	20	9,270	22.5
5	Trubarevo	Corridor X	39	28,861	22.5
6	Bitola	Route 8 – Corridor Xd	10		
7	Skopje Jug	Corridor X	16	6,770	22.5

Skopje railway node has four main stations which can play an important role in future. Railway station Skopje Jug records the second largest transshipment volume in the country, serving the Skopje steel mill. Trubarevo marshaling yard is one of the largest railway installations in North Macedonia, potential location for future terminal, as mentioned above.

Railway station Skopje Tovarna is open for freight transport and had the function of an intermodal terminal in the past, but currently there are no significant operations, due to outdated equipment and reconstruction needs. Station Madzari is located between Skopje Tovarna and Trubarevo marshaling yard, ensuring a rail connection with intermodal terminal BlueBell warehouse. All of these stations belong to the Core railway network, at the crossroad of Corridors X and VIII.

Railway station Tabanovce is a border station towards Serbia, on Corridor X. This station is foreseen as a joint railway border crossing point, according to bilateral agreement between North Macedonia and Serbia.

Station Gevgelija is the border station towards Greece, on Corridor X. According to the users' satisfaction survey, border station Gevgelija could be a potential location for terminal development. However, this is not to be considered due to serious limitations for expansion.

Railway station Bitola is on the Comprehensive railway network, on branch D of Corridor X (Route 8). This station has the largest quantities of goods transshipped in North Macedonia, serving the industrial complex. Importance of this station is also reflected in its proximity to the developing industrial zone Zhabeni and the border with Greece, with potential future alternative connection to Port of Thessaloniki.

More detailed description of the listed terminals and railway stations in North Macedonia is provided in Appendix III, while the characteristics of intermodal terminals are provided in Chapter 4.2 together with the map of all other terminals in the WB region.

4.1.6 Serbia

Serbia has invested heavily in its motorway network, which now fully covers Corridor X and its branches. Attention has now turned to the railway network and works have started in earnest to modernize the railway. A major investment programme for the main lines on Corridor X is now in progress. Before and during the works, however, the railway capacity and performance remain limited, so that intermodal services using the railway have not yet reached their potential.

Existing intermodal terminals are found in Belgrade, Indjija, Pančevo, Niš, Sremska Mitrovica and Kruševac. A number of railway stations with significant transshipment volumes and importance for the industry as well as IWW ports defined as Core and Comprehensive are recognized as important for the development of multimodality in Serbia. In Table 34, the most important multimodal terminals in Serbia are listed, as identified based on available data and freight transport flows and available relevant studies and strategic documents, while their position on Core and Comprehensive network is presented in Figure 64.

Table 34 - Main multimodal terminals in Serbia

No.	Location	Terminal/freight station	Modality
1	Belgrade	ŽIT	Bimodal terminal (Rail-Road)
2	Belgrade	Batajnica	Bimodal terminal (Rail-Road)
3	Sremska Mitrovica	RTC Luka Leget	Trimodal terminal (Rail-Road-IWW)
4	Niš	MBOX Terminals	Bimodal terminal (Rail-Road)
5	Belgrade	Dobanovci - Nelt Co	Bimodal terminal (Rail-Road)
6	Pančevo	Port of Pančevo	Trimodal terminal (Rail-Road-IWW)
7	Inđija	Intermodal terminal Inđija	Bimodal terminal (Rail-Road)
8	Kruševac	Nelt Co	Bimodal terminal (Rail-Road)
9	Novi Sad	Port of Novi Sad	Potential Trimodal terminal (Rail-Road-IWW)
10	Prahovo	Port of Prahovo	Potential Trimodal terminal (Rail-Road-IWW)
11	Šabac	Port of Šabac	Potential Trimodal terminal (Rail-Road-IWW)
12	Smederevo	Port of Smederevo	Potential Trimodal terminal (Rail-Road-IWW)
13	Radinac (Smederevo)	Freight station	Potential Bimodal (Rail-Road)
14	Pancevo Varoš	Freight station	Potential Bimodal (Rail-Road)
15	Bor	Freight station	Potential Bimodal (Rail-Road)
16	Svilajnac	Freight station	Potential Bimodal (Rail-Road)
17	Nis-Marshaling yard	Freight station	Potential Bimodal (Rail-Road)
18	Nis -Trupale	Freight station	Potential Bimodal (Rail-Road)
19	Novi Sad marshalling yard	Freight station	Potential Bimodal (Rail-Road)
20	Subotica	Freight station	Potential Bimodal (Rail-Road)
21	Sid	Freight station	Potential Bimodal (Rail-Road)
22	Pozega	Freight station	Potential Bimodal (Rail-Road)
23	Smederevo	Freight station	Potential Bimodal (Rail-Road)
24	Sabac	Freight station	Potential Bimodal (Rail-Road)
25	Sremska Mitrovica	Freight station	Potential Bimodal (Rail-Road)
26	Vreoci	Freight station	Potential Bimodal (Rail-Road)
27	Belgrade-Surcin	Freight station	Potential Bimodal (Rail-Road)
28	Jagodina	Freight station	Potential Bimodal (Rail-Road)
29	Kragujevac	Freight station	Potential Bimodal (Rail-Road)
30	Kraljevo	Freight station	Potential Bimodal (Rail-Road)
31	Pirot	Freight station	Potential Bimodal (Rail-Road)
32	Belgrade-marshalling yard	Freight station	Potential Bimodal (Rail-Road)

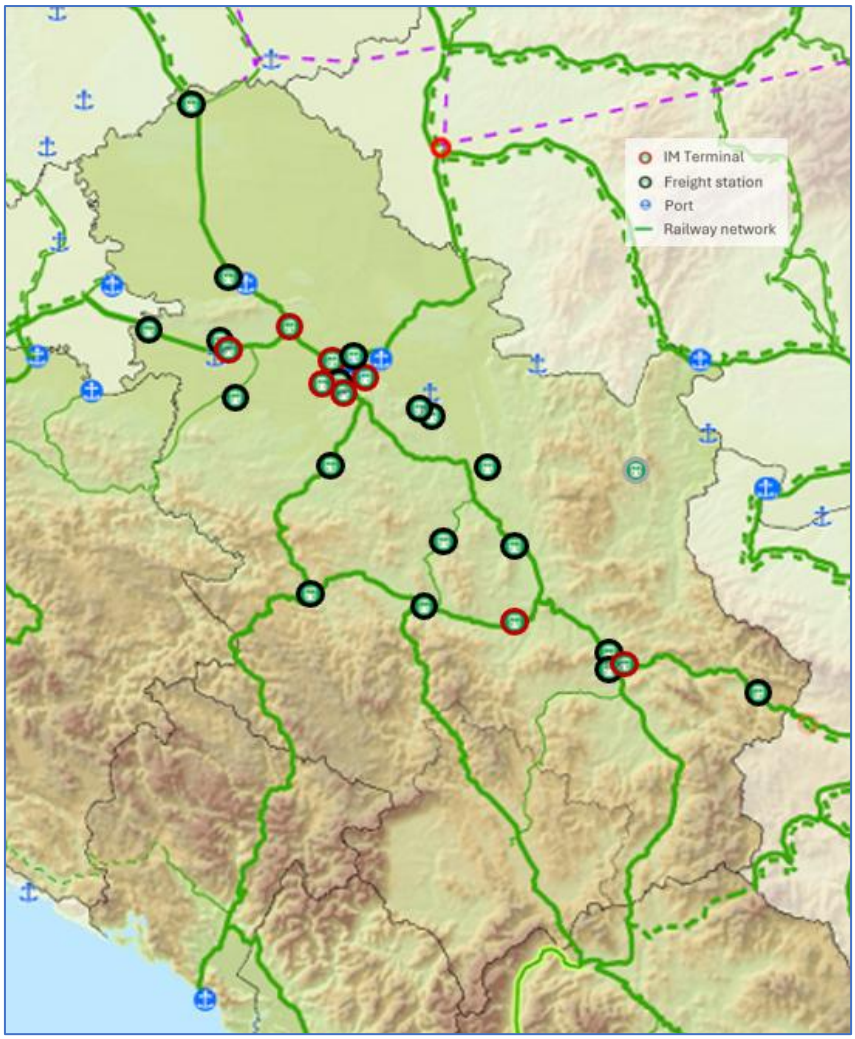

Figure 64 - Locations of existing multimodal terminals on the Core and Comprehensive freight railway network in Serbia[95]

There are eight intermodal terminals, with total annual turnover (2022) about 80,000[96], while the total number of containers in international exchange, including those transported by road, estimated at about 161,000 TEU[97].

- Belgrade area
  - Terminal ŽIT (state owned, at Belgrade marshaling yard, recently reconstructed)
  - Intermodal terminal Batajnica (state owned, recently constructed)
  - Intermodal terminal Dobanovci (owned by private company Nelt Co)
  - Intermodal terminal Indjija (owned by international company Metrans)
  - Intermodal terminal Pancevo (located in the Port of Pancevo, owned by private company Dry-Port Terminals)
- Sremska Mitrovica intermodal terminal, located in the Port of Leget, owned by private company RTC Leget
- Niš intermodal terminal, owned by private company M-Box Terminals
- Kruševac intermodal terminal, second terminal of private company Nelt Co, recently started

[95] Background map source: Transport Community TEN-T freight rail network
[96] Based on reported transshipment volumes by terminals
[97] Estimation of Consultant based on COMEXT Eurostat, Customs, statistical data and interviews

Container Terminal ŽIT opened in October 2024. Current capacities are 24,000 TEU, with plans for future expansion to 120,000 TEU.

The construction of the new intermodal terminal in Batajnica was completed this year and the terminal officially opened in autumn 2024, operated by state owned company Logistics centers of Serbia. The capacity of the terminal is 80,000 TEU annually, with 906 TEU container storage capacity. This completes the first phase of the construction of the intermodal terminal. The second phase envisages the construction of a logistics center and additional equipment that would increase the capacity to 150,000 TEU and enable additional services.

The intermodal terminal Dobanovci is privately owned terminal by one of the biggest logistics providers in Serbia. Estimated capacity of the terminal is 50,000 TEU with current utilization of about 20,000 TEU annually. Storage capacity is 2,000 TEU.

The intermodal terminal Indjija, recently joined the terminal network of Metrans international company, started with operations in 2024. The terminal capacity is estimated to be 40,000 TEU annually, with storage capacity of 4,000 TEU. Current capacity utilization does not exceed 20%.

The intermodal terminal Pančevo is located within the Danube Port of Pancevo, operated by a private company as a rail-road terminal with possibilities of transshipment to IWW. The capacity of the terminal is 50,000 TEU with current utilization between 20-50%. Storage capacity is 3,300 TEU.

All these 5 intermodal terminals in Belgrade area are located on Core railway network. Intermodal terminal Pancevo is located on Route 4, while the other four are located on Corridor X.

Sremska Mitrovica intermodal terminal is the oldest and biggest privately owned terminal in Serbia, located in the Port of Leget, with possibilities of transshipment to IWW. Estimated reported capacity is 100,000 TEU annually, with utilization of 25-50%. Storage capacity is 5,000 TEU. Terminal is located near the Croatian border, on Core railway network (Corridor X).

Intermodal terminal in Niš is located on Corridor X on railway junction of main axis towards North Macedonia and branch C to Bulgaria. It is a privately owned terminal with a capacity of 50,000 TEU annually and current utilization of about 16,000 TEU. Storage capacity is 2,700 TEU.

Intermodal terminal in Krusevac is a terminal opened in 2023, privately owned and still under development. There was no data on capacities and technical characteristics. The terminal is located on the Core railway network within the industrial zone of Krusevac.

Beside the listed active intermodal terminals, it is important to mention that several planned terminals are developing, where mature projects are especially in Port of Novi Sad (privately operated port) and Pirot, within the free zone Pirot near Bulgarian border.

A more detailed description and location of each of the intermodal terminals presented in the above above is provided in Appendix III, while an overview of their technical characteristics is given in Chapter 4.2. For railway stations an overview of their technical characteristics is provided in the following paragraphs.

Other multimodal freight transport facilities – Railway stations

Considering transshipment volumes, position on the network, and strategic documents and previous studies, 20 railway stations in Serbia have been identified as having important role in multimodal transport of Serbia. Their main characteristics are provided in Table 35.

Table 35 - Main railway stations in Serbia and characteristics

No.	Railway station	Location on the network	Number of tracks	Total length (m)	Max permitted load (t/axle)
1	Radinac	Corridor X	7	4,642	22.5
2	Pančevo Varoš	Corridor X/Corridor VII/Route 4	13	7,774	22.5
3	Bor		3	1,794	22.5
4	Svilajnac	Corridor X	5	3,848	22.5
5	Niš marshaling yard	Corridor X	36	24,063	22.5
6	Niš Trupale	Corridor X	7	4,679	22.5
7	Novi Sad marshaling yard	Corridor X	48	22,101	22.5
8	Subotica	Corridor X	28	11,562	22.5
9	Šid	Corridor X	20	8,292	22.5
10	Požega	Route 4	10	6,055	22.5
11	Smederevo	Corridor X	9	4,089	20
12	Šabac	Route 9	11	4,110	
13	Sremska Mitrovica	Corridor X	10	6,436	22.5
14	Vreoci	Route 4	11	5,018	22.5
15	Beograd Surčin	Corridor X	5	3,410	22.5
16	Jagodina	Corridor X	8	6,339	22.5
17	Kragujevac	Corridor X	9	6,374	22.5
18	Kraljevo	Route 10	14	5,054	15
19	Pirot	Corridor X	6	3,604	20
20	Belgrade marshalling yard	Corridor X	79		22.5

Radinac railway station has the highest turnover of goods, exceeding 2.4 million tons in total in 2023. This station is located in the industrial area of Iron factory – Steel mill HBIS Group, who is also main operator of the Port of Smederevo, where the railway station Smederevo is located. The station is connected to Corridor X.

Railway station Pancevo Varoš is located near 3 corridors (IWW Rhine-Main-Danube, Corridor X and Route 4), near the industrial complex of Oil Industry of Serbia. The turnover of goods exceeds 1.17 million tons in total.

Railway station Bor is in the eastern part of Serbia, near the industrial complex of mining ZiJin. Main goods transshipped in this station is metal ore. Turnover of goods exceeds 0.8 million tons. Bor railway station is out of the indicative extension of TEN-T network to Western Balkans.

Railway station Svilajnac is in the industrial zone of Power plant and coal mining. Turnover of goods exceeds 0.7 million tons in total. The station is close and connected to railway Corridor X.

Niš marshalling yard is located near the industrial zone Popovac and the Nis airport. It is in the southern part of Serbia at the junction of Corridor X to North Macedonia and its branch to Bulgaria. Nis railway node has a turnover of goods that exceeds 0.66 million tons in total (Nis marshalling yard and Trupale stations together).

Niš Trupale is a railway station also belonging to the Niš railway node. Even smaller, equipped with 7 tracks, it records over 0.48 million tons transshipped in 2023.

Novi Sad marshalling yard is located on railway Corridor X, connected to the high-speed railway line from Belgrade to Subotica in the northern part of the country, and to the Port of Novi Sad. The station is in the industrial part of Novi Sad, which is the second largest city in Serbia. Novi Sad marshalling yard has a turnover

of goods exceeding 0.17 million tons annually. Due to the densely built area in its surroundings, it has limited possibilities for extension.

Subotica station is located on railway Corridor X, on the north of Serbia near the Hungarian border and serves as the border railway station. Because it's located in a densely built urban area, it also has very limited possibilities for expansion.

Šid railway station is located on railway Corridor X, in the western part of Serbia and it is the railway border crossing point between Serbia and Croatia. In 2023, the turnover of goods exceeded 0.14 million tons in total.

Požega railway station is located in the western part of Serbia, near cities Čačak, Užice and Požega, on the railway junction of the Core network Route 4 from Belgrade to Montenegro and direction to Čačak-Kraljevo-Kruševac connection to Corridor X. The station is currently used for transshipment of metal ore coming from Bor to Port of Bar in Montenegro. In 2023, the transshipment of goods exceeded 0.37 million tons in total.

Smederevo railway station is located near to the Port of Smederevo and connected to Corridor X, passing Radinac railway station. In 2023, the transshipment of goods exceeded 0.54 million tons in total.

Šabac railway station is located on Route 9, on the railway connection from Ruma on Corridor X to Bosnia and Herzegovina. The station is connected to the Port of Šabac and the chemistry industrial complex. In 2023, the transshipment of goods exceeded 0.44 million tons in total.

Sremska Mitrovica railway station is located on Corridor X, near the Croatian border. The station is connected to the Port of Leget and intermodal terminal. In 2023, the transshipment of goods exceeded 0.42 million tons in total.

Vreoci railway station is located on Route 4, in central Serbia, near Lazarevac, in the coal mining basin near a thermal power plant. The station is connected to the industrial complex. In 2023, the transshipment of goods exceeded 0.32 million tons in total.

Belgrade-Surčin station is located on Corridor X, near Belgrade airport and in proximity to Belgrade logistics zone, where a number of logistics centers and warehouses are located. It also serves as a connection for intermodal terminal Dobanovci. In 2023, the transshipment of goods exceeded 0.31 million tons in total.

Jagodina railway station is located on Corridor X, in central Serbia between Belgrade and Niš. Railway station is connected to industrial zone.

Kragujevac railway station is located on the connection of Corridor X to Kraljevo, Route 10. It is in an urban area, with limited possibility for expansion, serving as a connection to an important automotive industrial area.

Kraljevo railway station is located on Route 10, at the railway junction connecting Bosnia and Herzegovina to the west, Corridor X to the north and east, and Kosovo to the south. It is in an urban area, with limited possibility for expansion, serving as a connection to an important industrial area.

Pirot railway station is located on Corridor X branch to Sofia, near the Bulgarian border. It is in an urban area, with limited possibility for expansion, serving as a connection to an important industrial area, where a container terminal is planned to be constructed.

Belgrade marshaling yard is one of the biggest railway installations in Serbia. It is equipped with 79 tracks in total. Since the intermodal terminal ŽIT is located at the marshaling yard, more information on location and characteristics are provided in the section related to ŽIT terminal.

A more detailed description of the listed terminals and railway stations in Serbia is provided in Appendix III, while the characteristics of intermodal terminals are provided in Chapter 4.2 together with the map of all other terminals in the WB region.

Other multimodal freight transport facilities – River- Ports

IWW ports play a key role in multimodal transport in Serbia, especially in transport of bulk, liquid and general cargo. Ports on the Core and Comprehensive network in Serbia are Port of Belgrade, Port of Pančevo and Port of Novi Sad (Core ports), and Port of Smederevo, Port of Sremska Mitrovica and Port of Prahovo (Comprehensive ports). All ports located on the Core and Comprehensive network are connected to the railway network, except the Port of Belgrade which is planned to be moved to a new location.

River ports in Serbia, as mentioned, are mainly used for transshipment of bulk and liquid cargo, currently there is no transshipment of containerized cargo, although there are some plans and activities in this regard, especially in the Danube ports of Novi Sad and Pančevo.

The existing Belgrade port is located on the right bank of the Danube River, in the urban area of Belgrade. Due to expansion of the city urban area, the port is disconnected from the railway system. The Port of Belgrade has a possibility and equipment for container manipulation and can store 10,000 TEU on an annual basis. Total quantities handled in the Belgrade port in 2021 was 0.2 million tons. Since it is disconnected from railway and difficult to be accessed by road, Serbia has started activities for the preparation of technical documentation for the construction and development of a new Belgrade port. The location has not been decided yet.

The Port of Novi Sad is located at the entrance to the Danube-Tisa-Danube Canal. From 2019, the P&O Ports FZE consortium (DP World) became the owner of the port operator, a joint-stock company Luka Novi Sad AD. Port operations include cargo handling and storage of bulk cargo, general cargo, container and liquid cargo. In addition to DP World, there is another operator at the Port of Novi Sad – Oil Industry of Serbia (NIS JSC), which operates at the terminal for the transshipment of oil and derivates. Total quantity handled in the port in 2021 was 1.4 million tons, dropped to 0.96 million tons in 2023. Within the latest developments of the port, a vertical quay is completed, and container terminal is expected to be open in 2025.

The Port of Pancevo is located also on the Danube River, at the intersection with rail-road Corridor X and Route 4. There are four operators in the port, 2 specialized for grain and oil terminals respectively, and 2 operating multipurpose terminals. A privately owned intermodal terminal is located in the port. Total quantity handled in 2023 was over 1.6 million tons.

The Port of Smederevo is located in Smederevo on Danube River in central part of Serbia. Main port operator is HBIS GROUP Serbia Iron & Steel which handles transshipment for steel mill at both the old and new ports. Additionally, there are other operators in the Port of Smederevo, one operating multipurpose terminal and another operating oil and derivates terminal (NIS JSC). The port of Smederevo is with largest quantities handled, over 2.8 million tons in 2023.

The Port of Leget Sremska Mitrovica is in the eastern industrial zone of Sremska Mitrovica, on the left bank of the Sava River, 133 km away from the mouth of the Danube River in Belgrade. Intermodal terminal is located in the port. Total quantities handled in 2023 were above 0.7 million tons.

The Port of Prahovo is located on the Danube River, at the border of Serbia, Romania and Bulgaria. The international port is of great importance for the chemistry industry located in Prahovo. Total quantities handled in 2023 were above 1.07 million tons.

For all the ports mentioned in the above, more detailed information on port operators, technical characteristics, equipment and capacities is provided in Appendix III.

4.2 Overview of main multimodal terminals infrastructure at regional level

In order to understand the needs for the development of a network of multimodal freight terminals in the region, in addition to the description of the locations and characteristics of the terminals in each of the RPs, it is necessary to have an overview at the regional level. This allows us to get a broader picture of the terminals' relevant position in relation to the Core and Comprehensive Road, Railway and Waterborne transport network and to the identified international commodity flows.

Also, in order to see the broader regional picture, it is necessary to compare the characteristics of all identified intermodal terminals, in order to recognize the differences in capacities and technical characteristics.

Bearing in mind the requirements of the TEN-T Regulation in terms of vertical transshipment, the existing intermodal terminals and container terminals in ports are primarily presented in this subchapter, while the description of the characteristics of the railway stations per RP has been presented in the previous subchapter. Also, an overview map with the location of railway stations and ports in relation to the Core and Comprehensive network and the identified international flows is presented in this subchapter.

4.2.1 Existing intermodal terminals

Analyzing the existing multimodal and intermodal terminal infrastructure, the observations for each of the RPs have been presented in the previous subchapter, based on official available data, relevant studies and strategic documents.

The following map of Figure 65 presents the existing network of intermodal freight terminals in the region with current utilization, the terminals' position on Core and Comprehensive railway and road networks and their relation to the international freight flows. A comparative overview of the characteristics of this network is provided in Table 36.

From the data in the table, it is evident that all terminals are well connected to the road and rail network (except for the Container Terminal in the Port of Durres, which does not have a rail connection) and that most of the terminals do not use more than 50% of their capacities (except for the Container Terminal in the Port of Durres, which is close to reaching maximum capacity).

The container terminals in ports are distinguished by their equipment, considering that they have mobile cranes. Most of the other rail-road terminals have several shorter sidings and operations are based on reach stackers, where only a few terminals have equipment for transshipment of semi-trailers and swap bodies.

If the container terminals in the Ports of Durres and Bar are excluded, all terminals base their operations on railway container lines (container block trains) to seaports, except for the terminals in Niš and Indjija, which only recently established lines to Austria and Hungary, respectively.

Excluding the Port of Durres, which does not have a rail connection, most of the other terminals have a capacity of 25-50,000 TEU, i.e. an average of one to two trains per day. Only 2 terminals in Serbia have a larger capacity, Batajnica and Sremska Mitrovica, but currently both have lower utilization.

Finally, none of the terminals has electrified sidings, and shunting operations are supported by diesel locomotives or universal vehicles.

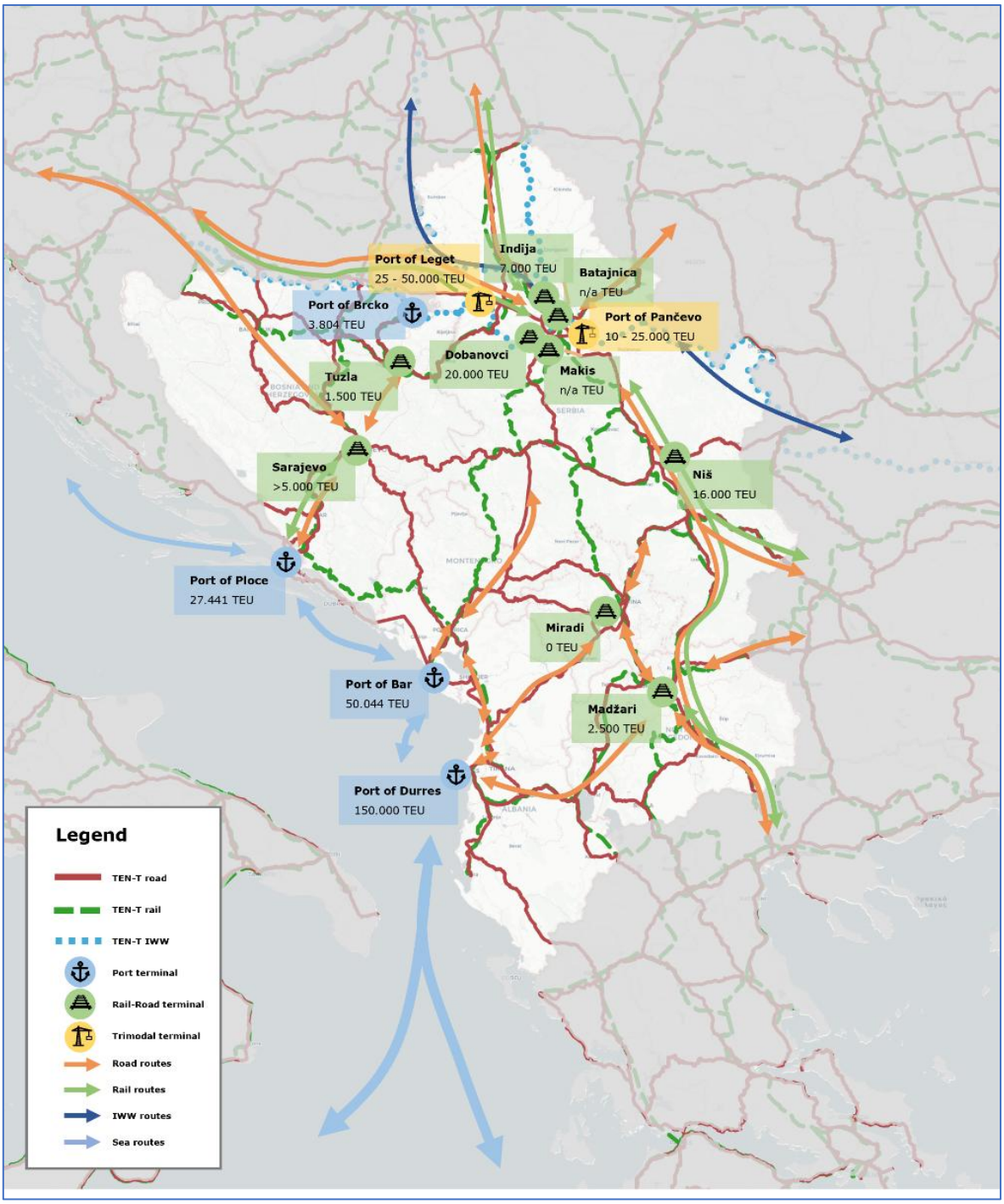

Figure 65 - Existing intermodal freight terminals network

Intermodal terminals are distributed along the Core network - main corridors in the vicinity of the biggest urban areas, matching the highest railway and road flows. The central – and mostly mountainous – part of the region (e.g. western Serbia, eastern Bosnia and Herzegovina and northern Montenegro) does not have any intermodal terminals (as well as no significant urban areas).

It is also visible that most of the active intermodal terminals with currently the highest transshipments are privately owned, while state owned terminals are yet to develop their markets.

Table 36 - Overview of existing intermodal terminals in the WB region

Intermodal terminal	Port of Durres	Port of Brčko Intermodal terminal	Container terminal Sarajevo	Tuzla intermodal terminal	Miradi[98]	Container terminal Port of Bar	Madžari Terminal (Blue Bell)	Intermodal terminal Batajnica	Container terminal Makiš	Intermodal Terminal Dobanovci	Inđija Intermodal Terminal	Intermodal terminal Niš (MBox)	Dry port terminal Port of Danube	Sremska Mitrovica - Port of Leget
Terminal operator	Mariner Adriatic	Port of Brčko	ŽFBH	Robni Terminal Tuzla	INFRAKOS	Port of Adria	Blue Bell Warehouse	Logistics Centers of Serbia	ŽIT (Railway Integral Transport)	Nelt Co.	Adria Rail (Metrans)	MBOX Terminals	Dry port terminals	RTC Luka Leget
Regional Partner	ALB	BIH	BIH	BIH	KOS	MNE	MKD	SRB	SRB	SRB	SRB	SRB	SRB	SRB
Location	Durres	Brčko	Sarajevo (freight station)	Bosanska Poljana (Tuzla)	Pristina	Bar	Skopje	Batajnica - Belgrade	Makiš - Belgrade	Dobanovci – Belgrade	Inđija	Popovac district (Niš)	Port of Pančevo	Port of Leget, Sr. Mitrovica
Owner	State owned	State owned	State owned	Private	State owned		Private	State owned	State owned	Nelt Co.	Private	Private	Private	Private
Starting year	n/a	2019		2022	2004	2013		2024	2016	2016	2023	2022	2020	2010
Terminal area (ha)	6.5	0.5			0.5	8	3	1.6	1.5	3	3.5	2.5	3.5	50
Link to Corridors	Corridor VIII	Sava River	Corridor Vc	Corridor Vc	Route 10	Route 4	Corridor X	Corridor X	Corridor X, Route 4	Corridor X	Corridor X	Corridor X, Xc	Corridor X, VII Route 4	Corridor X
Distance from road Corridor	1 km from SH2	6 km from city by-pass	10 km from A1	1 km from M4	5 km from R6	10 km from E-80	15 km from E-75 highway (3 km from A4)	6 km from Corridor X;	5 km from highway A1 – Corridor X	6 km from the E75 and E70 highways	5 km from the E75 highway	2 km from the E-75	At E-70, 30km from Corridor X	4 km from E-70 highway
Number of tracks	No railway connection	2 (4)	2	3-5[99]	4	2	3	3[100]	2	2	2	4	2	4+2
Length of tracks (m)	n/a	2,586 (total in port)	n/a	500		880 (2x440)		2,295		1,100	500	1,000	1,000	2,500
Link with station	n/a	Brčko	Sarajevo freight	Bosanska Poljana	Miradi	Bar	Madžari	Batajnica	Belgrade marsh. yard	Surčin	Inđija	Niš marsh. yard	Pančevo	Sr. Mitrovica
Container handling Equipment	3 portal cranes 6 reach stackers	3 portal cranes 1 reach stacker	n/a	2 reach stackers	1 reach stacker	Portal, gantry crane, reach stackers	2 reach stackers	1 reach stacker	3 reach stackers	3 reach stackers	2 reach stackers	3 reach stackers	2 reach stackers	Portal crane, 6 reach stackers
Type	Port terminal	Port terminal	Rail-Road	Rail-Road	Rail-Road	Port terminal	Rail-Road	Rail-Road	Rail-Road	Rail-Road	Rail-Road	Rail-Road	3-modal	3-modal
DG handling	Yes	n/a	No	No	n/a	n/a	n/a	Yes	n/a	n/a	n/a	Yes	n/a	n/a
Plug-ins for frigo containers	Yes	n/a	n/a	No	No	Yes	n/a	Yes	n/a	Yes	n/a	Yes	Yes	Yes
Swap bodies, semi -trailers handling	n/a	n/a	n/a	No	n/a	n/a	n/a	Yes	n/a	n/a	n/a	Yes	Yes	Yes
Realized annual transshipment volume (TEU)	138,477[101]	3,804	< 5,000	1,500	n/a	50,044[102]	2,500	n/a[103]	n/a[104]	30,000	7,000	16,000	10-25,000	25-50,000
Annual transshipment capacity (TEU)	180,000	n/a	n/a	10,000	25,000	100,000	50,000[105]	80,000	24,000	50,000[106]	40,000[107]	50,000	50,000	100,000
Open storage area (m²)	65,000	61,000	n/a	30,000	5,250	80,000	30,000	6,050	10,000	30,000	35,000	23,500	30,000	20,000
Storage space capacity (TEU)	7,000[108]	n/a	n/a	1,300	690	2,500	915	906	n/a	2,000	4,000	2,700	3,300	5,000
Quay length (m)	330	180	n/a	n/a	300	330	800	500	200	300	250	250	500	100
Max. permitted train length (m)	n/a	n/a	500	500	700	500	740	905		600	500	600	750+	750+
Max. permitted train gross weight (t)	n/a	n/a	2,000	2,000	1,500	n/a	2,000+	2,000+	2,000	2,000+	2,000	2,000+	2,000+	2,000
Shunting operations	n/a	n/a	Diesel (by ŽFBH)	Diesel (by ŽFBH)	Diesel locomotive	n/a	Diesel locomotive	Diesel locomotive	2 diesel locomotives	Diesel (by Serbia Cargo)	Diesel locomotive	Road-Rail vehicle dual mode	Diesel locomotive	3 diesel locomotives
Road's length inside the terminal (m)	3,000	n/a	n/a	n/a	n/a	n/a	1,000	n/a	n/a	n/a	n/a	1,200	n/a	1,000
Warehouse capacities	n/a	11,000 m²	n/a	3,000 m²	120 m²	~30,000 m²	6,500 m²	n/a	n/a	75,000 m²	n/a	planned	Port capacities available	20,000 m²
Specialized software (Terminal operating system)	NAVIS N4 Saas	n/a	n/a	DEPOT Master	Under development	n/a	In-house	Yes	In-house	In-house	by Metrans	NAVIS Octopy	In-house	Under develop.
Main lines and services	Gioia Tauro, Piraeus, Malta		Port of Ploče	In cooperation with shipping companies	North Macedonia, Thessaloniki		Port of Thessaloniki, Serbia, Kosovo	Planned – Budapest and seaports	Port of Rijeka	Ljubljana and Ports of Piraeus, Rijeka, Bar	Port of Rijeka, Budapest	Wels (Austria), Rijeka, Bar, Thessaloniki	Trieste	Port of Rijeka

[98] Temporarily out of operation, due to railway reconstruction, planned start in 2025
[99] Currently one siding in use
[100] 2 tracks for operation and one for shunting
[101] Data from 2020. Estimated annual transshipment in 2023 was 150,000 TEU (interview)
[102] Data from 2018
[103] Started operations in September 2024
[104] Started operations in October 2024
[105] Estimated by the Consultant
[106] Estimated by the Consultant
[107] Estimated by the Consultant
[108] According to interview, storage capacity is 1,550 TEU

4.2.2 Existing other multimodal nodes – Railway stations and ports

In addition to the infrastructure of intermodal terminals, the network of multimodal terminals is also important for the development of multimodality in the region. Based on the previously identified most important multimodal facilities, a comprehensive network of existing and potential multimodal terminals at WB regional level has been identified. The locations of the identified multimodal facilities are presented on the following map in Figure 66. This represents a comprehensive network of terminals, based on which the identification of the most important nodal points shall be examined, for establishing a core network of multimodal freight terminals in the region.

Figure 66 - Locations of terminals (bimodal and trimodal) recognized as needed for development of multimodality and of a comprehensive freight terminal network

5 Needs for multimodal transport development and considerations for the geographical distribution of multimodal freight terminals

5.1 Main industrial and urban areas per RP

Aiming to assess the needs for development of multimodal/intermodal terminals network, besides the flows and existing infrastructure and terminals analysed in previous chapters, it is necessary to identify and consider the position of the main industrial and urban areas as generators and attractors of flows of goods.

Given that the urban nodes on the indicative extension of the TEN-T network to the Western Balkans have not been defined, the largest urban areas by population are identified as locations of attraction of transport flows.

By analyzing the flows by commodities, as presented in Chapter 3, the most significant flows of certain commodity groups in import and export were identified. In terms of locations, it is essential to identify the key industrial zones, mining locations, logistics centers, and other production/ manufacturing facilities that generate flows of these significant product types.

Considering that data on the volumes of goods generated and attracted in industrial and urban areas are not available, the most important industrial areas have been identified per RP, based on other available data on significant companies, resources, type of industry and goods, and their locations as well.

In the following subchapters, the locations of the most significant industrial and urban areas are listed for each RP, while detailed descriptions of industries and population figures for urban areas are provided in Appendix III.

5.1.1 Albania

As shown in the detailed analysis presented in Appendix I, the largest volumes of exports from Albania are related to Crude oil; non-metallic products and minerals; metal ores and other mining products; metals and basic metal products excluding machinery, as well as chemical industry products. In imports, the highest volumes pertain to product groups such as petroleum derivatives; non-metallic products and minerals; basic metal products excluding machinery; food and beverages; agricultural products; coal and crude oil; wood and paper; and chemical products.

The most important mines in Albania are in the areas of Bulqiza, Puka and Fushe Arrez in northern and southeastern Albania. The oil industry is around Fier, while agriculture and food production are around Korca, Berat and Lushnja. Quarries are located to the greatest extent in the vicinity of Fier, Elbasan, Korce, Durres. The marble industry is in the areas around Tropoj and Shkoder. The metal industry is primarily located in Elbasan, while the textile industry is mainly in Tirana and Durres. Logistics activities are most intensive in the area of Tirana - Durres. There is a large number of industrial zones in Albania, the most important of which are:

- **Tirana**, the capital, is a significant industrial hub with industries focused on food processing, construction materials, textiles, and agriculture, but generally the industry in the area is diverse.
- **Durres**, a vital port city, serves as Albania's logistics center, enabling efficient import and export of goods. The key industries are logistics, food processing, textiles and construction materials.

- **Fier**, located in southwestern Albania, the oil industry is the backbone, producing and refining petroleum products for export. Both the energy and the construction materials industries are present as well.
- **Elbasan** has a historical focus on metal production, chemical industry and energy.
- **Vlore** area is characterized by various industries, where key industries are Oil and energy, logistics, construction, agriculture, fishing and food.

Concerning major urban areas, there are five cities with more than 100,000 inhabitants: Tirana, Durres, Vlore, Elbasan and Shkoder. Four of them (except Shkoder) coincide with the locations of the most important industrial areas mentioned above. Fier has a population of 85,000 inhabitants. Durres and Tirana cities together concentrate one third of the total population.

The locations of industrial areas in Albania in relation to the existing terminals and the main international freight flows are presented in the map of Figure 67.

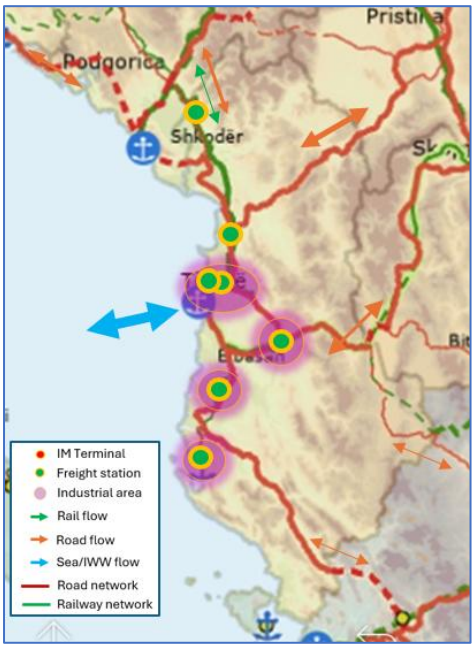

Figure 67 - Industrial areas, existing terminals and main international freight flows in Albania[109]

5.1.2 Bosnia and Herzegovina

As shown in the analysis presented in Appendix I, the largest volumes of exports from Bosnia and Herzegovina are related to several groups of goods: Metal ores, mining products; Chemicals, fibers, rubber and plastics; Coal and lignite; Basic metals and products; minerals; Wood and paper; Secondary raw materials; and Agriculture products. On the import side, Food and drinks; Agriculture products; Minerals; Petroleum products; Chemicals; and Basic metals and products are dominant in terms of quantities.

One of the most important industries in Bosnia and Herzegovina is the metal industry, primarily located in central and southern Bosnia and Herzegovina in Zenica and Mostar, while it is present to a lesser extent in Tuzla and other locations. The energy sector is also significant due to coal mines, which are in the vicinity of Tuzla (Kreka), Sarajevo (Kakanj), Ugljevik, and Gacko.

[109] Map Background source: TENTec Map Viewers - https://webgate.ec.europa.eu/tentec-maps

Bosnia and Herzegovina is known for its wood industry, especially in the vicinity of Banja Luka, Sarajevo and Teslić, while the textile industry is represented in the cities of Tešanj, Gračanica, Bugojno and Travnik. Agriculture and food production industry is spread all around the country, but Laktaši and Gradiška near Banja Luka, in the north, then Trebinje in the south, Bijeljina in the east, and Brčko in the northeast of Bosnia and Herzegovina can be mentioned as the most important locations.

Another important sector is the automotive industry. Significant centers where parts for the auto industry are produced are Sarajevo and Gradačac in the north, Goražde in the east and Tešanj in central Bosnia and Herzegovina.

Mining is extremely important in terms of transportation, and Bosnia and Herzegovina has several mines. Metal ores are exploited in the vicinity of Srebrenica in the east, Jajce in the central part, Posušjen in the south, as well as in the vicinity of Olovo and Vareš in the central part of Bosnia and Herzegovina. Quarries are in the northern part of Bosnia and Herzegovina.

The oil industry is found in the north, around Modriča, while the most important chemical industry is in the east, around Tuzla.

There are more than 100 industrial zones in Bosnia and Herzegovina, with several industrial zones in the vicinity of larger cities. The most important industrial areas are:

- **Sarajevo**, as the capital and central industrial hub. The key industries there are Automotive, metal processing, electronics, logistics and pharmaceuticals.
- In **Banja Luka** the key industries are wood processing, metal industry, construction materials, textiles, and food.
- **Zenica** is the center of the metal industry. In addition to metallurgy, the production of building materials also has a significant presence.
- **Tuzla** is known for its energy complex, chemical industry, mining and manufacturing.
- In **Mostar** the key industries are aluminum production, construction materials and food processing.
- In **Doboj** the key industries are metal processing, quarrying, automotive, agriculture, logistics and manufacturing.
- In **Bijeljina** the key sectors are agriculture, food processing, construction materials, textiles and automotive.
- In **Brčko** the key industries are Logistics, food processing and manufacturing.

Concerning major urban areas, there are six cities with more than 100,000 inhabitants: Sarajevo, Banja Luka, Tuzla, Zenica, Bijeljina and Mostar. All of them coincide with the locations of the most important industrial areas mentioned above. Brčko has a population above 80,000 inhabitants, and Doboj more than 70,000 inhabitants.

The locations of industrial areas in Bosnia and Herzegovina in relation to the existing terminals and the main international freight flows are presented in the map of Figure 68.

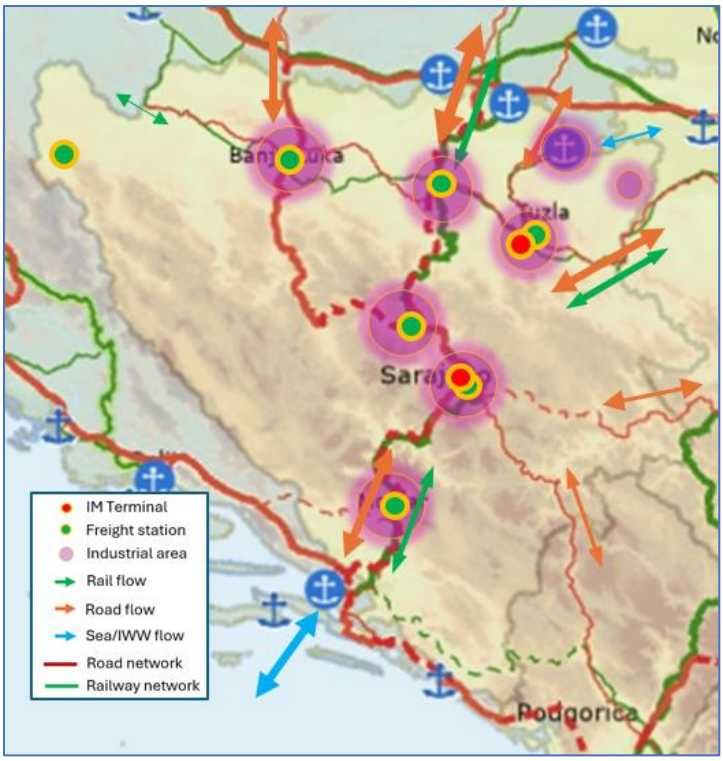

Figure 68 - Industrial areas, existing terminals and main international freight flows in Bosnia and Herzegovina[110]

5.1.3 Kosovo

As shown in the detailed analysis presented in Appendix I, the largest volumes of exports from Kosovo are related to the groups of goods Basic metals and products; Food and drinks; Coal and non-metallic products and minerals. On the import direction, the largest quantities are related to non-metallic products and minerals; Coke and petroleum products; Food and drinks; Basic metals; Chemicals; and Agriculture products.

The main mining activities in Kosovo are in the central part around Pristina, in the north around Mitrovica and in the west around Peje. The metal industry is connected to these mining areas and it is mainly located in Pristina and the surroundings of Mitrovica. Energy industry is most present in the vicinity of Pristina, as well as coal mining.

Agricultural production and food production industries are found in the areas around the cities of Peje, Pristina, Prizren and Ferizaj.

Logistics activities are to the greatest extent represented in Pristina.

The most important industrial zones in Kosovo are:

- **Pristina**, the capital, concentrates metal processing, energy, construction materials, manufacturing, and mining industries.
- **Mitrovica** is essential for Kosovo's mining sector.
- **Peje** specializes in food and beverage production, and wood processing.
- In **Ferizaj** the key industries are metal processing, furniture manufacturing, construction materials, food and beverage.

[110] Map Background source: TENTec Map Viewers - https://webgate.ec.europa.eu/tentec-maps

- **Prizren** area supports various industries, such as manufacturing, wood processing, food and beverage, construction materials and metal processing.

Concerning major urban areas, there are three cities with more than 100,000 inhabitants: Pristina, Prizren, and Ferizaj, which are locations of the most important industrial areas mentioned above. Peje has a population of around 96,000 inhabitants and Mitrovica around 85,000 inhabitants.

The locations of industrial areas in Kosovo in relation to the existing terminals and the main international freight flows are presented in the map in Figure 69.

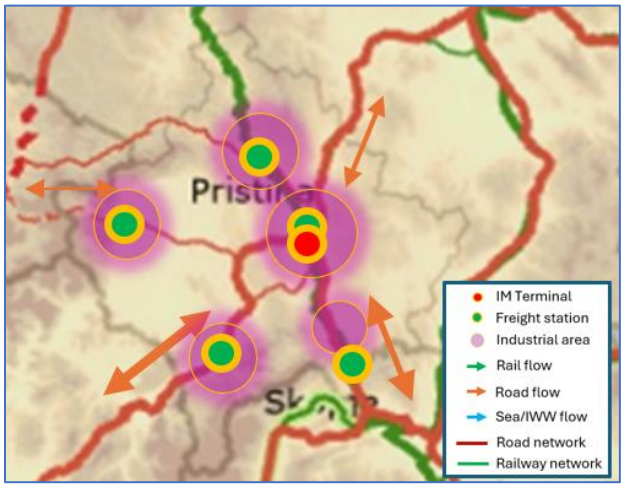

Figure 69 - Industrial areas, existing terminals and main international freight flows in Kosovo[111]

5.1.4 Montenegro

As shown in the detailed analysis presented in Appendix I, the largest volumes of exports from Montenegro are related to the groups of goods: Metal ores, mining products; Coal, lignite; and Wood and paper. And in the import direction, non-metallic products and minerals; food and drinks; and petroleum products are dominant.

The most important industrial sectors in Montenegro are mining and quarrying, primarily found around Nikšić and Podgorica (bauxite) in central part of Montenegro, and Pljevlja (coal lignite, zinc and lead) in the north. The energy sector facilities are mostly located near the coal mining, with power plant in Pljevlja. The metal industry is based in Nikšić (steel) and Podgorica (aluminum) as well as metal processing located mostly in central and south Montenegro. Agriculture and food production are in the central part of the country, along Zeta Plain, and in the south part of the country, where wine and olive oil are the most important food processing areas. Tourism is one of the most important business activities in Montenegro, with facilities located mostly on the south and south-west, on the coast of Adriatic Sea. The biggest logistics center is Port of Bar.

There are numerous industrial zones in Montenegro, such as Nikšić, Bar, Podgorica, Bijelo Polje and Pljevlja, then in smallest coastal cities Kotor, Budva, Herceg Novi and Tivat and in continental cities Cetinje, Danilovgrad, Mojkovac, Berane, Kolašin and other. Still, according to the research of publicly available information, the most important industrial areas in Montenegro are:

- **Podgorica**, the capital, leads in metal processing, food processing, beverage production and construction materials.
- In **Nikšić** key sectors are steel production, metal processing, mining, energy and beverages.

[111] Map Background source: TENTec Map Viewers - https://webgate.ec.europa.eu/tentec-maps

- **Bar** is Montenegro's main logistics center. Key industries include logistics, food processing and tourism.
- Key industrial sectors in **Bijelo Polje** are wood processing, food processing, textiles, manufacturing and trade.
- **Pljevlja** is essential for energy and coal mining, followed by wood processing and agriculture.

Concerning major urban areas, Podgorica concentrates almost one third of the country's population with the other populated cities being Nikšić and then Bar and Bijelo Polje and other less populated ones (Herceg Novi, Budva, etc.). Here, it should be taken into account specific of Montenegro coastal area as touristic destination, where significant quantities of construction materials, fuel, food and drinks and other products are transported.

The locations of industrial areas in Montenegro in relation to the existing terminals and the main international freight flows are presented in the map of Figure 70.

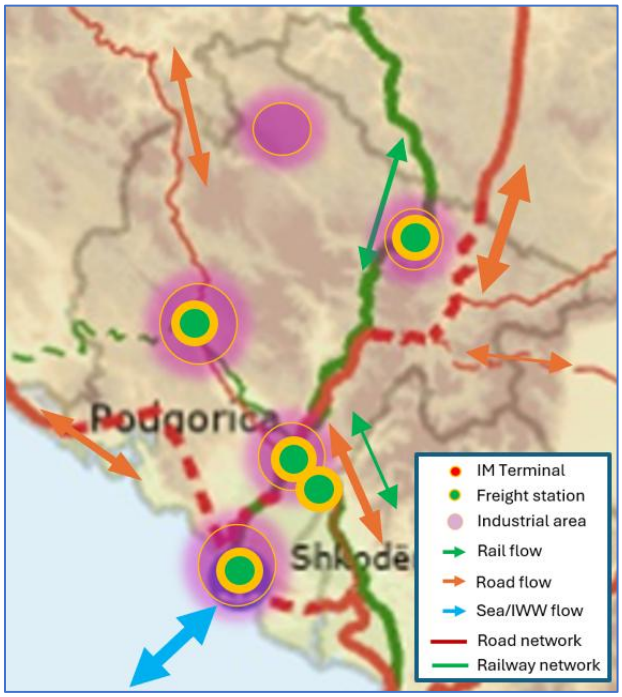

Figure 70 - Industrial areas, existing terminals and main international freight flows in Montenegro[112]

5.1.5 North Macedonia

As shown in the detailed analysis presented in Appendix I, the largest volumes of exports from North Macedonia are related to groups of goods: Basic metals and metal products except machinery; Metal ores and mining products; Non-metallic products and minerals; and Chemical products, fibers, rubber and plastics. On the import direction, the main quantities imported are Coal and crude oil; Coke and petroleum products; Basic metals; Food and drinks; and Non-metallic products and minerals.

Automotive industry is one of the largest economic contributors in North Macedonia. Over 50 companies operate in this sector, with the most significant manufacturing taking place in Bitola, Skopje, Tetovo, Prilep and Kavadarci.

[112] Map Background source: TENTec Map Viewers - https://webgate.ec.europa.eu/tentec-maps

Metal mining in North Macedonia is mostly found in eastern part of the country, where Sasa, Zletovo, Bichim and Borov Dol mines are located. Main coal mining is located near Bitola in the south of North Macedonia. Quarrying in North Macedonia is mostly found in its southwestern part, near Prilep and in the Skopje area.

The largest metal production sites in North Macedonia are in Skopje (Maksteel, Liberty) and near Dojran Lake (Dojran Steel) in the southeast, as well as in Kavadarci in the central-southern part of the country. The oil and derivatives industry are based mostly in Skopje, where also the chemical industry is based.

Agriculture and food production is mostly concentrated in the southern, southwestern and eastern parts of the country as well as along the Vardar valley in the central part of North Macedonia.

North Macedonia has established 14 Technological-Industrial Development Zones (TIDZs) to attract investments in various sectors. Currently, 8 of them are active, while the remaining are under development. Three of them are in Skopje, then in Tetovo in the north, Stip in the east, Prilep and Struga in the southwest, and Strumica in the southeast. In total, there are about 40 locations with active industry, agriculture, manufacturing and other business activities. Still, according to the research of publicly available information, the most important industrial areas in North Macedonia are:

- **Skopje**, the capital, is the largest industrial hub, focusing on automotive industry, electronics, metal processing, manufacturing, and logistics. Agriculture and food processing, beverages, chemistry and other industries are also present.
- In **Bitola area** the key sectors are energy, automotive, food processing, manufacturing, agriculture, quarrying and textile (area includes Zhabeni industrial zone).
- **Prilep** is a center for automotive industry, tobacco and food processing, beverages, metal processing and quarrying.
- **Veles-Kavadarci area** hosts metal processing, automotive, agriculture and food processing.
- In **Tetovo** the key industries are automotive, textile, metal processing, agriculture and food processing.
- **Strumica - Gevgelija wider area** has agriculture, food production, textile and automotive industry.
- In **Kumanovo** the key industries are metal processing, automotive, textile, agriculture and food processing.
- **Štip** hosts industries such as textile, automotive, metal processing, food processing, mining and various manufacturing.
- In **Kičevo** the key sectors are automotive industry and agriculture.

Concerning major urban areas, Skopje area is by far the largest (above half a million inhabitants), while the rest of the major agglomerations are in Bitola, Prilep, Kumanovo, Tetovo (above 50,000 inhabitants).

The locations of industrial areas in North Macedonia in relation to the existing terminals and the main international freight flows are presented in the map of Figure 71.

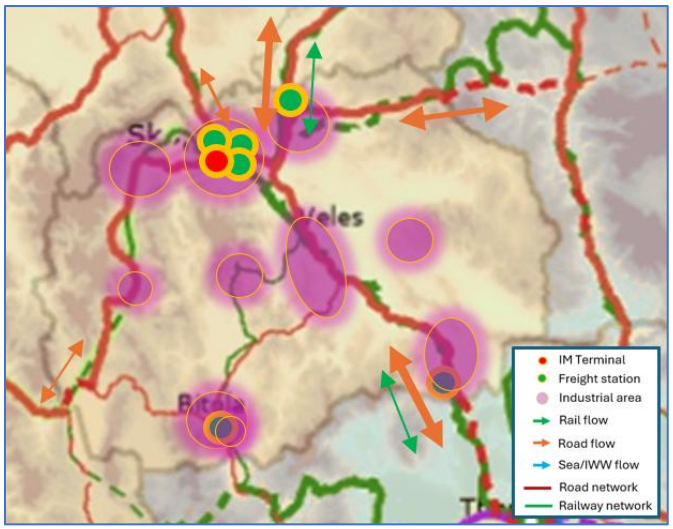

Figure 71 - Industrial areas, existing terminals and main international freight flows in North Macedonia[113]

5.1.6 Serbia

As shown in the detailed analysis presented in Appendix I, the largest volumes of exports from Serbia are related to groups of goods: Food and drinks; Agriculture; Chemicals, fibers, rubber and plastic; Metal ores and mining products; Basic metals and products; Non-metallic products and minerals; Wood and paper; Coke and petroleum products; and Machinery, equipment and electronics. On the import side, the most significant groups of goods are: Coal, lignite, crude oil & gas; Metal ores and mining products; Chemicals; Basic metals; Non-metallic products and minerals; Coke and petroleum products; Wood and paper; Food and drinks; Agriculture products; and Machinery and equipment.

Metal ores are mainly mined in eastern Serbia (Bor and Majdanpek), western Serbia (the Veliki Majdan and Rudnik mines), and southern Serbia (Lece, Grot, and Podvirovi). The largest lignite coal mines in Serbia are the Kolubara mining basin in central Serbia and Kostolac in the east. In addition, brown coal mines are in eastern Serbia, in Resavica.

Concerning metallurgy, the largest plants are in Smederevo (the Smederevo steel mill) in the central part of the country near Belgrade, copper production in Bor in eastern Serbia and copper mill Sevojno in western Serbia near Uzice.

The automotive industry main center is Kragujevac, while there are many other automotive manufacturing facilities around Novi Sad, Belgrade, and in the western and southeastern Serbia. Serbia also has a strong production of automobile tires in Kruševac, Pirot, Zrenjanin and the surroundings of Novi Sad and Belgrade.

Limestone for cement and construction materials is mined in Beočin, Popovac and Kosjerić, in the central, western and northern parts of Serbia. Clay mining and production of bricks and tiles is concentrated in the northern part of Serbia, as well as quartz sand for glass production. Marble and granite quarries are found in the regions of Aranđelovac (Venčac) and Vranje in central and south Serbia. Gravel and sand are mostly extracted from the bottom of the Danube River.

Oil refinery and petrochemical industry are in Pancevo, near Belgrade. Fertilizer production is in Šabac (west Serbia) and Prahovo (east Serbia). Pharmaceutical industry is mostly found in Belgrade area, while the biggest production of household chemicals is in Krusevac, in central Serbia.

[113] Map Background source: TENTec Map Viewers - https://webgate.ec.europa.eu/tentec-maps

Agriculture production in Serbia is most intensive in the northern part of the country in terms of cereals production, while other agriculture products and food processing is found in all parts of the country.

Serbia has 374 registered industrial zones and 15 free zones. The most important industrial areas in Serbia are:

- **Belgrade area** is the central hub for metal processing, automotive, oil and derivatives, chemistry, energy and mining, logistics, food and beverages production and various manufacturing.
- **Novi Sad**, the second-largest city, focuses on agriculture and food processing, automotive, oil industry, construction materials and various manufacturing.
- In **Niš** the key sectors are electronics, automotive, machinery, textiles and food and tobacco production.
- **Ruma-Sremska Mitrovica area** concentrates various industries, such as automotive, construction materials, metal processing, logistics, electronics, agriculture and food processing.
- **Kragujevac** is known as the home of automotive industry. It also has strong electronics production, wood processing, agriculture and food and construction materials industries.
- In **Subotica** the key sectors are automotive, agriculture and food processing, metal and machinery and textile industries.
- In **Zrenjanin** the key sectors are food processing, automotive and electrics.
- **Kruševac** is well known for chemistry production and beverages. It also hosts automotive industry, metal production and food processing.
- **Industrial area Čačak-Požega-Užice** (area around 3 cities in western Serbia) is the area where key industrial sectors are automotive, metal processing, food production and defense.
- In **Kraljevo** the key sectors are metal processing and automotive industry.
- In **Pirot** key sectors are automotive and food production.
- **Bor** is known as one of the biggest mining and metal processing locations.
- **Vreoci** is industrial zone in a coal mining basin, next to the biggest thermal power plant in Serbia.

Concerning major urban areas, there are more than 10 cities in Serbia with population higher than 100,000 inhabitants, including Belgrade with over 1.5 million population. Among them, all the cities presented above as the major industrial areas, except Pirot, Bor and Vreoci.

The locations of industrial areas in Serbia in relation to the existing terminals and the main international freight flows are presented in the map of Figure 72.

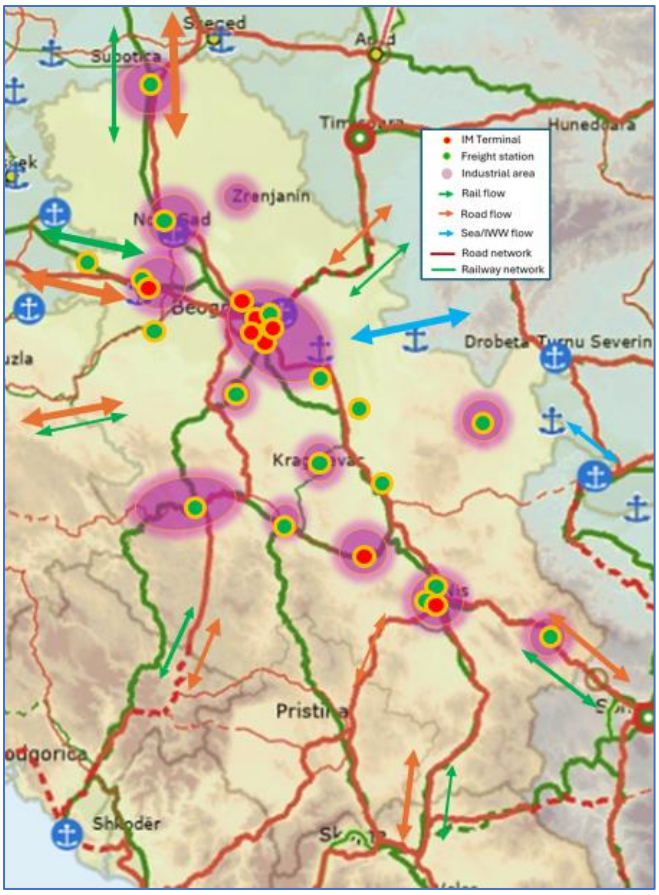

Figure 72 - Industrial areas, existing terminals and main international freight flows in Serbia[114]

5.2 Users' and providers' perspectives

As part of the research conducted in the framework of Task 2 on the level of users' satisfaction, aspects related to this Task of the assignment were also addressed.

An overview of the most important findings is given here below, while detailed analysis of the results of the online survey (in which 55 users participated) and the interviews conducted with the majority of terminals (7 terminals were interviewed in their entirety, basic data was provided by 5 terminals, while 5 terminals were not interviewed) can be found in **Appendix II**.

The most important ports to which intermodal transport lines are operated from land terminals in the region or reached directly by road transport are Rijeka, Durres, Bar, Koper, Thessaloniki, Ploče and Piraeus.

The majority of users consider that the offer of intermodal transport services is not sufficient.

Also, the majority of users and terminals operators (providers) believe that the establishment of terminals in border areas is not necessary, while those who believe that such a need exists highlight the locations of Gevgelija and Subotica.

Concerning the opinions collected within the survey and interviews regarding the causes and obstacles for the development of multimodal/ intermodal transport, practically all groups of users, as well as the terminal

[114] Map Background source: TENTec Map Viewers - https://webgate.ec.europa.eu/tentec-maps

operators themselves, stated the lack of railway infrastructure as the cause of the problem and one of the main obstacles preventing the development of multimodal/ intermodal transport in the region.

Some of the identified obstacles in further development relate to border crossings and complicated procedures or missing regulations, which primarily affect the transit times and the level of the provided intermodal transport services.

The consequences of the lack of infrastructure are reflected in non-competitive prices, long transit time, reliability, etc., which results in the fact that for approximately the same level of costs, i.e. price compared to road transport, multimodal/ intermodal transport offers a lower quality of service. This fact is stated as one of the main reasons for the decreasing or stagnating trend of railway transport in most of the RPs.

Bearing in mind the positive effects of multimodal/ intermodal transport on the environment, which most companies do not see as a direct financial benefit, defining multimodal/ intermodal transport as an activity of general public interest would enable the application of mechanisms for subsidizing transport operations, which would achieve better competitiveness and development of multimodal/ intermodal transport.

5.3 Identified infrastructural, regulatory and organizational needs and plans for multimodality development

The most significant needs and plans for the development of multimodality in the region are presented in the following paragraphs, taking into account the previously presented analysis of the characteristics of international commodity flows, the identified existing multimodal nodes and their characteristics, the location and importance of industrial areas and urban areas, information gathered from stakeholder consultations, current strategic documents and plans, as well as previous studies and projects.

From the perspective of the users, based on the survey and interviews conducted within Task 2, as well as on the basis of strategic documents and plans, the first group of needs is mainly directed towards the rehabilitation and reconstruction of the railway transport network, on which the conditions are currently such that they represent a significant obstacle to the development of multimodality along most of the sections of the network. Limitations on train speeds, limitations on the allowed length, mass and axle load of trains, which generally exist along most of the links of the Core and Comprehensive network, represent one of the most important obstacles to the development of multimodality. Solving these issues is a prerequisite for improvement of multimodal operations.

Although the development of the railway network is not the main topic of this assignment, it is important to highlight these needs, given that the rehabilitation and reconstruction of the railway network normally includes also the reconstruction and improvement of the railway stations located on the sections that are being reconstructed. Therefore, the rehabilitation of the parts of the network, where the railway stations identified in chapter 4 are located, is of particular importance for encouraging multimodal transport.

It should be noted here that when talking about the reconstruction of railway stations in terms of needs to function as multimodal freight terminals, it is primarily meant meeting the criteria and requirements defined in the TEN-T Regulation, i.e. the possibility of accepting trains 740 m long, at least 22.5 t axle load, as well as others conditions regarding control-command signaling, energy infrastructure, alternative fuels, equipment, and ICT systems for efficient terminal operations such as those that facilitate infrastructure capacity planning, transport operations, connections between the modes, and transshipment.

However, particularly for the infrastructural needs on the transport network for allowing multimodal operations, the emphasis is placed on existing and very specific bottlenecks and missing last-mile connections to multimodal freight terminals. These needs are reflected in the proposed Action Plan presented in Chapter 7.

The second group of identified needs, mostly indicated by users and providers of transport services, is the lack of support for the development of multimodal transport in the form of incentives or other financial benefits, including tax exemptions and benefits defined by Directive 92/106 EEC on combined transport. This group also includes other regulatory rules that have been recognized as being applied contrary to international rules and practice or lack of application in certain RPs.

The most important needs and plans are presented in the following subchapters per RP, while the needs in the field of digitalisation of processes and data exchange are elaborated in a separate report (Task 4). However, the relevant measures and proposed pilot applications are included in the proposed Action Plan presented in Chapter 7.

5.3.1 Albania

Albania is in a very specific situation when it comes to the development of multimodal transport. On the one hand, the port of Durres has the largest volume of container handling in the region (about 150,000 TEU), where the container terminal has no rail connection, and all containers are transported by road. On the other hand, the existing railway infrastructure is in very poor condition with missing connections. The northern part of the country has a railway connection to Montenegro, with an interruption at the bridge over the river Ishem, the southern part is connected from the junction Rhogozine - Fier - Vlore, where a private company has operations and a concession on the Fier-Vlore section, while to the east, Rhogozine - Elbasan - the border of North Macedonia, the railway is in poor condition and there is still no connection in North Macedonia to Kicevo. In addition to the above, the Durres-Tirana area, where the largest economic and urban activities are located, is practically not adequately connected to the rest of the railway network.

In order to improve the railway network, Albania is intensively working on construction and reconstruction, where there are currently the following projects:

- Tirana - Durres, ongoing construction works, expected to be completed in 2025
- Vore - Hani i Hotit Railway Line Modernization, expected to be completed in 2027
- Durres - Rrogozhine Railway Reconstruction, currently in preparation stage

Additionally, according to the information received during the consultation with stakeholders, there is plan for the development of the railway connection to Pristina, but the route has not been decided yet, since the ongoing Feasibility Study is currently in the Options Analysis stage.

The container terminal in the port of Durres will be moved to the new location of the port of Porto Romano, so actually the current works on Durres and Tirana line will serve passengers transport. As part of the construction of Porto Romano, it is also planned to connect the new port to the railway network.

Bearing in mind these plans, connecting the Port of Durres and Vlora with the hinterland in Albania and with Montenegro is achievable in this investment cycle, but the further development of multimodality based on connecting the port further with Kosovo and North Macedonia is still for the long-term horizon, when considering the need for construction of new railway connections through difficult, hilly and mountainous terrain.

The specificity of the development of multimodality in Albania, mentioned at the beginning, is reflected in the fact that on the routes and directions where rail connections are missing, Albania has the largest regional exchange with Kosovo and North Macedonia, which is carried out by road transport.

In this sense, within the framework defined by the TEN-T Regulation for the development of a network of multimodal terminals until 2030, Albania should focus on the first step, i.e. the provision of one terminal that will serve primarily domestic flows after the completion of the aforementioned planned railway projects, as well as the improvement of freight railway stations within the rehabilitation and reconstruction projects of the railway network.

As part of the planned modernization project of the Vore-Hani i Hotit section, it is necessary to remove the bottleneck on the bridge over the Ishem River, which was damaged during the 2019 earthquake.

The needs for last/first mile connections are practically described above, where currently the biggest issue is ensuring the railway connection to the freight port in Durres area, i.e. to connect the future port of Porto Romano by rail. According to the official plans, a development of the new port of Durres in Porto Romano, relocating the operations of the existing terminal and building the new Container Terminal and the new rail track into the new port in the 1st phase of development is envisaged.

Concerning legal reforms for the development of multimodality, it is necessary to harmonize the legislation with the Combined Transport Directive (92/106/EEC) and the eFTI Regulation 2020/1056. Albania has not implemented them yet.

The needs for digitalisation and exchange of data in a standardized digital form are a prerequisite for inclusion in modern transport chains and the international transport market. Terminals and rail transport operators do not have digital tools for interoperable data exchange, but activities to provide such tools are ongoing.

The needs that were defined during interviews and consultations also comprised the basic need for education of employees in the public and private sectors.

5.3.2 Bosnia and Herzegovina

Regarding railway infrastructure, both users of transport services and representatives of institutions from Bosnia and Herzegovina strongly emphasized the need for infrastructure improvement, which currently represents a basic obstacle for the development of multimodality. Although with the largest volume of railway transport in the region, the possibility of further significant increase in the volume of railway transport without rehabilitation and reconstruction of the railway network is not possible.

The most important routes that need to be rehabilitated relate to practically the entire Core and Comprehensive network in Bosnia and Herzegovina, especially Corridor Vc (Šamac - Doboj - Maglaj - Sarajevo - Mostar - towards Ploče) and Route 9a (Banja Luka - Doboj - Tuzla - Zvornik). Electrification of the network part on the east from Doboj is also needed (Doboj-Tuzla-Brcko-Banovici- Zvornik).

Recognized bottlenecks that currently prevent the realization and development of multimodal transport refer to points on the railway network that require interventions, that is, special projects even before entering into the reconstruction and overhaul of sections on the network. These are primarily the Ivan Tunnel, on the Sarajevo-Bradina section, i.e. Ivan-Bradina, as well as the recent (October 2024) damage to the railway near Jablanica, on the Konjic-Mostar section, which occurred due to floods and landslides and completely stopped traffic, thus completely cutting off the connection between Sarajevo and Mostar and the Port of Ploče.

The last mile connections that need to be improved primarily relate to the rehabilitation of the railway connection of the Port of Brčko, which increased the volume of transshipment of intermodal units, as well as

the rehabilitation of the connection between the railway stations Sarajevo Teretna and Rajlovac. This, especially bearing in mind that Sarajevo Teretna currently has the function of a terminal with a modest volume of intermodal transport operations, while the Rajlovac station is seen as the location of a future terminal. Also, it is necessary to improve the road connection of Sarajevo Teretna station, bearing in mind that access for trucks is currently very difficult.

When it comes to existing intermodal terminals, Sarajevo Teretna and Bosanska Poljana terminal (Robni Terminal Tuzla) are currently operating, both modestly equipped.

Bosanska Poljana terminal (Robni Terminal Tuzla) does not have its own industrial track, but uses the fifth track of the railway station Bosanska Poljana, and due to the closed railway market, it is unable to manipulate trains, even if it acquired its own locomotive, but it is bound to use the service of the Railways of the Federation of Bosnia and Herzegovina for the manipulation of trains.

The container terminal Sarajevo Teretna does not have adequate equipment for the efficient transshipment of containers, nor does it have sufficient organized space for storing a large number of containers.

Concerning regulatory obstacles to the development of intermodal transport in Bosnia and Herzegovina, one of the biggest is the treatment of containers by the Customs, where each container is treated as a commodity and not a transport unit. This causes obligation for temporary importation, deadlines set for leaving the country and limited possibility of changing the user of the container. The possibility of changing the mode of transport is also limited (if the container entered by road, it usually has to leave the territory by road as well).

During consultations with stakeholders and users, the issue of significant lack of rolling stock, especially wagons for transporting containers, was expressed.

During consultations and interviews, as well as through the results of the survey conducted in Task 2, the need for establishment of high number of multiple intermodal terminals was not recognized, but primarily the need for basic network of terminals with good connectivity and the establishment of regular lines from the southern part of Bosnia and Herzegovina to the Port of Ploče and the northern part to the Port of Rijeka. The need for better connectivity of the Port of Brčko, as well as connectivity with terminals in Serbia, was recognized, which coincides with the identified substantial flows of goods exchanged between Bosnia Herzegovina and Serbia.

One of the important needs recognized during the consultations is the lack of education, knowledge and awareness in the area of multimodal/intermodal transport at different levels, from operations to decision making, where stronger connections and cooperation is needed with universities, business associations and other stakeholders, not only in terms of projects but creating long-term capacities and professionals able to develop multimodality in the future.

Concerning legal reforms for the development of multimodality, it is necessary to harmonize the legislation with the Combined Transport Directive (92/106/EEC) and the eFTI Regulation 2020/1056. Bosnia and Herzegovina has not implemented them yet.

The needs for digitalisation and exchange of data in a standardized digital form are a prerequisite for inclusion in modern transport chains and the international transport market. Terminals and rail transport operators do not have digital tools for interoperable data exchange, but activities to provide such tools are ongoing.

5.3.3 Kosovo

Kosovo's railway infrastructure in terms of international connections is practically at a standstill. Precondition for the establishment of multimodality is the completion of the first phase of works on the reconstruction of the route Route 10, Pristina - North Macedonia, in order to enable the approach of trains from/to the Port of Thessaloniki. At the moment, containers from Thessaloniki arrive by train in Skopje, and then by road to Kosovo. Completion of phase 1 of Route 10 is foreseen in 2025.

The second and third phases envisage general rehabilitation of the lines from Pristina to Mitrovice and Leshak towards Serbia. This, along with overcoming other barriers, would allow trains from Kosovo to go directly to Central Europe in the future, without the need to go to Skopje and then back to the main axis of Corridor X.

Kosovo has only one intermodal terminal, "Miradi," in the vicinity of Pristina, which has been out of operation for some time due to railway network reconstruction works, and thus its operation will restart after the completion of phase 1 of the ongoing project in 2025. Terminal modernization and digitalisation of processes, terminal management and data exchange are needed.

In cooperation with Albania, Kosovo is also considering connecting Pristina and Port Durres by rail, where currently the largest number of containers are transported by road. This connection does not exist and construction is required on a difficult, hilly and mountainous terrain.

Based on the latest consultations with stakeholders and institutions from Kosovo, it is planned the construction of a new terminal (dry port) at Shkabaj, in wider Pristina area near power plant Kosova B, which is envisaged to play the role of a central multimodal hub and contribute to the development of multimodality in Kosovo. The terminal will be developed as part of the Durres – Pristina railway project, which is currently in the preparation stage.

Additionally, the improvement of railway stations and the creation of smaller multimodal terminals are planned in Peje and Prizren, even those railway stations are out of the Core and Comprehensive network.

Regulatory requirements have not been identified, except for the need for further implementation of the harmonized agreement on the Hani i Elezit as a joint railway border crossing with North Macedonia.

Concerning legal reforms for the development of multimodality, it is necessary to harmonize the legislation with the Combined Transport Directive (92/106/EEC) and the eFTI Regulation 2020/1056. Kosovo has not implemented them yet.

The needs for digitalisation and exchange of data in a standardized digital form are a prerequisite for inclusion in modern transport chains and the international transport market. Terminals and rail transport operators do not have digital tools for interoperable data exchange, but activities to provide such tools are ongoing.

5.3.4 Montenegro

In terms of railway infrastructure improvement needs, practically the entire part of Route 4 in Montenegro is subject to improvement, reconstruction and rehabilitation, where the need for the reconstruction of the section Lutovo - Bratonozici - Bioce, north of Podgorica, is prioritized, with anticipated completion by 2027.

Bearing in mind that the Port of Bar is the most important point of multimodal transport in Montenegro, which, apart from the goods exchange of Montenegro, is also an important gateway for goods from the region, especially Serbia, the improvement of the last mile connection of the Port of Bar is a significant need identified.

The container terminal in the Port of Bar is the only intermodal installation in the country. However, due to various difficulties of the Port of Adria - private operator of the container terminal, the Port of Bar is not achieving the expected volumes and growth in intermodal transport. This is also contributed by the poor condition of the railway and road infrastructure with a significantly increased transit time compared to other ports in the area.

Bar, Nikšić, Podgorica and Tuzi railway stations are the only 4 stations with registered transshipment of goods in 2023. An important is also the Bijelo Polje railway station, which is the border railway station with Serbia, established as a joint railway border crossing point. The other stations need to be reconstructed and equipped in order to attract multimodal flows.

During surveys and interviews with users (Task 2), the need for additional units in the railway rolling stock was expressed, in order to enable the fulfillment of transport requirements.

Considering the size of Montenegro, the short distance between Bar and Podgorica and the existing installations in the Port of Bar, improvement of Port of Bar facilities is a more viable solution than the construction of new terminal in Podgorica for additional manipulation of goods coming from Port of Bar.

Concerning legal reforms for the development of multimodality, it is necessary to harmonize the legislation with the Combined Transport Directive (92/106/EEC) and the eFTI Regulation 2020/1056. Montenegro has partially implemented the Combined transport Directive, while the eFTI Regulation has not been implemented yet.

The needs for digitalisation and exchange of data in a standardized digital form are a prerequisite for inclusion in modern transport chains and the international transport market. Terminals and rail transport operators do not have digital tools for interoperable data exchange, but activities to provide such tools are ongoing.

5.3.5 North Macedonia

North Macedonia is characterized by railway transit flows that have been declining in recent years, while the volume of multimodal/intermodal transport in the international exchange of goods is very small. The reason for this situation is primarily the poor condition of the railway infrastructure.

Considering the total bilateral and transit flows, the priority for improving the level of railway infrastructure is on Corridor X, while in terms of establishing connections where there are currently missing links, priority is the completion of Corridor VIII.

Rehabilitation of the railway infrastructure is needed along the entire length of Corridor X from the border with Serbia in the north to the border with Greece in the south of North Macedonia, for which the works completion is envisaged in 2030. As part of the rehabilitation of the network, it is necessary to reconstruct the existing railway stations, in accordance with the requirements of the TEN-T regulation and the possibilities of specific station locations. This primarily refers to the possibility of receiving trains with a length of at least 740

m, an axle load of 22.5 t, interoperability, signaling and control and ICT systems. The details of the improvement and reconstruction of railway stations and the possibilities in terms of available space and land use are the subject of feasibility studies and concrete reconstruction projects.

In the same context, the identified need for improvement of rolling stock is extremely important, where with the current capacities of the rolling stock on the existing infrastructure it is not possible to meet all transport requirements due to the insufficient number of locomotives.

When it comes to the infrastructure on Corridor X, especially considering the strong transit flows and trade of North Macedonia with Greece and Serbia, the Tabanovce and Gevgelija railway stations, which work as border stations to Serbia and Greece, are of particular importance. According to the bilateral agreement between North Macedonia and Serbia, the Tabanovce railway station is foreseen as a joint railway border crossing. In this sense, its reconstruction and improvement are needed, in order to perform this function, which would speed up traffic and increase the efficiency of the border crossing operations. On the other hand, the Gevgelija railway station has very limited possibilities for expansion. Although the location of Gevgelija was identified by the users as potential for the creation of a terminal, there are very limited possibilities for realization.

As a result of reduced railway capacities (due to the poor condition of the infrastructure and reduced speeds, lack of rolling stock, capacity of border crossings and other obstacles), as well as similar difficulties in Serbia, it was identified that container flows from Greek ports, especially Piraeus, to Central Europe and Western Balkans, partially move to the ports of the North Adriatic, from where the containers practically return to the Western Balkans or continue to Central Europe.

When it comes to the railway infrastructure on Corridor VIII, 3 phases of rehabilitation of the section from Kumanovo (connection with Corridor X) to Bulgaria are planned. Rehabilitation of Eastern Part of Rail Corridor VIII-PHASE I-Section Kumanovo-Beljakovce; Rail Corridor VIII-PHASE 2-Section Beljakovce-Kriva Palanka; Rail Corridor VIII-PHASE 3-Section Kriva Palanka - Deve Bair, border with Bulgaria. The missing connection from Kicevo to Albania requires the construction of a new railway line in two phases, from Kicevo to Struga in the first phase, and then from Struga to the border with Albania.

When it comes to intermodal terminals, there is currently only one private terminal connected to the Madzari railway station in Skopje (Blue Bell Warehouse), while operations in all the other facilities listed in earlier studies (Skopje Tovarna, Fersped, Karaorman, Sigma Logistics) have been abandoned.

The IPA 1 project in 2013 determined the location of Trubarevo Marshaling yard as the most favorable for the construction of a new intermodal terminal in Skopje. However, during the realization of the IPA 2 project on the feasibility and detailed design of the terminal, it was found that the considered options analysed face different limitations, also due to the changes caused by the urban development of the concerned municipality. Currently, 4 options are being considered, and if the connection is not possible, the project for the new intermodal terminal will have to change its location.

In any case, as a location with the largest industrial activities, the largest number of inhabitants, a developed railway junction at the intersection of Corridor X and Corridor VIII, Skopje or the city's surroundings is the most important location where an intermodal terminal needs to be developed.

Finally, it is noted that the Bitola railway station currently has the largest volume of transshipment in North Macedonia, which, along with the potential of the new Zhabeni and Prilep industrial zones and the proximity to the Greek border, it might be examined to be developed as a multimodal hub in the future.

Concerning legal reforms for the development of multimodality, it is necessary to harmonize the legislation with the Combined Transport Directive (92/106/EEC) and the eFTI Regulation 2020/1056. North Macedonia has not implemented them yet.

The needs for digitalisation and exchange of data in a standardized digital form are a prerequisite for inclusion in modern transport chains and the international transport market. Terminals and rail transport operators do not have digital tools for interoperable data exchange, but activities to provide such tools are ongoing.

5.3.6 Serbia

In terms of railway infrastructure development, Serbia is in a cycle of investment and rehabilitation of the railway network. Although the strategic plans for the development of the railway infrastructure are out of the scope of this assignment, the most significant projects contributing to multimodality development are presented below.

Several secure projects are ongoing or underway for the development and rehabilitation of the railway network on Corridor X:

- Construction of high-speed line Belgrade - Novi Sad - Subotica - Hungarian border (ongoing, expected completion in 2024)
- Rehabilitation and electrification of the Niš - Dimitrovgrad line (ongoing, expected completion in 2026)
- Reconstruction of the line Niš - Brestovac towards North Macedonia (ongoing, expected completion in 2025)
- Reconstruction and modernization of line Belgrade - Niš, including Stalac-Djunis project (funding secured, planned start in 2025 and completion in 2028)
- Reconstruction of Belgrade – Croatian Border, including border station Šid
- Reconstruction of Bresovac – Preševo (continuation of rehabilitation of line Niš – Brestovac – Preševo – border of North Macedonia)

In addition to Corridor X, reconstruction is also planned on other important routes that enable the development of multimodality:

- Route 4, from Belgrade to the border of Montenegro
- Route 9, from Ruma (connection to Corridor X) – Šabac – border of Bosnia and Herzegovina

Within the needs for railway infrastructure improvement, reconstruction and modernization of railway stations should be included, according to requirements of TEN-T Regulation, which should serve multimodal transport flows, once the reconstruction is completed.

In terms of last mile connectivity, identified need is the provision of better connection of Port of Pančevo to Corridor X, through the resolving of Belgrade railway node and completion of Belgrade by-pass, by construction of new rail-road bridge over the Danube River, enabling the connection with the Pancevo industrial zone and further towards Romania, and moving the railway traffic from Belgrade underground tunnels. This is also a bottleneck for multimodal transport on Route 4, from the Romanian border through the Belgrade railway node.

The Port of Belgrade is completely disconnected from the railway system due to construction of a new urban area (Belgrade waterfront) and port is planned to be moved; still, the new location has not been decided.

The last mile railway connection of Port of Prahovo is also in poor condition. This line also includes the railway station Bor, near one of the biggest industrial centers in Serbia. Even out of the Core and Comprehensive

network, this railway connection should be considered as important, since it connects the Comprehensive Port of Prahovo and two industrial centers.

Regarding bottlenecks, one of the priorities for improving railway operations and multimodality is border crossing Šid at the Croatian border, on one of the most loaded railway direction on Corridor X, connecting Serbia with North Adriatic ports (Rijeka, Koper, Trieste), where most of the intermodal services are established.

In regulatory terms, even Serbia is the only RP with introduced financial measures for development of combined and intermodal transport, providing grants to private and public companies since 2018, incentives for intermodal/multimodal operations or tax exemptions in accordance with Directive 92/106 EEC on combined transport, were not applied. For the development of multimodality, it is necessary to harmonize the legislation with the Combined Transport Directive (92/106/EEC) and the eFTI Regulation 2020/1056. Serbia has partially implemented Combined Transport Directive, while the eFTI Regulation has not been implemented yet.

The eight intermodal terminals that exist in Serbia are distributed exclusively along Corridor X. During the interviews and survey conducted in Task 2, a large number of providers expressed the opinion that Serbia does not need additional capacities and new terminals, but only a greater number of intermodal services and better connectivity of the existing ones. Contrary, a number of users expressed the need for terminals in the border zones with Hungary and Croatia, that is, in the locations of Subotica and Šid. Needs for terminal development in Western Serbia have not been identified.

The needs for digitalisation and exchange of data in a standardized digital form are a prerequisite for inclusion in modern transport chains and the international transport market. Several private terminals implemented digital solutions for data exchange and terminal management, while other terminals and rail transport operators do not have digital tools for interoperable data exchange. Still, activities to provide such tools are ongoing.

5.4 Multimodal capacities and needs

Analyzing the data on international commodity flows, trends and existing capacities of existing multimodal nodes, as presented in previous chapters, and with a partial reserve due to missing data for some RPs, several facts stand out:

- The volume of rail transport in all RPs in the region is decreasing, with the decrease in absolute amounts being less pronounced, especially in the case of Bosnia and Herzegovina. On the other hand, the decline in the share of rail transport in the total volume of goods is very pronounced, despite the fact that in all RPs a significant increase in goods exchange is recorded after 2020. This suggests that the increased trade in goods in the last few years has been taken over by road transport, which is also confirmed by statistical data that have been presented in Chapter 3.
- As a potential for recovery and growth of rail transport within the forecasts presented in Chapter 3, the highest volumes of quantities in rail transport reached in the past years was considered, which indicates that the capacities of the existing multimodal terminals (i.e. railway freight stations) are currently underutilized. In intermodal transport, except for the Container terminal in the port of Durres, it is clear from Table 37 that the current capacities of the existing intermodal terminals are also underutilized. This is also confirmed by reviewing the available data on transshipment in railway stations and their capacities in terms of number of tracks, where in most stations the traffic is at the level of one train per day or with less frequency. There are a few exceptions in Serbia (Radinac,

Pančevo Varoš and Bor), but these stations are mostly in the function of large industrial complexes (iron works, oil industry, mine) and cannot be treated as terminals fully open to the market. A similar assumption can be made for the railway stations of Zenica and Kreka in Bosnia and Herzegovina, but data were not available to justify such a statement.

- Analyzing the data on commodities and modal split in international trade flows, it is noticeable that significant quantities of goods, especially bulk cargoes that are suitable for rail transport, are actually transported by road transport.
- Comparing data from official statistical sources on the modal share of total transported quantities, with data from the Customs administrations, it is evident that significant volumes of goods are transported by rail in domestic transport for covering needs in partially closed systems (energy and heavy industry) or in transit from seaports (especially containers), which indicates insufficient use of railways in long-distance international transport of goods that start or end on the territory of the RPs, i.e. the Western Balkans. Figures 36 and 37 reveal the dominance of road transport, especially in intra-regional trade (94% road share).

In addition to the infrastructural, regulatory and organizational needs presented in the previous sub-chapter, the solution which should ensure the capacities of the railway network and greater competitiveness of railway transport, it is necessary to define a core network of rail-road terminals, with the aim of establishing together with the existing sea- and river- ports the multimodal capacities that will attract commodity flows.

It is an undoubted fact that multimodality in some RPs is developing, but it is still far from the real potentials in most RPs.

If the analysis of capacity needs was based only on comparing the capacity of freight railway stations and the actual transshipment volumes, excluding the nodes that primarily serve closed systems, it would be concluded that additional capacities are generally not needed. However, considering the need to slow down the growth of road transport, i.e. to increase the participation of multimodal transport in the total modal share and thereby achieve economic, ecological and social benefits, it is extremely important to combine the investments in railway network improvements with creation of new multimodal terminals and improve the capacities of existing ones, by forming a core network of multimodal terminals which will attract commodity flows and provide competitive alternative to road freight transport.

Bearing in mind the generally underutilized capacities of freight railway stations open for all users and the figures proving the low utilization of intermodal terminals (except for the Container terminal in Port of Durres), the main motivation for establishing a multimodal freight terminal network by introducing new functional multimodal terminals, e.g. rail-road terminals, is primarily the need for modal shift from road transport to sustainable multimodal solutions.

5.5 Multi-criteria spatial analysis for potential locations for the development of a multimodal freight terminals network in the region

Having in mind paragraph 2 of Article 36 of TEN-T Regulation (EU) 2024/1679, and given the unavailability of data on domestic flows, specifically flows generated by urban and industrial centers, the simplified needs assessment and analysis emerged through spatial consideration of the main transport network in relation to industrial zones and urban centers.

The definition of the terminal network is based on the existing multimodal nodes identified in Chapter 4. Spatial aspects have been considered in a multi-criteria analysis for each identified location, by taking into account: the most important industrial and urban zones; the alignment of the Core and Comprehensive network and the position of each terminal on it; the international flows of goods and the busiest corridors; and the potential for shift from road, expressed through the intensity of road freight traffic in the vicinity of existing nodes. In this way, the identification of the most crucial locations was carried out, showing where the greatest needs for rail-road terminals are.

In order not to result in a reduction of the volume of work at the terminals, the multimodal/ intermodal terminals network should be developed in phases. If the development of many terminals with a smaller scope of work begins at the same time, there may be a negative effect, and even the cessation of a terminal's operation. This especially applies in the case of Serbia, where many terminals have opened over a short period of time, but most of them have a relatively small volume of work.

With this analysis, the existing terminals were ranked in relation to the needs defined by the specific criteria, which enables the definition of a proposal for the development of a network of multimodal terminals in 2 phases, where - in accordance with the TEN-T regulation provisions and funding requirements – it is reasonable to propose a small number of terminals in the region and in each RP for the first phase until 2030, which would primarily initiate multimodal flows. In the next phase until 2040 or later, it is realistic to expect the continuation of the development of the network of multimodal freight terminals through the reassessment of the multimodal flows and needs for such terminals.

The multi-criteria spatial analysis includes three components with the following criteria:

- Component of identified current status
    - Significance from the aspect of RPs' strategic documents and identified user needs
    - Significance of the location in relation to the market, i.e. international transport flows
- Flows generation and attraction component
    - Size of the urban area
    - Proximity to the most important industrial zones
    - Position in relation to the Core and Comprehensive network
- Modal shift potential component
    - Intensity of road freight traffic

The criteria were applied linearly, without weighing factors, in relative ratios of values for each RP independently, so that the factors of the size of cities and economies in general would not prevail. For each criterion, ratings from 1 to 5 were calculated or estimated, where the rating was performed based on the data and information presented in the previous chapters, as follows:

- The criterion of importance from the aspect of RPs' strategic documents and plans and the identified needs of users was applied by assigning a score of 1 if the location was not mentioned, 3 if the location was defined in strategies and plans, or if it was mentioned as needed by the users, and 5 if it was location defined by strategies and users' needs.
- The criterion of the importance of the location in relation to the market, that is, the transport flows, was applied by using the values of the sum of the quantities of goods for the provisional assignment of trade flows on Corridors from Chapter 3. For each location, it was determined which Corridor(s) it belongs to, and then the value of the sum of quantities on those Corridors was put in relation to the total quantities for each RP. Scores were assigned from 1 to 5 for each 20% cluster.

- The urban zone size criterion was applied in such a way that a score of 5 was assigned to the largest city in each of the RPs. Then, the size of all other cities in one RP was compared to the largest city and that percentage was assigned to clusters of 20% each (0-20% grade 1, 20-40% grade 2, 40-60% grade 3, 60-80% grade 4 and from 80-100% grade 5).
- The criterion of proximity to the most important urban and industrial zones was applied by assigning grade 5 to the location of the terminal located up to 5 km away from the industrial or urban center, grade 4 for 5-10 km distance, grade 3 for 10 to 25 km, grade 4 for 25 to 50 km distance and grade 1 for over 50 km distance.
- The criterion of the importance of the location on the railway transport network was applied by assigning a score of 5 if the location is at the intersection of the Core Network Corridors and includes a connection with IWW or Maritime ports (or in the close hinterland of the port), a score of 4 was assigned if the location is at an intersection of the Core Network Corridor and the Comprehensive network, a score of 3 was assigned if the location is along the Core network, a score of 2 if it is along the Comprehensive network and a score of 1 if it is outside the Core and Comprehensive network.
- The criterion related to the potential for modal shift, defined through the intensity of road freight traffic in the vicinity of the location, is defined through the AADT of freight vehicles near the terminal location. It was applied by assigning a score of 5 to the location with the highest AADT, and then the AADT in the vicinity of the other locations was compared to the highest AADT. The percentages calculated in this way are classified into 5 clusters with a step of 20%, the same as in the case of the criterion of the size of the urban zone (for each cluster of 20% a score from 1 to 5 is assigned).

The visualization of the basis for the applied criteria is shown in Figure 73, without the freight AADT, which could not be displayed visually due to the lack of all data and technical limitations.

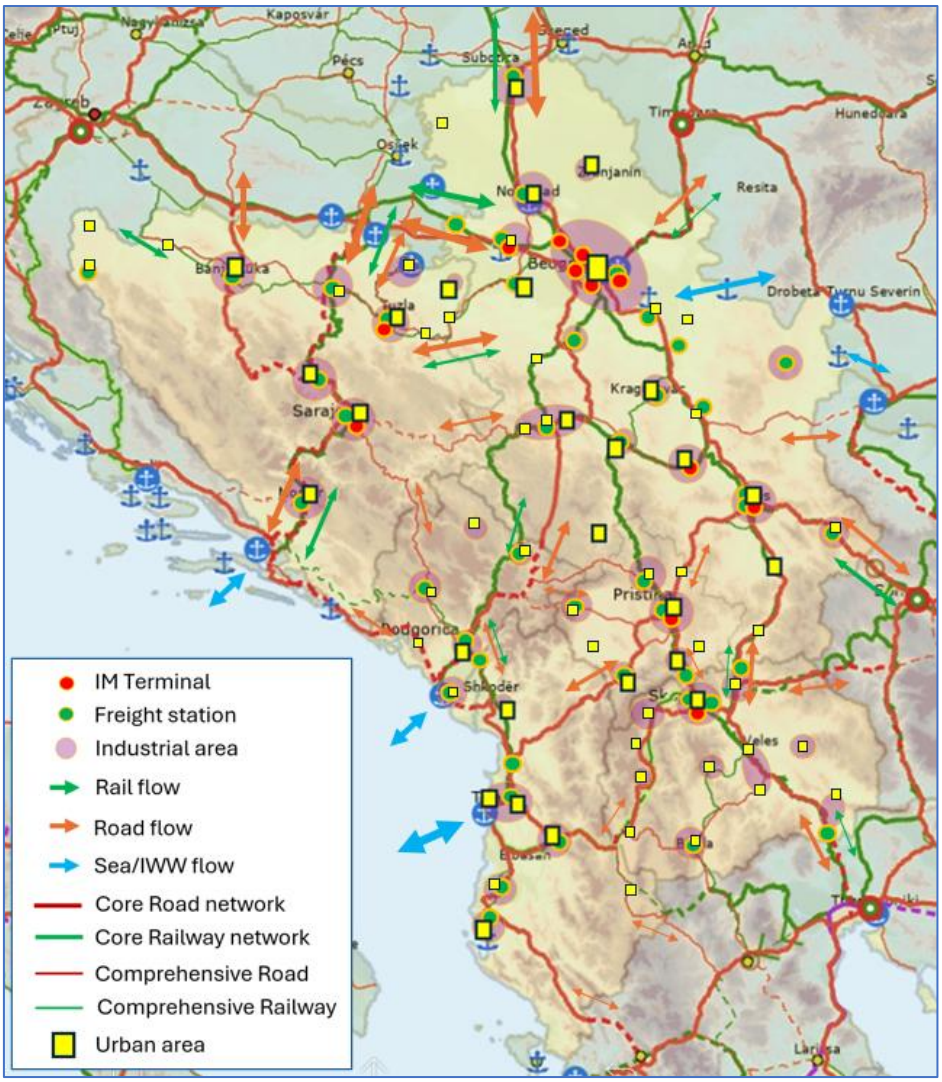

Figure 73 - Visualization of the applied criteria in relation to the existing terminals and transport network

Bearing in mind that there is a certain number of multimodal nodes identified in chapter 4 that are practically located at the same location, these terminals have been grouped by location and such terminals have the same ratings.

In relation to the final sum of grades, the terminals (i.e. the locations) are grouped into 3 groups – priority categories. A small number of terminals is included in the first priority group, which represents the development of terminals network in the first phase, until 2030. The second group represents the second phase of development of the terminal network in the future, while the third group represents the terminals and their locations for which development would require further increase in the intensity of flows, i.e. an additional analysis for justification for implementation in the future.

Bearing in mind that the analysis was done by grading the relative ratio of values within the RP for the criteria of the size of the urban zone, the importance of international flows on the corridors, as well as the potential for shift to road, the results of the analysis are presented for each RP separately.

5.5.1 Albania

The results of the spatial multicriteria analysis for Albania are presented in Table 37.

Table 37 - Results of Multi-criteria spatial analysis for Albania

			Attraction/generation			Identified status		Modal shift potential		
Terminal	RP	Location	Proximity to industrial area	Size of urban area	Position on the network	User/provider importance or RP importance	Significance of internat. flows	Potential for shift from road (AADT)	Sum	Location priority
Durres port	ALB	Tirana-Durres	5	2	5	5	5	4	26	1
Tirana	ALB		5	5	4	3		5	27	
Durres freight	ALB		5	2	5	1		4	22	
Vlore port	ALB	Vlore	5	2	2	3	1	2	15	2
Vlore Freight	ALB		5		2	3		2	15	
Milot	ALB	Milot	2	1	3	3	2	5	16	2
Fier	ALB	Fier	5	1	2	3	1	5	17	2
Elbasan	ALB	Elbasan	5	2	2	3	1	3	16	2
Bajze	ALB	Bajze	2	1	3	1	1	2	10	3

The results of the analysis show that the location with the highest priority is the Tirana-Durres area, where in the first phase an intermodal/multimodal terminal should be foreseen. In the second phase, the locations of the Port of Vlore hinterland, Fier, Elbasan and Milot are to be considered, and Bajze in the long term.

5.5.2 Bosnia and Herzegovina

The results of the spatial multicriteria analysis for Bosnia and Herzegovina are presented in Table 38.

Table 38 - Results of Multi-criteria spatial analysis for Bosnia and Herzegovina

			Attraction/generation			Identified status		Modal shift potential		
Terminal	RP	Location	Proximity to industrial area	Size of urban area	Position on the network	User/provider importance or RP importance	Significance of internat. flows	Potential for shift from road (AADT)	Sum	Location priority
Sarajevo CT	BIH	Sarajevo	5	5	3	5	3	5	26	1
Rajlovac	BIH		5		3	5		5	26	
Banja Luka	BIH	Banja Luka	5	4	2	3	3	5	22	2
Tuzla Ter	BIH	Tuzla	5	3	2	3	5	2	20	2
B. Poljana	BIH		4		2	3		4	21	
Kreka	BIH		5		2	3		2	20	
Doboj	BIH	Doboj	5	2	4	5	5	3	24	1
Mostar	BIH	Mostar	5	2	3	5	4	4	23	2
Zenica	BIH	Zenica	5	3	3	3	4	3	21	2
Bihać	BIH	Bihać	5	2	2	1	1	3.4	14.4	3
Šamac port	BIH	Šamac	3	1	2	3	2	1	12	3
Brčko port	BIH	Brčko	5	2	2	5	2	3.4	19.4	2

The results of the analysis show that the locations with the highest priority are Sarajevo and Doboj, where in the first phase an intermodal/multimodal terminal should be foreseen. The locations Banja Luka, Tuzla, Mostar, Zenica and Brčko are to be considered in the second phase of terminals development. Bihać and Šamac did not rank high in this analysis and thus they can be considered in the longer term.

5.5.3 Kosovo

The results of the spatial multicriteria analysis for Kosovo are presented in Table 39.

Table 39 - Results of Multi-criteria spatial analysis for Kosovo

			Attraction/generation			Identified status		Modal shift potential		
Terminal	RP	Location	Proximity to industrial area	Size of urban area	Position on the network	User/provider importance or RP importance	Significance of internat. flows	Potential for shift from road (AADT)	Sum	Location priority
Miradi	KOS	Pristina	5	5	4	5	5	5	29	**1**
Pristina	KOS		5		4	5		5	29	
Mitrovice	KOS	Mitrovice	5	3	3	1	1	2	15	**3**
Hani i Elezit	KOS	Hani i Elezit	2	1	3	1	2	2	11	**3**
Peje	KOS	Peje	5	3	1	3	1	1	14	**3**
Prizren	KOS	Prizren	4	5	1	3	3	4	20	**2**

The results of the analysis show that the location with the highest priority is Pristina, where in the first phase an intermodal/multimodal terminal should be foreseen. In the second phase, it seems that only Prizren is to be considered. However, bearing in mind that Peje and Prizren are not located on the Core and Comprehensive railway network, Prizren may be considered as potential location for the second phase after construction of new railway line from Pristina to Durres and if that section is included in indicative extension to Western Balkan. The locations Mitrovice, Hani i Elezit and Peje did not rank high in this analysis, and their inclusion in the plans for development of open terminals can be considered in the longer term.

5.5.4 Montenegro

The results of the spatial multicriteria analysis for Montenegro are presented in Table 40.

Table 40 - Results of Multi-criteria spatial analysis for Montenegro

			Attraction/generation			Identified status		Modal shift potential		
Terminal	RP	Location	Proximity to industrial area	Size of urban area	Position on the network	User/provider importance or RP importance	Significance of internat. flows	Potential for shift from road (AADT)	Sum	Location priority
Bar	MNE	Bar	5	2	5	5	5	5	27	**1**
Podgorica	MNE	Podgorica	5	5	4	3	5	4	26	**1**
Bijelo Polje	MNE	Bijelo Polje	5	2	3	1	3	3	17	**3**
Tuzi	MNE	Tuzi	4	5	3	3	1	5	21	**2**
Nikšić	MNE	Nikšić	5	2	2	5	2	5	21	**2**

The results of the analysis show that the locations with the highest priority are Podgorica and Bar. Considering the proximity of Podgorica and Bar, theoretically it can be treated as Podgorica-Bar area. However, since the Bar is logistics hub of Montenegro, development of the terminal in or adjacent to Port of Bar is recommended. In the second phase, the locations of Podgorica and Nikšić may be considered. Since Tuzi is very close to Podgorica, this location is questionable as a separate potential terminal location. Finally, the location of Bijelo Polje did not gain importance in this analysis, and its inclusion in the plans for development of open terminal should be considered in the long-term.

5.5.5 North Macedonia

The results of the spatial multicriteria analysis for North Macedonia are presented in Table 41.

Table 41 - Results of Multi-criteria spatial analysis for North Macedonia

			Attraction/generation			Identified status		Modal shift potential		
Terminal	RP	Location	Proximity to industrial area	Size of urban area	Position on the network	User/provider importance or RP importance	Significance of internat. flows	Potential for shift from road (AADT)	Sum	Location priority
Madzari	MKD	Skopje	5	5	4	3	5	4	26	**1**
Trubarevo	MKD		5		4	5		4	28	
Tovarna	MKD		5		4	5		4	28	
Skopje Jug	MKD		5		4	3		4	26	
Bitola	MKD	Bitola	5	1	2	3	4	3	18	**2**
Tabanovce	MKD	Tabanovce	4	1	3	1	2	4	15	**3**
Gevgelija	MKD	Gevgelija	4	1	3	3	2	4	17	**3**

The results of the analysis show that the location with the highest priority is Skopje, where in the first phase an intermodal/multimodal terminal should be foreseen. In the second phase, Bitola should be considered as a potential terminal location. Tabanovce and Gevgelija as locations of border stations, did not rank high in this analysis, and their inclusion in the plans for development of terminals can be considered in the longer term.

5.5.6 Serbia

The results of the spatial multicriteria analysis for Serbia are presented in Table 42.

The results of the analysis show that the locations with the highest priority are Belgrade, Novi Sad and Niš, where in the first phase development of existing or construction of new intermodal/multimodal terminals should be foreseen. In the second phase, a number of locations with priority 2 should be considered locations for further development. Also, there are locations with priority 3 (Bor, Svilajnac, Požega, Prahovo, Šabac, Vreoci, Šid, Kraljevo), which are quite important for multimodality and where significant quantities, especially of bulk cargo are transshipped, but did not gain importance in this analysis, and their inclusion in the plans for development of open terminals can be considered in the long-term.

Table 42 - Results of Multi-criteria spatial analysis for Serbia

			Attraction/generation			Identified status		Modal shift potential		
Terminal	RP	Location	Proximity to industrial area	Size of urban area	Position on the network	User/provider importance or RP importance	Significance of internat. flows	Potential for shift from road (AADT)	Sum	Location priority
ŽIT	SRB	Belgrade	5	5	5	5	5	5	30	1
Batajnica	SRB		5		5	5		5	30	
Dobanovci	SRB		5		5	5		5	30	
Surcin	SRB		5		5	5		5	30	
Belgrade m. yard	SRB		5		5	5		5	30	
Pančevo T	SRB	Pancevo	5	1	5	3	3	4	21	2
Pančevo V	SRB		5		5	3		4	21	
Nis m.y.	SRB	Niš	5	2	4	5	4	3	23	1
Nis Term.	SRB		5		4	5		3	23	
Trupale	SRB		5		4	5		3	23	
IMT S. Mitrovica	SRB	Sremska Mitrovica	5	1	3	3	2	2	16	2
S. Mitrovica	SRB		5		3	3		3	17	
Indjija	SRB	Inđija	3	1	4	3	3	4	18	2
Kruševac	SRB	Kruševac	5	1	4	3	3	2	18	2
Port of Novi Sad	SRB	Novi Sad	5	2	5	5	3	4	24	1
Novi Sad mar. yard	SRB		5		5	5		4	24	
Port of Smederevo	SRB	Smederevo	5	1	5	3	3	4	21	2
Radinac	SRB		5		5	3		4	21	
Smederevo	SRB		5		5	3		4	21	
Bor	SRB	Bor	5	1	1	3	2	3.5[115]	15.5	3
Svilajnac	SRB	Svilajnac	5	1	3	1	2	4	16	3
Pozega	SRB	Pozega	5	1	3	3	1	2	15	3
Port of Prahovo	SRB	Prahovo	4	1	1	3	1	3.5	13.5	3
Sabac	SRB	Sabac	5	1	2	1	2	3.5	14.5	3
Port of Šabac	SRB	Šabac	5	1	2	1	2	3.5	14.5	3
Vreoci	SRB	Vreoci	5	1	3	1	1	3	14	3
Sid	SRB	Sid	1	1	3	3	2	2	12	3
Jagodina	SRB	Jagodina	5	1	3	3	1	4	17	2
Subotica	SRB	Subotica	5	1	3	5	3	3	20	2
Kragujevac	SRB	Kragujevac	5	1	3	3	2	4	18	2
Kraljevo	SRB	Kraljevo	5	1	4	1	1	2	14	3
Pirot	SRB	Pirot	5	1	3	5	1	2	17	2

[115] In case of lack of data on AADT of heavy-goods vehicles, the average grade is considered

6 List of potential Rail-Road Terminals

6.1 TEN-T requirements

6.1.1 Requirements for the identification of Rail-Road Terminals

The new TEN-T Regulation includes the definition of European Transport Corridors (ETC) that shall replace the Rail Freight Corridors and Core Network Corridors in order to ensure coherence in the network development and enable synergies between the infrastructure and operational aspects of the network as well as to avoid duplication of work (e.g., for investment plans preparation).

According to the provisions of the new TEN-T Regulation, Section 6, Article 36, within three years after the entry into force of this Regulation, the Member States shall conduct a market and prospective analysis on multimodal freight terminals in their territory and assess the need for new multimodal freight terminals or additional transshipment capacity in existing terminals.

Regarding the rail-road terminals to be defined and included-listed in Annexes I and II of the new TEN-T Regulation, as per the revised guidelines provisions these terminals should at least meet one of the following conditions:

- its annual transshipment of freight exceeds, for non-bulk cargo 800,000 tons or, for bulk cargo, 0.1% of the corresponding total annual cargo volume handled in all maritime ports of the EU.
- it is the main rail-road terminal designated by a MS for a NUTS 2 region, where there is no RRT complying with the above criterion.
- it is proposed to be added by the MS in the framework of an Action Plan for the development of a multimodal freight terminal network, based on the market and prospective analysis.

Specifically regarding the consideration of the NUTS 2 criterion of the TEN-T Regulation, namely if the annual transshipment criterion is not satisfied (does not exceed 800,000 tons of non-bulk and 2,100,000 tons of bulk cargo), it is noted that if a Rail-Road Terminal is not proposed to be added by a MS (in this case by a Regional Partner) after conducting a market and prospective analysis on multimodal freight terminals, then it would lead to:

- 1 to 3 RRTs in Albania, maximum one in each NUTS 2 region[116]:
  - North Albania (consisting of the NUTS 3 regions of Diber, Durres, Kukes, Lezhe, Shkoder)
  - Central Albania (consisting of the NUTS 3 regions of Elbasan, Tirana)
  - Southern Albania (consisting of the NUTS 3 regions of Berat, Fier, Gjirokaster, Korce, Vlore)
- Maximum 2 to 3 RRTs in Bosnia and Herzegovina (for which NUTS regions have not been defined yet, but it is assumed to be maximum three NUTS 2 level regions, due to the size of Bosnia and Herzegovina as well as considering the geography, population and the entities of Bosnia and Herzegovina).
- Most likely 1 RRT in Kosovo (for which NUTS regions have not been defined yet, but it is assumed to be one at RP level due to Kosovo's size)
- 1 RRT in Montenegro

[116] The official names of NUTS 2 regions in Albania are used.

- 1 RRT in North Macedonia
- 1 to 4 RRTs in Serbia, maximum one in each NUTS 2 region [117]:
    - City of Belgrade NUTS 2 region
    - Autonomous Province of Vojvodina NUTS 2 region
    - Region Sumadjia and Western Serbia NUTS 2 region
    - Region Southern and Eastern Serbia NUTS 2 region

Therefore, the NUTS 2 criterion should be used only when the annual transshipment threshold is not reached for a candidate/ potential location, and after the assessment of the current capacity of existing multimodal terminals and the definition of its needs for additional capacities based on the analysis. Additionally, it should be underlined that the TEN-T Regulation clearly states that the inclusion of a terminal in the list of RRTs using the NUTS 2 criterion is possible only if no other RRT complies with the annual transshipment criterion in the same NUTS 2 region.

6.1.2 General, infrastructural and other requirements

The multimodal freight terminals of the trans-European transport network are terminals that are open to all operators and users in a non-discriminatory way. In these terms, the terminals which are part of the closed transport systems or operated and used for own account of a limited number of economic entities, cannot be treated as terminals which are part of the trans-European transport network.

In terms of infrastructure, the basic requirements for multimodal freight terminals, i.e. including rail-road terminals, according to Article 38, are:

- must be connected to at least two transport modes (i.e. railway and road network in case of RRTs)
- be able to accommodate 740 m long trains without manipulation or in case this is not economically viable, to ensure this requirement by 2040
- must be equipped with at least one recharging station for heavy-duty vehicles, inside the terminal or at a maximum distance of 3 km, as well as, if applicable, one refueling station used for hydrogen powered heavy-duty vehicles by the end of 2030
- equipped, by the end of 2030, with cranes, conveyors or other transshipment devices to move freight between different transport modes and for the positioning and storage of freight; especially in the case of vertical transshipment equipped with enough transshipment capacity able to handle containers, swap bodies or semi-trailers
- controlled access and dedicated areas such as gate area, intermediate buffer and waiting area, transshipment area and driving or loading lanes
- equipped, by end the of 2030, with digital tools to facilitate:
    - efficient terminal operations (photogates, terminal operation system, driver digital check-in/check-out, cameras or other sensors on transshipment equipment, railside camera systems, etc.)
    - provision of information flows within a terminal and between the transport modes and information exchange with interoperable systems

Exemptions from the requirements are possible only in in duly justified cases, when the terminal is located in spatially restricted area, in case of negative result of socio-economic cost-benefit analysis, or significant negative impacts on environment or biodiversity. Exemptions shall be approved by the Commission.

[117] The official names of NUTS 2 regions in Serbia are used.

Other priorities-requirements are related to extension and electrification of departure and arrival sidings, adjustments to signaling systems and improvements to the track configuration, removing the main technical and administrative barriers to multimodal transport, including the implementation of eFTI.

6.2 List of proposed Rail-Road Terminals per RP

Bearing in mind that in the region of the Western Balkans there is no terminal that meets all the requirements defined by the TEN-T regulation in terms of infrastructural characteristics and equipment and at the same time satisfies the first criterion in terms of the sufficient existing volume of the quantities of goods processed, a list of proposed terminals has been defined, taking into account the second criterion with the limitation of the number of terminals at the level of statistical-administrative territorial units (NUTS 2) where applicable, as well as the priorities of the locations defined on the basis of the conducted market and prospective analysis.

This analysis, which was presented in the previous chapters, included various analyses of the traffic flows and the markets in the region and in each RP, of available information on existing and potential or planned multimodal terminals, but also needs identification and consultations with RPs and users and a multi-criteria analysis considering spatial aspects, all aiming to ensure adequate distribution of multimodal freight terminals with adequate transshipment capacity, by identifying the most important multimodal terminals and locations for the region and for each RP.

The results of the analysis presented in chapter 5.5 in certain cases show an identical score for existing terminals which are concentrated around specific locations. Also, in some cases the analysis is conducted for existing terminals at locations where new terminals are already planned or projects are ongoing. In order to determine the specific proposals of the terminal (exact micro-location), the characteristics of each terminal described in 4.2, planning documents and ongoing projects described in chapter 5.3, as well as information obtained in direct consultations with the RPs, have been taken into account.

Having said that, the following table presents a list of proposed rail-road terminals for inclusion in the TEN-T relevant Annex II of Regulation (EU) 2024/1679 on Union guidelines for the development of the trans-European transport network.

Table 43 - List of proposed Rail-Road Terminals in the WB region

	Location	RP	Terminal proposed
1	Durres-Tirana area	ALB	New terminal in or adjacent to the new port (Porto Romano)
2	Sarajevo	BIH	New terminal in Rajlovac
3	Doboj	BIH	Exact location TBD - New terminal
4	Pristina	KOS	New terminal in Shkabaj
5	Bar	MNE	Exact location TBD - Port of Bar/Bar railway station
6	Skopje	MKD	Exact location TBD based on ongoing project results (Trubarevo marshalling yard) or new location in Skopje area to be proposed
7	Belgrade	SRB	Exact location TBD - Batajnica intermodal terminal or ZIT
8	Niš	SRB	Exact location TBD- Existing intermodal terminal or new location
9	Novi Sad	SRB	Exact location TBD - New terminal adjacent to Port of Novi Sad

All proposed locations are on the extension of the TEN-T Core Network, with implementation horizon by 2030. The rationale for the definition of the locations included in this list is the following:

For the location of Durres-Tirana, based on the current plans and consultations, a new terminal is proposed as part of the future port of Porto Romano or adjacent to it, which is destined to concentrate all freight operations from the Port of Durres, and according to the plans it will ensure railway connection, which is currently missing in Durres Port.

For the Sarajevo location, based on consultations and limited possibilities for expanding the existing freight terminal, a new intermodal terminal at the Rajlovac railway station is proposed.

The new intermodal terminal proposed for Doboj is based on analysis, and particularly its location on Corridor Vc and on the crossroad to the west to Banja Luka and to the east to Tuzla and Port of Brcko.

For the location of Pristina, based on consultations with RP and current plans, a new intermodal terminal is proposed to be developed in Shkabaj, which is the location already defined as part of the Pristina – Durres railway line project, which is underway.

For the Bar location, it is proposed to upgrade the existing installations with the development of a new terminal in the Port of Bar, which functions as the gateway of the country and the region, or to develop such a terminal nearby, possibly at the Bar railway freight station.

For the Skopje location, based on the results of the ongoing project, it will be decided whether it is possible to realize an intermodal terminal at the Trubarevo marshalling yard or whether a new location in Skopje area will have to be found.

For the Belgrade location, considering the current plans, the possibility for expansion and the investments that have been made already, it is proposed to continue with the 2nd phase of the Batajnica project by increasing the capacities and services of the recently constructed intermodal terminal. However, it remains to be decided whether this second phase with further development of Batajnica terminal and logistics center will follow or if the ŽIT terminal at Belgrade marshalling yard will be developed instead.

For the Niš location, it is proposed to examine the options for expansion of existing private terminal together with development of Niš marshalling yard and Nis airport into joint logistics facility, where existing intermodal terminal would be defined as rail-road terminal. Provided that the possibility of increasing the capacity of the existing private terminal through a Public-Private Partnership or any other model of blended investment is limited by Article 58 of the TEN-T Regulation, according to which the Action Plan for the development of the multimodal freight terminals network should not create obligation to the private sector to invest in terminals, if such joint investment is not possible, a new location is to be defined.

The situation is similar with the location of Novi Sad, where already the private port operator is working on the development of its own terminal (port container terminal), and – provided that the development of multimodal freight terminals network should not create obligation to the private sector to invest – the option is to develop the new terminal within the Novi Sad marshalling yard or new location in Novi Sad area.

It should be noted that the size of this list corresponds to the capacities necessary for the next period, taking also into account the current conditions of the network (i.e. the missing railway links on the connections Skopje – Durres and Tirana – Pristina), as well as the fact that the proposed terminals will be eligible for EU funding for their implementation, which in extension requires the additional justification and documentation of the respective investments. Therefore, the NUTS 2 criterion has not been used to the maximum (in the case of Albania and Serbia) and densification of the terminals network should be sought for the longer time horizon once the projects for development of terminals at additional locations (e.g. in Central or Southern Albania or

Western Serbia) become mature [118]. Furthermore, investments at specific locations like near the Port of Novi Sad and near Nis, during the project preparation stage should be particularly analysed in terms of financial viability, provided the presence of private terminals in their vicinity.

The proposed multimodal freight terminal network in the WB region is indicatively presented in the map of Figure 74.

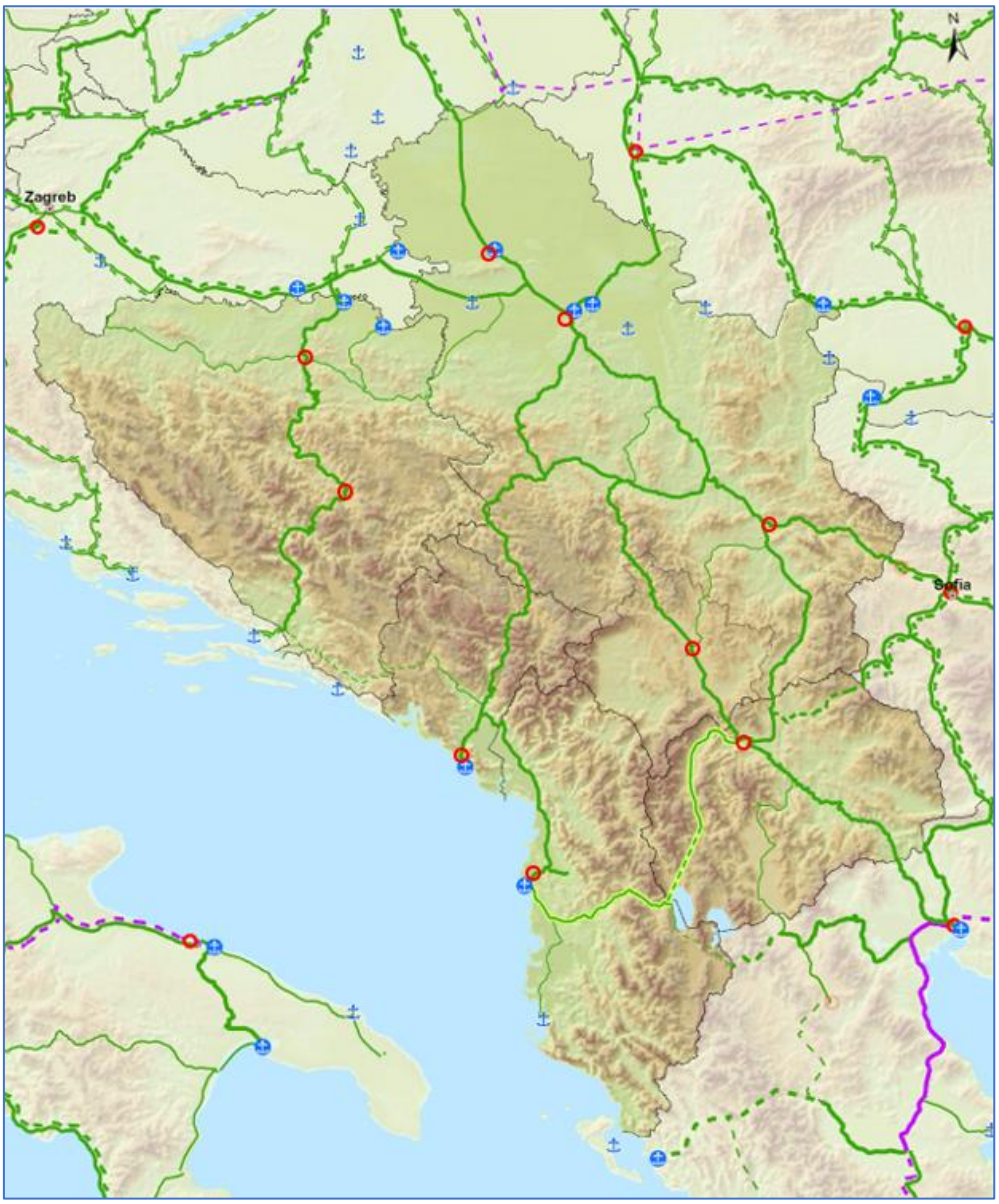

Figure 74 - Locations of proposed Rail-Road terminals in WB region[119]

[118] According to Article 58 (1f) of the TEN-T Regulation, amendments to Annex II of the Regulation for inclusion or exclusion of a RRT are possible through adoption of delegated acts by the Commission, as it also applies for adapting the Annex IV (indicative maps of extension of transport infrastructure networks of neighboring countries), based on high level agreements on transport infrastructure networks between the Union and the neighboring countries concerned Article 58 (5).

[119] Background map source: Transport Community TEN-T freight rail network

7 Action plan for the development of a Multimodal Freight Terminals network and last-mile connectivity in the WB region

While the definitions of sustainable transport may vary and may promote any particular dimension such as the environment (green transport), society (inclusive transport) or the economy (efficient and competitive transport), sustainable transport involves among others, the availability of safe, socially acceptable, universally accessible, reliable, affordable, fuel-efficient, environmentally friendly, low-carbon, and climate-resilient, transport infrastructure services and operations [120].

Integrated multimodal transport and transit systems that use at the maximum level the comparative advantages of each mode of transport are crucial to achieve sustainable transport. Sustainable multimodal transport systems can successfully connect countries while supporting economic growth, social development and global trade.

According to EU data, a quarter of greenhouse gas emission comes from transport and has a further increasing trend [121]. The European Green Deal therefore calls for a 90% reduction in greenhouse gas emissions from transport in order for the Union to become a climate-neutral economy by 2050. In 2020, the EU adopted the Sustainable and Smart Mobility Strategy — putting European transport on track for the future. It envisages that rail freight traffic should increase its market share by 50% by 2030 and double by 2050; while transport by inland waterways and short-sea shipping should increase its market share by 25% by 2030 and by 50% by 2050 and traffic on high-speed rail should double by 2030 and triple by 2050.

In the same direction, the Regional Partners of the Western Balkans have endorsed the Sustainable and Smart Mobility Strategy for the Western Balkans under the auspices of the Transport Community Treaty. Within the first goal of this strategy - Sustainable transport, the Flagship 4 "Greening freight transport" is defined, where some of the specific goals are to increase rail freight traffic for 20% by 2030, and to double it by 2050, and by 2030 transport by inland waterways and short sea shipping to increase by 15% and this to be also doubled by 2050. Within this flagship and within the Transport Community Action Plan for Waterborne transport and Multimodality, it was also stated that multimodal infrastructure should be further developed to remove all missing links, and that ensuring road/rail connectivity with all ports/airports/terminals in the region and developing modern inland terminals and transshipment serving the market needs are key preconditions for developing this sector.

Citing the TEN-T regulation, a more sustainable, resilient and reliable rail freight network across Europe should be established to contribute to the competitiveness of multimodal and combined transport. The infrastructure for combined railway transport and of terminals should be upgraded to ensure that intermodal transport is primarily done by rail, inland waterways or short-sea shipping and that any initial or final, or both, legs carried out by road are as short as possible. Also, the Member States should conduct a market and prospective analysis

[120] United Nations Trade & Development (UNCTAD) secretariat: Sustainable freight transport systems: Opportunities for developing countries, 2015

[121] Regulation (EU) 2024/1679 on Union guidelines for the development of the trans-European transport network

on multimodal freight terminals on their territory and elaborate an action plan for the development of a multimodal freight terminal network.

The latter is also defined as a condition, that is, a criterion for proposing and including an intermodal/ multimodal terminal in Annex II of the TEN-T regulation, if there is no terminal with a sufficiently large volume of annual transshipment.

The creation of a network of multimodal freight terminals, including Rail-Road terminals, is a basic condition for the initiation and development of multimodal transport, with the aim of offering a new, competitive service that will attract multimodal flows and enable a more balanced modal share, more efficient and sustainable transport.

A special case requiring attention relates to "the first and last mile" segment of a freight transport journey and identified bottlenecks preventing the multimodal flows or development of multimodality. Improving the efficiency of these segments of deliveries is crucial for the sustainability of freight transportation.

The last segment of preconditions for development of multimodal transport in the region is the improvement of information flows, i.e. exchange of information within and among all parties included in transport and logistics chains, enabling greater efficiency, planning and management of transport operations, with the aim of increased competitiveness of multimodal transport.

Therefore, the proposed Action Plan presented in this chapter aims at the development of multimodality in the region, and therefore it includes activities not only related to the development of a network of terminals, but also to facilitate and promote multimodal transport in the region through the integration to the EU transport system and the TEN-T multimodal Corridors. The Action Plan comprises three groups of actions and measures:

- Construction of new or reconstruction/improvement of existing multimodal/ intermodal terminals and purchase of related equipment in accordance with the TEN-T Regulation and the identified needs for multimodal freight terminals development.
- Construction/ Reconstruction of specific links of the rail and road networks for ensuring last-mile multimodal connectivity to existing terminals.
- Introduction of digital solutions to improve multimodality.

Each of these groups of actions and measures is presented in the following tables and the target year for their implementation is by 2030, i.e. within the timeframe for implementation of the Core TEN-T network extension in the region.

At the end, the list of horizontal and other measures and recommendations is presented, as preconditions or support to development of multimodal transport in the region.

Group of Actions and Measures 1: Construction/ Reconstruction of intermodal/ multimodal (Road-Rail) terminals and purchase of related equipment

Main task of the research and analysis performed has been to define the network of multimodal freight terminals in relation to existing sea and river ports, especially Core ports, urban and industrial centers, in accordance with the provisions of the TEN-T regulation. Bearing in mind the findings of the conducted market and prospective analysis and the fact that intermodal transport in the region is in the phase of initial development, i.e. that, except in Serbia, intermodal terminals with significant capacities practically do not exist, the presented actions of the first group propose the basic network of multimodal freight terminals, including rail-road terminals, for establishment of intermodal/ multimodal transport in the region.

Group of Actions and Measures 1: Construction/ Reconstruction of intermodal/ multimodal (Road-Rail) terminals and purchase of related equipment				
Institution responsible for coordination and reporting: Ministry responsible for transport in each RP				
Implementation period: 2025–2030				Type: Construction and procurement of relevant equipment
Name of activity:	Regional Party	Estimate of Investment Cost (million €)	Deadline for completion	Remarks
Construction of new terminal in or adjacent to the new Porto Romano in Durres – Tirana area	ALB	n.a.*	2030	The ongoing project "Development of the new port of Durres in Porto Romano, relocating the operations of the existing terminal and building in the 1st phase of development the new Container Terminal and the new rail track into the new port" aims at the consolidation of industrial activity and establishment of a cargo facility that will improve trade throughout the region. The foreseen capacity of the Container Terminal of the new port will be not less than 500,000 TEU. Provision of facilities and equipment and road-rail connectivity within and out of the terminal for full compliance with the provisions of the TEN-T Regulation for multimodal freight terminals. *The investment cost for the new terminal is included in the total investment cost for the port development.
Construction of Intermodal terminal Sarajevo in Rajlovac	BIH	20	2030	The project includes the preparation of the necessary studies and the reconstruction of the station for multimodal/ intermodal terminal operations and improvement of capacities, facilities and equipment and road and rail connectivity within and out of the terminal according to the provisions of the TEN-T Regulation for multimodal freight terminals. Estimated annual capacity: 80,000 TEU.
Construction of Intermodal terminal in Doboj	BIH	15	2030	The project includes the preparation of the necessary studies for decision on exact location of the terminal and the construction of the new terminal for multimodal/intermodal operations, construction of facilities and road and rail connectivity within and out of the terminal, and procurement of equipment, for full compliance with the provisions of the TEN-T Regulation for multimodal freight terminals. Estimated annual capacity: 50,000 TEU.
Construction of Intermodal terminal Pristina in Shkabaj	KOS	20	2030	The project includes the preparation of the necessary studies and the construction of a new planned hub for multimodal/ intermodal terminal (dry port), construction of facilities and procurement of equipment and road and rail connectivity within and out of the terminal for full compliance with the provisions of the TEN-T Regulation for multimodal freight terminals. Estimated annual capacity: 80,000 TEU.
Construction of new rail-road terminal in or adjacent to the Port of Bar	MNE	15	2030	The project includes the preparation of the necessary studies for decision on exact location of the terminal (within the port or railway freight station Bar) and construction of the multimodal/ intermodal terminal, ensuring improvement of capacities, facilities, equipment and road and rail connectivity within and out of the terminal for full compliance with the provisions of the TEN-T Regulation for multimodal freight terminals. Estimated annual capacity: 50,000 TEU.
Construction of Intermodal terminal in Skopje area	MKD	20	2030	The project includes construction of a new terminal for multimodal/ intermodal operations and ensuring capacities, facilities, equipment and road and rail connectivity within and out of the terminal for full compliance with the provisions of the TEN-T Regulation for multimodal freight terminals. Based on the results of the ongoing project for preparation of the necessary studies and design for new intermodal terminal at Trubarevo marshalling yard location, it is to be decided if the location of the Trubarevo marshalling yard is suitable or new location in Skopje area will be defined. Estimated annual capacity: 80,000 TEU.

Group of Actions and Measures 1 (cont.): Construction/ Reconstruction of intermodal/ multimodal (Road-Rail) terminals and purchase of related equipment				
Institution responsible for coordination and reporting: Ministry responsible for transport in each RP				
Implementation period: 2025–2030				Type: Construction and procurement of relevant equipment
Name of activity:	Regional Party	Estimate of Investment Cost (million €)	Deadline for completion	Remarks
TBD: - Development of the Batajnica terminal, or - Development of terminal ŽIT (Makis – Belgrade marshalling yard), in Belgrade	SRB	10	2030	The Serbian Ministry is to decide on the future actions, i.e. whether to proceed with phase 2 of development of Batajnica terminal and logistics center or with development of ŽIT terminal at Belgrade marshalling yard. In the case of Batajnica further development, the project will include phase 2 of the Intermodal terminal Batajnica project, with an increase of the capacity of the terminal from 80,000 to 150,000 TEU. In this phase, it is planned to develop capacity through procurement of equipment and development of a logistics area on about 67 ha. This expansion should ensure that the terminal complies with the provisions of the TEN-T Regulation for multimodal freight terminals regarding infrastructure, facilities and equipment. In the case of terminal ŽIT, the project will include extension to the 5th shunting group of the Belgrade marshaling yard. This would create the conditions for the terminal to process about 120,000 TEU per year, compared to the current annual capacity of 24,000 TEU.
Construction of Intermodal terminal in Novi Sad area	SRB	15	2030	The project includes the preparation of the necessary studies for exact location decision, feasibility and design, and construction of the intermodal terminal, last mile road and railway connections and facilities/equipment to ensure full compliance with the provisions of the TEN-T Regulation for multimodal freight terminals. Estimated annual capacity: 50,000 TEU.
Improvement and integration of the existing intermodal terminal Nis, Nis marshalling yard and the Niš airport or, Construction of new terminal	SRB	15	2030	Bearing in mind the plans and current activities for the construction of a railway bypass around Niš, which passes through the Niš marshalling yard and connects the Niš airport with the Corridor X branch to Bulgaria, and that the existing private intermodal terminal is located in the same zone, connected to the Niš marshalling yard, it is recommended to consider public-private partnership modalities, concessions or blended investments, for the establishment of an integrated logistics center in which the existing private intermodal terminal would have an interest in expanding and meeting the infrastructure requirements to be included into the TEN-T terminals network. By this, annual capacity of Niš marshaling yard and intermodal terminal would be increased, and volumes of goods and services would increase enabling the introduction of the cargo terminal at the airport. It is necessary to examine public-private partnership or other blended investments modalities, in order to ensure compliance with Article 58 of the Regulation that this should not create obligation to private sector to invest in terminals. In case that such proposal is not acceptable for private terminal and government, a new location for new terminal is to be defined.

Group of Actions and Measures 2: Network improvements (bottlenecks and missing links) for ensuring the last-mile multimodal connectivity to existing terminals and intermodal transport operations

The second group of measures and actions refers to identified last mile issues and bottlenecks that directly prevent multimodal transport to/from some of the existing multimodal terminals. In order to improve multimodal operations and use the capacities of the existing and proposed terminals network and to establish a denser network of multimodal freight terminals in the future, several large-scale railway projects must be implemented, such as ongoing and planned rehabilitation of Corridor X in Serbia and North Macedonia, planned completion of Corridor VIII in Albania and North Macedonia, planned reconstruction of Corridor Vc and Route 9 in Bosnia and Herzegovina, reconstruction of Route 4 in Montenegro and Serbia, resolving the Belgrade node and construction of third phase of Belgrade by-pass and road-rail bridge over the Danube River connecting Corridor X with Port of Pancevo and Route 4 to Romania, etc.

All most significant missing railway links are noted under Chapter 5, but major railway projects, although crucial for the improvement of multimodal transport, are not part of this action plan, except from specific bottlenecks which must be resolved urgently to reconnect the existing terminals to establish or reestablish operations before completion of the major projects. Also, it has to be noted that some of last mile connection issues identified in earlier stages of this assignment, have been resolved recently (i.e. connection of Serbian ŽIT intermodal terminal to Belgrade marshalling yard, which is complete and the first intermodal train arrived recently).

Group of Actions and Measures 2: Network improvements (bottlenecks and missing links) for ensuring the last-mile multimodal connectivity to existing terminals and intermodal transport operations				
Institution responsible for coordination and reporting: Ministry responsible for transport in each RP				
Implementation period: 2025–2027				Type: Construction
Name of activity:	Regional Party	Estimate of Investment Cost (million €)	Deadline for completion	Remarks
Reconstruction of railway bridge over the Ishem river	ALB	n.a.*	2027	Reconstruction of bridge damaged in earthquake in 2019 is necessary to reconnect the northern part of the Albania to the central and southern parts, enabling rail freight flows between Montenegro and Durres-Tirana and Elbasan areas. *It is assumed that the investment cost for the Isham river bridge reconstruction is included in the total investment cost of the secured project for rehabilitation or railway line Vore – Hani I Hotit.
Reconstruction of the railway tunnel "Ivan" at Sarajevo-Bradina section of Corridor Vc	BIH	n.a.*	2027	The reconstruction of the 3.2 km long tunnel is aiming to enable safe and efficient transport of large intermodal units such as containers, swap-bodies and semitrailers by railway. This reconstruction is a part of the secured and ongoing project of rehabilitation of railway line Visoko-Mostar. Resolving the Tunnel Ivan bottleneck even before the entire project completion would enable transport of intermodal units. *It is assumed that the investment cost for the Tunnel reconstruction is included in the total investment cost of the secured project for rehabilitation or railway line Visoko-Mostar (Corridor Vc).
Reconstruction of damaged railway section in Jablanica area (Donja Jablanica-Grabovica section)	BIH	2.5	2025	Urgent reconstruction of damaged railway section caused by floods and landslides in 2024. This event caused that railway traffic in south part of Corridor Vc from central Bosnia and Herzegovina to Port of Ploce is completely stopped.
Improvement of road last mile connection of existing container terminal at Sarajevo freight railway station	BIH	3	2025	Sarajevo freight station is currently the only intermodal terminal in central Bosnia and Herzegovina, facing very difficult access for trucks, as well as their movement within the terminal. Providing better conditions would facilitate intermodal transport operations, until the realization of the new terminal planned at the Rajlovac location.
Construction of last mile railway connection of Port of Brčko	BIH	n.a.*	2025	Connecting the Port of Brčko to the railway network with a new industrial track represents one of the important phases of the modernization of the port, which will enable an increase in the port's capacity and a larger volume, especially of intermodal transport in the terminal. *It is assumed that the investment cost for the construction of new railway connection is included in the total investment cost of the ongoing project of revitalization of the port, funded through EBRD loan and EU grant.

Group of Actions and Measures 3: Introduction of ICT and digital solutions to improve multimodality

The third group of measures and actions refers to the application of digital solutions for terminal management and the exchange of information in digital form, as an important prerequisite for increasing the efficiency, attractiveness and competitiveness of multimodal transport. Measures and actions of this group have been defined based on the results of the needs assessment in the field of digitalisation and the roadmap for implementation of selected applications along selected Corridors in the region.

Group of Actions and Measures 3: Introduction of ICT and digital solutions to improve multimodality				
Institution responsible for coordination and reporting: Ministry responsible for transport in each RP				
Implementation period: 2025–2030			Measure type: Deployment	
Regulations to be adopted for the implementation of the measures: eFTI Regulation				
Name of activity:	Regional Party	Cost estimate (million €)	Deadline for completion	Remarks
Deployment of solutions for eFTI implementation	ALL RPs	17.5	2030	Deployment of e-freight in the WB region according to the Action Plan developed in the study "Deployment of e-freight in the Western Balkans and implementation of the Regulation (EU) 2020/1056 on electronic freight transport Information". This would be a significant step forward in the digital transformation of freight transport, including multimodal freight, and offers important benefits for both operators and authorities, such as: reduced administrative costs in transport and logistics; improved overall efficiency of logistics chains; and more efficient enforcement of freight transport rules across the EU. By replacing paper-based documentation with electronic data in all transport modes, RPs will accelerate the flow of goods within the region and further towards MS, as well as the transition from one mode of transport to another.
Deployment of selected IT applications along main Corridors and Routes in the region (Multimodal Digitalisation Project)	ALL RPs	8.1	2030	Deployment of - Solution for match making and ordering for rail cargo (Rail-Flow or similar), - IT platform for stakeholders networking (IMSLOT or similar) - Multimodal Transportation Management Systems (Transport Management System for terminals) on selected Corridors and Routes in each RP, as follows: - ALB: Corridor VIII - BIH: Corridor Vc - KOS: Route 10 (Corridor X link from Pristina to Hani i Elezit) - MNE: Route 4 - MKD: Corridor X and Corridor VIII - SRB: Corridor X and Route 4 Deployment should start from already functional Corridors and Routes (Corridors Vc, X and Routes 4, 6) and continue with Corridor VIII once missing links are constructed.

7.1 Other measures for the development of multimodality in the WB region

The proposed Action Plan contains specific actions and measures that should be implemented in order to develop the identified priority network of multimodal freight terminals, including the digital solutions to facilitate multimodal transport operations.

In addition, a set of other measures and actions is defined and presented below. It is considered that these measures and actions would contribute to faster development of multimodality in the WB region, provided that they do not require significant investments or time:

1. Harmonization of RPs legislation with the provisions of the Combined Transport Directive 92/106/EEC: which aims to promote the use of combined transport within the European Union. The directive establishes common rules for certain types of combined transport of goods. By setting standards for vehicle dimensions, reloading equipment, and terminal facilities, the directive ensures compatibility and interoperability across the transport network, facilitating smoother and more efficient multimodal transport. The directive also defines incentives for combined transport operations, including the road carriers involved in combined transport chains.
2. Harmonization of the standards and rules on Customs treatment of intermodal units in international transport. This is essential for facilitating smooth and efficient cross-border movement of intermodal units. Even though some of the RPs have introduced Customs treatment of intermodal units regulated under international agreements and rules, certain differences are still present. Some of RPs treat intermodal units as temporarily imported goods, which greatly complicates and limits intermodal operations.
3. In addition to harmonization with provisions of Combined Transport Directive 92/106/EEC, defining the activity of intermodal transport as an economic activity of special interest can significantly boost development and efficiency of intermodal transport. This designation can pave the way for implementing various incentive measures, such as tax breaks, subsidies, and grants, which can encourage investment in infrastructure, technology, and services related to intermodal transport. Also, it would facilitate the creation of local joint ventures, public-private partnerships and other modalities of blended investments in intermodal transport infrastructure and operations. Examples of such cooperation are numerous in EU Member States.
4. One of the most important key preconditions for development of multimodal transport is improvement and procurement of railway rolling stock. Almost all railway operators in the region lack or have a shortage in locomotives, container flatcars, pocket cars, other special wagons or even ordinary wagons. In the current situation, there are cases where trains are delayed or transport demands/ requests are rejected, due to these lacks or shortages. Containers loaded on block-trains wait at stations for locomotives to pull them out, or wait at terminals for trains to be loaded and depart. It is not rare that freight trains remain on hold at railway border crossing points due to lack of locomotives as well.
5. Another important measure is the facilitation of railway crossing points, their improvement and introducing joint border/ common crossing points. The only joint railway crossing point introduced is at the border between Serbia and Montenegro, at railway station Bijelo Polje. Bilateral agreement for joint BCP is established between North Macedonia and Serbia, but the agreed railway station Tabanovce is not yet introduced as joint BCP. Time lost at borders is one of the highlighted bottlenecks for the development of multimodal transport and its competitiveness.

6. The need for education, qualified personnel and knowledge applied in business activities, as well as capacity building at the level of administration and decision-making, was recognized during the interviews with users and during consultations with RPs. Improvement of education, cooperation with universities, professional schools and associations in order to establish qualified human capital able to contribute to the improvement of intermodal/multimodal transport at operational and strategic level is one of the important measures and prerequisites for further development.

8 Conclusions

The specific objective of the current report was to present a carried out market and prospective analysis - a comprehensive assessment of the status of multimodality in the WB Region with analysis of the current and future traffic flows of freight, which is the basis for the preparation of an Action Plan for development of a multimodal freight terminals network – Rail-Road Terminals in the Western Balkans region, as the basis for the RP's proposal to the European Commission to add these terminals in Annexes I and II of the TEN-T Regulation.

The EU transport policy aims at a form of mobility that is sustainable, energy-efficient and respectful of the environment. These goals can be achieved by using multimodal transport that combines optimally the various modes of transport, exploiting each one's strength and minimizing the weaknesses. The European Commission hence pursues a policy of multimodality by ensuring better integration of the transport modes and establishing interoperability at all levels of the transport system.

The EU's economic influence extends significantly to its neighboring regions, including the Western Balkans. Geographical proximity, historical ties, and shared interests all contribute to this close trade relationship. Due to its close geographic proximity, economy and size, the EU is a main trading partner of the Western Balkans.

The WB is served by the following TEN-T European Transport Corridors:

- Western Balkans - Eastern Mediterranean - aimed at enhancing connectivity and economic cooperation in the region and plays a vital role in regional development and integration. This corridor provides connection of the WB with Central Europe and with the Baltic Sea-Adriatic Sea Corridor, Mediterranean Corridor and Baltic Sea-Black Sea-Aegean Sea Corridor. It practically constitutes the backbone of the Core TEN-T network indicative extension in the region.

- Rhine - Danube - connecting Strasbourg and Southern Germany with Central European cities like Vienna, Bratislava, Budapest and Belgrade. Eventually, it passes through Bucharest in Romania to the Black Sea port of Constanta. This corridor plays a significant role in enhancing transportation and trade connectivity in the WB region.

The highest degree of usage of multimodal transport operations is found along routes from the North Adriatic ports - Croatia - Belgrade - Niš, then Hungary - Belgrade - Niš, and Belgrade - Niš - Skopje - Thessaloniki. These routes coincide with the parts of Corridor X in the WB region, which provides connections from/ to the port of Thessaloniki in the south and the ports of Rijeka and Koper in the northwest through other European Transport Corridors. Additionally, there is a noticeable higher usage of routes towards the regional maritime ports of Durres and Bar, but also the Croatian Port of Ploče, as well as the connection from Niš in Serbia to Bulgaria. All these routes belong to the Western Balkans – Eastern Mediterranean European Transport Corridor.

Looking at the activities undertaken in the previous period to improve the railway infrastructure in the majority of RPs, and strategic documents and current plans of the RPs, it can certainly be concluded that the plans are oriented towards multimodality, where one of the prerequisites is to develop multimodal freight terminal network, besides construction and modernization of the railway and IWW networks.

Based on available data and information from relevant studies, a market and prospective analysis has been conducted through detailed examination of flows by commodity, trade partners (directions), mode of transport and a rough assignment of the quantities of internationally traded goods to the transport corridors network, aiming to analyze the status of multimodality per corridors as well.

Identifying the main industrial areas in the region per RP together with identification of the main existing multimodal terminals, against the Core and Comprehensive transport network and flows along it, enabled analysis of spatial distribution and needs in terms of missing capacities or new terminals. Future flows and needs were defined through the prospective analysis – forecast of flows, where special attention was dedicated to intermodal terminals and analysis of current and future capacities. Based on this analysis, a comprehensive network of multimodal/ intermodal terminals was defined.

Development of identified terminals and locations was divided into two phases, aiming to avoid reduced volume of cargo in terminals in case of development of an extensive terminals network at the same time and possible negative effects on viability of investments, ensuring gradual development of multimodal freight terminal network. The first phase of development considers development of terminals at locations with highest priorities, according to the comprehensive market and prospective analysis and criteria set by TEN-T regulation, aiming to define the main nodal points in the region as the multimodal freight terminals network to be included in the TEN-T network.

The proposed Action Plan includes activities related to the development of a network of terminals, but also to facilitate and promote multimodal transport in the region through the integration to the EU transport system and the TEN-T multimodal Corridors. The Action Plan comprises three groups of actions and measures for implementation by 2030:

- Construction of new or reconstruction/improvement of existing multimodal/ intermodal terminals and purchase of related equipment in accordance with the TEN-T Regulation and the identified needs for multimodal freight terminals development. This comprises the development of the network of multimodal freight terminals in the region, with the total cost estimated at around € 135 million, excluding costs of already ongoing projects. The proposal foresees terminals in Durres area in Albania, in Sarajevo and Doboj in Bosnia and Herzegovina, in the Pristina area in Kosovo, in the area of the Port of Bar in Montenegro, in Skopje area in North Macedonia, and in the areas of Belgrade, Novi Sad and Nis in Serbia.
- Construction/ Reconstruction of specific links of the rail and road networks for ensuring last-mile multimodal connectivity to existing terminals. This includes urgent restoration of the infrastructure at bottlenecks on the railway network (bridge over Ishem river in Albania, tunnel Ivan and destroyed section in Jablanica area in Bosnia and Herzegovina) and improvements for last mile connectivity by rail to the Port of Brcko in Bosnia and Herzegovina and by road at Sarajevo freight railway station, with the total cost estimated at less than € 10 million, excluding costs already secured through ongoing railway projects.
- Introduction of digital solutions to improve multimodality, with the total cost estimated at € 25.5 million, for deployment of e-freight in the entire region according to the e-FTI Regulation and of three IT applications by the terminals along the main Corridors and Routes and railway operators in the region.

APPENDICES (separate files)

Appendix I: Detailed analysis of international transport flows by commodity group, origin/destination and mode of transport for each RP

Appendix II: Detailed analysis of Users' and Providers' perspectives

Appendix III: Detailed overview of main existing multimodal terminals infrastructure at RP level

Appendix IV: Description of main industrial and urban areas per RP

Appendix V: Action Plans for the development of a Multimodal Freight Terminals network and last-mile connectivity per RP

Appendix I - Detailed analysis of international transport flows by commodity group, origin/destination and mode of transport for each RP

Albania

International trade

Expressed in monetary value, Albania's foreign trade accounts for 85% of its GDP (trade-to-GDP ratio), with most of the trade conducted with European countries. Main trade partners who export goods to Albania (import partners) and their shares on the total value of imports are Italy (45.5%), Germany (14.4%), Greece (13.3%), Serbia (5.7%), North Macedonia (3.3%) and France (3.1%). On the other hand, main trade partners who import goods from Albania (export partners) are Italy (54.3%), Kosovo* (11.8%), Greece (8.2%), Germany (6.6%), North Macedonia (4.6%), Serbia (2.9%) and Montenegro (2.8%).

Main trade partner of Albania is the EU. Albania has significant trade deficit with Türkiye, China, Greece and other far markets (rest of the world). Trade value with WB partners is not significant compared to EU. Albania has trade surplus with Kosovo. Generally, Albania's trade balance is structurally in deficit, mainly because exports are neither sufficiently diversified nor competitive in terms of price, and because of the country's narrow production base. Trade trend and balance of Albania is shown in Figure 1.

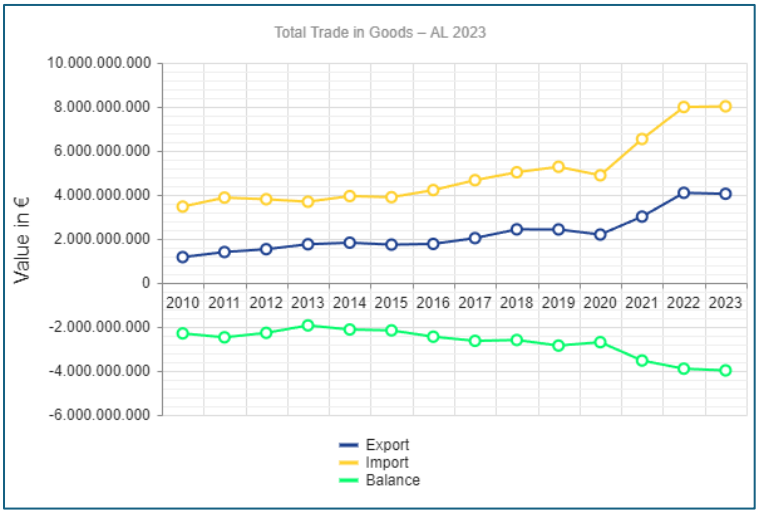

Figure 1 - Total trade value of Albania[1]

Albania has a constant trend of growth in international trade, especially since 2020. International trade stabilized somehow from 2022 to 2023, but it can be expected that growth in international

* This designation is without prejudice to positions on status and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

[1] Source: CEFTA trade portal

trade will continue, and consequently the transport demand and the need to increase transport capacities. In addition, Albania's current and planned investments in transport infrastructure will further attract economic activities and additional needs for the transport of goods, which will lead to the intensification of transport flows, both within Albania and internationally.

Analysis by commodity is made according to Standard classification of goods in transport (NST 2007).

Regarding import and export flows of goods per commodity group, Table 1 shows that in Albanian Exports the most represented quantities are goods from the groups of Coal, lignite, crude oil & gas; Other non-metallic and mineral products; Metal ores, mining products; Basic metals and products, except machinery; and Coke and petroleum products. On the other hand, in import flows, the highest quantities of goods are from the groups of Coke and petroleum products; Other non-metallic and minerals; Basic metals and products, except machinery; Food, drinks, tobacco; Agriculture, animals, fish; Coal, lignite, crude oil & gas; and Wood, paper, printed, recorded media.

Table 1 – Albanian Export and Import by commodity group (million tons)

Export			Import		
NST goods classification		**Qtty, mill t**	**NST goods classification**		**Qtty, mill t**
2	Coal, lignite, crude oil & gas	**0.84**	7	Coke and petroleum products	**1.21**
9	Other non-metallic, mineral	**0.76**	9	Other non-metallic, minerals	**0.90**
3	Metal ores, mining products	**0.68**	10	Basic metals and products, except machinery	**0.72**
10	Basic metals and products, except machinery	**0.49**	4	Food, drinks, tobacco	**0.52**
7	Coke and petroleum products	**0.21**	1	Agriculture, animals, fish	**0.40**
8	Chemicals, fibers, rubber, plastic, nuclear fuel	**0.18**	2	Coal, lignite, crude oil & gas	**0.35**
1	Agriculture, animals, fish	**0.18**	6	Wood, paper, printed, recorded media	**0.28**
4	Food, drinks, tobacco	**0.11**	8	Chemicals, fibers, rubber, plastic, nuclear fuel	**0.27**
6	Wood, paper, printed, recorded media	**0.06**	3	Metal ores, mining products	**0.14**
5	Textile & leather products	**0.05**	12	Transport equipment	**0.13**
14	Secondary raw mat., waste	**0.04**	11	Machinery and equipment, electronics	**0.09**
11	Machinery and equipment, electronics	**0.02**	5	Textile & leather products	**0.05**
	Total Export	**3.62**		**Total Import**	**5.09**

What may be concluded is that, except Food, drinks, tobacco, among the main commodities, all other goods are suitable for multimodal/ intermodal transport. The goods from the group Food, drinks, tobacco are represented with about 6% in import and about 1.3% in export.

Table 2 presents the transport modal share of each commodity group in Albanian international trade. It can be seen that for each commodity group, both maritime and road transport are involved. Maritime transport is extremely significant in the case of transport of Coke and petroleum products, while in the case of Food, drinks, tobacco; Agriculture, animals, fish and Chemicals, fibers, rubber, plastic, and nuclear fuel, the road transport is dominant.

Table 2 – Modal share of international trade of Albania by commodity group

NST classification of goods		Maritime	Railway	Road
9	Other non-metallic, minerals	51.7%	0.0%	48.3%
7	Coke and petroleum products	90.2%	0.0%	9.7%
10	Basic metals and products, except machinery	60.5%	0.0%	39.4%
2	Coal, lignite, crude oil & gas	67.5%	0.0%	32.5%
3	Metal ores, mining products	64.5%	1.5%	34.0%
4	Food, drinks, tobacco	30.0%	0.1%	69.9%
1	Agriculture, animals, fish	30.4%	0.0%	69.6%
8	Chemicals, fibres, rubber, plastic, nuclear fuel	28.2%	0.0%	71.7%
6	Wood, paper, printed, recorded media	38.5%	0.0%	61.4%
12	Transport equipment	68.2%	0.4%	31.3%
11	Machinery and equipment, electronics	56.1%	0.1%	43.5%
5	Textile & leather products	66.7%	0.2%	33.1%
14	Secondary raw mat., waste	73.7%	0.0%	26.2%
13	Furniture, manufactured goods	48.2%	0.1%	51.6%
20	Other goods	0.1%	0.0%	85.6%
17	Goods in removals, baggage, non market goods	0.0%	0.0%	78.4%
19	Unidentifiable goods	18.8%	0.0%	78.3%

The analysis by trade partners below refers to the quantities of goods in import and export, by transport mode, for the 20 most important trade partners of Albania with exchange of over 88.3% of the total quantities in international trade, which represents a sufficiently significant sample for analysis of flows.

Table 3 – Modal share of international trade for Export and Import flows per top 20 trade partners of Albania and total quantities (million tons)

	Modal share in Export			Export mill tons	Modal share in Import			Import mill tons	Total mill tons
Partner	**Maritime**	**Railway**	**Road**		**Maritime**	**Railway**	**Road**		
IT	96.7%	0.0%	3.3%	**0.44**	93.6%	0.1%	6.3%	**0.61**	**1.05**
XK	0.0%	0.0%	100.0%	**0.80**	0.0%	0.0%	100.0%	**0.17**	**0.97**
TR	99.9%	0.0%	0.1%	**0.04**	97.8%	0.0%	2.2%	**0.75**	**0.79**
IN	99.6%	0.0%	0.4%	**0.00**	99.9%	0.0%	0.1%	**0.78**	**0.78**
GR	19.9%	0.0%	80.1%	**0.17**	22.5%	0.0%	77.5%	**0.58**	**0.75**
MK	0.0%	0.0%	100.0%	**0.53**	0.0%	0.0%	100.0%	**0.08**	**0.62**
ES	99.5%	0.0%	0.5%	**0.42**	93.7%	0.0%	6.3%	**0.13**	**0.55**
ME	0.1%	3.1%	96.8%	**0.39**	0.0%	0.0%	100.0%	**0.05**	**0.44**
CN	100.0%	0.0%	0.0%	**0.34**	94.8%	0.0%	5.2%	**0.02**	**0.36**
RS					0.0%	0.0%	100.0%	**0.31**	**0.31**
OM					100.0%	0.0%	0.0%	**0.20**	**0.20**
DZ					100.0%	0.0%	0.0%	**0.12**	**0.12**
GB	99.7%	0.0%	0.3%	**0.11**	49.9%	0.0%	50.1%	**0.00**	**0.11**
RU					100.0%	0.0%	0.0%	**0.10**	**0.10**
LY					100.0%	0.0%	0.0%	**0.10**	**0.10**
US	99.9%	0.0%	0.1%	**0.02**	99.5%	0.0%	0.5%	**0.07**	**0.09**
BG	4.4%	0.0%	95.6%	**0.04**	0.0%	0.0%	100.0%	**0.05**	**0.09**
DE	19.2%	0.0%	80.8%	**0.02**	10.5%	0.0%	89.5%	**0.06**	**0.08**
HR	6.8%	0.0%	93.2%	**0.04**	25.9%	0.0%	74.1%	**0.04**	**0.08**
EG	100.0%	0.0%	0.0%	**0.00**	99.6%	0.0%	0.4%	**0.08**	**0.08**
mill t	1.41	0.01	1.96	**3.38**	3.04	0.00	1.27	**4.31**	**7.69**

From the data presented, it is possible to recognize the separation of flows into maritime transport to countries that have access to the sea and road transport to countries in the hinterland. The only partner of Albania with a significant presence of both maritime and road transport is Greece, where road transport dominates due to proximity of the market and due to absence of railway connections.

The biggest trade partners of Albania in terms of imports are India, Türkiye, Italy, Greece and Serbia. For Albania's exports, the most significant in terms of goods flows (in quantity) are Kosovo, North Macedonia, Italy, Spain and Montenegro.

In relation to trading partners, Table 4 shows the quantities of commodities groups for the 20 most important trading partners. In exchange with the largest trading partner, Italy, all commodity groups are represented, with a slight dominance of Other non-metallic, minerals and Food, drinks, tobacco. Second in order is Kosovo, with which Albania exchanges the most Other non-metallic, minerals and Basic metals and products, except machinery, mainly in exports. The next two partners in terms of quantity of goods are Türkiye and India: Albania mainly imports Other non-metallic and minerals from Türkiye, and goods from the Coke and petroleum products group from India.

Table 4 – Trade quantities (million tons) of Albania, for top 20 trade partners by commodity group

Partner/ NST	9	7	10	2	3	4	1	8	6	5	11	14	12	13	20	17	19	Sum
IT	0.18	0.08	0.13	0.03	0.08	0.16	0.05	0.09	0.06	0.08	0.06	0.01	0.02	0.01		0.00	0.00	**1.05**
XK	0.40	0.03	0.25	0.00	0.04	0.10	0.07	0.06	0.02	0.00	0.00	0.00	0.00	0.00			0.00	**0.97**
TR	0.48	0.10	0.16	0.00	0.00	0.00	0.00	0.00	0.05				0.00					**0.79**
IN	0.08	0.70	0.00		0.00								0.00					**0.78**
GR	0.09	0.12	0.06	0.01	0.07	0.10	0.08	0.08	0.06	0.00	0.01	0.04	0.00	0.00	0.00	0.00	0.00	**0.75**
MK	0.05	0.00	0.09	0.38	0.07	0.01	0.00	0.01	0.00				0.00					**0.62**
ES	0.06	0.03	0.00	0.44	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.55**
ME	0.20	0.02	0.01		0.10	0.00	0.00	0.07	0.04				0.00					**0.44**
CN	0.00	0.00	0.01	0.00	0.34	0.00		0.00	0.00				0.00					**0.36**
RS	0.03	0.01	0.00		0.00	0.10	0.13	0.03	0.01	0.00	0.00		0.00	0.00			0.00	**0.31**
OM			0.20										0.00					**0.20**
DZ			0.04	0.08														**0.12**
GB	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00					**0.11**
RU			0.00	0.00			0.07	0.03					0.00					**0.10**
LY			0.09	0.02														**0.10**
US		0.00	0.02	0.06	0.00	0.00	0.00	0.00	0.00				0.01					**0.09**
BG	0.01	0.02	0.01		0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00				**0.09**
DE	0.01	0.00	0.01	0.00	0.00	0.02	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	**0.08**
HR	0.01	0.01	0.01		0.00	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00			0.00	**0.08**
EG	0.00	0.01	0.00	0.05		0.00	0.00	0.01										**0.08**
Total	**1.60**	**1.23**	**1.11**	**1.08**	**0.71**	**0.53**	**0.46**	**0.40**	**0.26**	**0.10**	**0.09**	**0.05**	**0.05**	**0.02**	**0.00**	**0.00**	**0.00**	**7.69**

The analysis of transport flows according to the mode of transport was partially presented in previous paragraphs. Figures 2 and 3 show the total modal share by volume in international trade. In relation to the total quantities, maritime transport is dominant, while it can be seen from the directions that maritime transport is particularly dominant in import, while road transport has the advantage in export flows.

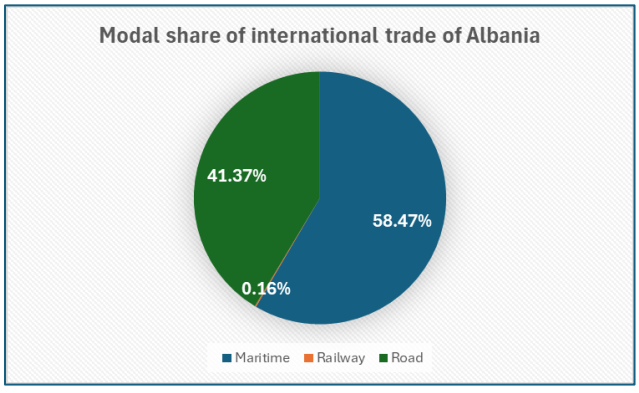

Figure 2 – Modal share in international transport of Albania 2023[2]

[2] Customs administration of Albania, data provided for top 25 commodities.

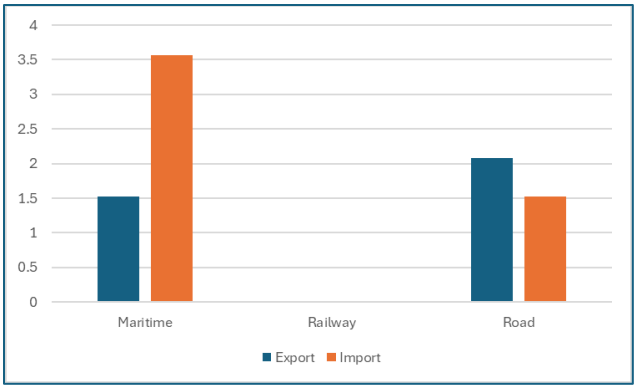

Figure 3 – Quantities in international trade of Albania (million tons) per mode of transport and direction, 2023[3]

Table 5 presents the quantities of the top 5 commodity groups in international trade, per mode of transport and direction. Other non-metallic products and minerals are equally represented in maritime and road transport, while other commodity groups are mainly in maritime transport. The extremely low representation of rail transport is clearly visible.

Significant import flows of Other non-metallic products and Coke and petroleum products in maritime transport can be distinguished, as well as the export flows of Other non-metallic products, Basic metals and Coal, lignite and crude oil in road transport.

Table 5 – Top 5 commodity groups per mode of transport and direction in international trade of Albania

NST*/mode /flow	9	7	10	2	3
Maritime	***0.861***	***1.278***	***0.730***	***0.800***	***0.524***
Export	0.124	0.130	0.127	0.453	0.495
Import	0.736	1.147	0.604	0.347	0.028
Railway	***0.000***		***0.000***		***0.012***
Export			0.000		0.012
Import	0.000		0.000		0.000
Road	***0.804***	***0.138***	***0.476***	***0.385***	***0.275***
Export	0.639	0.077	0.359	0.385	0.169
Import	0.165	0.061	0.117	0.000	0.107
Total	**1.665**	**1.416**	**1.207**	**1.185**	**0.811**

*

9 - Other non-metallic, minerals

7 - Coke and petroleum products

10 - Basic metals and products, except machinery

2 - Coal, lignite, crude oil & gas

3 - Metal ores, mining products

[3] Source: Consultant elaboration based on COMEXT Eurostat, Customs and statistics data

Rail transport flows of international trade

In 2022, the volume of goods traded by rail (export and import) was 4,604 tons, of which 3,000 tons were exchanged with Hungary. The same year, freight transport carried out by private entities occupies the largest share of rail freight transport in the country with 99% in tons and 98% in t-km.

Goods transported by rail are coal and lignite, crude oil and natural gas 99.1%; Only 0.5% are food, beverage and tobacco products; 0.2% are metal and mining products and other products of quarries and 0.2% are secondary raw materials; municipal wastes and other wastes.

Table 6 - Exports/imports in Albania of freights by rail, million tons, 2022[4]

	Q1-2022	Q2-2022	Q3-2022	Q4-2022
Export	0	0.001	0.0007	0
Import	0.002	0.001	0	0

The main reason for the almost negligible volume of railway transport in Albania is the condition of the basic infrastructure railway connections.

Specific of railway transport in Albania is the short line between port of Vlore and Fier railway station, where private operator Albrail is operating, transporting crude oil between the port and oil refinery in Fier. Transported annual quantities are over 0.15 million tons.

Maritime transport flows of international trade

Albania has four seaports, which serve for the transport of freights, which are the Ports of Durres, Vlore, Shengjin and the port of Limjon (Saranda). In 2022, the volume of goods traded by seaports (export and import) was 6.25 million tons (Table 7), of which from port of Durres 95.7% or 5,98 thousand tons.

Table 7 - Volume of freight transported by seaports of Albania, 2021-2022 in million tons[5]

	2021	2022
Total	**4.84**	**6.25**
Port of Durres	**4.44**	**5.98**
-Import	3.09	4.58
-Export	1.35	1.40
Port of Vlore	**0.12**	**0.11**
-Import	0.07	0.07
-Export	0.05	0.04
Port of Limjoni (Sarande)	**0.04**	**0.04**
-Import	0.015	0.025
-Export	0.025	0.015
Port of Shengjin	**0.24**	**0.12**
-Import	0.18	0.06
-Export	0.06	0.06

The most common products are Coke and refined petroleum products, Other non-metallic products and minerals, Coal, lignite and crude oil and gas, taking majority of over 56%.

[4] Source: Institute of Statistics Albania, Rail Transport Statistics Fourth Quarter, 2022

[5] Source: Institute of Statistics Albania, Transport in figures 2022

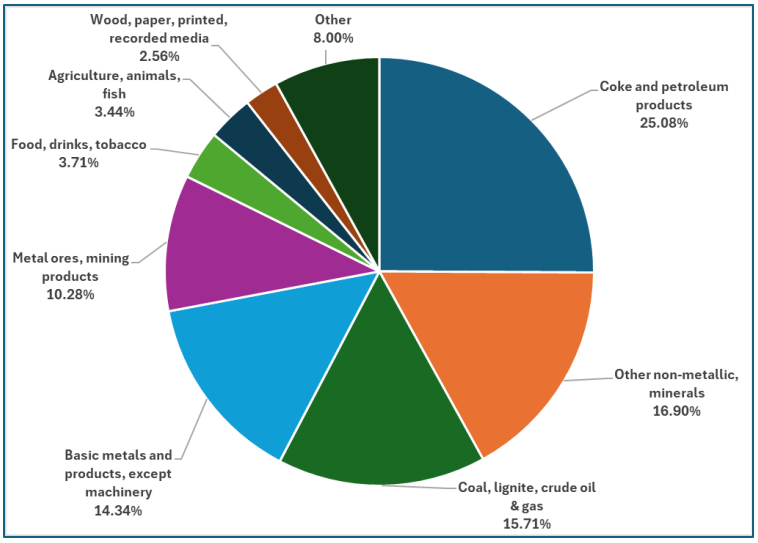

Figure 4 – International Maritime transport in Albania - share by commodity group[6]

Road transport flows of international trade

Regarding road freight transport, the Institute of Statistics Albania does not keep official data. Having in mind the poor availability of railway transport services and small quantities, it is clear that the majority of the goods coming through seaports are transported by road to/from inland destinations in the hinterland, including domestic and international movements.

In international road transport, the share per commodity group is shown by Figure 5. Groups of goods suitable for multimodal transport which are transported internationally by road are Other non-metallic products and minerals, Basic metals except machinery, products of Agriculture, animals and fish and Coal, lignite and crude oil and gas. Those main four groups are over 57% of international road transport of Albania.

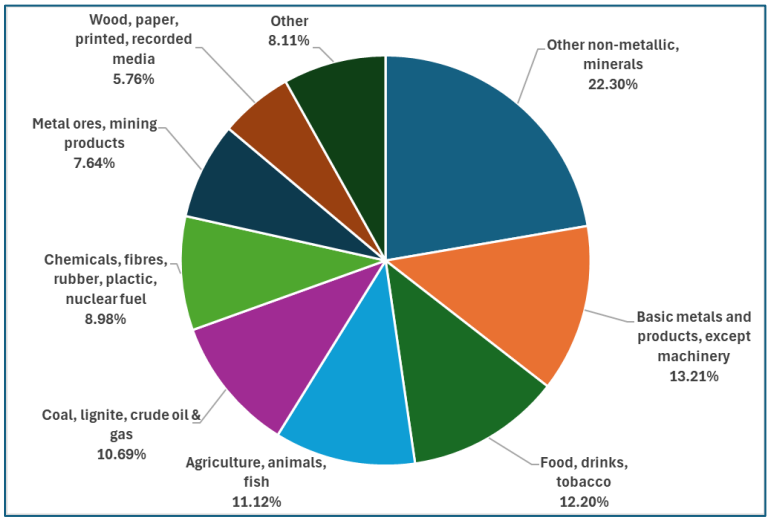

Figure 5 – International Road transport in Albania - share by commodity group[7]

[6] Consultant elaboration based on COMEXT Eurostat, Customs and statistics data

[7] Consultant elaboration based on COMEXT Eurostat and Customs data.

Intermodal transport flows of international trade

Intermodal transport in Albania is fully based on Port of Durres operations, where containerized goods are coming or leaving Albania by container vessels. There are no railway container lines or services and a total quantity of about 150.000 TEU is transported by road, from/to Port of Durres to locations in Albania, mostly to Tirana area and from industrial zones (metal ore) and to Kosovo. According to data provided by Kosovo administration, about 40,000 TEU is transported to/from Kosovo to Port of Durres by road.

On the other hand, amount of containerized goods in Albanian international trade is 0.73 million tons, which is estimated to 96,000 TEU ending or starting in Albania.

It can be calculated that about 14,000 TEU is transported by road to other markets, mostly North Macedonia, and Serbia, as destinations in the catchment area of the Port of Durres.

Out of 96,000 TEU in Albania, about 55,000 TEU is export of metal ores and mining products, mostly to China, then Italy, United Arab Emirates, Switzerland, Hong Kong and India.

In import direction, there is about 31,000 TEU, where majority of about 20,000 TEU are other non-metallic products and minerals, mostly coming from India, Spain and Türkiye.

However, this structure is currently not affecting the multimodal flows in Albania, considering that there is no functional railway connection to Port of Durres and containers are transported by road from/to the port.

On the other side, the potential is huge, represented in 96,000 TEU which are ending in Albania. These quantities of intermodal units are by far the largest in the region, and represent a huge potential for the development of intermodal transport.

Figure 6 illustrates the distribution of commodities in intermodal international transport of Albania (containerized goods). The majority of commodities are from the group Metal ores, mining products and Other non-metallic products and minerals, which are also identified in maritime and road transport. Regarding the technology of intermodal transport in terms of reliability and safety, it should be expected that the share of other goods could be increased.

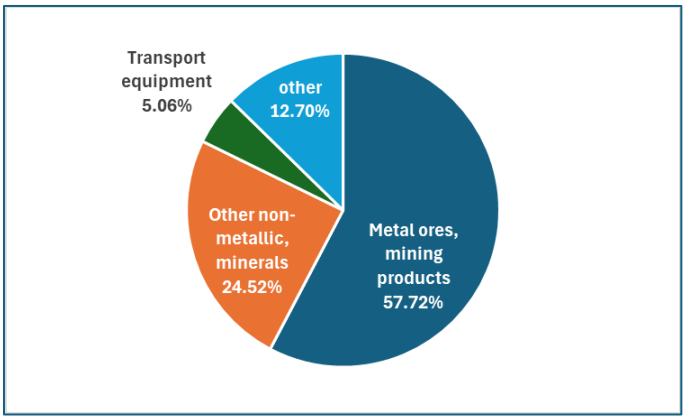

Figure 6 - International Intermodal transport in Albania - share by commodity group (containerized goods)

Bosnia and Herzegovina

International trade

Bosnia and Herzegovina's trade-to-GDP ratio stands at 97%. However, trade development is hindered by low productivity levels, limited access to finance, and administrative barriers. While Customs duties are relatively low for most products, non-tariff barriers remain a significant challenge.[8] The main export partners are Germany (19.4%), Croatia (18.5%), Serbia (15.1%), Austria (12.4%), Italy (10.5%) and Slovenia (9.8%). On the import side, main partners are Italy (23.6%), Germany (20.3%), Serbia (17.2%), and Croatia (12.8%). Trade trend and balance of Bosnia and Herzegovina is shown in Figure 7.

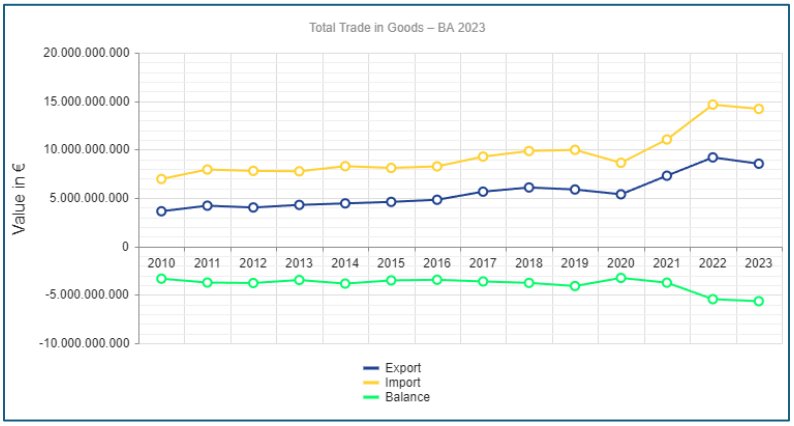

Figure 7 - Total trade value of Bosnia and Herzegovina[9]

Given that Bosnia and Herzegovina has a constant growth trend in international trade, especially since 2020. Despite a decrease in 2023 compared to 2022, it can be expected that international trade will have a growing trend, leading to further growth of transport flows and improved transport capacities needs.

Since the trade relations expressed in monetary terms do not necessarily reflect the traffic flows, further analysis is done based on traded quantities of goods, according to available data. **Analysis by commodity** is made according to Standard classification of goods in transport (NST 2007).

Import and export flows of goods per commodities group are presented in Table 8. It shows that in Export of Bosnia and Herzegovina, the most represented quantities are goods from the groups of Metal ores, mining products; Chemicals, fibers, rubber, plastic, nuclear fuel; Coal, lignite, crude oil & gas; Basic metals and products, except machinery; Other non-metallic products and minerals and Wood, paper, printed, recorded media. On the other hand, in Import flows, the highest quantities of goods are from the groups of Food, drinks, tobacco; Agriculture, animals, fish; Other non-metallic products, minerals; Coke and petroleum products; and Chemicals, fibers, rubber, plastic, nuclear fuel. Also, there is a quantity of 2.28 million tons of goods, for which only origin/destination were available, while structure by commodities group and mode of transport were not available. This

[8] https://www.lloydsbanktrade.com/en/market-potential/bosnia-and-herzegovina/trade-profile#classification_by_products

[9] Source: CEFTA trade portal

quantity of goods does not exceed 3% per each group of goods and relates to exchange with far markets (China, USA, India, Türkiye, etc.) where data were not covered fully in used database sources.

Table 8 – Export and Import of Bosnia and Herzegovina by commodity group (million tons)

Export			Import		
NST goods classification		**Qtty, mill t**	**NST goods classification**		**Qtty, mill t**
3	Metal ores, mining products	2.10		n/a	2.28
8	Chemicals, fibres, rubber, plastic, nuclear fuel	0.98	4	Food, drinks, tobacco	1.08
2	Coal, lignite, crude oil & gas	0.96	1	Agriculture, animals, fish	0.88
10	Basic metals and products, except machinery	0.89	9	Other non-metallic, minerals	0.87
9	Other non-metallic, minerals	0.84	7	Coke and petroleum products	0.79
6	Wood, paper, printed, recorded media	0.71	8	Chemicals, fibres, rubber, plastic, nuclear fuel	0.73
14	Secondary raw mat., waste	0.57	10	Basic metals and products, except machinery	0.65
1	Agriculture, animals, fish	0.52	6	Wood, paper, printed, recorded media	0.44
4	Food, drinks, tobacco	0.37	11	Machinery and equipment, electronics	0.17
7	Coke and petroleum products	0.36	12	Transport equipment	0.14
11	Machinery and equipment, electronics	0.18	3	Metal ores, mining products	0.12
	n/a	0.16	2	Coal, lignite, crude oil & gas	0.07
13	Furniture, manufactured goods	0.12	14	Secondary raw mat., waste	0.07
12	Transport equipment	0.04	5	Textile & leather products	0.06
5	Textile & leather products	0.03	13	Furniture, manufactured goods	0.05
20	Other goods	0.02	20	Other goods	0.01
19	Unidentifiable goods	0.01	19	Unidentifiable goods	0.00
17	Goods in removals, baggage, non-market goods	0.00	17	Goods in removals, baggage, non-market goods	0.00
	Total Export	**3.62**		**Total Import**	**5.09**

It is important to highlight that the majority of quantities exchanged in international trade are suitable for multimodal/ intermodal transport. The goods which may be questionable in case of multimodal/ intermodal transport belong to the group Food, drinks, tobacco, which share is about 10% of export and 21% of import quantities. The modal share per group of commodities is shown in Table 9.

Table 9 – Modal share of international trade of Bosnia and Herzegovina by commodity group

NST classification of goods		IWW	Railway	Road	n/a
3	Metal ores, mining products	4.66%	2.12%	90.10%	3.12%
9	Other non-metallic, minerals	0.00%	0.75%	98.89%	0.36%
8	Chemicals, fibres, rubber, plastic, nuclear fuel	0.00%	6.98%	91.99%	1.03%
10	Basic metals and products, except machinery	2.02%	3.09%	92.26%	2.64%
4	Food, drinks, tobacco	0.00%	1.24%	95.21%	3.55%
1	Agriculture, animals, fish	0.13%	4.66%	93.33%	1.88%
6	Wood, paper, printed, recorded media	0.00%	0.40%	96.78%	2.81%
7	Coke and petroleum products	0.49%	38.34%	60.54%	0.63%
2	Coal, lignite, crude oil & gas	0.00%	10.50%	89.18%	0.32%
14	Secondary raw mat., waste	0.00%	21.82%	77.54%	0.64%
11	Machinery and equipment, electronics	0.04%	0.02%	98.05%	1.89%
12	Transport equipment	0.04%	0.08%	97.33%	2.55%
13	Furniture, manufactured goods	0.00%	0.01%	98.94%	1.05%
5	Textile & leather products	0.00%	0.01%	98.04%	1.95%
20	Other goods	0.00%	80.48%	17.80%	1.72%
19	Unidentifiable goods	0.00%	0.00%	100.00%	0.00%
17	Goods in removals, baggage, non-market goods	0.00%	0.00%	100.00%	0.00%

It can be seen, that for certain commodity groups (i.e. NST 7, 2, 14), the road transport is dominant but with significant share of rail transport, suggesting that shift from road to railway transport is possible and should be facilitated through development of railway infrastructure and establishing of Rail-Road terminals network.

The **analysis by trade partners** refers to the quantities of goods in international trade, by the transport mode, for the 20 most important trade partners of Bosnia and Herzegovina. The volumes are presented in Table 10.

Table 10 – Modal share of international trade of Bosnia and Herzegovina per Export and Import flows and per top 20 trade partners and total quantities (million tons)

Modal share in Export						Exp. mill tons	Modal share in Import						Imp. mill tons	Total mill tons
O/D	IWW		Rail	Road	n/a		O/D	IWW		Rail	Road	n/a		
HR	3.0%		1.1%	95.8%	0.0%	3.42	RS	0.2%		0.8%	99.0%	0.0%	1.80	5.22
RS	0.0%		17.9%	82.1%	0.0%	2.15	HR	0.0%		1.1%	98.9%	0.0%	1.58	3.74
SI	0.0%		13.9%	86.0%	0.0%	0.70	US	0.0%		0.0%	0.0%	100.0%	0.93	1.63
IT	0.0%		2.1%	86.4%	11.5%	0.51	SI	0.0%		0.0%	99.9%	0.1%	0.63	1.13
DE	0.0%		8.0%	90.7%	1.3%	0.38	HU	0.0%		18.1%	81.7%	0.2%	0.41	0.80
HU	0.0%		15.0%	84.6%	0.4%	0.38	IT	0.0%		1.7%	94.0%	4.4%	0.34	0.72
AT	0.6%		3.3%	95.0%	1.1%	0.29	TR	0.0%		0.0%	0.0%	100.0%	0.34	0.63
ME	0.0%		0.0%	100.0 %	0.0%	0.20	CN	0.0%		0.0%	0.0%	100.0%	0.32	0.52
PL	0.0%		24.9%	75.1%	0.0%	0.12	RU	0.0%		0.0%	0.0%	100.0%	0.29	0.41
TR	0.0%		0.0%	0.0%	100.0 %	0.08	DE	0.1%		4.7%	93.7%	1.5%	0.26	0.34
MK	0.0%		0.0%	0.0%	100.0 %	0.08	PL	0.0%		33.6%	66.4%	0.0%	0.21	0.29
XK	0.0%		0.0%	100.0 %	0.0%	0.08	AT	0.0%		0.2%	99.7%	0.1%	0.17	0.25
RO	39.7%		0.0%	59.4%	0.8%	0.07	CZ	0.0%		67.4%	32.5%	0.1%	0.16	0.23
CZ	0.0%		24.5%	75.5%	0.0%	0.07	BR	0.0%		0.0%	0.0%	100.0%	0.15	0.22
SK	0.0%		31.2%	68.8%	0.0%	0.05	IN	0.0%		0.0%	0.0%	100.0%	0.11	0.16
NL	0.0%		0.0%	94.2%	5.8%	0.04	SK	0.0%		34.0%	66.0%	0.1%	0.08	0.12
FR	0.0%		0.0%	98.2%	1.8%	0.04	MK	0.0%		0.0%	0.0%	100.0%	0.08	0.11
BG	11.2%		0.1%	87.9%	0.8%	0.03	NL	0.0%		0.0%	96.3%	3.7%	0.07	0.10
CN	0.0%		0.0%	0.0%	100.0 %	0.03	EG	0.0%		0.0%	0.0%	100.0%	0.07	0.10
AL	0.0%		0.0%	100.0 %	0.0%	0.03	RO	0.0%		6.2%	93.7%	0.1%	0.07	0.10

Similar to previous analysis, marked are trade partners where road transport is dominant and where possibilities for shift from road to railway transport are evident with few regional economies and neighboring EU MS (Serbia, North Macedonia, Italy, Croatia, Hungary, and Romania), where multimodality can be increased through improvement of regional railway infrastructure and establishing of Rail-Road terminals, especially in case of flows to biggest trade partners of Bosnia and Herzegovina – Croatia and Serbia.

To recognize the possibility for increase of multimodal/ intermodal transport to/ from the most important trade partners, it is important to analyze distribution by commodity group. Table 11 presents the quantities of goods by commodity group for the 20 most important trading partners. In exchange with the largest trading partners, Croatia and Serbia, all commodity groups are represented, with a dominance of Metal ores and mining products and Other non-metallic products and minerals in the case of Croatia and Coal, lignite, crude oil and gas in the case of Serbia. Those 3 groups create the most significant flows of goods which are suitable for railway transport.

Table 11 – Trade quantities (million tons) of Bosnia and Herzegovina, for top 20 trade partners by commodity group

Partner/ NST	3	9	8	10	4	1	7	6	2	14	11	12	13	5	20	19	17	Sum
HR	1.84	1.13	0.23	0.23	0.33	0.24	0.36	0.28	0.00	0.25	0.06	0.00	0.04	0.01		0.00		**5.01**
RS	0.16	0.21	0.28	0.41	0.55	0.46	0.56	0.24	0.97	0.04	0.03	0.01	0.01	0.01		0.01	0.00	**3.95**
SI	0.03	0.09	0.16	0.21	0.12	0.20	0.06	0.16	0.00	0.14	0.06	0.07	0.02	0.01		0.00	0.00	**1.33**
US	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**0.93**
IT	0.07	0.03	0.17	0.19	0.03	0.17	0.02	0.08	0.00	0.01	0.03	0.01	0.01	0.02		0.00	0.00	**0.85**
HU	0.04	0.04	0.21	0.05	0.10	0.13	0.02	0.03	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.79**
DE	0.01	0.01	0.22	0.07	0.05	0.03	0.00	0.08	0.01	0.01	0.05	0.04	0.03	0.01	0.02	0.00	0.00	**0.64**
AT	0.00	0.01	0.11	0.10	0.03	0.02	0.00	0.06		0.01	0.07	0.02	0.01	0.00	0.00		0.00	**0.46**
TR	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**0.42**
CN	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**0.36**
PL	0.02	0.02	0.09	0.04	0.02	0.01	0.07	0.01		0.00	0.01	0.00	0.01	0.00	0.00		0.00	**0.32**
RU	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**0.29**
CZ	0.00	0.02	0.04	0.02	0.00	0.06	0.02	0.01	0.04	0.00	0.00	0.01	0.00	0.00	0.00			**0.23**
ME	0.01	0.07	0.01	0.06	0.05	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00				**0.22**
MK	0.01	0.00	0.01	0.03	0.04	0.02	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00				**0.16**
BR	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**0.15**
RO	0.00	0.00	0.02	0.05	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00			**0.13**
IN	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**0.13**
SK	0.00	0.02	0.05	0.01	0.01	0.00	0.01	0.02		0.00	0.00	0.00	0.00	0.00				**0.13**
NL	0.00	0.00	0.02	0.01	0.02	0.02	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00		0.00	0.00	**0.11**
Total	**2.20**	**1.67**	**1.63**	**1.47**	**1.38**	**1.37**	**1.13**	**1.05**	**1.03**	**0.64**	**0.34**	**0.16**	**0.15**	**0.08**	**0.03**	**0.01**	**0.00**	**16.61**

The analysis of **transport flows according to the mode of transport** was partially presented in previous paragraphs, where in detail modal share is presented for all commodity groups and the top 20 trade partners. Figures 8 and 9 are showing the modal share of international trade of Bosnia and Herzegovina as percentages of total quantities and by volume per direction. Road transport per export and import directions is quite balanced, while in railway transport, imports are more than 3 times higher compared to exports.

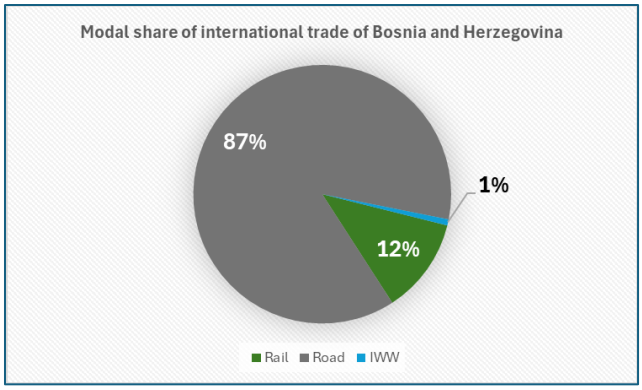

Figure 8 – Modal share of international transport of Bosnia and Herzegovina 2023[10]

[10] Source: Customs administration of Bosnia and Herzegovina

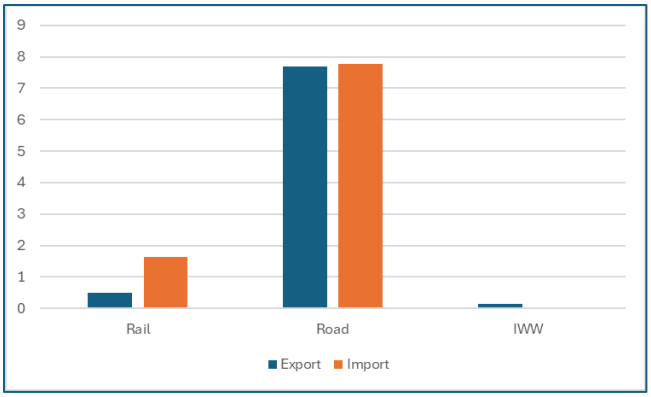

Figure 9 – Quantities in international trade of Bosnia and Herzegovina (million tons) per mode of transport and direction, 2023[11]

Domination of road transport in international flows is unquestionable but comparing the shares on the total level including domestic transport, where railway transport share is slightly higher than road, it may be expected that share of railway in future can be significantly increased in international flows.

Table 12 - Top 5 commodity groups per mode of transport and direction in international trade of Bosnia and Herzegovina

NST*/mode /flow	3	9	8	10	4
IWW	0.10			0.03	
Export	0.10			0.03	
Import					
Railway	0.05	0.01	0.12	0.05	0.02
Export	0.05	0.01	0.01	0.04	0.02
Import	0.00	0.00	0.11	0.00	0.00
Road	2.00	1.70	1.57	1.42	1.38
Export	1.89	0.83	0.96	0.80	0.32
Import	0.11	0.87	0.61	0.62	1.06
Grand Total	2.20	1.71	1.69	1.50	1.41

*

3 - Metal ores, mining products

9 - Other non-metallic, minerals

8 - Chemicals, fibers, rubber, plastic

10 - Basic metals and products, except machinery

4 - Food, drinks, tobacco

Rail transport flows of international trade

Main specific of Railway transport system in Bosnia and Herzegovina is its division to Railways of Federation of Bosnia and Herzegovina and Railways of Republika Srpska, both responsible for managing infrastructure and delivering operations. According to information gathered from surveys and interviews with users, ZRS is responsible for about 30% and ZFBH for 70% of total quantities transported by rail.

Total quantities of goods transported in Bosnia and Herzegovina in 2022 was 12,7 million tons, which include international trade, domestic transport and transit. Out of this total quantity, the most common products transported were: 49.5 % coal and lignite, crude oil and natural gas, 26.6 % metal ores and other mining and quarrying products; and 5% Coke and refined petroleum products.

[11] Source: Customs administration of Bosnia and Herzegovina

Quantity in international trade in 2022 was 2.91 million tons, which is about 23% of total. Total quantities in international railway trade in 2023 were 2.12 million tons.

Detailed structure per commodity group in internationally traded and transported goods by railway transport was known for about 50% of quantities. For this sample, most common commodities with share of 57% were Coke and petroleum products and Secondary raw materials. Considering that analyzing such sample would not give the full picture, Figure 10 shows the share of commodities in railway transport including international trade, transit and domestic transport together.

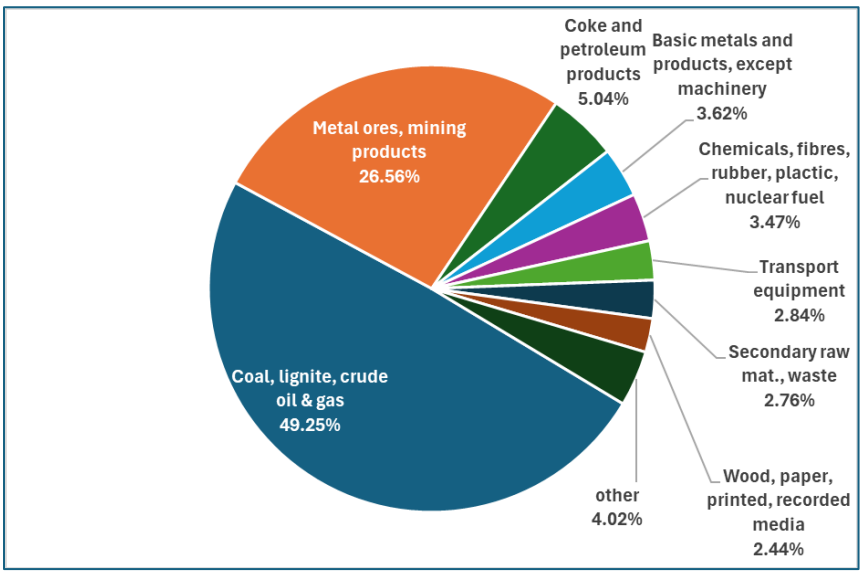

Figure 10 - International Railway transport in Bosnia and Herzegovina – share by commodity group

Some of the important users of railway transport services in Bosnia and Herzegovina are Chemical industry and mining in Tuzla industrial area, Iron factory Arcelor Mittal in Zenica and Aluminij in Mostar.

Main railway flows are oriented to railway stations Sarajevo, Mostar, Zenica, Doboj and Banja Luka. Data on quantities transshipped is not available.

Road transport flows of international trade

According to the official statistics, Road transport is the second mode of transport, carrying lower quantities compared to railway. In 2022, the total quantity of goods transported by road, were 10.35 million tons, including domestic and transit transport.

Given that for 2023, the structure of international road transport was mostly provided, the Consultant elaborated total quantities based on COMEXT Eurostat, Customs and statistics data. Figure 11 presents the structure of international road transport per commodity group.

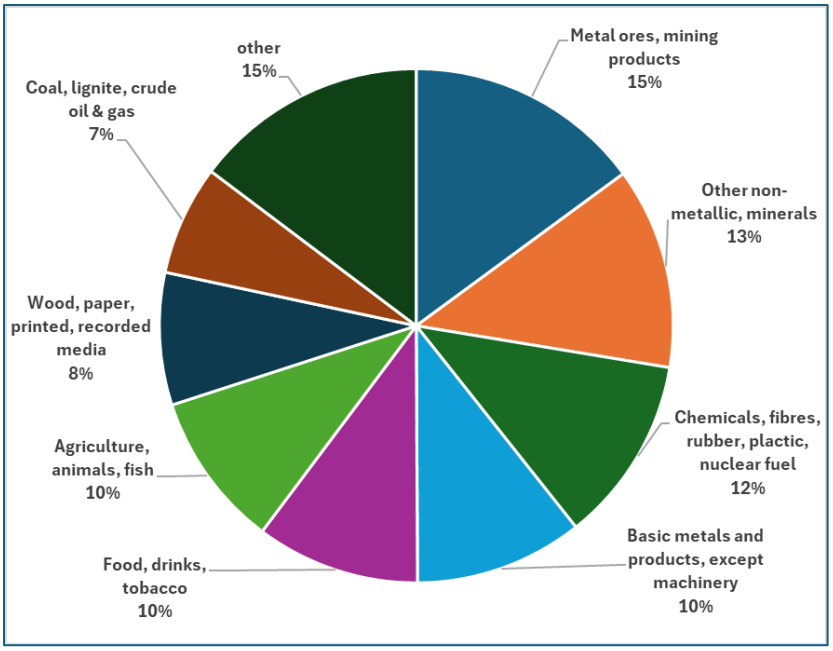

Figure 11 – International Road transport in Bosnia and Herzegovina – share by commodities

What is visible from this analysis, is that 57% of commodities (metal ores, mining products, non-metallic products and minerals, chemicals, rubber, basic metals and Coal, lignite and crude oil and gas) are transported by road transport, while these commodity groups in bulk form are more suitable for railway or water means of transport.

Inland Waterway transport flows of international trade

In 2022, only 0.09 % of imports and 1.11% of exports were transported by inland waterway. IWW transport in Bosnia and Herzegovina is negligibly small, although there is an international river Sava that flows through Bosnia and Herzegovina. According to information from interviews, the reason for this trend is the poor navigation conditions on the Sava River, where complete rehabilitation needs to be carried out, from the mouth of the Danube, all the way upstream to the port in Bosnia and Herzegovina.

However, Figure 12 illustrates the distribution of 0.14 million tons of commodities internationally transported by Sava River.

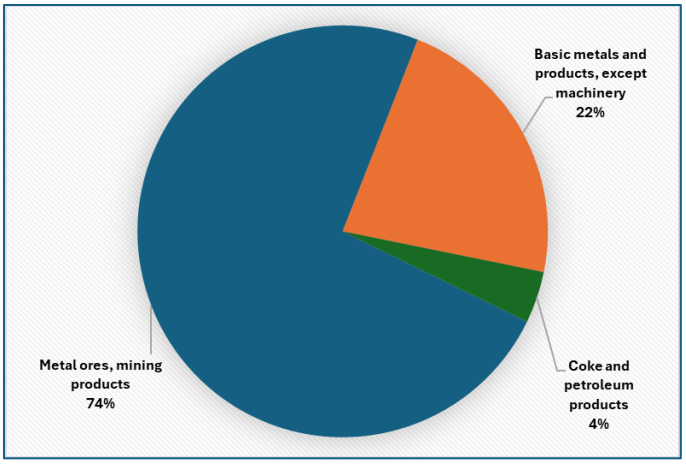

Figure 12 – International IWW transport in Bosnia and Herzegovina – share by commodities

Intermodal transport flows

Analysis of intermodal transport flows in international trade were mainly not supported by detailed data, especially missing the structure of import/export flows from/to China, United States, Türkiye, Brazil, India and Russian Federation. Total quantity of these flows are about 2.5 million tons, where it can be assumed that transport to/from far markets should significantly containerized. However, there is no data to justify such an assumption.

Total quantity of containerized goods, converted to TEU, reaches a total volume of 56,200 TEU. In exports 20,500 TEU and in imports about 35,700 TEU. According to available data from COMEXT Eurostat, other regional customs and statistics, about 8,000 TEU is exported by road, to Italy and Serbia.

On the other hand, based on independent private analysis of data from Port of Ploče and Port of Rijeka (container terminal AGCT)[12], the intermodal transport market of Bosnia and Herzegovina is divided between the major flows: about 27,000 TEU to/from Port of Rijeka mainly to the northern part of Bosnia and Herzegovina, and about 26,000 TEU to/from Port of Ploče to southern part of Bosnia and Herzegovina. The rest of about 3,000 TEU is transported from/to Serbia and other European countries, mostly by road.

According to the same source, dominant commodities in import were machinery, textile, technical goods, furniture and food and consumer goods. In export, commodities were wood and wooden products, agriculture products, minerals, stone, granulates etc.

The share of intermodal transport in total transport flows in Bosnia and Herzegovina in 2023 was 1.62% in the export of goods and 3.25% in the import of goods. Percentage-wise, the participation is extremely small, but it represents a small increase compared to 2022, when it amounted to 1.59% in the export of goods and 2.10% in the import of goods[13].

[12] Results presented during interviews, the source is known to the consultant and asked to remain anonymous
[13] Data from Administration for indirect taxation of Bosnia and Herzegovina, 2024

Kosovo

International trade

Trade-to-GDP ratio in Kosovo is 110%.[14] The main export sectors include base metals, miscellaneous manufactured articles, plastics, rubber, mineral products, and prepared foodstuffs. On the import side, mineral products, prepared foodstuffs, machinery, and base metals are the leading categories, expressed in monetary trade value. Main trade partners of Kosovo in terms of export are North Macedonia (21.2%), Albania (18.1%), Germany (15.6%), Serbia (11.2%), Italy (8.3%) and Montenegro (6.8%). On the import side, main trade partners of Kosovo are Germany (20.7%), Serbia (12.6%), Greece (10.4%), North Macedonia (9.6%) and Italy, Albania and Slovenia (approximately 9%). The trade trend and balance of Kosovo is shown in Figure 13.

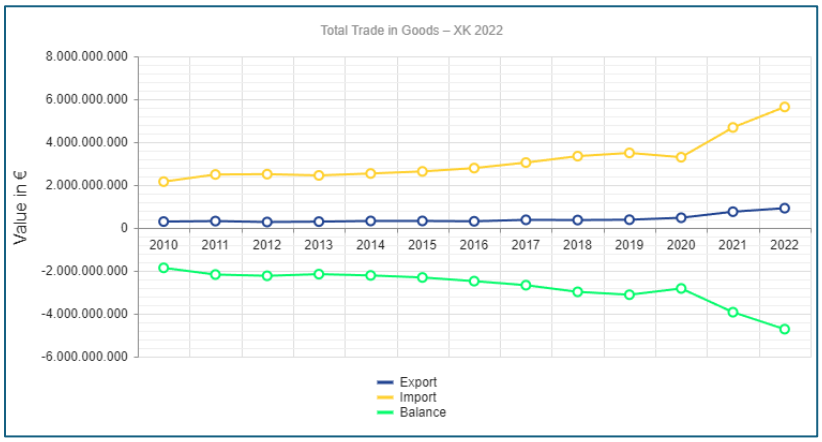

Figure 13 - Total trade value of Kosovo[15]

International trade in Kosovo is in constant deficit. There is no country where Kosovo expressed a trade surplus. Figures show that Kosovo has constant growth in international trade, significantly from 2020 onwards and particularly in imports, which leads to the expectation that this trend will continue, consequently causing further growth of freight transport demand and increased needs for improved transport capacities.

Analysis by commodity is made according to Standard classification of goods in transport (NST 2007).

Import and export flows of goods per commodity group are presented in Table 13. It shows that in Export of Kosovo most common commodities are Basic metals and products, except machinery; Food, drinks, tobacco; Coal, lignite, crude oil & gas and Other non-metallic, minerals. On the other hand, import flows are more than 6 times higher than export and consists mainly of Other non-metallic, minerals; Coke and petroleum products; Food, drinks, tobacco and Basic metals and products, except machinery.

[14] https://www.lloydsbanktrade.com/en/market-potential/kosovo/trade-profile
[15] Source: CEFTA trade portal

Table 13 – Export and Import of Kosovo per commodities (million tons)

Export			Import		
NST goods classification		**Qtty, mill t**	**NST goods classification**		**Qtty, mill t**
10	Basic metals and products, except machinery	0.18	**9**	Other non-metallic, minerals	1.19
4	Food, drinks, tobacco	0.14	**7**	Coke and petroleum products	0.85
2	Coal, lignite, crude oil & gas	0.13	**4**	Food, drinks, tobacco	0.64
9	Other non-metallic, minerals	0.11	**10**	Basic metals and products, except machinery	0.56
8	Chemicals, fibres, rubber, plastic, nuclear fuel	0.08	**8**	Chemicals, fibres, rubber, plastic, nuclear fuel	0.46
3	Metal ores, mining products	0.04	**1**	Agriculture, animals, fish	0.45
14	Secondary raw mat., waste	0.04	**3**	Metal ores, mining products	0.31
5	Textile & leather products	0.03	**6**	Wood, paper, printed, recorded media	0.27
1	Agriculture, animals, fish	0.03	**11**	Machinery and equipment, electronics	0.14
6	Wood, paper, printed, recorded media	0.02	**5**	Textile & leather products	0.06
13	Furniture, manufactured goods	0.01	**12**	Transport equipment	0.06
11	Machinery and equipment, electronics	0.00	**2**	Coal, lignite, crude oil & gas	0.06
12	Transport equipment	0.00	**13**	Furniture, manufactured goods	0.02
19	Unidentifiable goods	0.00	**14**	Secondary raw mat., waste	0.00
7	Coke and petroleum products	0.00	**19**	Unidentifiable goods	0.00
17	Goods in removals, baggage, non market goods	0.00	**17**	Goods in removals, baggage, non market goods	0.00
	Total Export	**0.81**		**Total Import**	**5.09**

It is important to highlight that the majority of quantities exchanged in international trade are suitable for multimodal/intermodal transport.

The modal share per commodity group is shown in Table 14.

Table 14 – Modal share of international trade of Kosovo by commodity group

NST classification of goods		Railway	Road
9	Other non-metallic, minerals	0	100%
7	Coke and petroleum products	0	100%
4	Food, drinks, tobacco	0	100%
10	Basic metals and products, except machinery	0.4%	99.6%
8	Chemicals, fibers, rubber, plastic, nuclear fuel	0	100%
1	Agriculture, animals, fish	0	100%
3	Metal ores, mining products	0	100%
6	Wood, paper, printed, recorded media	0	100%
2	Coal, lignite, crude oil & gas	0	100%
11	Machinery and equipment, electronics	0	100%
5	Textile & leather products	0	100%
12	Transport equipment	0	100%
14	Secondary raw mat., waste	0	100%
13	Furniture, manufactured goods	0	100%
19	Unidentifiable goods	0	100%
17	Goods in removals, baggage, non-market goods	0	100%

It is obvious that the entire international trade of Kosovo is done by road transport. Further analysis of flows per mode of transport is redundant. Expected completion of construction works on railway infrastructure towards North Macedonia and eventual future opening of services to Serbia could significantly change the situation, but until then, Kosovo is limited to road transport as only available option.

The **analysis by trade partners** refers to the quantities of goods in international trade for the 20 most important trade partners of Kosovo per direction. The volumes are presented in Table 15. Compared to other regional economies, here it will be no analysis per modal share. Main export and import flows are to/from North Macedonia and Albania, while in import additional significant flows of goods are coming from Türkiye, Serbia, India and Greece.

Table 15 – Export and Import flows and per top 20 trade partners of Kosovo and total quantities (million tons)

	Export		Import		Total mt
O/D	Road	mt	Road	mt	
MK	100%	0.31	100%	0.75	1.07
AL	100%	0.17	100%	0.80	0.97
TR	100%	0.02	100%	0.53	0.55
RS	100%	0.05	100%	0.42	0.46
IN	100%	0.00	100%	0.41	0.41
GR	100%	0.00	100%	0.39	0.40
CN	100%	0.00	100%	0.20	0.20
IT	100%	0.02	100%	0.17	0.19
DE	100%	0.03	100%	0.16	0.19
ME	100%	0.07	100%	0.08	0.16
BG	100%	0.01	100%	0.12	0.13
HR	100%	0.01	100%	0.10	0.11
US	100%	0.03	100%	0.08	0.10
BA	100%	0.01	100%	0.08	0.09
SI	100%	0.00	100%	0.06	0.07
RO	100%	0.01	100%	0.05	0.06
HU	100%	0.00	100%	0.06	0.06
PL	100%	0.01	100%	0.05	0.06
ES	100%	0.00	100%	0.05	0.05
AT	100%	0.00	100%	0.05	0.05
Total million tons		**0.75**		**4.62**	**5.37**

The transport flows per trade partner and per commodity are shown in Table 16. This analysis aims at recognizing the flows of commodities suitable for future shift from road to railway transport.

Table 16 – Trade quantities (million tons) of Kosovo for top 20 trade partners by commodity group

Partner/ NST	9	7	10	4	8	1	3	6	2	11	5	12	14	13	19	17	Sum
MK	0.34	0.04	0.11	0.10	0.11	0.03	0.16	0.01	0.13	0.00	0.00	0.00	0.02	0.00	0.00	0.00	**1.07**
AL	0.40	0.03	0.25	0.10	0.06	0.07	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00		**0.97**
TR	0.11	0.05	0.12	0.03	0.06	0.03	0.00	0.08	0.00	0.02	0.02	0.00	0.01	0.01	0.00	0.00	**0.55**
RS	0.06	0.00	0.03	0.12	0.03	0.16	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00		**0.46**
IN	0.12	0.27	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00			**0.41**
GR	0.02	0.29	0.03	0.01	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		**0.40**
CN	0.02	0.00	0.05	0.00	0.04	0.00	0.00	0.01		0.03	0.03	0.01	0.00	0.01	0.00	0.00	**0.20**
IT	0.03	0.04	0.02	0.03	0.02	0.01	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00		**0.19**
DE	0.01	0.00	0.01	0.03	0.04	0.00	0.00	0.02	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	**0.19**
ME	0.04		0.01	0.01	0.01	0.02	0.01	0.05	0.01	0.00	0.00	0.00	0.00	0.00			**0.16**
BG	0.05	0.00	0.00	0.04	0.02	0.00	0.00	0.01		0.00	0.00	0.00	0.00	0.00			**0.13**
HR	0.03	0.00	0.00	0.04	0.01	0.02	0.00	0.01	0.00	0.00	0.00	0.00		0.00	0.00		**0.11**
US	0.00	0.06	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	**0.10**
BA	0.00	0.00	0.02	0.02	0.00	0.01	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00			**0.09**
SI	0.01	0.00	0.00	0.04	0.01	0.01	0.00	0.00		0.00	0.00	0.00		0.00			**0.07**
RO	0.01	0.00	0.02	0.01	0.00	0.01	0.00	0.01		0.00	0.00	0.00		0.00			**0.06**
HU	0.01	0.00	0.00	0.02	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00		0.00			**0.06**
PL	0.01	0.00	0.01	0.02	0.01	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00		**0.06**
ES	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00		**0.05**
AT	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.01		0.00	0.00	0.00	0.00	0.00			**0.05**
Total	**1.28**	**0.81**	**0.70**	**0.66**	**0.46**	**0.41**	**0.28**	**0.28**	**0.15**	**0.13**	**0.09**	**0.05**	**0.04**	**0.03**	**0.00**	**0.00**	5.37

The significant flows of Other non-metallic products and minerals are recognized to/from North Macedonia, Albania, India and Türkiye. Basic metals and metal products except machinery are in direction of Albania and Türkiye. Food, drinks and tobacco creates the main flows from North Macedonia and Serbia. Products of agriculture, animals and fish are flowing to/from Serbia, while Coke and petroleum products are mainly coming from Greece and India.

Intermodal transport flows

Main flows of containerized goods transported in international trade of Kosovo are related to the direction of Port of Durres. About 36,000 TEU is finding their way to/from Kosovo through this South-Adriatic gate.

In addition to this number, trade of containerized goods with partners from other directions was about 1,000 TEU, making the total number of TEU at the level of 37,000.

Considering that currently there are no functional railway links, all containers are transported by road, as well as all other goods.

Data on structure of containerized goods per partner and commodity is available only in the part of trade of Kosovo with European Union, based on COMEXT Eurostat database. Main trade partners in case of containerized goods are Spain (over 57%), followed by France, Poland, Belgium, Italy and Malta.

At the same time, the main commodity group is Other non-metallic products and minerals (57.2%) followed by Food, drinks and tobacco (20.7%).

Montenegro

International trade

Montenegro is a country open to foreign trade, with trade-to-GDP ratio of 126%[16]. Expressed in monetary values, main trade partners who import goods from Montenegro are Serbia (40.6%), Bosnia and Herzegovina (16%), Slovenia (15.6%), while Kosovo, Albania and Germany import approximately 5% each. On the import side, main trade partners of Montenegro who export goods to Montenegro are Germany (20.7%), Serbia (12.6%), Greece (10.4%), and North Macedonia, Italy, Albania and Slovenia with a share between 8-10 % each. Trade trend and balance of Montenegro is shown in Figure 14.

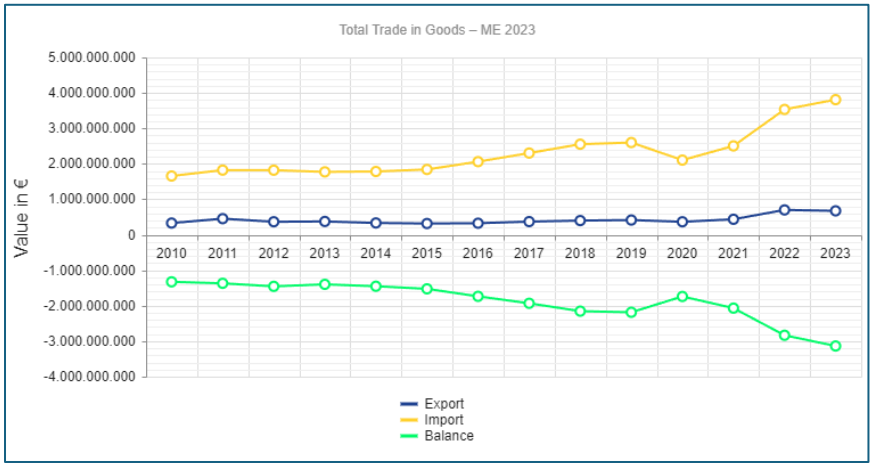

Figure 14 - Total trade value of Montenegro[17]

Trade balance of Montenegro is in deficit. Given that Montenegro has a constant trend of growth in international trade, especially since 2020, it can be expected that this trend will continue, leading to further growth of freight transport demand and the need to improve transport capacities.

Analysis per mode of transport, commodities and trade partners is done based on data extracted from COMEXT database and data provided by Montenegrin customs on trade with CEFTA partners. Data related to trade with the rest of the world was not available. Results of further analysis should be taken with reservation to this limitation.

Analysis by commodity is made according to Standard classification of goods in transport (NST 2007).

Import and export flows of goods per commodity group, limited to trade partners from EU MS and CEFTA, are presented in Table 17. On the export direction, the flows are mainly consisted of groups of goods Metal ores, mining products; Coal, lignite, crude oil & gas; and Wood, paper, printed, recorded media. All these commodities are suitable for multimodal/intermodal transport. Regarding the import direction, main commodities are Other non-metallic products and minerals; Food, drinks,

[16] https://www.lloydsbanktrade.com/en/market-potential/montenegro/trade-profile
[17] Source: CEFTA trade portal

tobacco; Coke and petroleum products; Chemicals, fibers, rubber, plastic; Metal ores, mining products; Basic metals and products, except machinery and Agriculture, animals, fish. Beside the group of Food, drinks and tobacco which share is 17%, all other listed main groups of commodities are suitable for multimodal transport as well.

Table 17 – Export and Import of Montenegro by commodity group (million tons)[18]

Export			Import		
NST goods classification		**Qtty, mill t**	**NST goods classification**		**Qtty, mill t**
3	Metal ores, mining products	0.315	9	Other non-metallic, minerals	0.696
2	Coal, lignite, crude oil & gas	0.200	4	Food, drinks, tobacco	0.473
6	Wood, paper, printed, recorded media	0.136	7	Coke and petroleum products	0.330
1	Agriculture, animals, fish	0.044	8	Chemicals, fibers, rubber, plastic, nuclear fuel	0.219
10	Basic metals and products, except machinery	0.036	3	Metal ores, mining products	0.136
4	Food, drinks, tobacco	0.017	10	Basic metals and products, except machinery	0.133
14	Secondary raw mat., waste	0.017	1	Agriculture, animals, fish	0.122
8	Chemicals, fibres, rubber, plastic, nuclear fuel	0.003	6	Wood, paper, printed, recorded media	0.062
9	Other non-metallic, minerals	0.003	12	Transport equipment	0.040
11	Machinery and equipment, electronics	0.003	11	Machinery and equipment, electronics	0.034
19	Unidentifiable goods	0.002	13	Furniture, manufactured goods	0.016
12	Transport equipment	0.001	5	Textile & leather products	0.009
13	Furniture, manufactured goods	0.001	2	Coal, lignite, crude oil & gas	0.003
7	Coke and petroleum products	0.000	14	Secondary raw mat., waste	0.003
5	Textile & leather products	0.000	20	Other goods	0.000
20	Other goods	0.000	19	Unidentifiable goods	0.000
17	Goods in removals, baggage, non-market goods	0.000	17	Goods in removals, baggage, non-market goods	0.000
	Total Export	**0.78**		**Total Import**	**2.78**

The modal share per group of commodities, based on data sample limited to trade partners from EU MS and CEFTA parties is shown in Table 18.

Table 18 – Modal share of international trade of Montenegro by commodity group

NST classification of goods		Maritime	Railway	Road
9	Other non-metallic, minerals	20.7%	0.0%	79.3%
4	Food, drinks, tobacco	1.3%	0.0%	98.7%
3	Metal ores, mining products	64.2%	4.9%	30.9%
7	Coke and petroleum products	82.2%	0.0%	17.8%
8	Chemicals, fibers, rubber, plastic, nuclear fuel	0.5%	0.0%	99.5%
2	Coal, lignite, crude oil & gas	0.5%	0.0%	99.5%
6	Wood, paper, printed, recorded media	7.0%	0.0%	93.0%
10	Basic metals and products, except machinery	13.8%	0.0%	86.2%
1	Agriculture, animals, fish	2.3%	2.9%	94.8%
12	Transport equipment	5.5%	1.5%	93.0%
11	Machinery and equipment, electronics	1.2%	0.0%	98.8%
14	Secondary raw mat., waste	0.7%	0.0%	99.3%
13	Furniture, manufactured goods	2.6%	0.0%	97.4%
5	Textile & leather products	3.6%	0.0%	96.4%
19	Unidentifiable goods	0.0%	0.0%	100.0%
20	Other goods	6.9%	0.0%	93.1%
17	Goods in removals, baggage, non-market goods	0.1%	0.0%	99.9%

Commodities from the groups of Metal ores, mining products; and Coke and petroleum products are mainly transported by sea, while still significant share is on road, which could be shifted to rail and/or maritime transport. Agriculture products and Transport equipment are mainly transported by road, with a small share of railway and maritime transport, suggesting that further shift from road is

[18] Limited to trade with EU MS and CEFTA partners

possible. A similar situation is with the biggest group of commodities – Other non-metallic products and minerals, and Basic metals and products, where road transport is dominant, while significant quantities are in maritime transport.

The group of commodities Coal, lignite, crude oil & gas, which is typically suitable for railway or maritime transport, in case of Montenegro is almost fully transported by road.

The **analysis by trade partners** refers to the limited quantities of goods in international trade, by the transport mode, for the 20 most important trade partners of Montenegro among EU MS and CEFTA parties. The volumes[19] are presented in Table 19.

Table 19 – Modal share of international trade of Montenegro per Export and Import flows and per top 20 trade partners and total quantities (million tons)

	Export				Import				Total mt
O/D	Sea	Rail	Road	mt	Sea	Rail	Road	mt	
RS	0.0%	0.0%	100.0%	0.257	0.0%	0.7%	99.3%	0.765	1.021
AL	0.0%	0.0%	100.0%	0.046	0.1%	3.1%	96.8%	0.389	0.435
GR	96.1%	0.0%	3.9%	0.146	93.1%	0.0%	6.9%	0.263	0.409
HR	0.0%	0.0%	100.0%	0.006	47.4%	0.0%	52.6%	0.291	0.297
BA					0.0%	0.0%	100.0%	0.199	0.199
XK	0.0%	0.0%	100.0%	0.084	0.0%	0.0%	100.0%	0.074	0.159
IT	74.2%	0.0%	25.7%	0.023	34.6%	0.0%	65.4%	0.059	0.082
MT	100.0%	0.0%	0.0%	0.068	100.0%	0.0%	0.0%	0.000	0.068
SI	0.0%	0.0%	100.0%	0.007	0.6%	0.2%	99.2%	0.054	0.061
PL	0.0%	36.7%	63.3%	0.027	0.3%	0.0%	99.7%	0.014	0.041
NL	98.8%	0.0%	1.2%	0.022	6.9%	0.0%	93.1%	0.013	0.035
ES	99.0%	0.0%	1.0%	0.022	52.4%	0.0%	47.6%	0.013	0.035
SE	99.7%	0.0%	0.3%	0.033	5.1%	0.0%	94.9%	0.001	0.034
DE	1.7%	0.0%	98.3%	0.005	4.1%	0.0%	95.9%	0.029	0.034
FI	100.0%	0.0%	0.0%	0.022	0.3%	0.0%	99.7%	0.000	0.022
MK					0.0%	0.0%	100.0%	0.021	0.021
FR	0.0%	0.0%	100.0%	0.001	2.8%	0.0%	97.2%	0.013	0.014
BG	18.8%	4.7%	76.5%	0.002	0.0%	1.6%	98.4%	0.010	0.012
AT	0.0%	0.0%	100.0%	0.001	0.0%	0.0%	100.0%	0.010	0.011
HU	0.0%	0.0%	100.0%	0.001	0.8%	0.0%	99.2%	0.011	0.011
mill t	0.32	0.01	0.44	0.77	0.41	0.02	1.80	2.23	3.00

Main output of this analysis is related to the possibilities for modal shift in case of main trade partners, Serbia, Albania and Croatia. Trade with Serbia is almost fully done by road, even the possibility of using railway is present, evidenced through the example of Poland, where over one third of goods are transported by railway. In case of Albania and Croatia, the exported goods are not transported by sea, even if is possible and visible in case of import from Croatia and total trade with Greece, where majority of goods are transported by Maritime transport. In addition to this, the import from Italy is mainly by road, even the export is more oriented to Maritime transport.

In order to analyze all quantities per all trade partners, the data related to the missing part of trade partners is needed. However, considering the data from statistics office presented in following paragraphs, the majority of missing data are related to maritime transport, which do not affect the flows from/to neighboring trade partners and inland freight flows per trade partners listed.

To recognize the possibility for increase of multimodal/intermodal transport to/from most important trade partners, it is important to analyze distribution per commodity group for each trade partner as

[19] Limited to trade with EU MS and CEFTA partners

well. Table 20 presents the quantities of goods by commodity group for the 20 most important trading partners.

Table 20 – Trade quantities (million tons) of Montenegro, for top 20 trade partners by commodity group

Partner/ NST	9	4	3	7	8	2	6	10	1	12	11	14	13	5	19	20	17	Sum
RS	0.15	0.33	0.02	0.02	0.10	0.19	0.05	0.04	0.09	0.01	0.01	0.01	0.01	0.00	0.00			1.04
AL	0.20	0.00	0.10	0.02	0.07		0.04	0.01	0.00	0.00								0.44
GR	0.00	0.00	0.14	0.24	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00				0.41
HR	0.21	0.02	0.00	0.04	0.01		0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.30
BA	0.07	0.04	0.01	0.00	0.01	0.00	0.01	0.05	0.00	0.00	0.00		0.00	0.00				0.20
XK	0.04	0.01	0.01		0.01	0.01	0.05	0.01	0.02	0.00	0.00	0.00	0.00	0.00				0.16
IT	0.01	0.01	0.00	0.01	0.00		0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.08
MT		0.00	0.07		0.00		0.00	0.00			0.00		0.00	0.00				0.07
SI	0.00	0.02	0.00	0.00	0.00		0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00			0.06
PL	0.00	0.00	0.02	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
NL	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
ES	0.01	0.00	0.00		0.00		0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
SE	0.00	0.00	0.03		0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00				0.03
DE	0.00	0.01	0.00	0.00	0.00		0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
FI	0.00	0.00	0.02		0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00			0.02
MK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00		0.00	0.00				0.02
FR	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00			0.01
BG	0.01	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.01
AT	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.01
HU	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.01
Total	0.70	0.48	0.45	0.33	0.21	0.20	0.19	0.17	0.17	0.04	0.03	0.02	0.02	0.01	0.00	0.00	0.00	3.02

Most traded group of commodities with main trade partners Serbia, Albania and Croatia is Other non-metallic products and minerals, which is consists of products mainly suitable for multimodal transport. These products are currently transported mostly by road from/to these 3 markets. In case of Greece, where goods are mostly transported by sea, main quantities are related to the goods from the groups Metal ores, mining products and Coke and petroleum products.

The products from the group Food, drinks and tobacco, are mostly traded with Serbia and transported by road. Those products are mainly related to touristic summer season activities at seaside and without efficient intermodal terminal and services it is not to be expected significant modal shift.

The analysis of **transport flows according to the mode of transport** was partially presented in previous paragraphs, where in detail modal share is presented per commodity group and for the top 20 trade partners among EU MS and CEFTA parties. Figure 15 show the modal share of international trade of Montenegro as volume per direction.

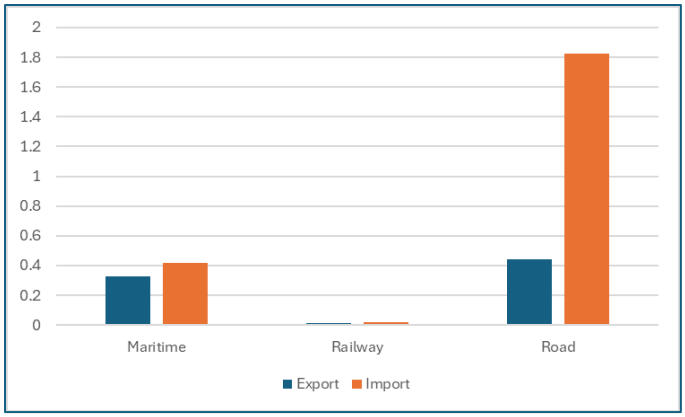

Figure 15 – Partial quantities in international trade of Montenegro (million tons) per mode of transport and direction, 2023

This figure does not reveal the real situation completely, but only partially, considering that it refers to partial data on trade with EU Member States and CEFTA, while data on trade with other partners is not available.

The share of maritime transport in trade with EU Member States and CEFTA parties is at a low level. Also, the quantities imported by road transport are significantly higher than the quantities exported, as well as the quantities that occur in maritime transport. However, when other trading partners that are not covered by Eurostat data and submitted data on trade with CEFTA are considered, the modal share changes significantly.

Based on the official data of MONSTAT, where total quantities per mode of transport include domestic transport and transit, as well as transport of goods traded with all international partners, the modal share is significantly in favor of maritime transport and is presented in Figure 16.

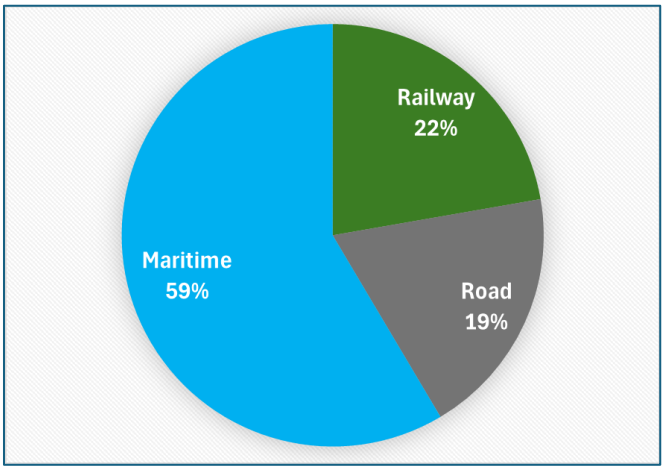

Figure 16 – Modal share of total quantities of goods transported in Montenegro[20]

On the other hand, when looking at export and import only, due to huge import of goods mainly from Serbia and Albania by road (in total about 1.8 million tons) and considering that port operations are

[20] Source: MONSTAT – Annual statistics of transport, warehousing and connections 2023

mainly based on goods transiting Montenegro, the modal share is quite different and presented in Figure 17.

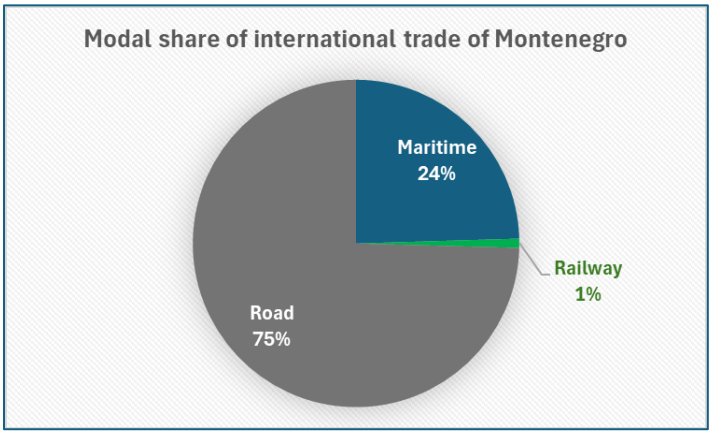

Figure 17 – Modal share of quantities transported in international transport of Montenegro (export and import only)[21]

Based on the fact that all data on trade with neighboring trade partners are available, as well as that a significant volume of transshipment in the Port of Bar and of volume of rail transport is related to transit movements, it can be said that the missing data does not significantly affect the rating and recognition of flows that are important for the network of multimodal terminals. Additionally, the amount of goods related to Montenegro, that is, the amount of transported goods related to the missing data, does not represent a significant deficiency in the regional framework.

Concerning the above, entire analysis was performed on the data related to the quantities in trade with the EU Member States and CEFTA parties, especially bearing in mind that data on the structure by country of origin and destination and by commodity group are not available in the official statistics.

Table 21 – Top 5 commodities per mode of transport and direction in international trade of Montenegro[22]

NST*/mode /flow	9	4	3	7	8
Maritime	0.15	0.01	0.29	0.26	0.001
Export	0.00	0.00	0.29		0.00
Import	0.15	0.01	0.000	0.26	0.001
Railway	0.00		0.02	0.00	0.00
Export			0.01		
Import	0.00		0.01	0.00	0.00
Road	0.56	0.48	0.14	0.06	0.22
Export	0.003	0.02	0.02	0.00	0.003
Import	0.55	0.47	0.12	0.06	0.22
Grand Total	**0.70**	**0.49**	**0.45**	**0.31**	**0.22**

*

9 - Other non-metallic, minerals

4 - Food, drinks, tobacco

3 - Metal ores, mining products

7 - Coke and petroleum products

8 - Chemicals, fibers, rubber, plastic, nuclear fuel

[21] Source: Consultant calculation base on COMEXT Eurostat and Customs data

[22] Limited to trade partners among EU MS and CEFTA parties

Rail transport flows of international trade

Total quantities of goods transported in Montenegro in 2023 was 1.11 million tons, which include international trade, domestic transport and transit. As mentioned above, the structure of this quantity per country of origin/destination and per commodity is not available.

Main directions of transport flows are defined by railway infrastructure, the main corridor from Serbian border to port of Bar, and connections from Nikšić to Podgorica and from Podgorica to Albanian border, as well as 4 railway stations capable of goods transshipment – Niksic, Podgorica, Bar and Tuzi. Biggest flows are oriented to Bar and Niksic, where Bar is connected to Port of Bar and represent the starting/ending station of flows related to Port of Bar, and Niksic as the station located near biggest industrial area of Montenegro. Transshipment quantities are shown in Table 22.

Table 22 – Quantities of goods transshipped in main freight railway stations in Montenegro 2022 (million tons)

Railway freight station	Transshipped quantities (million tons) in 2022
Nikšić	0.615
Bar	0.718
Podgorica	0.011
Tuzi	0.004

Detailed structure per commodity group in internationally traded and transported goods by railway transport was known for about 50% of quantities. For this sample, most common commodities with share of 57% were Coke and petroleum products and Secondary raw materials. Given that analyzing such a sample would not give the full picture, Figure 18 depicts the share of commodities in railway transport including international trade, transit and domestic transport together.

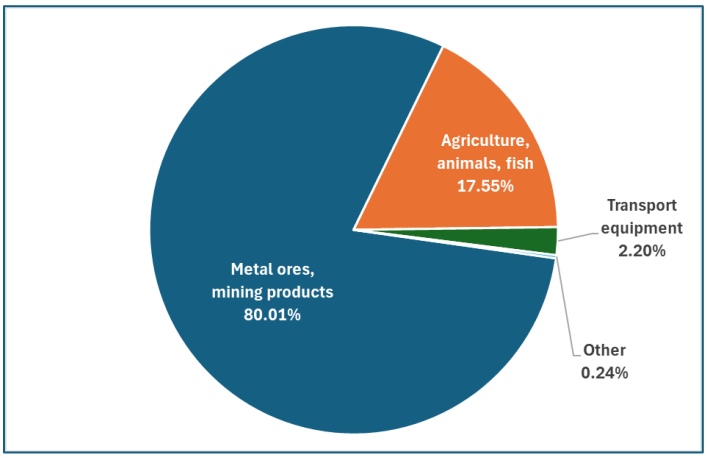

Figure 18 – International Railway transport in Montenegro – share by commodity group[23]

[23] Limited to trade with EU MS and CEFTA parties

Maritime transport flows of international trade

Most of the transported goods by sea are transshipped in the Port of Bar. Major freight flows by sea are presented by Table 23, showing the quantities for top 10 origin-destination countries.

Table 23 – Quantities of main maritime flows in Montenegrin ports in 2023 per O/D country (million tons)[24]

O/D	GR	HR	EG	IT	LT	TR	MT	ES	SG	MY	Total
mt	0.5	0.4	0.27	0.21	0.14	0.11	0.1	0.1	0.09	0.09	2.01

The share per main commodity group in maritime transport in trade with EU MS and CEFTA parties is presented in Figure 19.

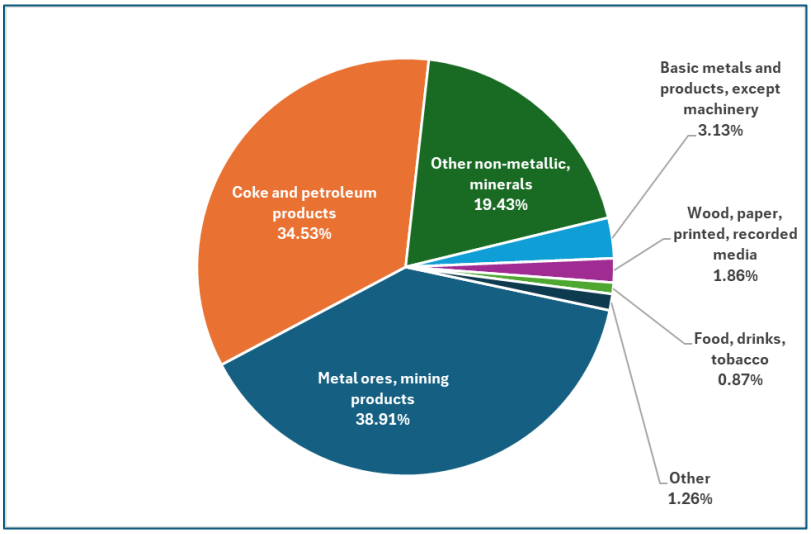

Figure 19 - International Maritime transport in Montenegro – share by commodity group

The biggest maritime flows to/from Montenegro are coming from Greece and Croatia, mainly consisting of Matal ores, mining products and Coke and Petroleum products. Those commodities are suitable for further transport in multimodal transport to/from port hinterland.

Maritime transport in Montenegro is mostly performed through Port of Bar, with reported about 2 million tons of goods handled in 2023. According to information provided by the port, around 30% of the total handled quantities is originated from Serbia and around 25% from Montenegro. At the same time, according to COMEXT Eurostat data, almost half of inbound quantities is originated from Greece and Croatia. Comparing these quantities with volume of goods in foreign trade, it is identified that about 1.4 million tons in maritime transport is transiting Montenegro.

Road transport flows of international trade

Main road transport flows in international trade of Montenegro in import direction are coming from Serbia, Albania, Bosnia and Herzegovina, Croatia, Kosovo and Slovenia. In export direction, main quantities are transported to Serbia, Kosovo and Albania.

The structure of goods transported by road per commodity group is presented in Figure 20.

[24] MONSTAT - Annual statistics of transport, warehousing and connections 2023

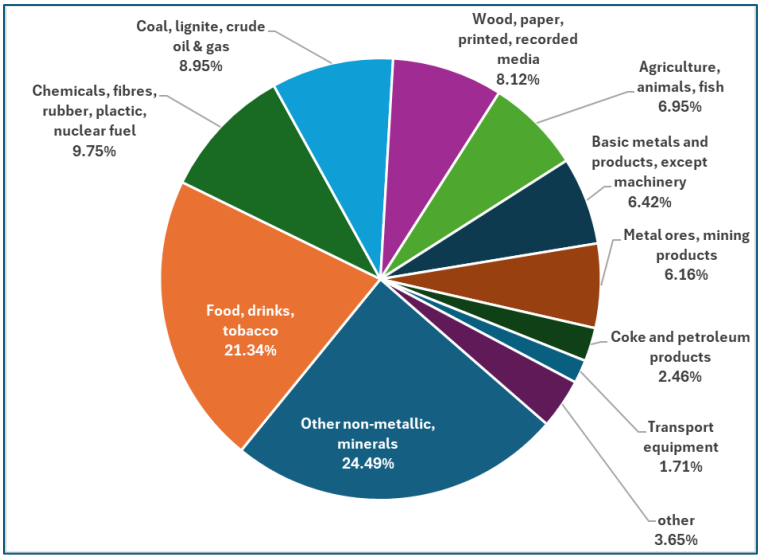

Figure 20 - International Road transport in Montenegro – share by commodity group[25]

Main groups of commodities are Other non-metallic products and minerals; Food, drinks, tobacco, Chemicals, fibers, rubber, plastic; Coal, lignite, crude oil & gas; and Wood, paper, printed, recorded media. Apart from Food, drinks and tobacco, all other commodities (51.3%) are suitable for multimodal transport.

Intermodal transport flows of international trade

Since Montenegro does not have inland intermodal terminals nor services established, flows of containerized goods are transported by road.

Main flows of containerized goods are transshipped in Port of Bar, where about 50,000 TEU is performed annually. There is no available data on the structure of this flow.

Total quantity of containerized goods from to EU MS and CEFTA parties is estimated to 3,000 TEU[26], while volumes of flows to far markets (China, USA, India, etc.) are not available.

[25] Limited to trade with EU MS and CEFTA parties

[26] Based on limited data on trade with EU MS and CEFTA parties

North Macedonia

International trade

North Macedonia is highly integrated into international trade, with a total trade-to-GDP ratio of over 171%[27]. According to data from the State Statistical Office, in 2022, expressed in monetary value, thanks to the strong supplier base for automotive industry, the country mainly exported supported catalysts containing precious metals or their compounds as active substances, ignition wiring sets, other wiring sets used in vehicles and other supported catalysts. Regarding imports, the key products comprise petroleum oils derived from bituminous minerals (excluding crude), other metals of the platinum group and their alloys in unwrought or powdered form, unwrought or powdered platinum and platinum alloys, and motor vehicles. Main trade partner of North Macedonia in terms of export value are Germany (57%), Kosovo (6.3%), Serbia (6.2%), Bulgaria (5.7%), Greece (4.8%), and Hungary (4.7%). On import side, main partners of North Macedonia are Germany (22.2%), Greece (20%), Serbia (13%), Italy (9.5%), Bulgaria (9.3%), and Hungary (4.4%).

Trade trend and balance of North Macedonia is shown in Figure 21.

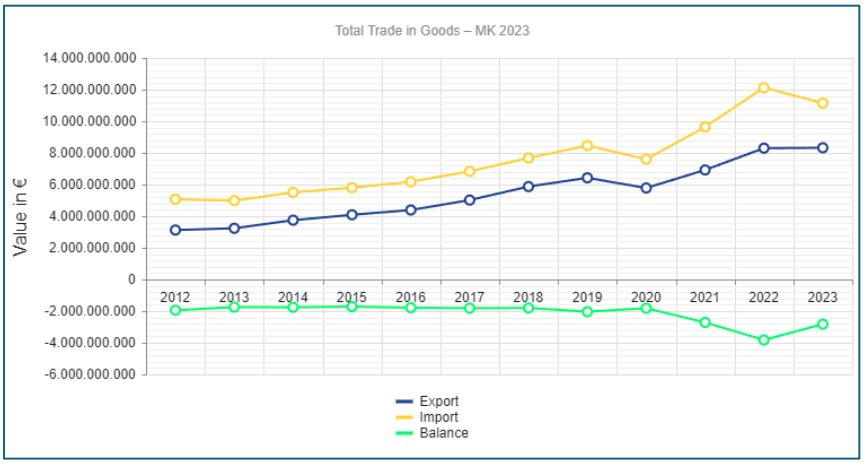

Figure 21 - Total trade value of North Macedonia[28]

Trade balance of North Macedonia is in deficit. Montenegro has a trend of growth in international trade, especially after the recovery since 2020. Despite a decrease observed in 2023, it can be expected that international trade will return to growth and the transport demand and the need to improve transport capacities will grow as well.

Analysis be commodity is made according to Standard classification of goods in transport (NST 2007).

Import and export flows of goods per commodity group are presented in Table 24. It shows that in Export of North Macedonia, the most represented quantities are goods from the groups of Basic metals and products, except machinery; Metal ores, mining products and Other non-metallic products and minerals. In Import flows, the highest quantities of goods are from the groups of Coal,

[27] https://www.lloydsbanktrade.com/en/market-potential/north-macedonia/trade-profile

[28] Source: CEFTA trade portal

lignite, crude oil & gas; Coke and petroleum products and Basic metals and products, except machinery. All those major groups of commodities are suitable for multimodal transport.

Table 24 – Export and Import of North Macedonia by commodity group (million tons)

Export			Import		
NST goods classification		**Qtty, mill t**	**NST goods classification**		**Qtty, mill t**
10	Basic metals and products, except machinery	0.68	2	Coal, lignite, crude oil & gas	1.64
3	Metal ores, mining products	0.59	7	Coke and petroleum products	1.56
9	Other non-metallic, minerals	0.45	10	Basic metals and products, except machinery	0.94
8	Chemicals, fibres, rubber, plastic, nuclear fuel	0.34	4	Food, drinks, tobacco	0.67
1	Agriculture, animals, fish	0.33	9	Other non-metallic, minerals	0.66
4	Food, drinks, tobacco	0.26	3	Metal ores, mining products	0.55
14	Secondary raw mat., waste	0.21	8	Chemicals, fibres, rubber, plastic, nuclear fuel	0.54
11	Machinery and equipment, electronics	0.08	1	Agriculture, animals, fish	0.32
2	Coal, lignite, crude oil & gas	0.07	6	Wood, paper, printed, recorded media	0.26
5	Textile & leather products	0.06	14	Secondary raw mat., waste	0.18
7	Coke and petroleum products	0.05	11	Machinery and equipment, electronics	0.18
6	Wood, paper, printed, recorded media	0.05	5	Textile & leather products	0.09
12	Transport equipment	0.04	12	Transport equipment	0.09
13	Furniture, manufactured goods	0.03	13	Furniture, manufactured goods	0.03
19	Unidentifiable goods	0.01	20	Other goods	0.00
1	Agriculture, animals, fish	0.00	1	Agriculture, animals, fish	0.00
17	Goods in removals, baggage, non market goods	0.00	17	Goods in removals, baggage, non market goods	0.00
20	Other goods	0.00	19	Unidentifiable goods	0.00
	Total Export	**3.23**		**Total Import**	**7.72**

To recognize the flows, it is important to analyze each commodity group per transport mode, aiming to recognize the commodities which are transported significantly by road and another transport means, suggesting that shift from road transport is possible in short term period if the network and transshipment capacities allowing it.

The modal share for each group of commodities is presented in Table 25.

Table 25 – Modal share of each commodity group in international trade of North Macedonia[29]

NST classification of goods		Railway	Road
2	Coal, lignite, crude oil & gas	0.0%	100.0%
10	Basic metals and products, except machinery	3.3%	92.9%
7	Coke and petroleum products	5.1%	94.9%
3	Metal ores, mining products	0.0%	100.0%
9	Other non-metallic, minerals	0.0%	100.0%
4	Food, drinks, tobacco	0.6%	97.4%
8	Chemicals, fibres, rubber, plastic, nuclear fuel	0.0%	100.0%
1	Agriculture, animals, fish	0.0%	100.0%
14	Secondary raw mat., waste	34.7%	54.5%
6	Wood, paper, printed, recorded media	0.0%	100.0%
11	Machinery and equipment, electronics	0.1%	99.9%
5	Textile & leather products	0.0%	100.0%
12	Transport equipment	0.0%	100.0%
13	Furniture, manufactured goods	0.0%	100.0%
19	Unidentifiable goods	0.0%	100.0%
20	Other goods	0.7%	99.3%
17	Goods in removals, baggage, non-market goods	0.0%	100.0%

Commodities from the groups Coke and petroleum products; Basic metals and products, except machinery and especially Secondary raw mat., waste, are transported mainly by road, but with positive share of railway transport, suggesting that shift from road to railway transport is possible. In

[29] Limited to trade with EU MS and certain regional economies

addition to this, it is questionable that Coal, lignite and crude oil and gas are fully transported by road.

The **analysis by trade partners** refers to the quantities of goods in international trade, by the transport mode, for the 20 most important trade partners of North Macedonia. The volumes are presented in Table 26.

Table 26 – Modal share of international trade of North Macedonia per Export and Import flows and per top 20 trade partners and total quantities (million tons)

Modal share in Export			Exp. mill tons	Modal share in Import		Imp. mill tons	Total mill tons
O/D	Rail	Road		Rail	Road		
GR	0.9%	99.1%	**0.34**	3.3%	96.7%	**2.50**	**2.84**
RS	0.0%	100.0%	**0.39**	4.4%	95.6%	**0.80**	**1.20**
XK	0.0%	100.0%	**0.75**	0.0%	100.0%	**0.31**	**1.07**
BG	0.0%	100.0%	**0.38**	22.0%	78.0%	**0.62**	**1.01**
TR	0.0%	100.0%	**0.16**	0.0%	100.0%	**0.53**	**0.69**
AL	0.0%	100.0%	**0.08**	0.0%	100.0%	**0.53**	**0.62**
CI	0.0%	100.0%	**0.00**	0.0%	100.0%	**0.39**	**0.39**
RU	0.0%	100.0%	**0.03**	0.0%	100.0%	**0.34**	**0.36**
CN	0.0%	100.0%	**0.08**	0.0%	100.0%	**0.17**	**0.26**
DE	0.0%	100.0%	**0.13**	0.1%	99.9%	**0.11**	**0.24**
US	0.0%	100.0%	**0.07**	0.0%	100.0%	**0.13**	**0.20**
RO	1.3%	98.7%	**0.10**	16.4%	83.6%	**0.09**	**0.19**
IT	0.0%	100.0%	**0.09**	0.2%	99.8%	**0.08**	**0.17**
BA	0.0%	100.0%	**0.08**	0.0%	100.0%	**0.08**	**0.16**
HR	0.0%	100.0%	**0.08**	0.0%	100.0%	**0.08**	**0.16**
SI	0.0%	100.0%	**0.06**	0.0%	100.0%	**0.07**	**0.13**
UA	0.0%	100.0%	**0.03**	0.0%	100.0%	**0.08**	**0.11**
PL	0.0%	100.0%	**0.05**	0.0%	100.0%	**0.05**	**0.10**
HU	0.1%	99.9%	**0.04**	0.0%	100.0%	**0.05**	**0.09**
GT	0.0%	100.0%	**0.00**	0.0%	100.0%	**0.08**	**0.08**

Similar to previous analysis, marked are trade partners where road transport is dominant and where possibilities for shift from road to railway transport are evident.

To recognize the possibility for increase of multimodal/intermodal transport to/from most important trade partners, it is important to analyze distribution per commodity group as well. Table 27 presents the quantities of goods by commodity group for the 20 most important trading partners.

Table 27 – Trade quantities (million tons) of North Macedonia, for top 20 trade partners by commodity group

Partner/ NST	2	7	10	3	9	8	4	1	14	6	11	5	12	13	19	20	17	Sum
GR	0.82	1.29	0.24	0.05	0.05	0.10	0.07	0.09	0.10	0.02	0.01	0.01	0.00	0.00	0.00		0.00	**2.84**
RS	0.08	0.02	0.12	0.05	0.21	0.13	0.27	0.21	0.02	0.04	0.02	0.00	0.00	0.00	0.01			**1.20**
XK	0.13	0.04	0.11	0.16	0.34	0.11	0.10	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00		0.00	**1.07**
BG	0.00	0.08	0.08	0.15	0.19	0.16	0.04	0.04	0.18	0.04	0.01	0.00	0.01	0.00	0.00		0.00	**1.01**
TR	0.00	0.01	0.31	0.01	0.14	0.04	0.01	0.03	0.02	0.04	0.02	0.04	0.01	0.01	0.00			**0.69**
AL	0.38	0.00	0.09	0.07	0.05	0.01	0.01	0.00		0.00			0.00					**0.62**
CI	0.00			0.39			0.00	0.00			0.00							**0.39**
RU	0.21	0.01	0.09	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00				**0.36**
CN	0.00	0.00	0.05	0.08	0.01	0.02	0.00	0.00		0.01	0.05	0.03	0.01	0.00	0.00			**0.26**
DE	0.00	0.00	0.03	0.01	0.02	0.04	0.04	0.00	0.00	0.02	0.02	0.02	0.02	0.01	0.00	0.00	0.00	**0.24**
US	0.00	0.12	0.01	0.00	0.00	0.01	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00		0.00	**0.20**
RO		0.01	0.08	0.00	0.01	0.02	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00		0.00		**0.19**
IT		0.00	0.07	0.00	0.01	0.03	0.02	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00			**0.17**
BA	0.00	0.00	0.03	0.01	0.00	0.01	0.04	0.02	0.00	0.03	0.00	0.00	0.00	0.00				**0.16**
HR		0.00	0.03	0.00	0.02	0.02	0.04	0.01	0.00	0.02	0.01	0.00	0.00	0.00	0.00			**0.16**
SI		0.00	0.02	0.00	0.00	0.01	0.03	0.00	0.00	0.01	0.04	0.00	0.01	0.00	0.00			**0.13**
UA	0.00	0.00	0.06	0.00	0.00	0.00	0.02	0.02		0.00	0.00	0.00	0.00	0.00				**0.11**
PL		0.00	0.01	0.02	0.00	0.01	0.03	0.02		0.00	0.01	0.00	0.00	0.00		0.00		**0.10**
HU	0.00	0.00	0.02	0.00	0.00	0.02	0.01	0.01		0.01	0.01	0.00	0.01	0.00	0.00			**0.09**
GT				0.08		0.00	0.00	0.00		0.00		0.00						**0.08**
Total	**1.62**	**1.59**	**1.47**	**1.11**	**1.07**	**0.75**	**0.75**	**0.55**	**0.39**	**0.27**	**0.23**	**0.12**	**0.08**	**0.04**	**0.01**	**0.00**	**0.00**	**10.05**

Main flows of Coal, lignite, crude oil & gas are from direction of Greece and Albania, while Petroleum products are coming from Greece mainly. Basic metals and products, except machinery are transported from/to Greece and Türkiye, while Other non-metallic products and minerals are transported from/to Kosovo, Bulgaria and Serbia. Mital ores and mining products are mainly from Cote de Ivoire. Food, drinks, tobacco and Agriculture products are mainly exchanged with Serbia. All those groups of commodities are suitable for multimodal transport, even Food, drinks and tobacco on shorter distances from-to Serbia.

The analysis of **transport flows according to the mode of transport** was partially presented in previous paragraphs, where in detail modal share is presented for all commodity groups and the top 20 trade partners. Figures 22 and 23 are showing the modal share of international trade of North Macedonia as percentages of total quantities and by volume per direction. Road transport is extremely dominant, and import direction is almost two times higher than export. Involvement of Railway transport is at very low level, even the operations are possible and exists, but mainly in transit of goods over North Macedonia.

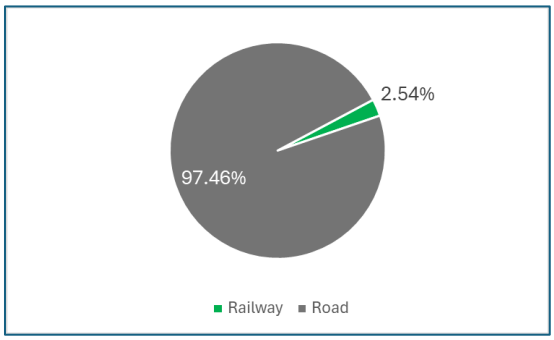

Figure 22 - Modal share of international transport of North Macedonia 2023[30]

[30] Consultant elaboration based on COMEXT Eurostat and Statistics data of North Macedonia

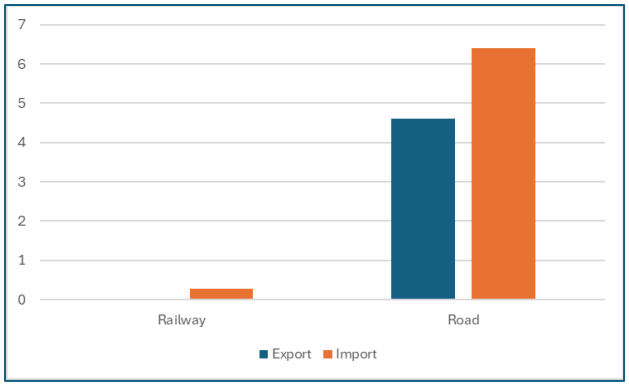

Figure 23 - Quantities in international trade of North Macedonia (million tons) per mode of transport and direction, 2023[31]

Rail transport flows of international trade

Most of the railway flows are realized over the Corridor X part of the network, through North Macedonia, connecting Serbia on the North-west and Greece on South-east. Significant internal flows are to the south, on the line Veles-Prilep-Bitola. An overview of transshipped quantities in main railway freight stations is given in Table 28.

Table 28 – Transshipped quantities in main railway freight stations of North Macedonia in 2022[32]

Railway freight station	loaded mt	unloaded mt	total mt
Bitola	0.195	0.518	0.713
Skopje Jug	0.079	0.267	0.347
Ilinden	0.052	0.110	0.162
Skopje Tovarna	0.007	-	0.007
Kumanovo	0.002	-	0.002
Krivolak	-	0.031	0.031
Sivec	-	0.028	0.028

During 2022, a total of 1.42 million tons of goods were transported by rail.[33] In 2023, based on COMEXT and data from Statistics database MAKSTAT, total volume of railway transport in international trade was 0.3 million tons, leading to conclusion that railway flows are mainly domestic and transit.

Railway transport has a strong decreasing trend, reaching its minimum in 2022 from 2007, when total quantities were 4.7 million tons.

The structure of railway transport per commodity group is shown in Figure 24.

[31] Official statistics database MAKSTAT
[32] Source: Railways of North Macedonia
[33] Official statistics of North Macedonia

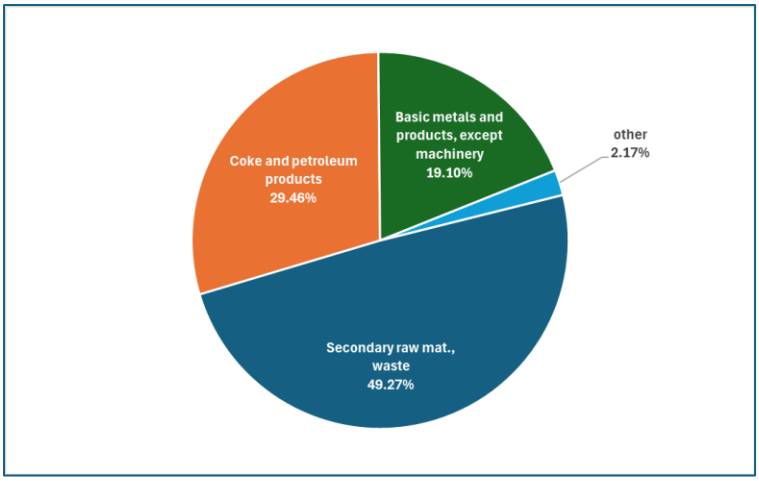

Figure 24 – International Railway transport in North Macedonia – share by commodity group[34]

Almost half of current quantities in international railway transport are Secondary raw materials coming from Bulgaria.

Road transport flows of international trade

Road transport covers the majority of movements of goods internationally, as well as in domestic transport and transit movements. According to official statistical data, in 2023 was 11.04 million tons of goods in import and export, transported by road.

Analysis per commodity was performed on 95% of that quantity. Figure 25 shows the structure of international road transport (import and export) per group of commodities.

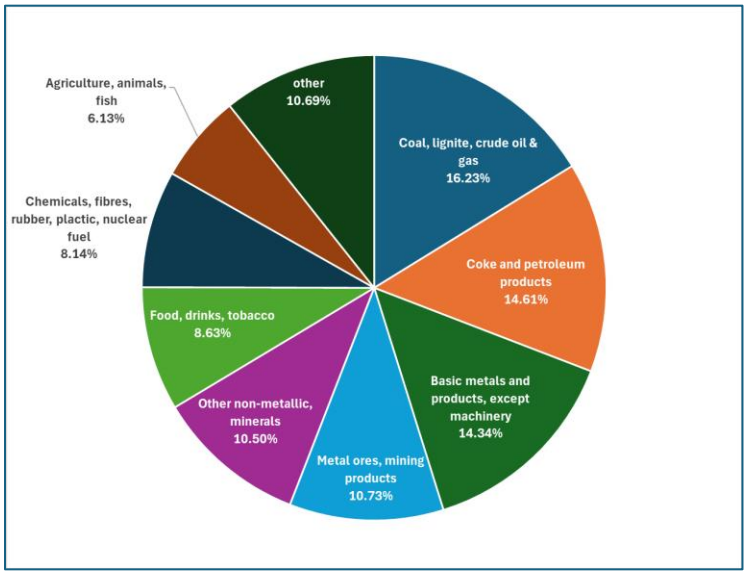

Figure 25 - International Road transport in North Macedonia – share by commodity group[35]

Considering that road transport serves most of the international movement of goods, all commodity groups are represented in relation to the quantities traded. Practically commodities that are suitable

[34] Consultant elaboration based on COMEXT Eurostat and Statistics data of North Macedonia for 2023
[35] Consultant elaboration based on COMEXT Eurostat and Statistics of North Macedonia

for multimodal transport can be shifted from road to rail transport, once the conditions and capacities of railway services are met.

Intermodal transport flows of international trade

According to Official statistics, intermodal transport flows in 2022 were on the level of 23,400 TEU, but 22,000 TEU in transit. Only 1,480 TEU was meant for the market of North Macedonia. Even from this quantity, 500 TEU were empty containers.

According to COMEXT database, the estimated number of containers in 2023 was 2,000 TEU, mainly to Greece and Italy.

This data matches the information gathered through the survey and interviews, where was identified that about 2,500 TEU was approximately the current performance of private intermodal terminal located in Skopje. According to the same source, majority of transit is coming from China, through Port of Piraeus and Port of Thessaloniki on the way to Serbia and further to Central Europe.

Serbia

International trade

Serbia is gradually becoming more open to international trade, with trade-to-GDP ratio at 139% [36]. Expressed in monetary values, Serbian main exports are electrical machines and apparatus, metal ores and residues, power engines and motors, iron and steel, and fruit and vegetables. Imports are led by oil and oil derivatives, electrical machines and apparatus, natural gas, electricity, and medical and pharmaceutical products. Main export partners of Serbia are Germany (23.9%), Bosnia and Herzegovina (10.9%), Italy (9.8%), Hungary (8.7%), Romania (8%), Montenegro (6.8%) and Croatia (5.8%). On the import side, Serbia brings the goods mainly from Germany (28.4%), Italy (15.8%), Hungary (9%), and several countries with share between 5-6.5% - Romania, France, Bosnia and Herzegovina, Austria, Slovenia and Croatia.

Trade trend and balance of Serbia is shown in Figure 26.

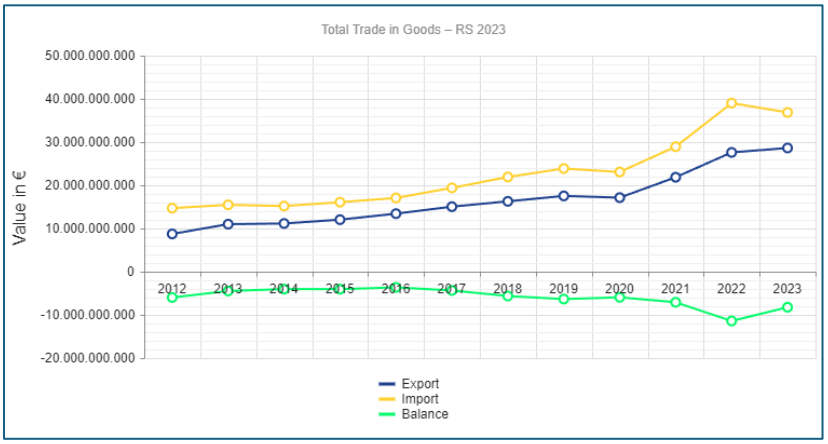

Figure 26 - Total trade value of Serbia[37]

Compared to the rest of the regional economies, Serbia has the most balanced trade. Given that Serbia has a constant trend of growth in international trade, especially between 2020 and 2022. It can be expected that international trade will continue to grow, and consequently transport demand and the need for improved transport capacities will increase too.

Analysis by commodity is made according to Standard classification of goods in transport (NST 2007).

Import and export flows of goods per commodity group are presented in Table 29. It shows that in Export of Serbia, the most represented quantities are goods from the groups of Food, drinks and tobacco and products of Agriculture, animals and fish, followed by Chemicals, fibers, rubber, plastic, nuclear fuel; Metal ores, mining products; and Basic metals and products, except machinery. Regarding Import flows, the far highest quantity imported belongs to the group Coal, lignite, crude oil & gas. Significant quantities over one million tons annually are from the groups of Metal ores, mining products; Chemicals, fibers, rubber, plastic, nuclear fuel; Basic metals and

[36] https://www.lloydsbanktrade.com/en/market-potential/serbia/trade-profile#classification_by_products
[37] Source: CEFTA trade portal

products, except machinery; Other non-metallic, minerals; Coke and petroleum products; Wood, paper, printed, recorded media and Food, drinks and tobacco.

Regarding the fact that detailed data were not provided, analysis was performed based on COMEXT Eurostat database, combined with data from Official statistics, CEFTA trade portal and other sources. In those terms, for certain trade partners the structure per commodity or mode of transport was unknown.

Table 29 – Export and Import of Serbia by commodity group (million tons)

Export			Import		
NST goods classification		**Qtty, mill t**	**NST goods classification**		**Qtty, mill t**
4	Food, drinks, tobacco	2.79	**2**	Coal, lignite, crude oil & gas	4.94
1	Agriculture, animals, fish	2.65	**3**	Metal ores, mining products	2.70
8	Chemicals, fibres, rubber, plastic, nuclear fuel	2.03	**8**	Chemicals, fibres, rubber, plastic, nuclear fuel	2.63
3	Metal ores, mining products	1.66	**10**	Basic metals and products, except machinery	1.66
10	Basic metals and products, except machinery	1.48	**9**	Other non-metallic, minerals	1.39
9	Other non-metallic, minerals	1.12	**7**	Coke and petroleum products	1.18
6	Wood, paper, printed, recorded media	0.82	**6**	Wood, paper, printed, recorded media	1.13
7	Coke and petroleum products	0.54	**4**	Food, drinks, tobacco	1.09
11	Machinery and equipment, electronics	0.52	**1**	Agriculture, animals, fish	0.85
14	Secondary raw mat., waste	0.35	**19**	Unidentifiable goods	0.77
12	Transport equipment	0.18	**11**	Machinery and equipment, electronics	0.59
5	Textile & leather products	0.11	**12**	Transport equipment	0.28
13	Furniture, manufactured goods	0.11	**14**	Secondary raw mat., waste	0.24
2	Coal, lignite, crude oil & gas	0.05	**5**	Textile & leather products	0.20
19	Unidentifiable goods	0.01	**13**	Furniture, manufactured goods	0.06
17	Goods in removals, baggage, non market goods	0.00	**17**	Goods in removals, baggage, non market goods	0.00
	Total Export	**14.40**		**Total Import**	**19.70**

It is important to highlight that the majority of quantities exchanged in international trade of Serbia are suitable for multimodal/intermodal transport. The modal share per each group commodities is shown in Table 30.

Table 30 – Modal share of international trade of Serbia by commodities

NST classification of goods		IWW	Railway	Road
2	Coal, lignite, crude oil & gas	48.7%	24.0%	27.2%
8	Chemicals, fibers, rubber, plastic, nuclear fuel	17.1%	9.1%	73.8%
3	Metal ores, mining products	52.4%	29.0%	18.6%
4	Food, drinks, tobacco	0.7%	5.0%	94.3%
1	Agriculture, animals, fish	25.2%	10.3%	64.4%
10	Basic metals and products, except machinery	7.7%	18.3%	74.1%
9	Other non-metallic, minerals	0.7%	8.7%	90.6%
6	Wood, paper, printed, recorded media	0.2%	4.1%	95.8%
7	Coke and petroleum products	32.6%	35.8%	31.6%
11	Machinery and equipment, electronics	1.3%	0.5%	98.2%
19	Unidentifiable goods	5.2%	3.5%	91.4%
14	Secondary raw mat., waste	34.7%	3.4%	61.9%
12	Transport equipment	8.9%	3.9%	87.2%
5	Textile & leather products	0.0%	0.3%	99.7%
13	Furniture, manufactured goods	0.0%	0.4%	99.6%
17	Goods in removals, baggage, non-market goods	0.0%	0.0%	100.0%

Based on the distribution shown for each commodity group, it is noticeable that the groups Chemicals, fibers, rubber, plastic, nuclear fuel; Agriculture, animals, fish; Basic metals and products, except machinery; Other non-metallic products and minerals and Secondary raw materials have a dominant share of road transport, but also a significant share of rail and/or IWW transport, which suggests the conclusion that it is possible to shift these types of products from road to rail transport.

The **analysis by trade partners** refers to the quantities of goods in international trade, by the transport mode, for the 20 most important trade partners of Serbia. The volumes are presented in Table 31.

Table 31 – Modal share of international trade of Serbia per Export and Import flows and per top 20 trade partners and total quantities (million tons)

	Export			Exp mt	Import			Imp mt	Total mt
	IWW	Railway	Road		IWW	Railway	Road		
BA	0.2%	0.8%	99.0%	**1.80**	0.0%	17.9%	82.1%	**2.15**	**3.95**
BG	11.9%	21.3%	66.8%	**0.96**	57.1%	17.5%	25.4%	**1.80**	**2.75**
RO	61.4%	2.2%	36.4%	**1.62**	42.5%	10.5%	47.0%	**1.03**	**2.64**
IT	0.0%	45.2%	54.8%	**1.17**	0.0%	0.6%	99.3%	**0.72**	**1.88**
HR	8.4%	3.3%	88.3%	**0.79**	0.3%	4.3%	95.4%	**0.85**	**1.64**
CN	n/a	n/a	n/a	**0.70**	n/a	n/a	n/a	**n/a**	**1.58**
ID	n/a	n/a	n/a	**0.00**	n/a	n/a	n/a	**1.55**	**1.55**
DE	14.2%	6.9%	78.9%	**0.70**	0.7%	0.4%	98.8%	**0.84**	**1.54**
HU	35.8%	5.0%	59.2%	**0.68**	21.8%	11.1%	67.1%	**0.81**	**1.48**
RU	n/a	n/a	n/a	**0.21**	n/a	n/a	n/a	**n/a**	**1.36**
MK	0.0%	4.4%	95.6%	**0.80**	0.0%	0.0%	100.0%	**0.39**	**1.20**
TR	9.1%	8.5%	82.4%	**0.19**	8.5%	25.7%	65.8%	**0.93**	**1.12**
ME	0.0%	0.7%	99.3%	**0.76**	0.1%	0.0%	99.9%	**0.26**	**1.02**
UA	n/a	n/a	n/a	**0.09**	n/a	n/a	n/a	**n/a**	**0.88**
PL	0.4%	38.5%	61.1%	**0.34**	26.3%	6.2%	67.5%	**0.52**	**0.86**
ZA	n/a	n/a	n/a	**0.00**	n/a	n/a	n/a	**n/a**	**0.74**
AT	40.9%	1.2%	57.9%	**0.25**	22.4%	5.9%	71.7%	**0.39**	**0.65**
SI	0.0%	15.9%	84.1%	**0.36**	0.4%	0.1%	99.5%	**0.20**	**0.56**
CZ	0.3%	19.2%	80.5%	**0.22**	24.8%	11.1%	64.1%	**0.31**	**0.52**
GR	0.0%	7.1%	92.9%	**0.24**	3.5%	4.1%	92.5%	**0.26**	**0.50**
Grand Total	**1.69**	**1.78**	**8.40**	**11.88**	**4.84**	**2.53**	**9.18**	**16.55**	**28.43**

The largest partners of Serbia in 2023 in terms of the quantity of goods were Bosnia and Herzegovina and Bulgaria, where the structure by mode of transport indicates the possibility of shifting goods from road to other modes of transport, i.e. multimodal transport. The situation is similar with all neighboring countries, except Romania, where the largest quantities are transported by IWW transport. In exports to Italy, the participation of railway transport is significant, but in import flows a road transport is completely dominant.

The distribution by transport mode is not known for some important trading partners such as China, Indonesia, the Russian Federation, South Africa and Ukraine. Based on the conducted interviews and collected information, it can be confirmed that road transport dominates imports from China, while exports are dominated by rail, in both cases from/to seaports. In the case of Indonesia, it is about the import of coal by sea, and then by IWW transport to the river ports in Serbia. For other trading partners, the consultant did not have enough input for this type of assessment.

To recognize the possibility for increase of multimodal/intermodal transport to/from most important trade partners, it is important to analyze distribution per commodity group as well. Table 32 presents the quantities of goods by commodity group for the 20 most important trading partners of Serbia.

Table 32 – Trade quantities (million tons) of Serbia, for top 20 trade partners by commodity group

Partner/ NST	2	8	3	4	10	1	9	7	6	11	19	14	12	5	13	17	Sum
BA	0.97	0.28	0.16	0.55	0.41	0.46	0.21	0.56	0.24	0.03	0.01	0.04	0.01	0.01	0.01	0.00	**3.95**
BG	1.16	0.34	0.15	0.16	0.24	0.02	0.35	0.17	0.08	0.01	0.02	0.03	0.01	0.00	0.00		**2.75**
RO	0.28	0.33	0.17	0.11	0.21	0.75	0.23	0.12	0.13	0.03	0.03	0.20	0.01	0.01	0.02		**2.64**
IT	0.00	0.21	0.11	0.34	0.32	0.47	0.07	0.02	0.14	0.07	0.05	0.00	0.03	0.04	0.01	0.00	**1.88**
HR	0.00	0.20	0.11	0.24	0.07	0.18	0.47	0.06	0.13	0.02	0.03	0.08	0.02	0.00	0.01		**1.64**
CN[38]	n/a	n/a	0.60	n/a	0.26	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**1.59**
ID[39]	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**1.55**
DE	0.00	0.36	0.01	0.18	0.18	0.14	0.02	0.02	0.12	0.24	0.08	0.03	0.13	0.02	0.01	0.00	**1.55**
HU	0.01	0.33	0.13	0.20	0.10	0.10	0.08	0.26	0.09	0.05	0.03	0.08	0.01	0.01	0.00	0.00	**1.50**
RU	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**1.36**
MK	0.08	0.13	0.05	0.27	0.12	0.21	0.21	0.02	0.04	0.02	0.01	0.02	0.00	0.00	0.00		**1.20**
TR	0.01	0.16	0.07	0.05	0.25	0.07	0.21	0.02	0.10	0.06	0.03	0.02	0.02	0.05	0.01		**1.12**
ME	0.19	0.10	0.02	0.33	0.04	0.09	0.15	0.02	0.05	0.01	0.00	0.01	0.01	0.00	0.01		**1.04**
UA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**0.88**
PL	0.00	0.13	0.02	0.11	0.22	0.02	0.04	0.16	0.07	0.04	0.02	0.00	0.01	0.01	0.01	0.00	**0.86**
ZA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**0.74**
AT	0.00	0.18	0.03	0.10	0.11	0.05	0.02	0.02	0.09	0.03	0.02	0.00	0.01	0.00	0.00	0.00	**0.65**
SI	0.00	0.11	0.08	0.10	0.06	0.01	0.02	0.01	0.05	0.04	0.03	0.03	0.02	0.01	0.00		**0.56**
CZ	0.09	0.09	0.00	0.04	0.11	0.01	0.01	0.02	0.04	0.05	0.02	0.00	0.04	0.01	0.00		**0.52**
GR	0.00	0.07	0.01	0.09	0.07	0.10	0.02	0.05	0.06	0.00	0.01	0.00	0.00	0.00	0.00		**0.50**
Total	**4.81**	**3.80**	**3.15**	**3.02**	**2.85**	**2.80**	**2.18**	**1.54**	**1.54**	**0.87**	**0.61**	**0.57**	**0.34**	**0.25**	**0.14**	**0.00**	28.48

The largest quantities of goods that Serbia trades are from the Coal, lignite, crude oil & gas commodity group, where flows are mainly focused on Bosnia and Herzegovina, Bulgaria and Indonesia. The second largest group consists of Chemicals, fibers, rubber, and plastic where there are no particularly large single flows, but the largest part of flows belongs to Bulgaria, Romania, Germany and Hungary. Metal ores, mining products is the third group in which trade with China leads. According to information from the surveys, it is mainly about the export of ores through the port of Bar. Traditionally, Serbia exchanges large quantities of grain with Romania, while other products from the Agriculture, animals, fish group are exchanged mostly with Bosnia and Herzegovina and Italy.

Having in mind that Serbia trade largest quantities of goods, and have largest number of neighboring countries and connections, it is difficult to estimate main flows and assign trade quantities on the corridors network based on country of origin or destination, especially in case of far markets where goods are going through seaports, where it is impossible to estimate which port is chosen. Data on quantities in seaports per country of origin or destination is not publicly available.

The analysis of **transport flows according to the mode of transport** was partially presented in previous paragraphs, where in detail modal share is presented per commodity group and the top 20 trade partners. Figures 27 and 28 are showing the modal share of international trade of Serbia as percentages of total quantities and by volume per direction. Road and railway transport per export and import directions are quite balanced, while in IWW transport, import is the dominant direction.

[38] Data from unofficial sources
[39] Data from unofficial sources

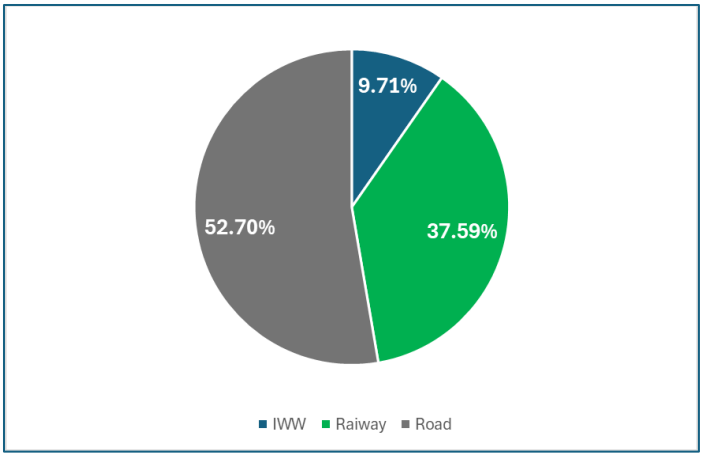

Figure 27– Modal share of international transport flows of Serbia 2022[40]

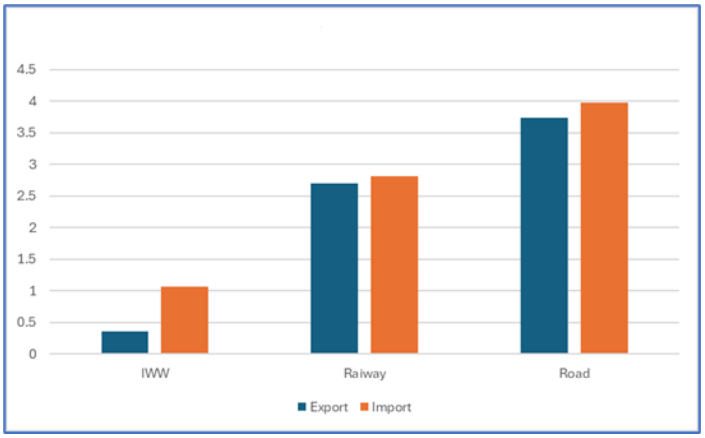

Figure 28 - Quantities in international trade of Serbia (million tons) per mode of transport and direction, 2022

Here it has to be mentioned that data from official statistics of Republic of Serbia are not fully matching the COMEXT data, where share of IWW transport is higher, reaching up to 20%. While railway transport share is lower. However, it is not clear if the available data on export and import include transit movements or not.

[40] Statistical office of Serbia - Statistical report on transport 2022

Rail transport flows

In 2022, the volume of goods transported by rail (national, export and import) was 10.16 million tons, while in 2023 that quantity decreased to 8.5 million tons.

Main railway freight flows per country are given in Table 33.

Table 33 - Rail freight transport by country in Serbia, 2022[41]

	Rail freight transport (million t)		
	Total	Loaded	Unloaded
Total	**5.50**	**2.69**	**2.81**
HR	1,16	0.62	0.53
ME	0.89	0.64	0.25
BG	0.76	0.15	0.61
BA	0.69	0.07	0.62
HU	0.35	0.05	0.29
IT	0.32	0.26	0.06
PL	0.28	0.19	0.09
RO	0.22	0.08	0.14
SI	0.15	0.10	0.05
MK	0.14	0.13	0.01
GR	0.14	0.09	0.04

Data from this table show that the largest railway flows are to the port of Rijeka and Bar, then to Bulgaria and Hungary on the branches of Corridor X, as well as to Bosnia and Herzegovina.

The total volume of railway traffic in 2022 is approximately evenly distributed by types of movement, where the largest volume is in the import direction, while the smallest volume is transported in transit. Domestic transport and export are equally represented.

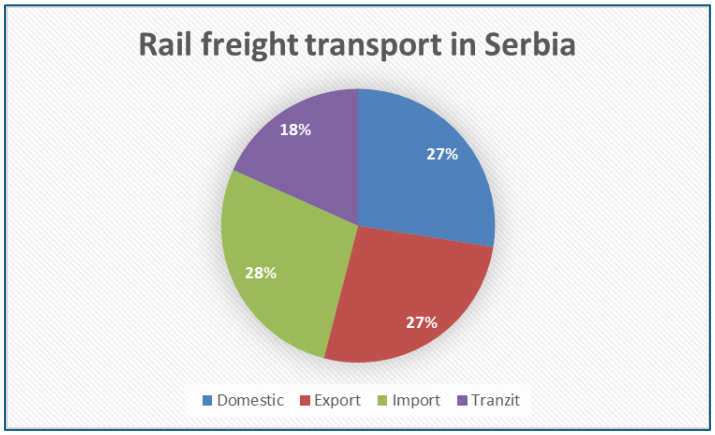

Figure 29 – Rail freight transport in Serbia, share of quantities in domestic and international transport[42]

A breakdown of transported freight by rail per commodity group is provided in Figure 30.

[41] Source: Consultant calculation based on data from Statistical office Serbia

[42] Source: The Consultant calculation based on data from Statistical office Serbia

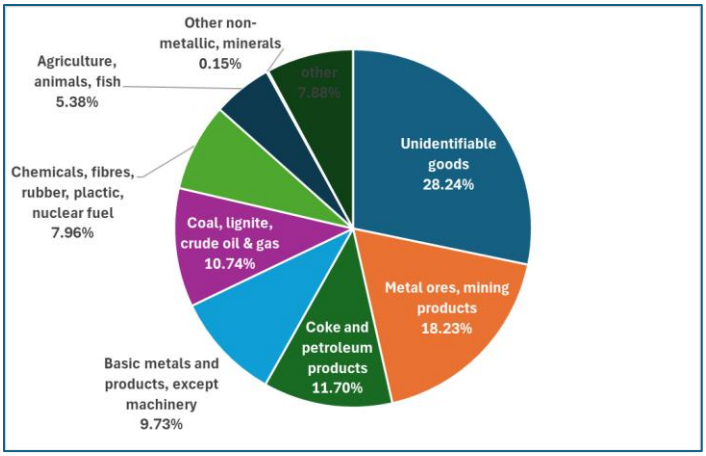

Figure 30 - International Railway transport in Serbia – share by commodity group[43]

The largest quantities by commodity group are represented in the groups of Metal ores and mining products, Coke and petroleum products, Basic metals and Chemistry fibers, rubber and plastics. Largest commodity group is Unidentifiable goods.

Based on data from Statistical office Serbia, the Consultant calculated quantities of goods transported by rail in transit through the territory of Serbia in 2022. This calculation is presented in the following table.

[43] Source: Consultant calculation based on data from Statistical office Serbia and COMEXT data

Table 34 - Transit of goods in Serbia, by countries of loading and unloading, by rail, in 2022 (000 tons)

from country/ to country	ALB	AUT	BIH	BGR	CZE	DEU	GRC	ITA	HUN	MKD	POL	ROU	SVK	SVN	HRV	TUR	MNE	Total
Total	**2**	**21**	**110**	**118**	**202**	**121**	**406**	**37**	**200**	**19**	**44**	**22**	**164**	**15**	**17**	**226**	**18**	**1742**
ALB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0**
AUT	-	-	-	16	-	-	183	-	-	5	-	-	-	-	-	18	-	**222**
BIH	-	-	-	-	-	1	-	-	2	-	10	1	-	-	-	1	0	**15**
BGR	-	14	1	-	28	86	-	15	19	6	5	-	40	4	3	-	-	**221**
CZE	-	-	-	4	-	-	78	-	-	2	-	-	-	-	-	4	-	**88**
DEU	-	-	2	2	-	-	5	-	-	1	-	-	-	-	-	24	-	**34**
GRC	-	0	-	-	166	1	-	-	159	-	-	-	115	1	-	-	-	**442**
ITA	-	-	-	8	-	-	1	-	-	1	-	-	-	-	-	-	-	**10**
HUN	2	-	2	55	-	-	47	-	-	2	-	-	-	-	-	70	-	**178**
MKD	-	6	98	0	1	-	-	-	1	-	-	-	1	0	-	-	-	**107**
POL	-	-	4	10	-	-	0	-	-	-	-	-	-	-	-	104	-	**118**
ROU	-	-	3	-	-	-	-	22	-	-	-	-	-	-	1	-	0	**26**
SVK	-	-	-	3	-	-	90	-	-	1	-	-	-	-	-	5	-	**99**
SVN	-	-	-	19	-	9	0	-	-	0	-	-	-	-	-	-	-	**28**
HRV	-	-	-	1	-	-	2	-	-	1	-	9	-	-	-	-	-	**13**
CHE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0**
TUR	-	1	0	-	1	24	-	-	19	-	19	-	8	1	13	-	18	**104**
UKR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0**
FRA	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	**0**
MNE	-	-	0	-	6	-	-	-	-	-	10	12	-	9	0	-	-	**37**

Figure 31 shows the load of main freight railway stations in Serbia, which is important for the estimation of multimodal transport flows and identification of possible locations of Rail-Road Terminals.

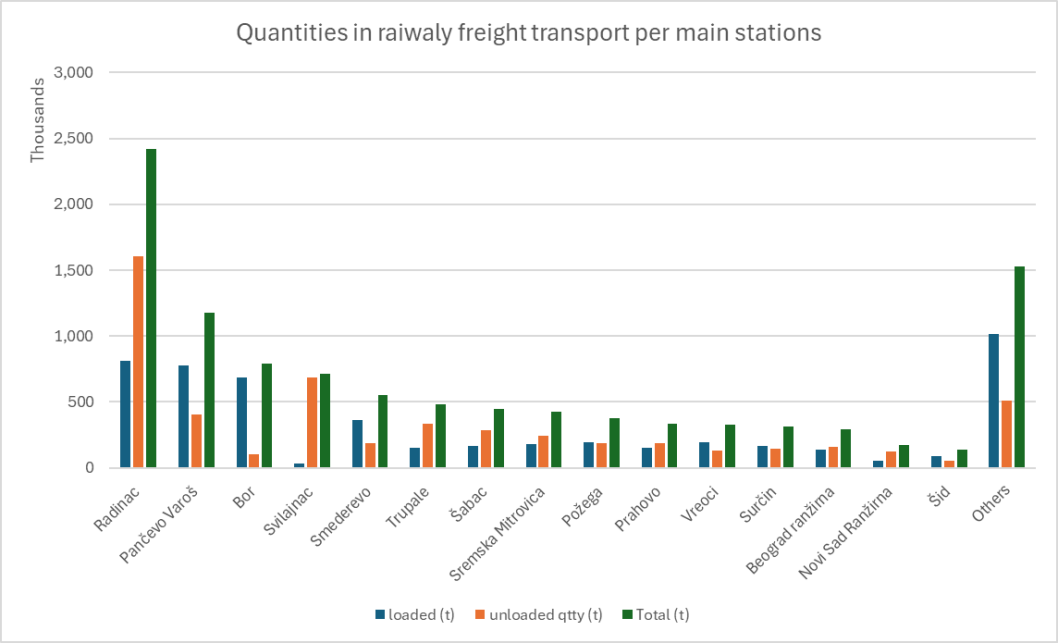

Figure 31 – Quantities in railway freight transport per main stations in Serbia (000 tons)

Largest quantities are registered in railway freight station Radinac, which is located in the area of largest iron factory in Serbia, HBIS. Station Pančevo varoš is connected to Pančevo industrial zone, where a significant chemistry industry and oil refinery are located. Station Bor is located in the area of copper mining and production ZiJin. Svilajnac and Vreoci stations are located next to the Power plants, while Smederevo serves the industrial zone and Port of Smederevo. Trupale station serves the industrial zone of the city of Niš where a number of different industries are located.

Road transport flows

In the 2022, the total volume of goods transported by road (export, import and domestic) was 20.31 million tons.[44] The breakdown of this quantity per type of movement is shown in Figure 32.

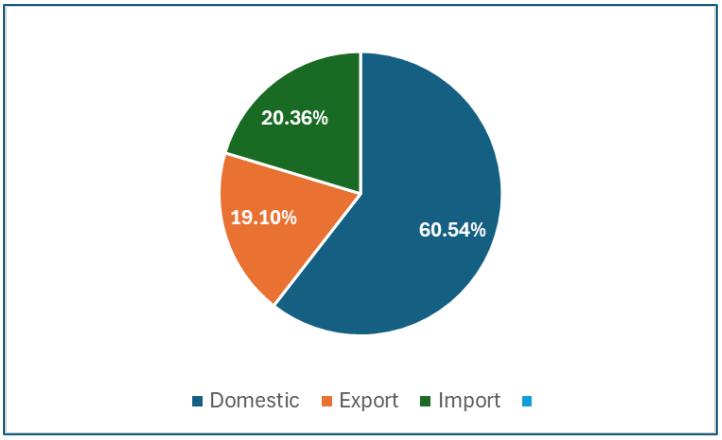

Figure 32 – Road transport – breakdown of quantities per type of movement

Internationally transported quantities were about 39.5%, or 8 million tons. The breakdown of these flows per locations in Serbia is unknown.

The breakdown of transported freight by road in international flows per commodity group is given in Figure 33.

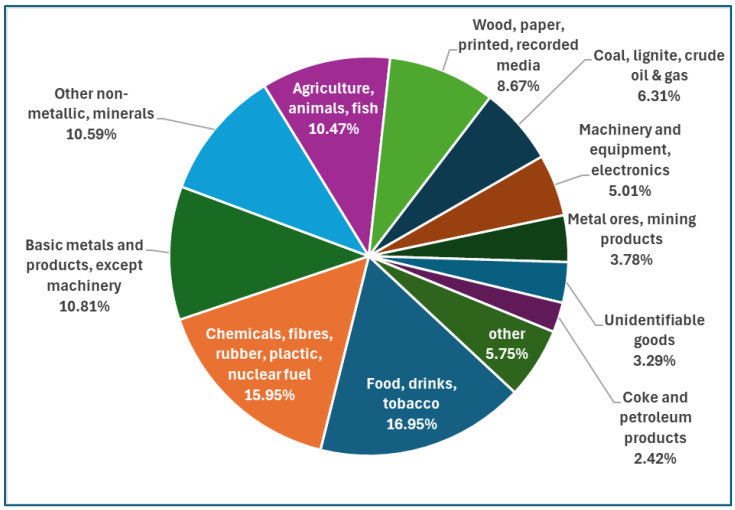

Figure 33 - International Road transport in Serbia – share by commodity group[45]

The most represented groups of goods in road transport are Food, drinks, tobacco; Chemicals, fibers, rubber, plastics; Basic metals and products, except machinery; and Other non-metallic products and minerals, which make up over 54% of the quantities transported by road and in relation to the proximity of the largest trading partners, all are suitable for multimodal transport, including the Food, drinks and tobacco products group.

[44] Agency for Statistics of Serbia, Transport 2023

[45] Source: Consultant calculation based on data from Statistical office Serbia and COMEXT data, 2023

IWW transport flows

In 2022, the volume of goods transported by inland waterways (national and international) was 6.74 million tons. Majority of this quantity, or 5.05 million tons are in domestic transport, leaving about 1.6 million tons for international IWW transport.[46]

According to the official statistics the breakdown of total quantities per type of movement in IWW transport in 2022 is shown in Figure 34, where domestic transport is about 76%.

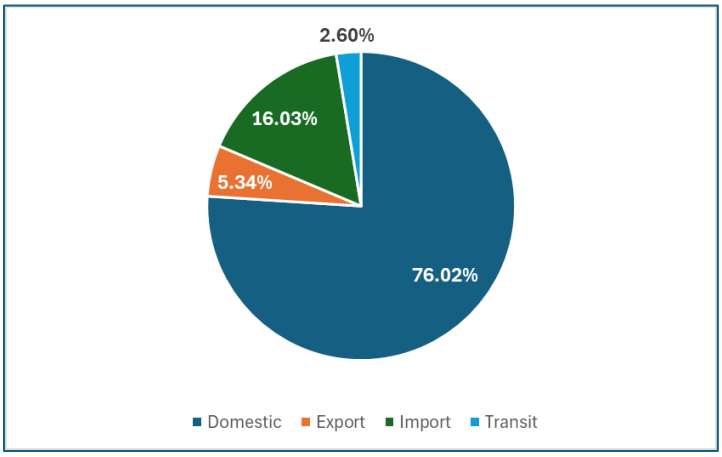

Figure 34 - IWW transport – breakdown of quantities per type of movement

On the other hand, according to the COMEXT Eurostat data, quantities traded internationally and transported by IWW transport are much higher, reaching the 2.5 million tons, mostly in trade with Romania and Bulgaria in 2023. Also, the high quantities of imported Coal from far markets are identified from unofficial sources (about 1.5 million tons), which changes the picture of the flows of IWW transport to Serbia.

For estimation of flows on IWW, it is important to present the volumes of cargo handled in river ports (approximately, handled quantities are two times higher than throughput). The total volumes of handled quantities in Serbian ports are presented in Figure 35.

[46] Agency for Statistics of Serbia, Transport 2023

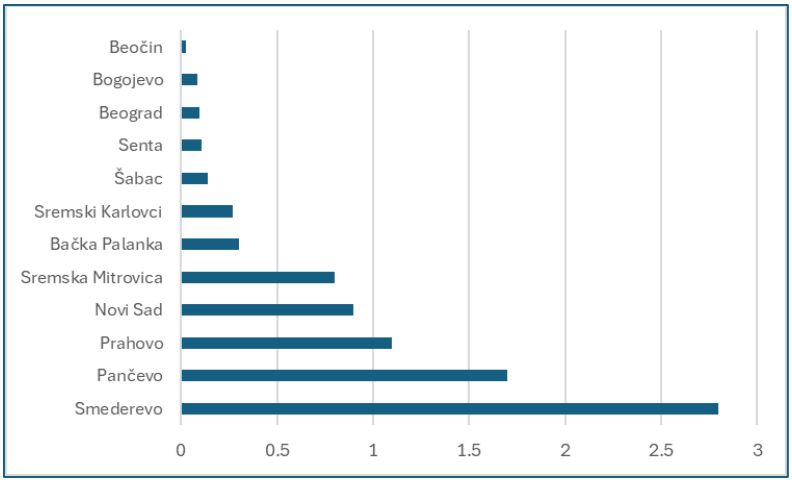

Figure 35 - Cargo handled in Serbian river ports, 2023 (million tons)[47]

The IWW flows are strongest to the Ports of Smederevo and Port of Pančevo, where significant metal and chemistry industry are located, respectively.

Intermodal transport flows

According to combined data from COMEXT Eurostat database, official Statistics, information gathered from intermodal transport terminals and other relevant sources, total flows of containerized goods are estimated to 161,000 TEU.

Approximately 80,000 of that quantity is transported by rail, which represents the sum of reported throughput of all Serbian intermodal terminals in 2023. The other half is transported by road.

Established regular intermodal services from different intermodal terminals are:

- Belgrade – Port of Rijeka
- Belgrade – Budapest
- Belgrade – Piraeus
- Belgrade – Trieste
- Belgrade – Koper
- Nis – Ljubljana
- Nis – Port of Rijeka
- Nis – Wels

Exact quantities are not available, but according to the survey and interviews, the majority of container flows are towards the Port of Rijeka. Besides these regular lines, containers are transported by rail from/to Port of Bar, Port of Burgas, Port of Thessaloniki on occasional basis.

[47] Port Governance Agency of Serbia

Appendix II – Detailed analysis of users' and providers' perspectives

The perspective of users and service providers of multimodal/intermodal transport was examined as part of the activities of Task 2 of this TA assignment. The methodology was explained in the previous (Task 2) report, while it must be emphasized that the results of the survey and interviews presented here do not refer to the satisfaction of users and the attitudes of service providers in terms of quality, time and other characteristics. The results refer to questions related to quantities, commodity flows, needs in terms of capacity and terminal locations, etc., i.e. relevant to Task 3 and this report on identification of multimodal freight terminals.

As in the previous report for Task 2, the surveyed subjects were divided into several groups:

- Users of transport and logistics services who use the services of multimodal/intermodal terminals in the region
- Users of transport and logistics services who do not use the services of multimodal/intermodal terminals in the region, but use this type of service (terminals outside the WB region)
- Providers of transport and logistics services that are not involved in multimodal/intermodal chains
- Providers of transport and logistics services that are involved in multimodal/intermodal chains, divided into:
    - Those that include terminals in the WB region
    - Those that do not include terminals in the WB region
- Companies that carry out transportation for their own account
- Direct providers of intermodal transport services - intermodal terminals (owners and/or operators)

In terms of sample size, the online survey was sent to targeted users recognized as important for the Western Balkans market. During the preparation and implementation of Task 2, 136 companies that are important for the market of the Western Balkans were recognized. Of the mentioned number, 55 companies responded to the call and filled out the survey.

From the group of terminals, at the beginning of the project, based on previous studies and projects, available databases and other sources, including the experience of consultants, 27 locations where intermodal transport (**IMT**) is performed or is possible were recognized. Bearing in mind that some of the locations belong to the railway infrastructure managers, as well as the fact that in the meantime there was information that some locations are without intermodal operations and there is no prospect that services will be established at such locations in the near future, a list of 16 terminals was made who were invited for an interview.

The vast majority of invited operators agreed to support the project and provide information, but by the time this report was concluded, they had not finally approved an interview date or submitted

written responses. The list of invited multimodal/intermodal terminals, i.e. their operators, with interview status, is provided in Table 1.

Table 1 - List of invited multimodal/intermodal terminals for an interview

RP	Intermodal Terminal (active)	Operator	Interview status
ALB	Port of Durres Container terminal	Mariner Adriatic (part of Hili Company)	Completed
BIH	Port of Brcko Container terminal	Port of Brčko (public company)	Partially completed
BIH	Tuzla intermodal terminal	Robni Terminal Tuzla doo	Completed
BIH	Sarajevo container terminal	ZFBH, railway infrastruct. manager	
KOS	Miradi intermodal terminal	INFRAKOS, railway infrastruct. manager	Completed
MNE	Port of Bar	Port of Bar JSC	Partially completed
MNE	Port of Bar Container terminal	Port of Adria	
MKD	Blue Bell intermodal terminal Skopje	Blue Bell Warehouse (Navico Shipping)	Completed
MKD	Skopje Tovarna	Skopje Tovarna - Railway station (ZRSM)	Partially completed
SRB	Port of Leget Intermodal terminal	RTC Luka Leget	Completed
SRB	Dry Port Terminal Pancevo	Dry Port Terminals	Completed
SRB	Dobanovci intermodal terminal Nelt	Nelt Co.	Partially completed
SRB	Kruševac intermodal terminal Nelt	Nelt Co.	
SRB	MBOX intermodal terminal Niš	MBox Terminals	Completed
SRB	Batajnica intermodal terminal	Logistički centri Srbije Ltd (State owned)	Partially completed
SRB	Container terminal Makiš	ŽIT (State owned)	Temporary closed
SRB	Inđija intermodal terminal	Adria Rail Ltd (METRANS)	Partially completed

It is also important to note that there is a certain number of freight railway stations and river ports, whose managers were not interviewed, given that the data is publicly available or known from recent studies, and intermodal transport operations do not exist or are planned, but bulk, general and/or liquid cargoes are mostly transshipped.

For all terminals that are not included in the research, the consultant has provided basic data on capacity, current handled quantities and equipment according to the latest publicly available information and data from recent studies.

The most important views of users and service providers of multimodal/intermodal transport and terminals will be presented here, for the purposes of presenting the current situation on the market, needs and defining proposals for increasing capacity.

Providers of transport and logistics services

The largest group of surveyed users is made up of providers of transport and logistics services, which make up 59.26% of the total number of respondents. Of this set, 25% of them declared that they do not participate in multimodal/intermodal chains, while 75% of participants who represent transport and logistics service providers participate in intermodal chains.

Transport and logistics providers involved in IMT

The structure of surveyed providers of transport and logistics services according to the amount of intermodal unit transport realized is shown in Figure 1.

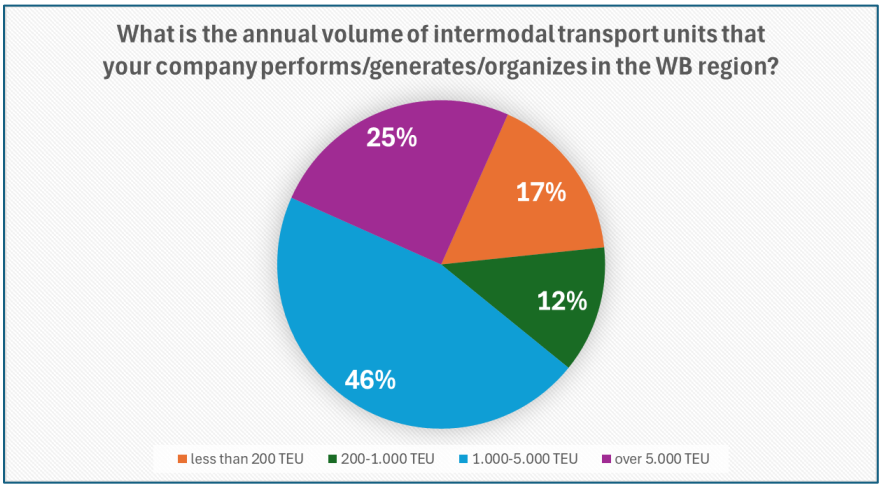

Figure 1 – Distribution of number of participants according to annual clustered volume of containers handled or transported

It should be said that the 25% of transport and logistics service providers that are involved in intermodal chains with over 5,000 TEU per year are large shipping companies. Due to the fact that the majority of the interviewed users did not want to reveal even an approximate number in terms of the volumes, as well as that the majority of respondents declared for full or partial anonymity of the source of information, it is not possible to single out the largest users in this report. The largest number of respondents, 46% of them, belong to the group that realizes from 1,000 to 5,000 TEU per year, while the remaining 29% participate in the realization of transport with less than 1,000 TEU per year.

When it comes to freight flows in intermodal transport, providers of transport and logistics services can be divided into two groups: those who specify origin and destination locations, and those companies that list exit seaports or local intermodal terminals as their destinations. In both cases, long-distance markets dominate intermodal transport, primarily China, the USA, India, Brazil, and so on. Medium representation is seen with Mediterranean countries (Spain, Italy, Egypt, etc.). EU countries (Germany, Northern Europe, the Netherlands, Central Europe) also have medium representation, while destinations like Turkey, Algeria, and similar are somewhat less represented. In summary, the dominant destinations are China, the EU, the USA, and Asia.

When it comes to intermodal terminals and ports most frequently used, the questions were defined to separate terminals in the WB region from those outside the region. However, respondents provided similar answers for both questions, evidently defining "their region" to include ports and terminals not located in the Western Balkans. As a result, the answers were combined and presented in Figure 2.

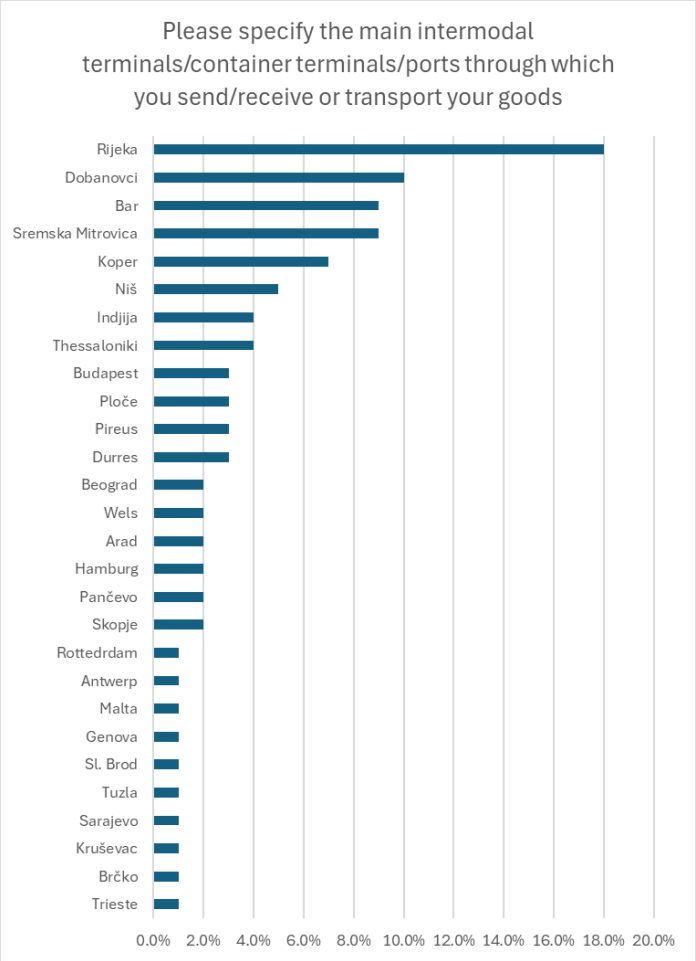

Figure 2 – Most named intermodal/container terminals and ports

This diagram should be interpreted with some caution, considering that the majority of respondents are from Serbia. On the other hand, the relative size of economies and the development of intermodal transport also favor Serbia. However, the disproportion in the number of respondents is somewhat greater, so it could be expected that the ports of Ploče, Durres, and Thessaloniki might be ranked higher if the number of respondents from Bosnia and Herzegovina, Albania, North Macedonia and Kosovo* was higher.

The need for additional capacities, as assessed by providers of transport and logistics services, is depicted in Figure 3.

* This designation is without prejudice to positions on status and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

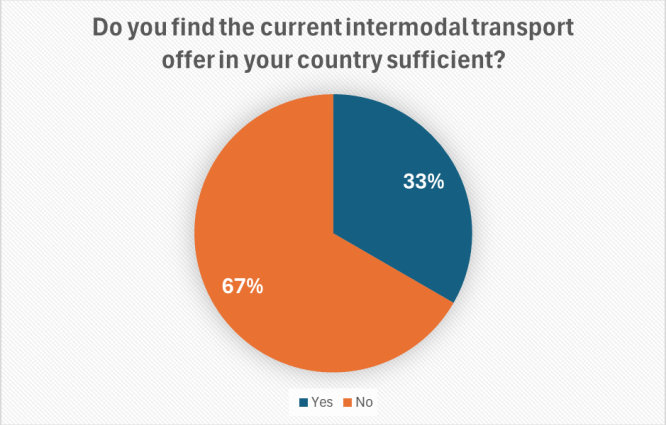

Figure 3 – Opinion of participants on needs for additional offer (transport and logistics providers)

Although this question was presented in Task 2 report on users' satisfaction, it is important to repeat it here, considering that respondents who answered "No" to this question were offered to suggest the location of a possible new intermodal terminal, which would satisfy the defined need with the question of the sufficiency of the offer. The results of the locality proposal are given in the following graph.

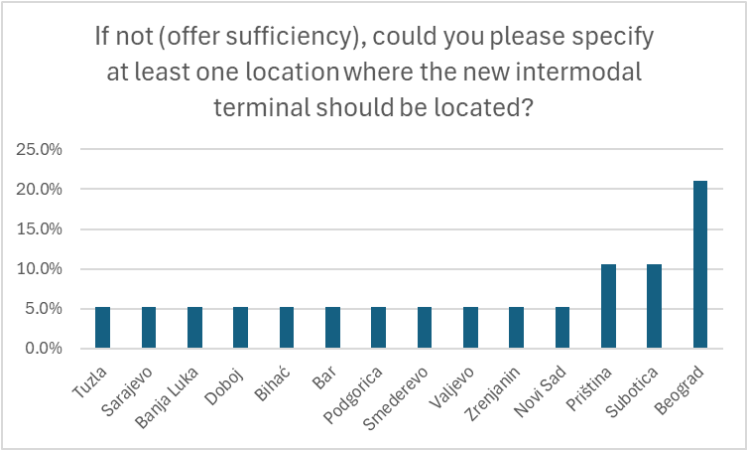

Figure 4 – Proposals for new terminal locations (transport and logistics providers)

It can be recognized that the respondents made suggestions according to their location, i.e. guided by partial interests, which of course is completely legitimate. Also, it can be seen that for certain locations, it is meant to increase the existing capacities. Additionally, locations are observed to be linked to cities. This is supported by the fact that one respondent stated that a terminal is needed near every major city in the region. Also, some interviewees stated that it is not only a matter of need for new or additional terminal capacities, but primarily better railway infrastructure, more efficient railway transport and better commercial connectivity of existing terminals.

With a similar goal, this time defined by a technical specification of the assignment, the question was asked: "Do you think that the construction of new intermodal terminals in the border area is necessary/useful?". Most of the respondents answered "No", but those who answered "Yes" were given the opportunity to suggest the locations of new terminals in the border zone.

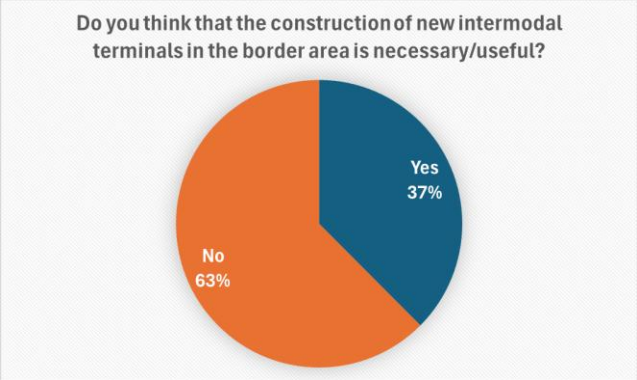

Figure 5 – Opinion of transport and logistics providers about the need for terminals in border areas

Figure 5 shows the opinions of transport and logistics service providers participating in intermodal chains regarding the need for new intermodal terminals in border areas. It is important to note that the majority of respondents who believe that terminals in border areas are necessary are maritime shippers, rail operators, and large freight forwarders, reflecting their interest in fewer handling operations and greater availability of empty containers.

When asked about the locations where such terminals should be established, respondents provided answers aligned with their locations and operational routes. However, a prominent location mentioned was the border area between North Macedonia and Greece, specifically Gevgelija, which was highlighted not only by users from North Macedonia. In addition to Gevgelija, other mentioned locations included Subotica, Dimitrovgrad, Šid, the general border area between Bosnia and Herzegovina and Serbia, as well as non-border locations in Bosnia and Herzegovina (Sarajevo, Doboj, Banja Luka and Tuzla) and in Kosovo (Pristina).

This group of users (transport and logistics service providers participating in intermodal chains) also focused on other problems and obstacles hindering the further development of intermodal transport and provided several recommendations:

- "It is extremely important and necessary to stimulate the development of intermodal transport. Allocating funds for co-financing, alongside necessary prerequisites such as appropriate legislation, infrastructure, and transport means, is crucial and essential for fostering the development of this mode of transport in the country and the region."
- "Larger subsidies are needed for the development of intermodal connections."
- "Modernization of railways, liberalization of rail traffic, collaboration with industry experts and practitioners, adaptation to market needs, optimization in line with development opportunities, stimulation of transition to sustainable transport practices, establishment of hub and spoke systems in the country."
- "Education, education, education of the market, environment, political society as well as new generations, low level of knowledge."
- "Intensive efforts are needed to adapt and modernize legal and customs procedures to enhance the significance and competitiveness of this mode of transport."
- "Incentive measures (lack of measures that encourage the development of intermodal transport)."

- “Skilled workforce is crucial. Mostly semi-skilled workers are employed. They are trying, but much more is needed for development.”
- “Adjustment and enhancement of administrative and customs regulations are necessary to establish sustainable intermodal transport.”

In an attempt to gather information on the structure of goods transported, respondents listed a very diverse and wide range of commodities. In response to the question "Please specify the 3-5 main types of goods (commodities) transported," respondents mentioned: Consumer goods, steel products, construction materials, chemicals, animal protein, IT equipment, fast-moving consumer goods (FMCG), soda, paper, stone, ceramic tiles, furniture, sheet metal, air conditioners, fittings, hardware, various manufacturing and agricultural machinery, HVAC equipment, marble, tiles, beverages, tires, chemical products, raw materials for the tobacco industry, ores, minerals, fruits, white goods, frozen fruits, timber, metals, marbles, ferro-nickel, mattresses, chrome, spare parts for machines, tires, biscuits, food, copper concentrate, clover, cereals, construction, consumer goods, tires, sugar beet, copper concentrate, home furnishings, foodstuffs, building materials, cigarettes, ores, consumer goods, raw materials for the automotive industry, chemicals, various materials in tank containers, solar panels, appliances, IT equipment, tires, soybeans, sugar, ferroalloys, wood, soda, paper, general cargo, toys, grains, consumer goods, general cargo, white goods, electrical appliances, tires, school supplies, and ceramics.

Considering that exact quantities were not specified, it cannot be determined which types of goods dominate among respondents. However, it can be said that practically all types of goods are covered, ranging from bulk and non-bulk, liquid and general cargo to industrial products, food, technology, etc.

Furthermore, respondents were asked to give their suggestions on the most important missing connections. Excluding general responses, most responses reflect real needs. Some of the answers to consider are as follows:

- Sarajevo/Doboj/Banja Luka/Tuzla – Budapest,
- Sarajevo/Doboj/Banja Luka/Tuzla – Ljubljana,
- Sarajevo/Doboj/Banja Luka/Tuzla – Belgrade,
- Sarajevo/Doboj/Banja Luka/Tuzla – Adriatic ports,
- Poor road connection and conditions at the container terminal in Sarajevo,
- Rijeka-Subotica,
- Belgrade and Niš with the central and southern parts of Bosnia and Herzegovina,
- Durres-Pristina,
- Niš-Istanbul,
- Serbia – Albania/ Port of Durres,
- Primarily to equip the infrastructure towards Budapest (as the main connection HUB), some terminals in Romania (Arad, for example) and Macedonia,
- Koper – Belgrade. Koper is a port with a million TEU per year. Primary for the domestic economy is the connection with the port of Koper,
- Railway and road infrastructure to Skopje,
- Sarajevo-Belgrade highway,
- Pristina-Durres highway,

- Modernization of the Port of Bar and connection with Serbia, better access to the port,
- Modernization of the railway line Doboj-Tuzla-Brčko,
- Mostar-Ploče highway,
- Connecting Sarajevo with the port of Ploče via Mostar,
- Lack of railway connection between the Makiš terminal (ŽIT) and the Makiš marshalling station (internal),
- Better connections of Bosnia and Herzegovina with international railway corridors, such as Corridor Vc (Budapest-Sarajevo-Ploče) and Corridor X (Belgrade-Zagreb-Ljubljana), would enable Bosnia and Herzegovina to better integrate into European transport networks,
- Connecting Doboj-Banja Luka with the port of Rijeka,
- Lack of tracks (double required or more),
- Belgrade – Romania road/railway connection.

The last question for this group of users is related to defining the needs for additional services and technology for loading and unloading intermodal units in relation to the location. To the question "Specify the place for loading/unloading of intermodal transport units (containers, swap bodies, etc.)", the respondents' answers are presented in Figure 6.

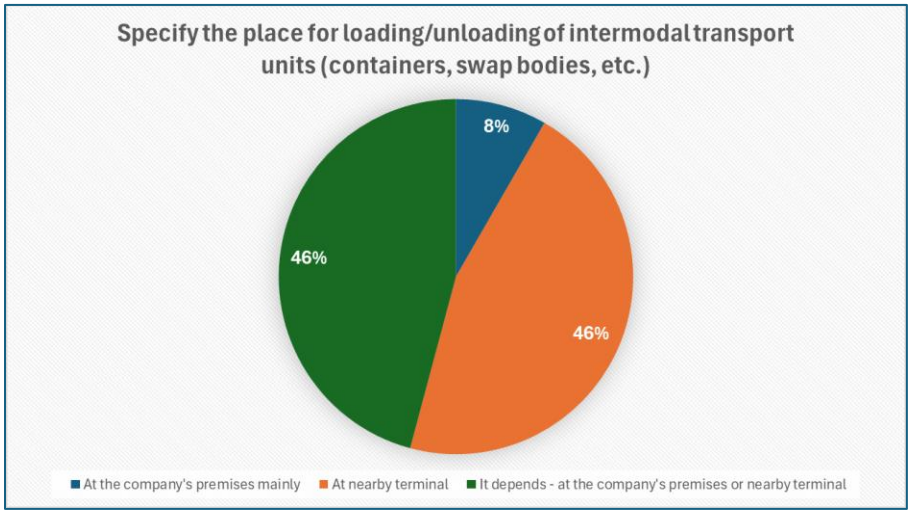

Figure 6 – Intermodal units loading/unloading options (transport and logistics providers)

Against this group of transport and logistics service providers that are involved in intermodal chains through terminals in the region, there is only one company that declared that it does not include terminals in the region in its activities. Given that it is a company that requires anonymity, and that its views do not differ much from those previously mentioned, it will only be mentioned here that the construction of the railway infrastructure between Tirana and Durres and the establishment of intermodal services on that route are important.

Transport providers not involved in IMT

The next subgroup of companies, made up of a smaller number of respondents, represents providers of transport and logistics services whose services are not included in multimodal/intermodal transport chains. Half of this group is made up of organizers and carriers in road transport, while the other half is made up of railway operators. Although it may seem surprising that railway operators do not participate in multimodal transport chains, for 50% of these railway operators it was determined that in reality they mainly transport bulk and liquid cargo in transport technologies that do not actually have last/first mile in road transport, but loading and unloading is performed directly into/from the wagons to the warehouses. The commodities that are transported in this way are mostly crude oil, fuel and grain. In this specific case, fuel and crude oil are transported as domestic transport. In the case of grain, loading is done directly into wagons and transported to EU countries, where the operator hands over the composition to the EU operator at the border and there is no knowledge of how and where the unloading is done.

On the other hand, the second half of railway operators were asked to review their survey responses. The consultant is aware that one railway operator handles container transport, especially in transit, although they indicated in the survey that they do not participate in multimodal/intermodal transport chains.

All surveyed companies in this group stated their plans to integrate their services into intermodal transport chains. With this in mind, Figure 7 provides an overview of the assessed average transport distances. It should be noted that among the displayed 38% of respondents with average transport distances less than 500 km, railway companies are included.

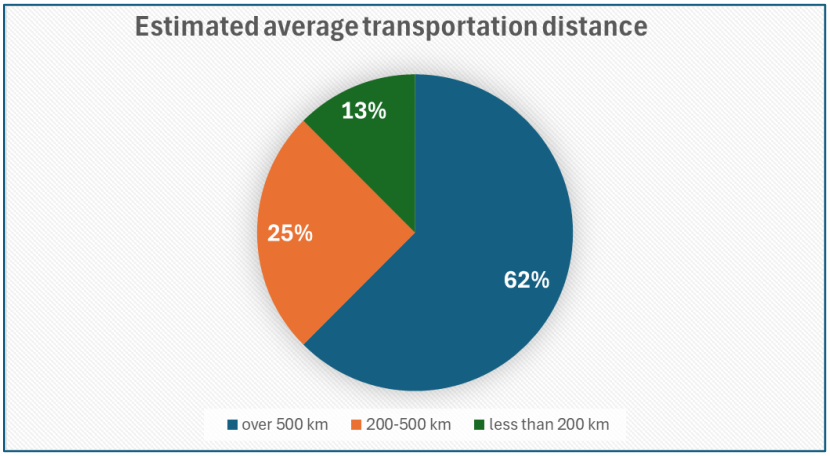

Figure 7 – Estimated average transport distance (transport and logistics providers not involved in intermodal transport chains)

Within the confirmed plans to be involved in intermodal chains, it is necessary to show the presence of transport and logistics service providers in the markets. It should be emphasized here that out of the 33% shown that are present on the domestic markets, a third, or 11%, operate exclusively on the domestic market and that these are railway operators. From Figure 8, it can be seen that the largest participation is in the European Union market (39%), while the participation in the market of the Western Balkans as an international transport services market is represented by 17%.

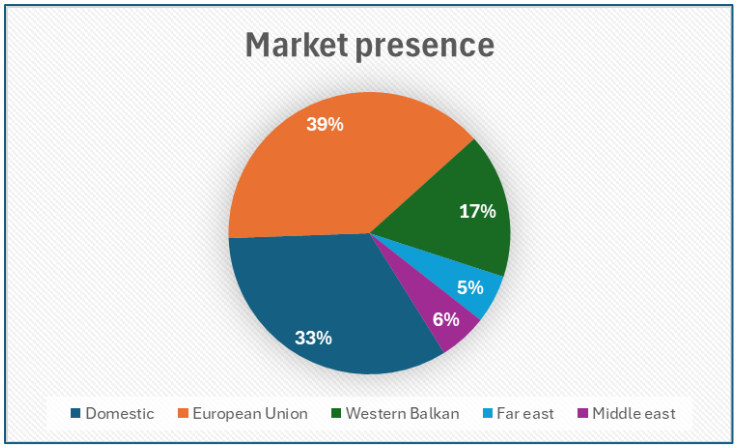

Figure 8 – Presence on different markets by transport and logistics providers who are not involved in intermodal transport chains

Providers of transport and logistics services that are not involved in intermodal chains were asked about the origin and destinations of goods in import and export. Various destinations are listed, but the most frequently listed countries are singled out and shown in Figure 9. It can be seen that the member countries of the European Union are the most represented, while the other destinations are practically negligible. Also, it can be seen that distant destinations are not present, which is to be expected considering that these are transport and logistics service providers that are not involved in intermodal transport chains.

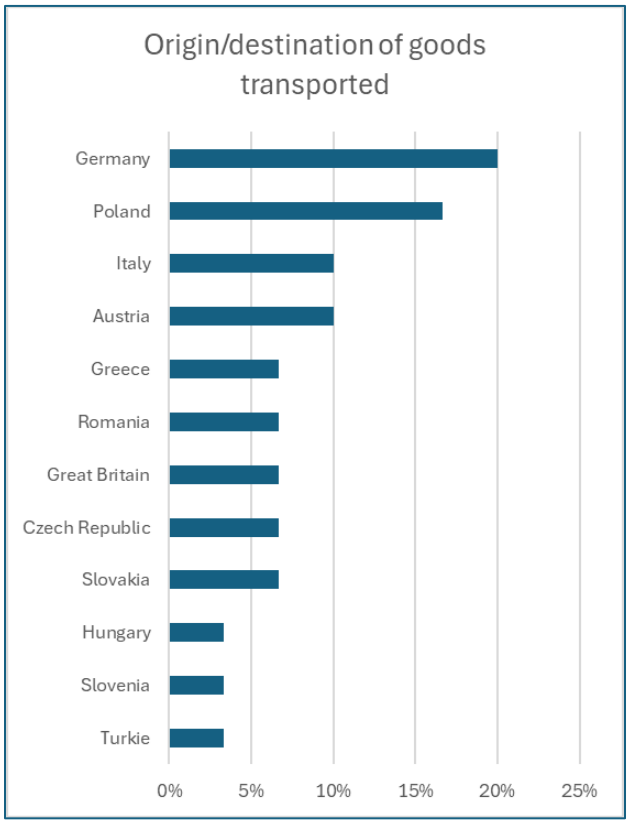

Figure 9 – Origins and destinations of goods (transport and logistics providers who are not involved in intermodal transport chains)

In attempting to identify the main groups of goods among this group of companies, it was determined that no specific commodities predominate. Practically all types of goods are included, from bulk cargoes such as grain, construction materials, scrap metal, various ores, to liquid cargoes like oil and fuel, various chemical products, and general cargoes such as steel, machinery, and consumer goods including food products.

The results presented, although based on a smaller number of companies (14.8% of the total respondents), should not be disregarded, especially considering that 62.5% of these companies stated their involvement in transportation or organizing transportation of over 150,000 tons annually.

Users of transport services

Transport service users are divided into two main groups: 55.6% of respondents use intermodal transport services, while 44.4% of users do not use intermodal transport services.

Users of transport services who use intermodal transport

Among companies in the group of users who utilize intermodal transport, 80% of them use terminal services within the region, while 20% do not use regional terminal services. It is important to note that this percentage does not reflect the number of intermodal units processed at regional terminals compared to the volume of intermodal units traveling directly to or from seaports or intermodal terminals outside the Western Balkans region. This is primarily because companies use different combinations of transport routes depending on the destination. The aim is to define that companies not using regional intermodal terminal services have their reasons, and it is important to understand those reasons.

Another reason lies in the fact that companies, or respondents, did not distinguish between territories of EU member states in the vicinity and the concept of the "Western Balkans region". Therefore, ports like Rijeka, Koper, Ploče, and Thessaloniki were included in the list of regional terminals by participants, even though they do not belong to the Western Balkans region but are certainly considered "regional" from a business perspective.

Users of intermodal transport services, including intermodal terminals in the WB region

Among the group of companies using regional intermodal terminals, nearly 90% are large companies with over 250 employees. This group is further characterized by significant volumes of goods transported, with 50% of companies generating between 1,000 and 5,000 TEUs annually, while the other half handles up to 1,000 TEUs annually.

Figure 10 depicts the self-assessment results of intermodal transport users using terminals in the region regarding the share of intermodal transport in fulfilling total transport needs compared to road transport only. Respondents in this group estimated the share by responding to the question "In realization of the total transport activities of your company, please estimate the share of intermodal transport (against the road only)." We can see that nearly 80% of respondents still find road transport

dominant, despite using intermodal transport. Only 22% of respondents indicated that intermodal transport accounts for 50-80% of their transport activities.

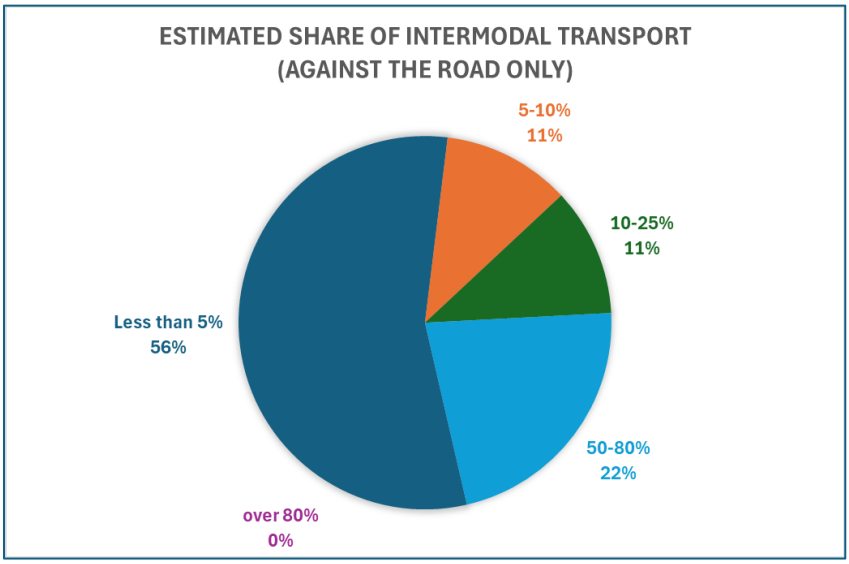

Figure 10 – Estimation of share of intermodal transport by users of intermodal transport services

When it comes to the terminals and ports that the respondents stated that they use most often, of the terminals in the Western Balkans region, the port of Bar is the most frequently mentioned, while the others that are mentioned in approximately the same volume are the Port of Durres and the terminals Sremska Mitrovica, Dobanovci, Pančevo and Indjija in Serbia. The Pirot terminal in Serbia was also mentioned, but only as a place of unloading of smaller volumes of containers with specific goods arriving by rail from the Port of Burgas.

In order to try to evaluate the directions of intermodal goods flows, this group of users who use intermodal transport and terminals in the region, was asked to answer the question: "Please list the main intermodal terminals/container terminals/ports out of the WB region through which you send/receive or transport your goods". The responses are provided in Figure 11.

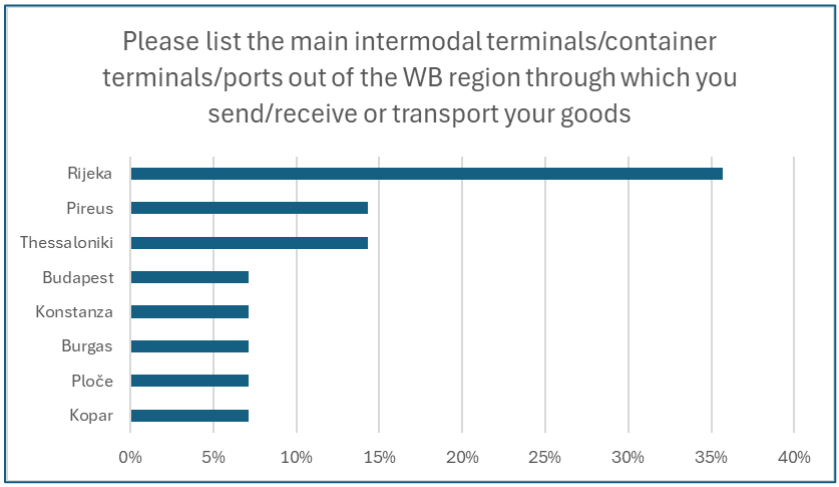

Figure 11 – Most used intermodal terminals/ports outside the WB region (users of intermodal transport services)

Here, it is important to note again that the structure of the respondents consists mostly of companies from Serbia. In any case, it is recognized that users from BIH are oriented towards the ports of Ploče and Rijeka, users from Albania and Kosovo are oriented towards the port of Durres and to some extent Thessaloniki, users from Montenegro towards the port of Bar, while users from Serbia in most cases use the port Rijeka, but also all seaports in the area, including those on the Black Sea, as well as the terminals in Budapest.

Compared to transport and logistics service providers, companies that use transport services generate slightly smaller volumes of goods in intermodal transport. Figure 12 shows the structure of respondents according to their volume of transport requests, that is, the number of containers they realize. We can see that the number of companies that generate transport flows of lower intensity is equal to the number of companies that declared themselves to have a medium intensity of transport needs. There were no companies with more than 5,000 TEU. On the other hand, the vast majority of companies examined here (about 90%) belong to the group of large companies with over 250 employees.

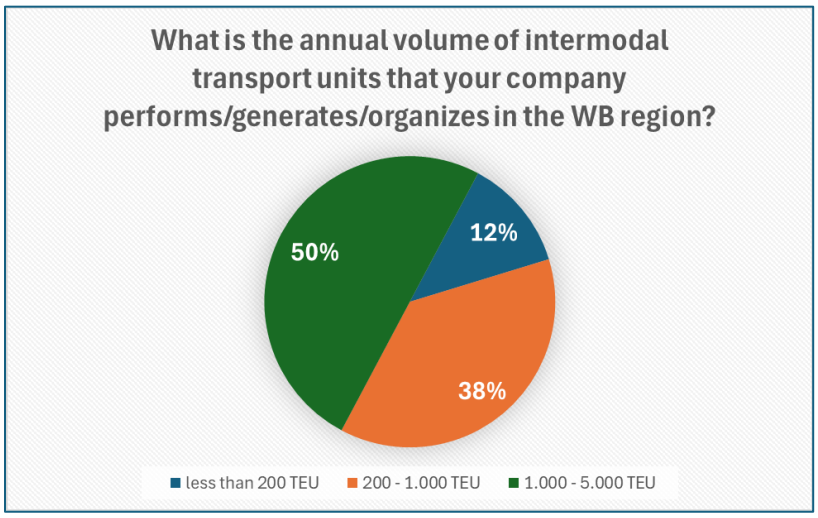

Figure 12 – Share of volumes of intermodal transport demand per survey participated users

Similar to transport service providers, the types of goods that appear in transport are very diverse. Included are bulk and liquid cargoes, crude oil, general cargo, steel, tires and other automotive, agricultural products, grains, beverage products, minerals, chemistry, ore, aluminum, paper, etc.

This group of users were asked to recognize and list the most important missing links. The answers to the question "Name one or two important missing links of intermodal transport with economic centres in the WB Region" were mostly related to railway connections or generally defined as following: Belgrade-Nis-Qafe Thane-Tirana; Durres-Kosovo; Tuzla-Doboj-Rijeka; Belgrade-Novi Sad-Subotica; Belgrade-Merdare-Kukes-Tirana; Belgrade-Bar; border crossing points Šid-Tovarnik (railway), Subotica BCP to Hungary, Presevo-Tabanovce joint railway BCP, Railway connection Bosnia and Herzegovina to Serbia.

Users were also asked to define the main origin-destinations when importing or exporting goods. Some of the respondents answered this question by stating the seaports through which the goods go (Rijeka, Bar, Koper mostly). Bearing in mind that we are talking about the users of intermodal

transport, it is expected that a slightly larger share of destinations have distant markets, so that the respondents, in addition to the countries of the European Union, also mentioned the following destinations: China, Africa, USA, Latin America, UAE, Saudi Arabia, Qatar, Australia, India, Argentina, Middle East, Egypt, Algeria. However, there were respondents who mentioned countries in the immediate vicinity, e.g. Hungary, Romania, Greece, Slovenia, Austria.

Figure 13 shows an interesting fact that a significant part of respondents, 37% of them, do not plan to further increase their activities related to intermodal transport. One of the largest companies in the area of the metal industry in the region stated that the costs of combined and intermodal transport are too high and that in such market conditions they do not plan to further increase the share of intermodal transport in meeting their transport needs. This company stated that less than 5% of its transport needs are met by intermodal transport. Also, the other companies stated the main reason that for now they get a significantly better quality, faster and more flexible service from road transport, which still prevails as a need in relation to small or no price differences.

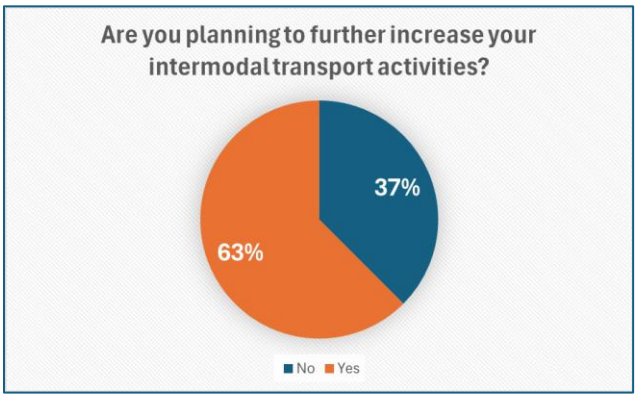

Figure 13 – Plans for further increase of intermodal transport activities (Users of intermodal transport services)

When it comes to the needs and proposals for additional capacities and locations, the majority of users of transport services who use intermodal transport and terminals in the region expressed a negative opinion on the question whether it is necessary to construct terminals in border areas. Of the companies that responded positively to this question, the suggested locations are Subotica, Pirot, the Šid-Tovarnik border crossing and a general answer that refers to the locations where railway lines and roads meet in the border area between Bosnia and Herzegovina and Serbia.

Users of transport services who use intermodal transport but do not use terminals in the WB region

There were not many such users in the research (less than 5%), but it is interesting to consider the reasons for such decisions. It should be said that these are large companies, with over 250 employees and that generate up to 5,000 TEU each, as annual needs for intermodal transport. Given that the companies requested anonymity, it can be said that they come from the Automotive industry, Mining, Chemical and Oil industries. The main markets of these companies are the EU, especially Germany and Central Europe, followed by Turkey and distant markets (Asia, Africa, America).

The terminals used by these companies are for the most part the Ports of the Northern Adriatic, then the Port of Ploče and Rail-Road terminals in the EU (further than neighboring EU Member states).

The commodities that are the subject of this small group of users are mainly packaged bulk goods, bulk cargo, liquid cargo in tanks, various machines, parts for the automotive industry, electronics.

All companies from this group declared that they currently have less than 5% share of intermodal transport in total needs, and that they plan to increase the share of intermodal transport in the future.

As some of the main reasons why they do not use the terminals in the region, they state:

- Infrastructure, especially railways (there are too many works ongoing in Serbia, which significantly slows down work and reduces operator's reliability)
- Infrastructure: there is a lack of terminals in Bosnia and Herzegovina and the railway infrastructure is in a poor condition
- There is no regular connection of local terminals (Bosnia and Herzegovina) with terminals in Europe, by rail transport
- There are problems with the storage of goods in hubs in Europe and further distribution to customers
- Serious Customs barriers and complex procedures for containers in Bosnia and Herzegovina
- In the railway part of the transport in the region, it is not possible to know the status of the shipment (there is no track and trace), while in the road information about the status and location is monitored in real time,
- Poor connection of regional terminals (especially in Bosnia and Herzegovina)
- Price/quality ratio on the side of road transport, especially important when it comes to expensive shipments

Users of transport services who do not use intermodal transport services

This group includes companies that use intermodal transport in general or on a very small scale or occasionally. The group consists mainly of large companies (72%), while medium-sized companies in this group are represented by 28%.

When analyzing the responses, it was noticed that there is a very small percentage of companies that the consultant has knowledge of export of large quantities of consumer goods to distant markets of the USA, Australia, Canada, Latin America, and at the same time classify themselves in the group that does not use intermodal transport. These companies generally send palletized goods to seaports, where the goods are loaded into containers within the terminal and continue as containerized to the port of destination and further to the final destination. For the stated reason, these respondents stated that they practically do not use intermodal transport services on the part of the journey to the exit ports.

All other companies from this group deliver or ship their goods to the markets of the European Union, the Western Balkans and the domestic market.

The mode of transport that is dominantly used by these companies is road, but other types are also appearing. An overview of the mode of transport used by these companies, expressed by the number of repetitions in the listing, is shown in Figure 14.

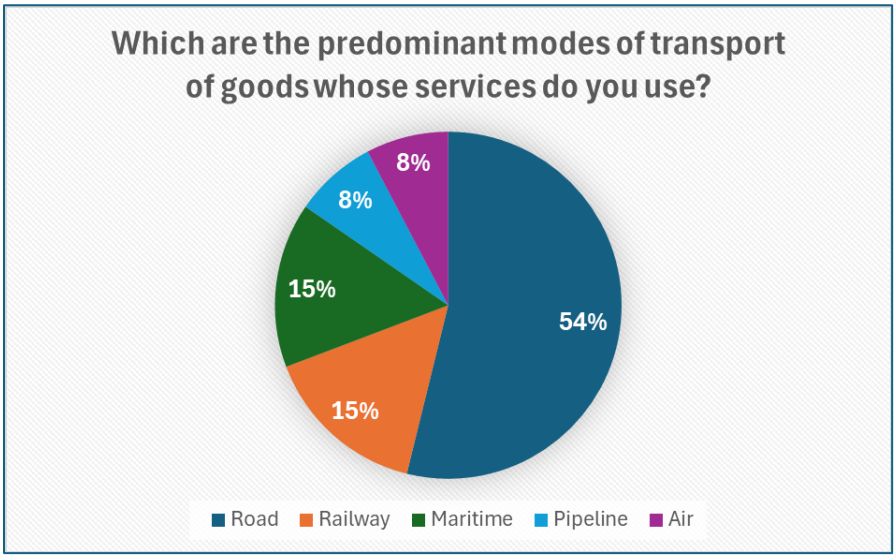

Figure 14 – Self estimation of users about dominant mode of transport in their transport activities (Users who do not utilize intermodal transport)

For users of transport services who do not use intermodal transport, the most significant origins/ destinations (i.e. imports/ exports) are in the EU. The responses provided are shown in Figure 15.

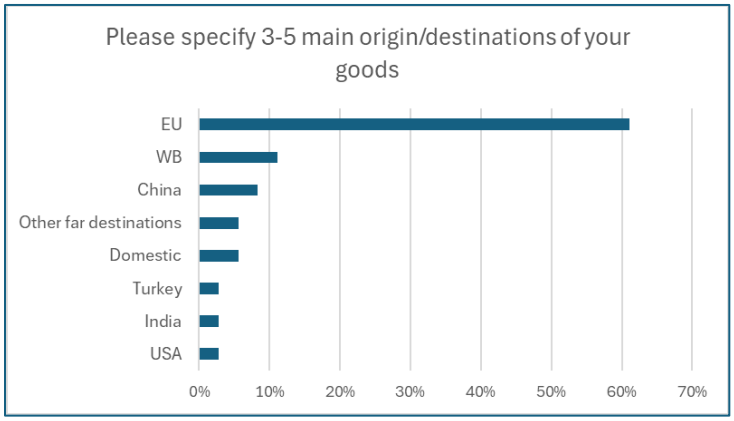

Figure 15 – Main origin/destinations of goods (Users who do not utilize intermodal transport)

One of the important issues that needs to be highlighted for users of transport services who do not use intermodal transport is defining the most important reasons for such a decision. Users were asked to state a limited number of offered reasons and in this way the reasons, i.e. obstacles for inclusion in intermodal chains, were prioritized. Figure 16 shows that some of the most important reasons are of a technical nature, e.g. short distances that need to be transported or specific goods that are not suitable for transport in intermodal units.

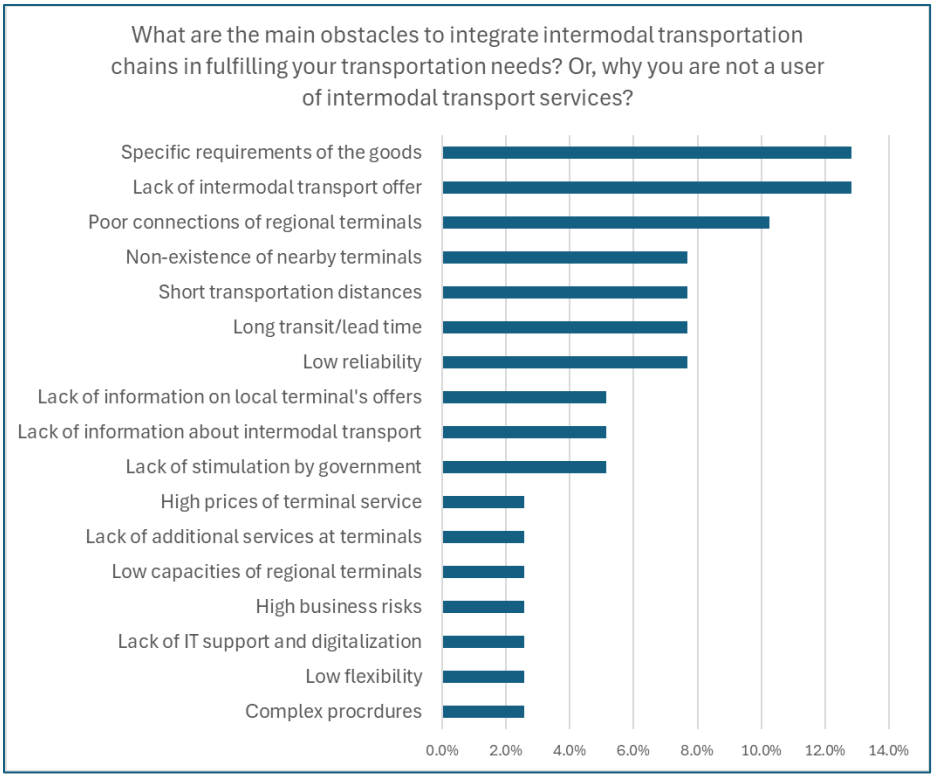

Figure 16 – Main obstacles to become users of intermodal transport

Perspective of providers (terminals)

In their answers to the questions, the interviewed terminals defined several important positions related to Task 3 of this assignment.

The priorities they define mostly refer to infrastructural shortcomings of the railway and road network, time losses at border crossings and complicated border procedures.

In terms of last-mile connectivity, they are mostly satisfied with the current state of play of their terminals and do not see too many shortcomings in this sense.

In terms of total capacity, only terminals from Serbia consider that there is sufficient capacity, while terminals from other RPs consider that the current capacity is insufficient.

Regarding the commodities, there are no special restrictions except when it comes to dangerous goods, where only a few terminals have the possibility of handling dangerous goods.

When it comes to destinations, most terminals do not analyze where the goods are coming from, but most of them claim that distant markets and EU countries are the main destinations.

Most of the terminals think that the construction of new terminals in border areas is not necessary.

When asked whether the establishment of new terminals on existing service routes would contribute to raising the level of connectivity and efficiency of the transport network, most terminals gave a negative answer, while only seaports responded positively.

In relation to the question about the need to upgrade the existing railway stations or marshalling stations to the level of terminals, the answers were mostly negative, except in the case of Bosnia and Herzegovina, where the locations of Sarajevo, Doboj and Banja Luka were mentioned.

Finally, when asked if any of the terminals from the surrounding countries of the European Union or neighboring RP can be seen as competition, the majority of terminals prefer to see it as an opportunity for cooperation and establishment of services. Seaports see other ports as competition. Also, regarding competition with terminals in the EU, lower competitiveness of WB terminals is defined by the lack of subsidies in the region, while terminals in the EU or their users enjoy this type of benefit.

Appendix III – Detailed overview of main existing multimodal terminals infrastructure at RP level

Albania

As regards intermodal transport, Albania has one main intermodal terminal - Port of Durres container terminal, and construction of Lezhe bimodal terminal (future connection to Port of Shengjin, not analyzed in detail under this assignment) was planned[1]. Bearing in mind that for the future development of multimodality in Albania, in addition to intermodal terminals, it is important to identify the key railway freight stations, as places of transshipment of cargo from road to rail transport. Based on the available information related to railway transport in Albania, and after analyzing the available relevant studies and strategic documents, the identified most important multimodal terminals in Albania are presented in Table 1 and Figure 1.[2]

Table 1 - Main multimodal terminals in Albania

No.	Location	Terminal/freight station	Modality
1	Durres	Port of Durres container terminal	Trimodal (Rail-Road-Maritime)
2	Vlore	Port of Vlore bulk terminal	Trimodal (Rail-Road-Maritime)
3	Tirana	Freight station	Planned Bimodal (Rail-Road)
4	Milot	Freight station	Planned Bimodal (Rail-Road)
5	Durres	Freight station	Potential Bimodal (Rail-Road)
6	Fier	Freight station	Potential Bimodal (Rail-Road)
7	Elbasan	Freight station	Potential Bimodal (Rail-Road)
8	Vlore Freight	Freight station	Potential Bimodal (Rail-Road)
9	Bajze	Freight station	Potential Bimodal (Rail-Road)

[1] Republic of Albania, Ministry of Infrastructure and Energy, Intermodal transport performance strategy and Action plan (2021-2026), 2021

[2] Map Background source: TENTec Map Viewers - https://webgate.ec.europa.eu/tentec-maps

Figure 1 - Locations of existing freight terminals Core and Comprehensive network in Albania

Port of Durres

Port of Durres handles about 78% of the country's seaborne trade in tonnage terms and 75% of all the export and import trade of the country. This makes the Port of Durres the most important seaport in Albania, located on Corridor VIII.

The Port of Durres is located 38km away from Tirana. It processes passenger ferries, Ro-Ro vessels, container and general cargo vessels, and bulk ships. The port operates as a 'Landlord Port' with terminal operations by the private sector. The port extends to 80 ha of surface area. Over the past decade, has significantly renewed its infrastructure, through a self-funded dredging of the main channel, and the construction, upgrade and concession of specialized terminals using EIB and EBRD funding. Terminals include:

- Passenger's Terminal / Ro-Ro
- Containers Terminal
- East Terminal (bulk cargo)
- West Terminal (general cargo)

In 2022, the total volume freights transported by port of Durres was 6.25 million tons, while in 2023 6.76 million tons (increase for 8%).[3]

The container terminal in the Port of Durres is the only container processing terminal in Albania. The containers are mainly coming from the ports of Piraeus, Malta and "Gioia Tauro" in Italy. The containers that are unloaded in Albania are mainly destined for Albania and Kosovo[*], but also for North Macedonia and Serbia [4]. The Container terminal in the Port of Durres encompasses around 50,000m^2 with a capacity of 180,000 TEU/year [5]. The TEU number processed in the Port of Durres during the year 2022, consist in a volume of almost 150,000 TEU, processed by the Durres Container Terminal (DCT) Concession Company.

Table 2 shows an increase in turnover in Durres Port from 2012 to 2020. There is no noticeable difference between import and export flows.

[3] Statistical office Instat Albania. From 2022, the volume of loading-unloading for Port of Durres includes also the volume of goods transported by MBM port (Porto Romano Durres Concessionaire Company).

[*] This designation is without prejudice to positions on status and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

[4] Blue Connectivity: Maritime and Inland Waterways in the Balkans Peninsula, 2022

[5] Source: Durres Port Authority website

Table 2 - Traffic data of Durres Container Terminal for 2012-2020[6]

DESCRIPTION	2012	2013	2014	2015	2016	2017	2018	2019	2020
TEU TOTAL	87,909	109,054	99,350	104,060	118,829	118,270	134,526	145,762	138,477
TEU EXPORT	43,638	53,938	50,612	52,006	58,986	58,920	67,386	73,075	69,339
TEU IMPORT	44,271	55,116	48,738	52,054	59,843	59,350	67,140	72,687	69,138
TOTAL SHIPS	164	144	165	184	200	206	185	191	190
TON VOLUME	1,171,187	1,510,430	1,300,539	1,415,404	1,578,774	1,480,459	1,501,545	1,727,133	1,549,201

One of the main shortcomings in the functioning of the port is its position in the dense city center in the immediate hinterland, which prevents a better connection of the port with the hinterland, especially due to the lack and impossibility of a railway connection. The container terminal does not have a railway infrastructure, and according to the information obtained during the interviews and consultations, the plans for the railway connection refer to the transport of passengers. Figure 2 shows the tracks which are under construction, where it is noticeable that the container terminal will not be connected by rail in the future either.[7]

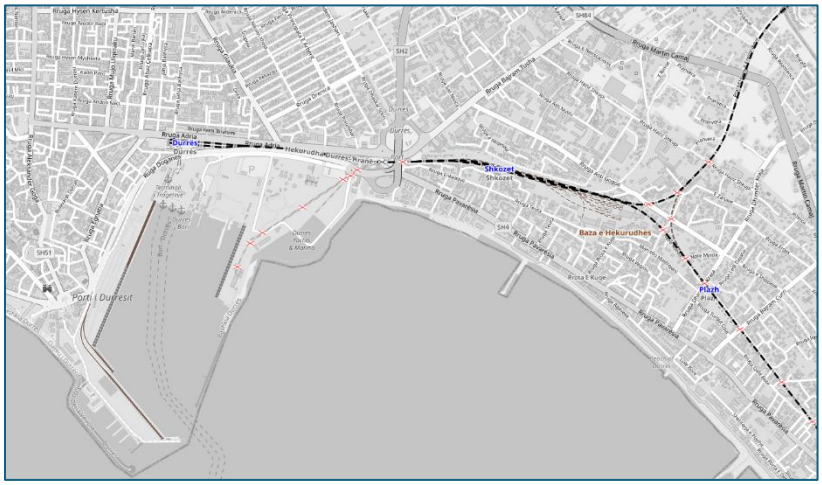

Figure 2 - Ongoing construction of railway connection to Port of Durres

Since the Container terminal in the Port of Durres is not connected to the railway system, intermodal (rail-maritime) transport capacities are absent, and prerequisite for development of intermodality is the connection of the Port of Durres (and/or of the future Porto Romano) to the railway network, provided that the Port of Durres after the full implementation of the Porto Romano project will be destined for passenger transport operations only.

[6] Source: Durres Port Authority website

[7] Map source: OpenRailwayMap - www.openrailwaymap.org

Figure 3 - Micro-location of Port of Durres and Porto Romano

Plans for the new port of Durres at Porto Romano, Albania, includes the existing freight Port of Durres movement out of the city to a new location in Porto Romano, 9km to the North. The project development aims at the consolidation of industrial activity and establishment of a cargo facility that will improve trade throughout the region. It is envisaged that the new seaport will use the latest in Green Ports and automation technologies and will be interconnected with the rail and road infrastructure. The capacity of Container terminal in Porto Romano will be not less than 500,000 TEU [8]. It was anticipated that the first port operations could begin in 2025, however very recent information is that the project is only now entering in its construction Phase I [9].

With the completion of the Port of Romano Container Terminal construction project, the capacities of this terminal will be able to meet future needs, bearing in mind that they represent more than a 300% increase compared to the existing capacity.

Port of Vlore

The port of Vlore is the 2nd largest in Albania. Vlore is defined as the second entrance gate to Corridor VIII. It mainly processes passenger ferry vessels and cargo vessels, covering about 10% of import-export of goods. The infrastructure and superstructure of the port are currently undergoing a rehabilitation program starting with the construction of a Ro-Ro and cargo berth funded by a EUR 16.5 million Italian Cooperation fund. Commercial services are under a privatization process. The port of Vlore is mainly oriented towards transshipment of petroleum products. The processing capacity of the port of Vlore reaches up to 600 thousand tons per year [10].

Figure 4 - Railway connection of Port of Vlore and Vlore railway station

[8] Blue Connectivity: Maritime and Inland Waterways in the Balkans Peninsula, 2022
[9] https://www.dredgingtoday.com/2024/08/26/albanias-largest-seaport-project-entering-next-phase/
[10] Blue Connectivity: Maritime and Inland Waterways in the Balkans Peninsula, 2022

Other multimodal freight transport facilities – Railway stations

The basic characteristics of railway stations that are important for the development of multimodality in Albania are shown in Table 3.

Table 3 - Main railway stations in Albania and characteristics

No.	Railway station	Location on the network	Number of tracks	Track length (m)	Max permitted load (t/axle)
1	Milot	Route 2	2		
2	Durres	Corridor VIII	n/a		
3	Fier	Corridor VIII	4	910	20
4	Elbasan	Corridor VIII	4+4		
5	Vlore Freight	Corridor VIII	4+3	1,205	20
6	Bajze	Route 2	4+4		

No available data exists related to the volume of transshipment in these railway stations.

Durres railway station

Durres railway station was the main railway station serving the port city of Durres in central Albania, the second most populated city in Albania. The station played the hub of the Albanian railway network and was connected to other cities in Albania, including the capital of Tirana, Vlore, Elbasan and Shkoder. However, the station is currently disconnected from the rest of railway network and will be transformed to a passenger station only, while the freight will be moved to Porto Romano. Still, it is not decided if the Porto Romano will be connected to Duress railway station or there will be new freight station serving the port.

Bajze railway station

Bajze railway station is located in Bajze in the north of Albania. It is operated by Albanian Railways and part of the Montenegrin - Albanian cross-border freight line between Podgorica and Shkoder in Albania. The station is on the Durres-Tirana-Podgorica railway line (Route 2; Rail Core network).

Since the railway station in Tuzi (Montenegro) is the border station, railway station Bajze currently has marginal role in railway system of Albania. However, the ongoing feasibility study on railway connection Priština (Kosovo) to Albania is analyzing several options, one of which is to connect Albania and Kosovo through Shkoder. If this option would be adopted, Bajze railway station can play a more significant role in the future.

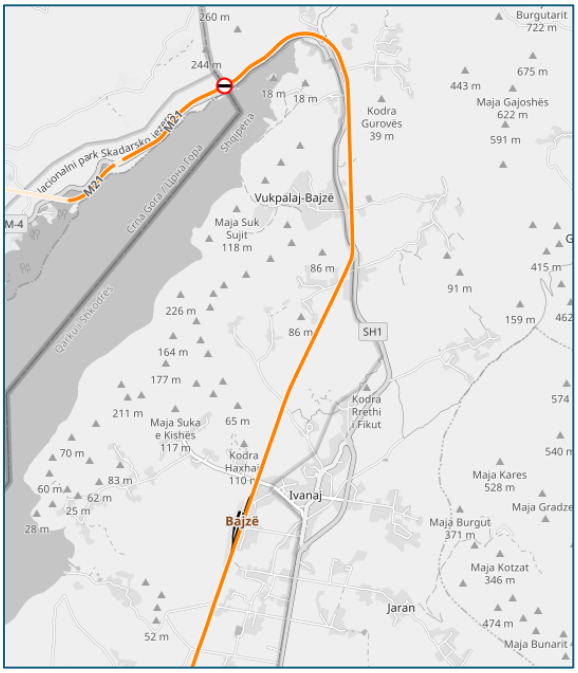

Figure 5 - Location of the Bajze railway station in proximity to the border of Montenegro

Vlore railway station

Vlore railway station serves the city of Vlore in southwestern Albania, the third most populated city of Albania. The station is on the Tirana-Durres-Vlore railway line (Corridor VIII; Rail Comprehensive network) and is the southernmost station on the Albanian railway network. It opened in 1985 when the railway line was extended from Narte to Vlore. In 2016, a private rail company, Albrail, received a concession to start transporting crude oil from Fier to Vlore as of December 2018. The station is equipped with 4 tracks and 3 sidings. The maximum permitted axle load is 20 t/axle.

Fier railway station

Fier railway station serves the main city of Fier County. The station is on the Durres-Vlore railway line (Corridor VIII; Rail Comprehensive network). The station opened in 1968 after an extension from Rrogozhine was completed. Fier was a busy transportation hub in the days of the People's Socialist Republic of Albania for ores and fertilizers freight at a time when road infrastructure was still underdeveloped. In 1991, the International Fertilizer Development Center reported that 80-90% of fertilizer produced in Fier and Laç was transported by rail. Although the transport estimates were optimistic, the transportation methods were not suitable and needed revision.[11]

The station was rehabilitated in 2018, and now is equipped with 4 tracks and has a maximum permitted load of 20 t/axle. Location of Fier freight station on the railway network is shown on Figure 6.[12]

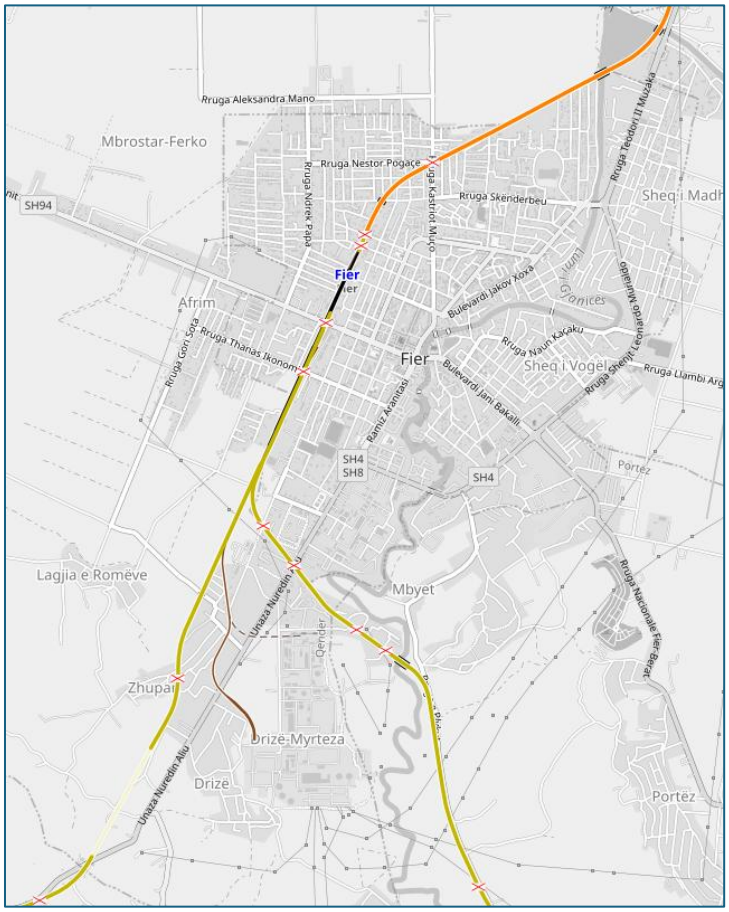

Figure 6 - Location of Fier freight station on the railway network

Elbasan railway station (terminus)

Elbasan railway station serves the city of Elbasan in Albania. Located at the 72 km long railway line between Durres - Rrogozhine - Elbasan is in operation today as terminus. The station was opened in 1950. The line beyond Elbasan, which runs through extremely sparsely populated regions of the country, was closed in 2012 and Elbasan again became a terminus. Plans have existed since the late 2000s to build a new line to Elbasan from the capital Tirana to allow more direct movement between the two cities and replace the circuitous route that currently exists. The station is on Corridor VIII and

[11] Supply, Distribution and Marketing of Fertilizer and Other Key Agricultural Inputs, Albania 1991 (IFDC-USAID)

[12] Map source: OpenRailwayMap - www.openrailwaymap.org

is a part of the extended Rail Core network. The station is equipped with 4 tracks and 4 additional sidings. Location of Elbasan railway station is shown in Figure 7.

Figure 7 - Location of Elbasan freight station on the railway network[13]

[13] Map source: OpenRailwayMap - www.openrailwaymap.org

Bosnia and Herzegovina

The existing transport infrastructure network (road, rail, inland navigation) still presents considerable bottlenecks and therefore, multimodal/intermodal transport is not yet developed. Although intermodal options exist, the poor integration among the different available modes is a major barrier to its sustainable development.

Apart from the existence of the infrastructural network (road, rail, inland waterway), which still has considerable bottlenecks and safety concerns, multimodality must be supported by adequate inland infrastructures, primarily multimodal terminals.

Only five terminals are considered suitable for providing intermodal transport services since they are equipped with only basic equipment for container handling without technologies and procedures for the realization of intermodal transport services (Banja Luka, Sarajevo, Tuzla, Brčko, Šamac) [14].

Table 4 lists the identified most important multimodal terminals in Bosnia and Herzegovina, based on available data, international freight transport flows and available relevant studies and strategic documents.

Table 4 - Main multimodal terminals in Bosnia and Herzegovina

No.	Location	Terminal/freight station	Modality
1	Brčko	Port of Brčko	Under-developed Trimodal (Rail-Road-IWW)
2	Tuzla	Terminal	Bimodal (Rail-Road)
3	Sarajevo	Freight station/terminal	Bimodal (Rail-Road)
4	Sarajevo	Rajlovac freight station	Planned Terminal (Rail-Road)
5	Banja Luka	Freight station/terminal	Bimodal (Rail-Road)
6	Doboj	Freight station	Planned Bimodal (Rail-Road)
7	Mostar	Freight station	Planned Bimodal (Rail-Road)
8	Zenica	Freight station	Under-developed Bimodal (Rail-Road)
9	Bihać	Freight station	Potential Bimodal (Rail-Road)
10	Kreka	Freight station	Potential Bimodal (Rail-Road)
11	Šamac	Port of Šamac	Under-developed Trimodal (Rail-Road-IWW)

Figure 8 shows the listed terminals on the Core and Comprehensive railway network in Bosnia and Herzegovina.

[14] Framework Transport Strategy for the Federation of Bosnia and Herzegovina (draft), ref. Study of the needs of users for intermodal transport in the Danube Region (2018)

Figure 8 - Locations of listed existing multimodal terminals on the Core and Comprehensive railway network in Bosnia and Herzegovina[15]

Port of Brčko

One of the largest and most important transit points in Bosnia and Herzegovina is the Port of Brcko. The Port of Brčko is located in the north-eastern part of Bosnia and Herzegovina, on the right riverbank of the Sava River waterway. It is the only international port in Bosnia and Herzegovina. In this respect, it is the largest and most important transit point for cargo traffic flows to and from the heavy industries in Bosnia and Herzegovina.

Brčko Port covers an area of about 14 hectares, most of which consists of an operational shore with auxiliary and accompanying facilities, open and closed warehouses, and workshop spaces. Three anchoring points, set up in accordance with technological operations and types of goods, are located in the immediate vicinity of the operational quay.

The micro-location of the terminal within the Port of Brčko is shown in Figure 9.

[15] Map Background source: TENTec Map Viewers - https://webgate.ec.europa.eu/tentec-maps

Figure 9 - Micro-location of terminal in Port of Brčko

The port is connected to the main railway station of Brčko by a single track. Along the operational shore there are four shunting tracks with a total length of 2,586 m. There is also container terminal with an area of 5,000 m^2. The container terminal started operating in 2019, and its initial capacity was limited, but it has been expanded. With the establishment of a modern container terminal, the Port of Brčko increased its competitiveness in the transport market. The scope of container operation in the Port of Brčko in 2021 was 1,204 TEU, while in 2023 it reached 3,804 TEU.

The railway connections and the position of Port of Brčko in relation to the railway network are shown in Figure 10.

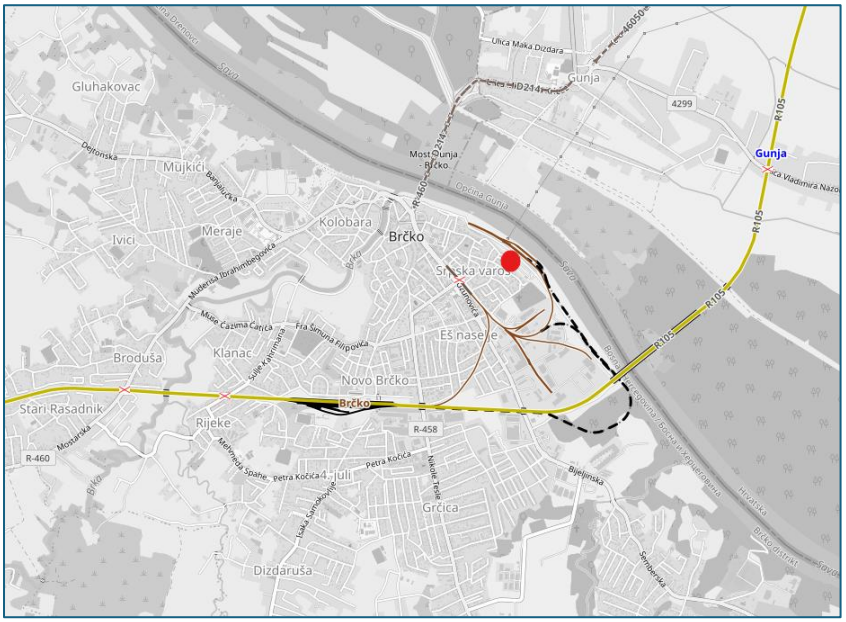

Figure 10 - Position of Port of Brčko on the railway network (red dot mark)[16]

[16] Map source: OpenRailwayMap - www.openrailwaymap.org

The mechanization consists of two cranes of the Ganz type (6t, l=30m) and one of 27 t capacity. In 2023, Port of Brčko handled 40,843 t of bulk and general cargo. Daily capacity of the port for bulk cargo is 1,800-2,000 t, while for general cargo is 1,500-2,000 t[17].

Terminal Tuzla

This Intermodal terminal in Tuzla should be modernized. Tuzla is the third largest city in Bosnia and Herzegovina, although it has a less favorable geographic position in relation to the main potential intermodal corridors.

The terminal is located at the freight railway station "Bosanska Poljana", owned and operated by the private company "Robni Terminal Tuzla". Its position on the railway network and its proximity to the industrial zone and the City of Tuzla are shown in Figure 11 (red dot mark).

Figure 11 - Position of Terminal Tuzla at railway station Bosanska Poljana in relation to the industrial zone and the City of Tuzla[18]

The terminal is equipped with 2 reach stackers, capable of handling 20- and 40-feet containers up to 40t. The annual capacity of the terminal is estimated at 10,000 TEU, while current throughput is much lower. The terminal is located at the railway station with the possibility of use of 3-5 sidings. Currently the last siding of the station is used for loading and unloading. The maximum permitted length of train is 500 m, weight is limited to 2,000 t and maximal axle load is 22.5 t. The total length of tracks is five, and the length of loading track is 630 m.

The open storage capacity of the terminal is 30,000m^2 and warehouse capacities are 3,000 m^2. The container storage capacity is 1,300 TEU.

Shunting operations are done by the public railway operator, Railways of Federation of Bosnia and Herzegovina.

Within the complex of the private intermodal terminal, Customs terminal is established as well as other logistics services, including warehousing, road transport and distribution. The micro-location of the terminal is shown on Figure 12.

[17] Information provided by Port of Brcko authorities

[18] Map source: OpenRailwayMap - www.openrailwaymap.org

Figure 12 - Micro-location of Tuzla intermodal terminal

Container terminal Sarajevo

The terminal is located at the freight railway station Sarajevo, near the main passenger railway station in the urban area of the City of Sarajevo. According to the information from interviewed freight forwarding companies, the terminal is facing issues related to road connections and accessibility for trucks. The operation volumes are low and mainly based on container trains coming from Port of Ploče.

Terminal details are not publicly available. The total number of tracks is seven and the length of loading track is 430m.

The location of the terminal in relation to the railway infrastructure is shown in Figure 13 (red dot mark).

The freight railway station Sarajevo is managed by Railways of Federation of Bosnia and Herzegovina (ŽFBH) and operations at the container terminal are also performed by this state-owned company. Freight station Sarajevo also handles general cargo, bulk and other types of cargo. Details on capacities, quantities handled, and equipment were not made available.

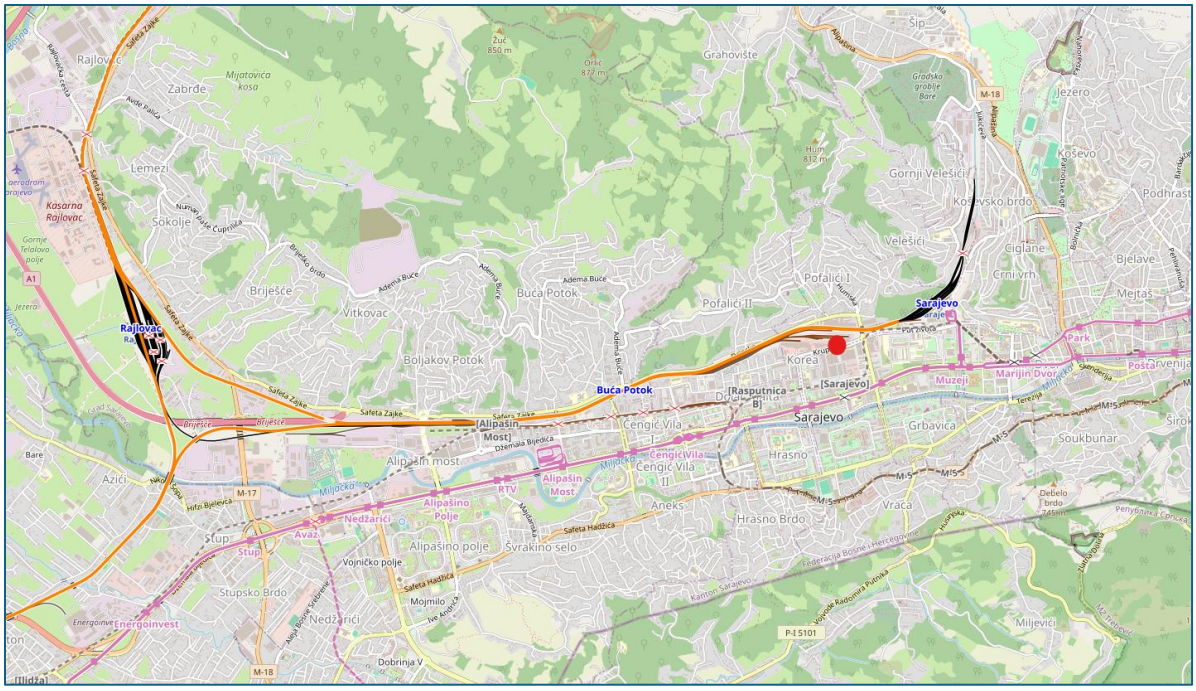

Figure 13 - Location of Sarajevo container terminal (red dot mark) and Rajlovac freight station on the railway network[19]

It is necessary to modernize the terminal, provide conditions for access and truck parking, optimize the flow of vehicles, machinery, and goods within the terminal, as well as to organise space for container storage. Better communication and access control for road vehicles need to be ensured.

The micro-location and view of the terminal is shown in Figure 14.

Figure 14 - Micro-location of container terminal Sarajevo at the freight railway station

Estimation based on the interviews and survey conducted under the Task 2, is that current volumes are below 5,000 TEU annually.

[19] Map source: OpenRailwayMap - www.openrailwaymap.org

Other multimodal freight transport facilities – Railway stations

The basic characteristics of railway stations that are important for the development of multimodality in Bosnia and Herzegovina are provided in Table 5.

Table 5 - Main railway stations in Bosnia and Herzegovina and characteristics

No.	Railway station	Location on the network	Number of tracks	Track length (m)	Max permitted load (t/axle)
1	Doboj	Corridor Vc/Route 9	15+10	750	22.5
2	Rajlovac	Corridor Vc	17+20		22.5
3	Mostar	Corridor Vc	5+3		
4	Zenica	Corridor Vc	3+3		
5	Kreka	Route 9	9		
6	Sarajevo Freight	Corridor Vc	7	430	22.5
7	Bosanska Poljana	Route 9	5	650	22.5
8	Banja Luka	Route 9	8+8	550	22.5

No available data exists related to the volume of transshipment in these railway stations.

Railway station Rajlovac (Sarajevo)

Railway station Rajlovac is located on the west part of the City of Sarajevo, on the railway Core network – Corridor Vc, near the Rajlovac industrial zone, and near highway connection to Corridor Vc motorway. According to information received during consultations, Rajlovac is a planned location for development of intermodal/multimodal terminal. Given its proximity to the industrial zone, underdeveloped land use and possibility for connection to road network, Rajlovac has a strong potential for further development.

The station has 17 direct tracks and 20 sidings, with a maximum allowed train length of 645 m and maximal axle load of 22.5 t. The station is equipped with a side loading ramp. The micro-location of Rajlovac railway station is shown in Figure 15.

Figure 15 - Micro-location of railway station Rajlovac

Official information on the Rajlovac railway station development plans has not been provided to the Consultant, nor is it publicly available.

Railway station Doboj

Doboj station is located on Corridor Vc (Port of Ploče-Mostar-Zenica-Doboj-Šamac), at the railway junction with Route 9 (line Novi Grad-Banja Luka-Doboj-Tuzla-Zvornik), i.e. at the crossroad of the Core and Comprehensive railway network in Bosnia and Herzegovina.

The freight station Doboj handles general cargo, bulk and other types of cargo. The station is located in proximity of City of Doboj on one side of the Bosna River, and industrial zone of Doboj on the other bank of the river, directly connected to limestone quarrying and distribution facilities.

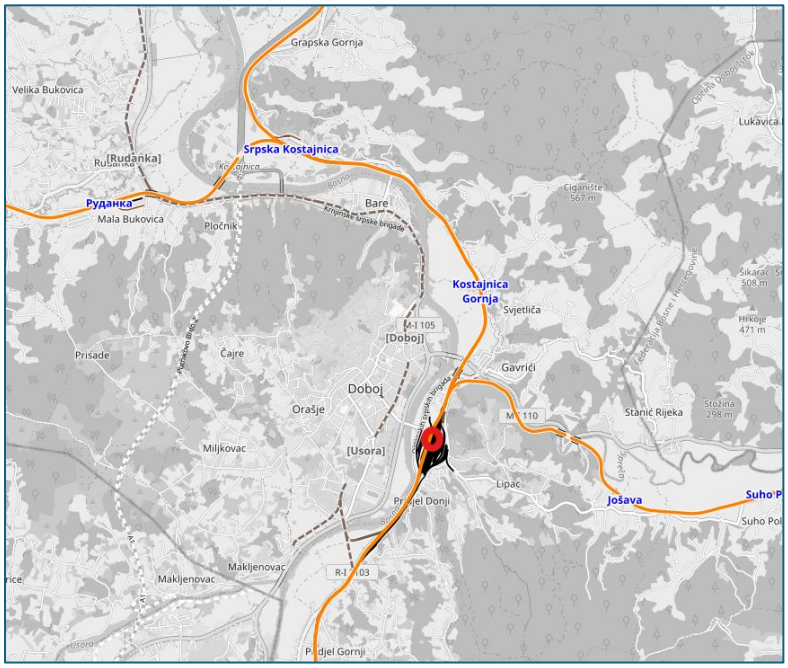

Figure 16 - Railway junction and position of Doboj station[20]

Figure 17 - Micro-location of Doboj Railway station

[20] Map source: OpenRailwayMap - www.openrailwaymap.org

Details on capacities, quantities handled, and equipment were not available. The total number of tracks is 25, the length of loading track is 750m. There are no terminals, only side loading ramps at the railway station exist, where containers are stripped, and the transport is continued by conventional trucks.

In the past 6 years, the representatives of the Republika Srpska have on several occasions-initiated discussions with foreign investors for building an Intermodal Terminal at the Doboj railway station, bearing in mind that strategic documents identify the need for the construction of this terminal, but to date, implementation has not started.

Terminal Banja Luka

Intermodal terminal Banja Luka is managed and operated by Railways of Republika Srpska, a state-owned railway company. It is one of the biggest railway stations in Bosnia and Herzegovina. During the interviews the Consultant received information that there are no container operations in Banja Luka station or any other railway station of Republika Srpska.

The freight station Banja Luka handles general cargo, bulk and other types of cargo, which may occur in railway transport. Details on capacities, quantities handled, and equipment were not made available. The total number of tracks is 16 and the length of loading track is 550 m.

Position of the railway station in relation to the city, railway network and industrial zone is shown in Figure 18.

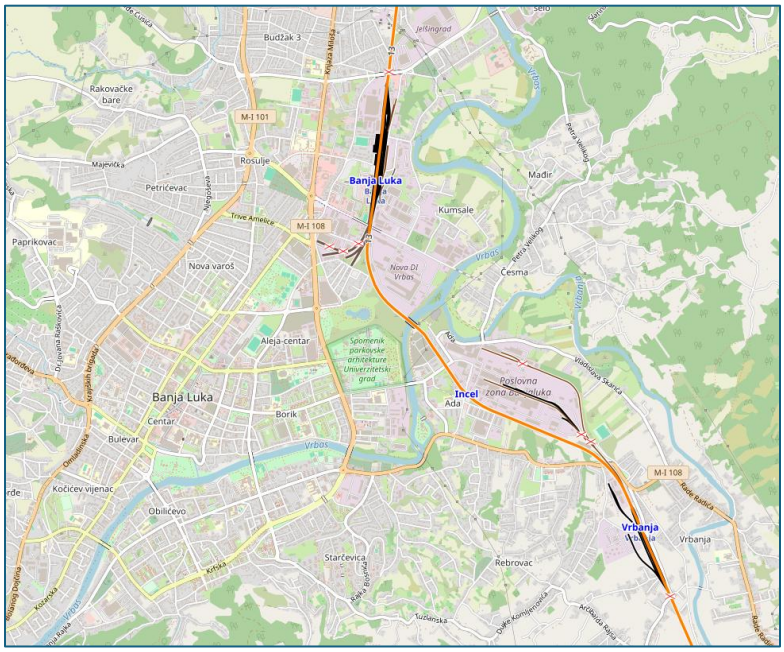

Figure 18 - Railway network in Banja Luka and Banja Luka station[21]

[21] Map source: OpenRailwayMap - www.openrailwaymap.org

Railway station Mostar

The freight railway station Mostar is located in south Bosnia and Herzegovina, on the road and railway Corridor Vc to Port of Ploče, and near to the industrial zone on the south side of the City of Mostar. This station is managed and operated by Railways of Federation of Bosnia and Herzegovina (ŽFBH). It handles general, bulk and other types of cargo. The station has a side loading ramp, it is open for transshipment of containers. The station is not open for handling dangerous goods. Details on capacities, quantities handled, and equipment were not available. The station is located near the international airport. The location of Mostar freight railway station is shown in Figure 19.

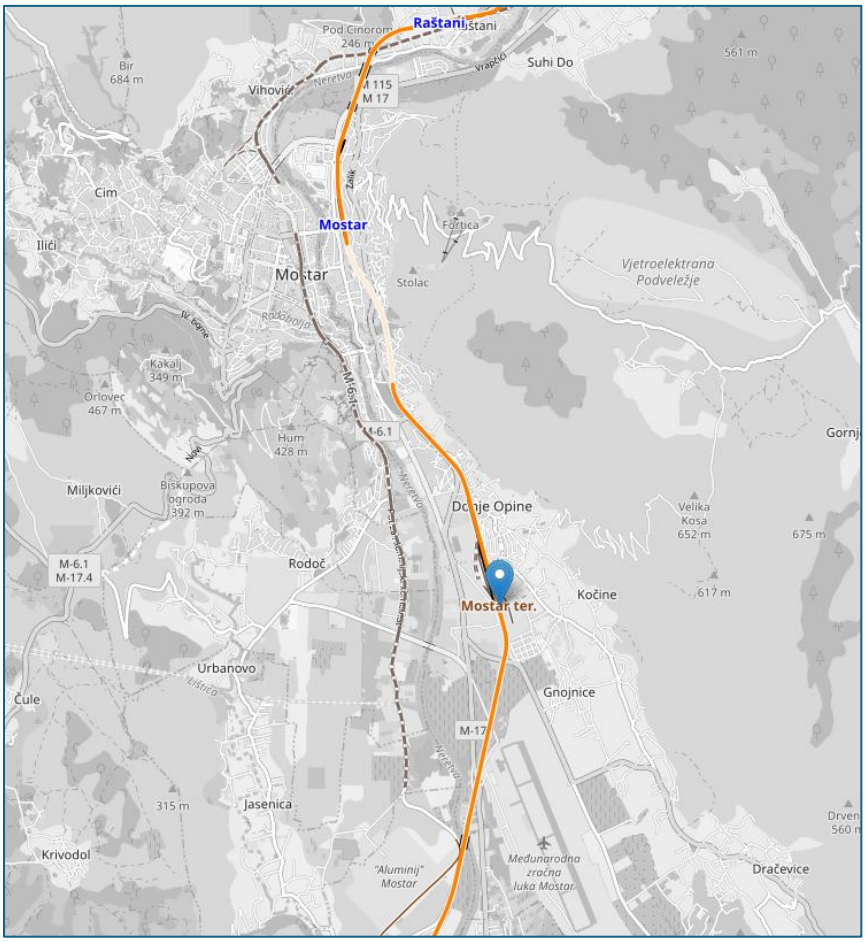

Figure 19 - Location of Motor freight railway station[22]

[22] Map source: OpenRailwayMap - www.openrailwaymap.org

Railway station Zenica

Zenica railway station is located in central Bosnia and Herzegovina, on Corridor Vc. It is of high importance for Steal mill/Iron factory Arcelor Mittal, which is one of the main industrial facilities in Bosnia and Herzegovina.

Zenica is connected with Sarajevo (70 km southeast) by railway and motorway Corridor Vc (Port of Ploče-Mostar-Zenica-Doboj-Šamac), both of which follow the valley of the Bosna River. The station has a side ramp, it is not open for transshipment of containers. The station is not open for handling dangerous goods. Details on capacities, quantities handled, and equipment were not available. There is no container handling equipment. Only loading ramps exist, where containers are stripped, and the transport is continued by conventional trucks.

The location of Zenica freight railway station is shown in Figure 20.

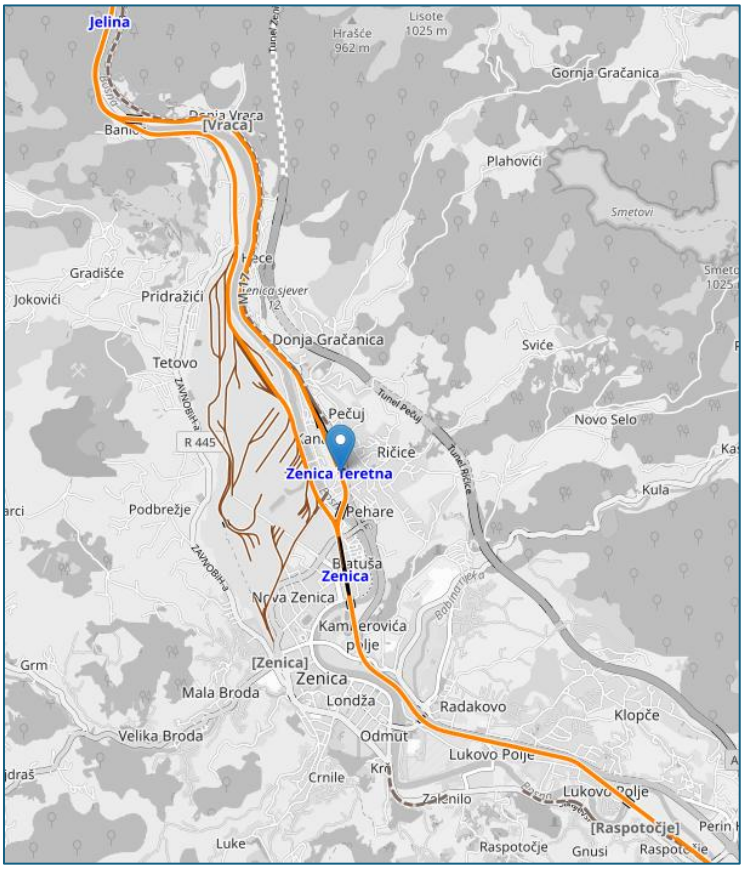

Figure 20 - Location of Zenica freight railway station[23]

[23] Map source: OpenRailwayMap - www.openrailwaymap.org

Railway station Kreka

The Kreka station is located in the immediate vicinity of Tuzla, between the city and railway station Bosanska Poljana, where intermodal terminal "Robni terminal Tuzla" is located. This station is of importance for the coal mining and chemical industry of Tuzla industrial zone. The railway station of Kreka is open for the manipulation of containers, while it is closed for the manipulation of dangerous goods. Railway stations Kreka, between stations Tuzla and Bosanska Poljana is shown in Figure 21.[24]

Figure 21 - Location of Kreka railway station

<u>Other multimodal freight transport facilities – Sea- and River- Ports</u>

Port of Šamac

The port of Samac is a fully privately owned, managed and operated port and, as such, it serves only the needs of the private operator. According to its disposition in relation to the Sava waterway, the port is classified as an open shore harbour. The port is one of the two TEN-T Core ports in Bosnia and Herzegovina.

The area of the Port of Samac covers 588,342m^2. The distance between Samac and the Danube (Corridor VII) is 304km. The Port is connected to a highway and the Samac-Ploce railway (Corridor Vc) running to the Adriatic Sea. The open warehouse – harbour plateau covers an area of 30,000m^2, while the closed warehouse is 3,600 m^2. The overload capacity of the Port of Šamac is 966,650 t per year. The mechanisation allows for the transport of both general bulk and goods: water-shore, shore-water, wagon-truck and container handling.

The industrial rail line is 1,630 m in length and is connected to Samac railway station. Capacities also include a 1,462 m^2 Type A custom warehouse, a container overload terminal and a water-wagon truck. All warehouses are regulated by a storage space agreement. A Customs terminal also forms part of the harbour [25].

[24] Map source: OpenRailwayMap - www.openrailwaymap.org

[25] Development of indicative TEN-T extensions of the Comprehensive and Core Network in Western Balkans, TCT 2021.

Even stated that container handling in the port is possible, details regarding capacities, equipment and handled volumes were not available. Also, interviewed freight forwarding companies didn't include the Port of Šamac as a node that intermodal transport activities take place.

Bearing in mind the location - the beginning of the Corridor Vc in Bosnia and Herzegovina, the proximity of the Šamac railway station and the border crossing, the potential of this location is not negligible in terms of future multimodal/inter-modal operations.

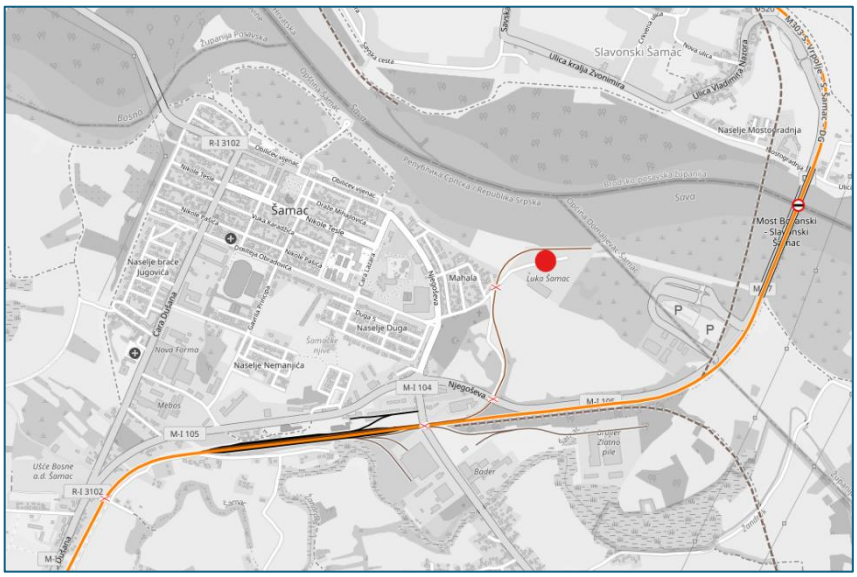

Figure 22 - Location of Port of Samac and its railway connection to Samac railway station on Corridor Vc

Port of Ploče

When we talk about multimodality in Bosnia and Herzegovina, it is important to mention, although it is not located in Bosnia and Herzegovina, the Croatian Port of Ploče. Ploče is primarily a bulk port of regional importance in the Western Balkans. Container traffic volume at the Port of Ploče is at the level of about 25,000 TEU. The port does serve important bulk commodity markets, and functions as a critical gateway for shippers in Bosnia and Herzegovina and elsewhere in the Western Balkans, via Corridor Vc.

While the area gravitating to the Port of Ploče to a certain extent overlaps with that gravitating to the Port of Rijeka, the Port of Ploče is primarily oriented to the markets of Bosnia and Herzegovina (about 90% of cargo traffic and 98% of container traffic are coming from/to Bosnia and Herzegovina), due to proximity and alignment of commodity types (primarily bulk commodity shipments). Considering current transport volumes, the container traffic volumes at the Port of Ploče do not represent a significant contribution to the volume of overall containerized flows in Croatia.

Kosovo

Given the relatively small size of Kosovo, multimodal freight transport should be considered mainly in the context of international transport as opposed to domestic transport. More precisely, it's the rail-road integration that could be the backbone of multimodality in Kosovo.

In Table 6, the most important multimodal terminals in Kosovo are listed, based on available data and available relevant studies and strategic documents.

Table 6 - Main multimodal terminals in Kosovo

No	Location	Terminal/freight station	Modality
1	Miradi	Terminal	Bimodal terminal (Rail-Road)
2	Prištine	Terminal	Potential Bimodal (Rail-Road)
3	Mitrovice	Freight station	Planned Bimodal (Rail-Road)
4	Hani i Elezit	Freight station	Potential Bimodal (Rail-Road)
5	Peje	Freight station	Planned Bimodal (Rail-Road)
6	Prizren	Freight station	Planned Bimodal (Rail-Road)

The positions of listed existing locations are shown on Figure 23.

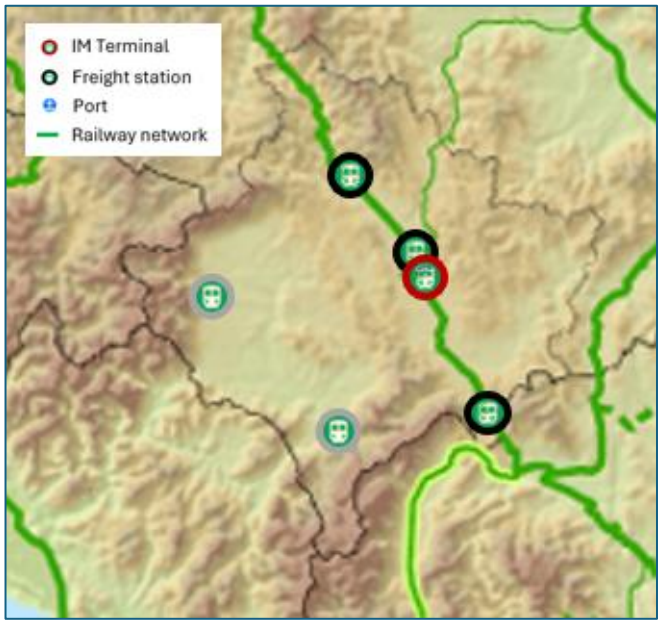

Figure 23 - Locations of listed existing multimodal terminals on the Core and Comprehensive railway network in Kosovo[26]

Miradi Freight Terminal

In terms of infrastructure, Miradi is currently the main multimodal terminal, while other terminal locations shall be considered in parallel to the modernization projects of railway Route 10. The Freight Terminal at Miradi was built in September 2004. The terminal is located opposite the Miradi railway station and connected via the thirteenth track. Miradi Railway Station serves as the main

[26] Map Background source: TENTec Map Viewers - https://webgate.ec.europa.eu/tentec-maps

station for the composition of the freight trains. The station includes sufficient number of tracks for composition and decomposition of freight trains.

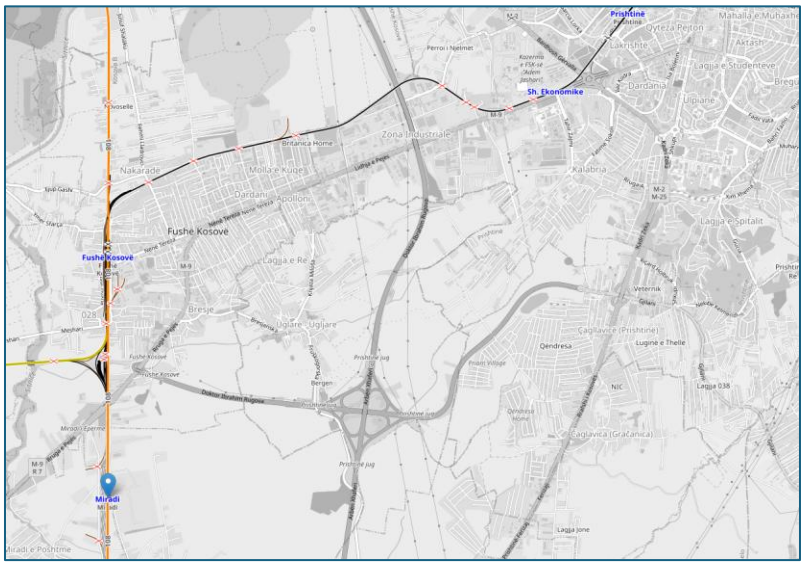

Figure 24 - Position of Miradi railway station in relation to the railway network and proximity to the City of Pristina (blue pin mark)[27]

The Miradi Freight Terminal has a 5,250 m^2 surface for operation of containers and other goods. On this asphalted space can be placed containers, other goods and trucks for loading/ unloading of goods. It has 1,000 m^2 of parking secured by fence and guard. The terminal has one reachstacker with load capacity up to 40 t. Warehouses are of a surface of 120 m^2. Maximum permitted train length is 700 m, while the total weight of trains is limited to 1,500 t due to limitations introduced at the part of the railway network towards Skopje.

According to the information gathered through interviews, the Miradi freight station is also equipped with a head-ramp allowing loading of combined transport units.

Miradi terminal is currently out of operation due to the reconstruction of railway tracks in Kosovo.

The micro-location of Miradi terminal and its position on the railway network near Pristina is shown in Figures 24 and 25.

[27] Map source: OpenRailwayMap - www.openrailwaymap.org

Figure 25 - Micro-location of Miradi terminal at the freight railway station

Regarding maritime transport flows, Kosovo relies mostly on three foreign ports – Durres, Thessaloniki and Bar. Thus, investments in rail, road, border and terminal infrastructure shall take into consideration the need to improve multimodal connections with these ports [28].

For the total current capacity for intermodal transport in Kosovo, the only terminal in possibility to provide the services is terminal Miradi, with estimated transshipment capacity of 25,000 TEU annually.

Other multimodal freight transport facilities – Railway stations

The basic characteristics of railway stations that are important for the development of multimodality in Kosovo are shown in Table 7.

Table 7 - Main railway stations in Kosovo and characteristics

No.	Railway station	Location on the network	Number of tracks	Total length/track length (m)	Max permitted
1	Mitrovice	Route 10	8	3,962	22.5
2	Hani i Elezit	Route 10	4	284	22.5
3	Peje		8		
4	Prizren		3+1		

No available data exists related to the volume of transshipment in these railway stations.

Railway station Mitrovice

Station Mitrovice is one of the main stations on the railway line Mitrovica – Leshak, Route 10. Mitrovica railway station is equipped with 8 tracks with a total length of 3,962 m. The railway is connected to both the industrial zone and the business park[29]. The maximum train's length, which can be served currently at the station is 630.86 m and the main track is 506 m long. The station is

[28] Kosovo Multimodal transport strategy 2023-2030

[29] https://kiesa.rks-gov.net/desk/inc/media/3FE59E21-A8FC-4711-A4D7-0C360F368836.pdf

open for both passenger and freight traffic[30]. Location of Mitrovice railway station on the railway network of the City of Mitrovice is shown in Figure 26.

Figure 26 - Location of the Mitrovice railway station[31]

Railway station Hani i Elezit

Hani i Elezit station is located on Route 10 (Leshak-Fushe Kosove-Hani i Elezit) at border between Kosovo and North Macedonia. Hani i Elezit railway station is equipped with 4 tracks with a total length of 284 m. Location of border station Hani i Elezit in relation to the border of North Macedonia is shown in Figure 27.

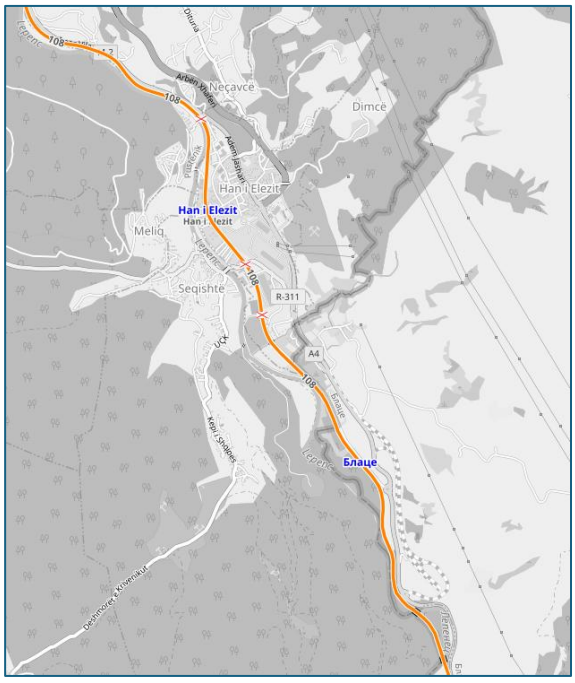

Figure 27 - Location of Han i Elezit railway station in proximity to the border of North Macedonia

Railway stations Peje and Prizren

Railway station Peje is located near the border of Montenegro, while Prizren railway station is located on the south part of Kosovo, towards Albania but connected by railway to Pristina only. Both stations are recognized as planned terminals by Kosovo authorities. However, Peje and Prizren railway stations are out of the indicative extension of TEN-T freight railway network to Western Balkans.

[30] INFRAKOS Network Statement 2020

[31] Map source: OpenRailwayMap - www.openrailwaymap.org

In the long-term perspective, depending on outcomes of ongoing feasibility studies for new railway connection between Durres and Pristina, in case that the new line is passing Prizren, this railway station can play important role for multimodality in Kosovo in the future.

Montenegro

The only intermodal terminal in Montenegro is established in the Port of Bar. Railway connecting segments between the port piers and the railway network are sufficient and all berths are connected. Infrastructure for transshipment from the sea to road and rail and vice versa exists, but for direct transshipment between rail and road transport it is missing. This implies that the capacity of railway lines is not fully exploited. To utilize this potential, improvements in the port or construction of a Rail-Road terminal adjacent to port is needed.

The most important multimodal terminals in Montenegro, identified based on available data and freight transport flows and available relevant studies and strategic documents, are listed in Table 8 and their locations are illustrated in Figure 28.

Table 8 - Main multimodal terminals in Montenegro

No.	Location	Terminal/freight station	Modality
1	Bar	Port of Bar	Trimodal terminal (Rail-Road-Maritime)
2	Podgorica	Freight station	Planned Bimodal (Rail-Road)
3	Bijelo Polje	Freight station	Potential Bimodal (Rail-Road)
4	Tuzi	Freight station	Potential Bimodal (Rail-Road)
5	Nikšić	Freight station	Potential Bimodal (Rail-Road)

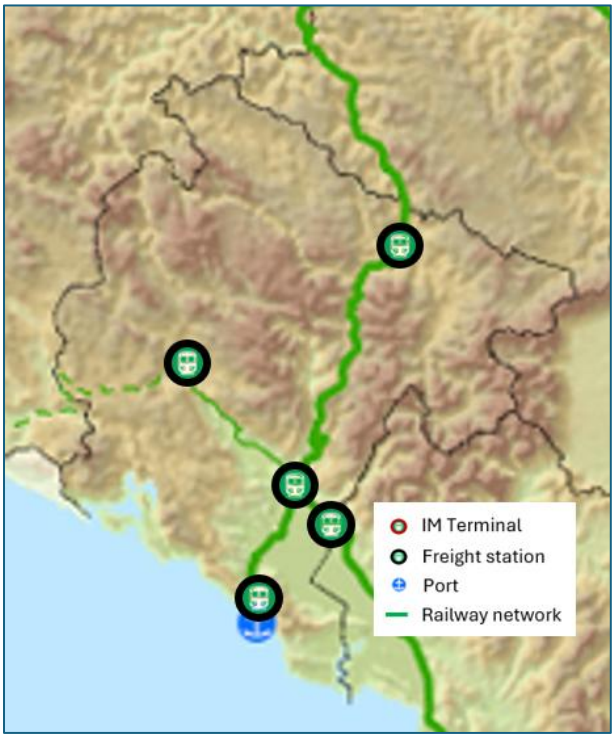

Figure 28 - Locations of listed existing multimodal terminals on the Core and Comprehensive railway network in Montenegro[32]

[32] Map Background source: TENTec Map Viewers - https://webgate.ec.europa.eu/tentec-maps

Port of Bar

The most important port in Montenegro is the Port of Bar, where about 95% of all port activities of the country are performed[33].

The activities at the Port of Bar are performed by two port operators:

- Port of Bar JSC, state owned, covering the bulk, liquid cargo and general cargo terminals; and
- Port of Adria JSC, private company, covering the container terminal, cruise terminal and general cargo.

The areas operated by the two operators are shown in Figure 29.

Figure 29 - Areas of port operators in Port of Bar[34]

Port of Bar JSC possesses: (a) Grain Terminal, with a 30,000t capacity silo; (b) General Cargo terminal with closed storage and cold storage areas; (c) Dry Bulk cargo terminal with length of the operational quay of 554 m, water depth up to 14 m and the maximal allowed ships' draft of 12.8 m, as well as open storage area behind the operational quay of 30,000 m^2. The terminal is equipped with two mobile harbour cranes (124 t and 144 t SWL); (c) Ro–Ro terminal designed to accept, store and dispatch Ro–Ro cargo units (complete road trucks or units of truck-trailers and semitrailers); (d) Passenger Terminal with five berths for passenger ships and ferryboats; and (e) a terminal for liquid cargo for the reception and dispatch of oil and oil derivatives.

The Port of Bar is the largest port in Montenegro, of regional importance, and is included in the TEN-T indicative extension to the Western Balkans as a Core Port. It can handle dry cargo, liquid cargo, general cargo, cruise ships, Ro-Ro ships and containers. The Port of Bar also has a Passenger terminal, but it is mostly oriented to transport of goods. Almost 95% of products coming by sea to Montenegro are transported through this port. The average level of utilization of the total capacity from 2012 to 2022 was in the range of approximately 35% - 40%. According to the provisions of the valid spatial planning documentation, the planned capacity of the port of Bar for the future is 12

[33] Blue Connectivity: Maritime and Inland Waterways in the Balkans Peninsula, 2022

[34] Source: Integrated and Sustainable Transport in Efficient Network – ISTEN, Local context analysis of Port of Bar

million tons/ year. Major barriers for port valorization from regional markets are the high travel times for accessing the port by road and rail and the non-competitive costs[35].

Second operator in the Port of Bar is the private company Port of Adria JSC, located next to Port of Bar JSC, that possesses a Container Terminal with an operational quay which is 330 m long and depth of 12 m, with two 40 t gantry cranes and open storage for 2,500 TEU and 180 refrigerated containers. It also possesses two General Cargo Piers equipped with portal cranes and closed and open storage of 7.6 ha and 5.1 ha, respectively, a Timber Terminal with a covered storage space of 5.86 ha, as well as a terminal for transshipment of wood and wooden products with storage space[36].

The container terminal is connected to the railway network by 2 tracks of total length of 880 m (2x440 m).

The Port of Bar is connected to the railway station Bar. The railway connections of the entire port are shown in Figure 30.

Figure 30 - Railway connections within the Port of Bar and Bar railway station[37]

The estimated capacity of the container terminal is 100,000 TEU annually, while current utilization is not known. Latest available data are from 2018, where the volume handled was 50,044 TEU. Therefore, it can be said that currently the total capacity for intermodal transport in Montenegro is about 100,000 TEU. This data is related only to the Port of Bar as the starting/ending point of container flows. There are no capacities in the hinterland in Montenegro.

According to the COMEXT and Customs data, the quantity of containerized goods in trade of Montenegro with regional economies and EU, reached a volume of about 4,000 TEU in 2023. On the

[35] Kapidani N, Tijan E, Jović M, Kočan E. National Maritime Single Window – Cost-Benefit Analysis of Montenegro Case Study

[36] Transport Development Strategy – Montenegro 2019-2035

[37] Map source: OpenRailwayMap - www.openrailwaymap.org

other hand, from survey results, the need for additional inland terminal is strongly present, even the majority of containers are in transit through Montenegro from/to the Port of Bar.

Other multimodal freight transport facilities – Railway stations

Main railway stations and their characteristics are summarized in Table 9.

Table 9 - Main railway stations in Montenegro and characteristics

No.	Railway station	Location on the network	Number of tracks	Track length (m)	Max permitted load (t/axle)
1	Podgorica	Route 4	19	791	22.5
2	Bijelo Polje	Route 4	8	730	22.5
3	Tuzi	Route 2b	5	704	22.5
4	Niksic	Route 2b	13	616	22.5
5	Bar	Route 4	14		22.5

Railway station Podgorica

Station Podgorica is located on railway Route 4 (Bar-Belgrade). The station is equipped with 19 tracks. The railway is connected to both the industrial zone and the business park. The maximum train's length, which can be served currently at the station, is 791m. The station is open for both passenger and freight traffic. The station is category D4, allowing 22.5 t/axle and 80 t/m. Turnover of goods exceeds 0.01 million tons in total. Location of railway stations Podgorica and Tuzi on the railway network and in relation to the border with Albania is shown in Figure 31.

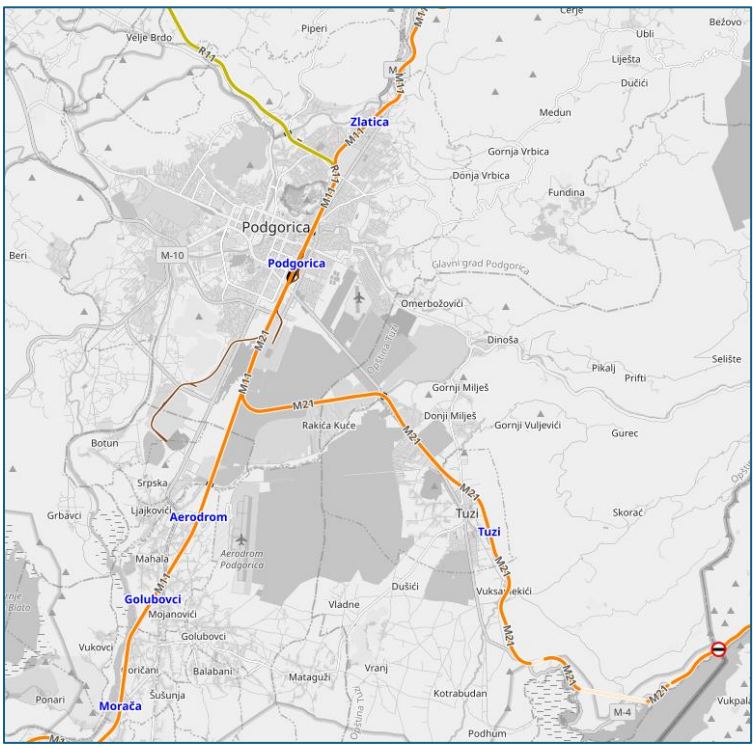

Figure 31 - Locations of Podgorica and Tuzi railway stations[38]

[38] Map source: OpenRailwayMap - www.openrailwaymap.org

Railway station Bijelo Polje

Station Bijelo Polje is located on railway Route 4 (Bar-Belgrade). The station is equipped with 8 tracks. The station is connected to the industrial zone and the business park. The maximum train's length, which can be served currently at the station, is 730m. The station is open for both passenger and freight traffic. The station is category D4, allowing 22.5 t/axle and 80 t/m.

The station is a railway joint border crossing point and located in the city of Bijelo Polje. Location in relation to the city is shown in Figure 32.

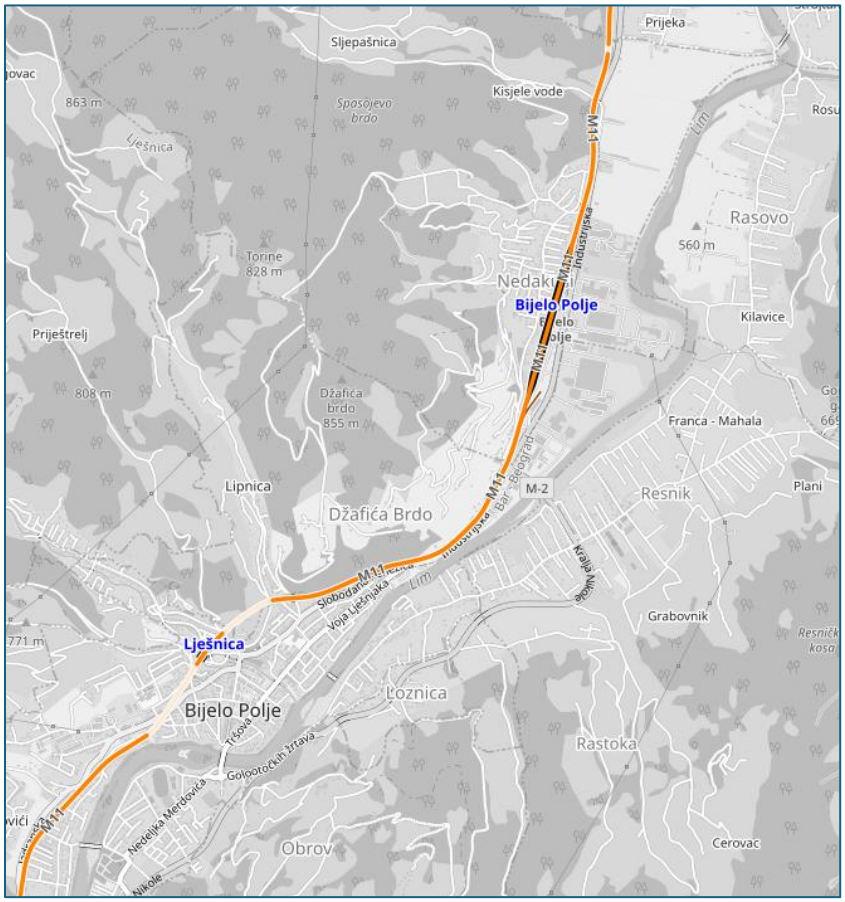

Figure 32 - Location of Bijelo Polje railway station[39]

Railway station Tuzi

Station Tuzi is located on railway line/ border crossing point with Albania, on the Core railway network. The station is equipped with 5 tracks. The maximum train's length, which can be served currently at the station, is 704m. The station is open for both passenger and freight traffic. The station is category D4, allowing 22.5 t/axle and 80 t/m. Turnover of goods exceeds 0.04 million tons in total. Location of the station in relation to Podgorica and the border with Albania is shown in Figure 31.

Railway station Nikšić

[39] Map source: OpenRailwayMap - www.openrailwaymap.org

Nikšić railway station is located on the Comprehensive railway network. The station is equipped with 13 tracks, and it is connected to the industrial zone. The maximum train's length, which can be served currently at the station, is 616 m. The station is open for passenger and freight traffic. The station is category D4, allowing 22.5 t/axle and 80 t/m. Turnover of goods exceeds 0.6 million tons in total. The location of Nikšić railway station in relation to the city and industrial zone is shown in Figure 33.

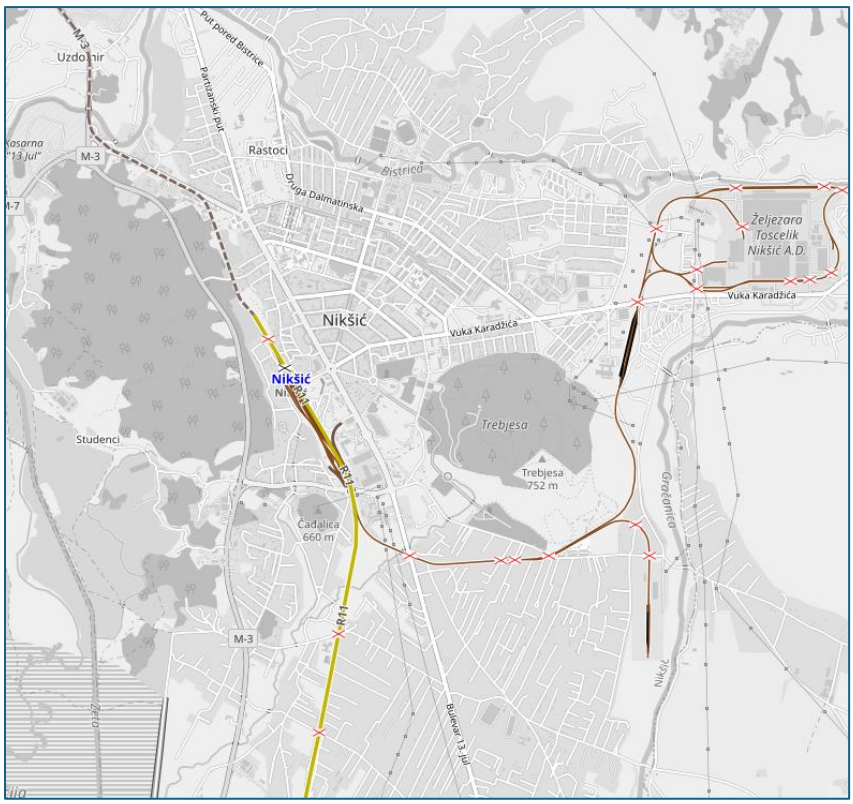

Figure 33 - Location of Niksic railway station[40]

[40] Map source: OpenRailwayMap - www.openrailwaymap.org

North Macedonia

Improvement of connectivity of different modes of transport is an important task for establishment of well-developed and functional transport infrastructure in North Macedonia. Enhanced multimodal/intermodal transport is expected to improve the attractiveness and competitiveness of North Macedonia and mitigate the environmental impact of heavy-duty vehicles.

In Table 10, the most important multimodal terminals in North Macedonia are listed, as identified based on available data, international freight flows and available relevant studies and strategic documents.

Table 10 - Main multimodal terminals in North Macedonia

No	Location	Terminal/freight station	Modality
1	Madzari	Container Terminal Blue Bell Warehouse	Bimodal terminal (Rail-Road)
2	Tabanovci	Freight station	Potential border (Rail-Road)
3	Gevgelija	Freight station	Potential border (Rail-Road)
4	Skopje Tovarna	Freight station	Potential Bimodal (Rail-Road)
5	Trubarevo Marshalling Yard	Freight station	Planned Bimodal (Rail-Road)
6	Bitola	Freight station	Potential Bimodal (Rail-Road)
7	Skopje Jug	Freight station	Potential Bimodal (Rail-Road)

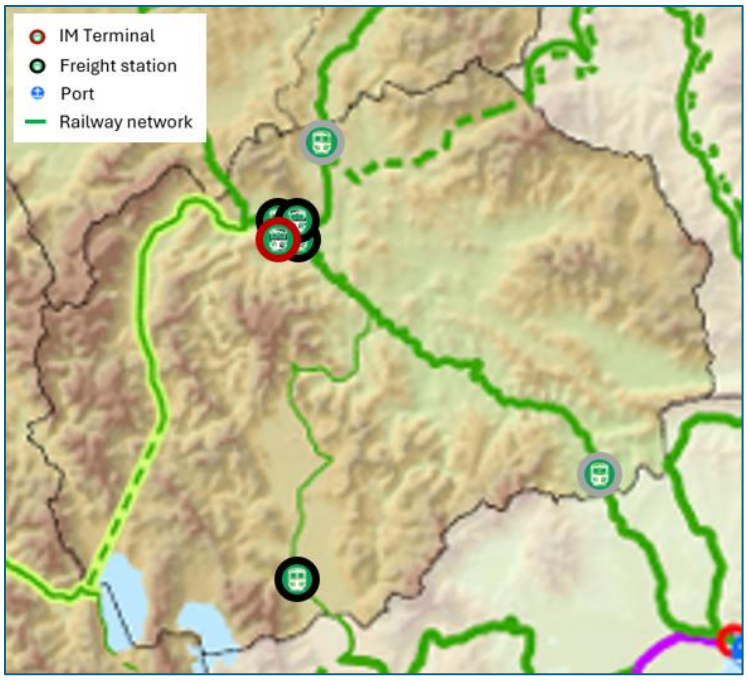

Figure 34 - Locations of listed existing multimodal terminals on the Core and Comprehensive railway network in North Macedonia[41]

The Feasibility Study and Cost Benefit Analysis for Development of strategic multimodal transport nodes in the country, supported by the EU Operational Programme for Regional Development were

[41] Map Background source: TENTec Map Viewers - https://webgate.ec.europa.eu/tentec-maps

completed in 2013/14 and recommended the existing marshalling station in Trubarevo near Skopje as optimal location for the development of Intermodal terminal. The project of construction of new intermodal terminal should be applied in two phases. In the first stage, it should be built the basic infrastructure like: the railway tracks, access to the terminal, transshipment area, parking space for lorries and cars, small warehouse facilities and buildings to provide services like Customs terminal management. In the second stage, it would be possible to set up further or larger warehouses or new specialized areas for different services if the demand for TEU traffic increases. It's necessary to prepare a study for the proposed location in Trubarevo, which shall provide guidelines for its development, construction and operation[42].

However, since the Feasibility Study and Cost Benefit Analysis for Development of strategic multimodal transport nodes was completed over 10 years ago, during the urban development of the city, there were changes in the possibilities of connecting the potential terminal Trubarevo with the road network, as well as other complications identified in the phase of options analysis of the Feasibility Study which is ongoing under IPA II. Analysis will show if Trubarevo will be the location for the new terminal or whether this decision must be changed.

Madžari Terminal – Container Terminal Blue Bell Warehouse

Container Terminal "Blue Bell Warehouse" is a privately operated terminal connected to the railway station Madžari in Skopje. It is located between the railway stations Skopje Tovarna and Trubarevo marshalling yard.

The terminal is equipped with 2 sidings (one operational), allowing acceptance of trains of maximum length of 740m. The terminal has 30,000 m^2 capacity for open storage, and container storage for 915 TEU. There is a 6,500 m^2 warehouse capacity.

Container handling is supported with 2 reachstackers, while shunting of trains is ensured by one diesel locomotive.

The estimated capacity of this intermodal terminal is 50,000 TEU annually, and current utilization is under 20%[43].

Position of the Blue Bell Warehouse intermodal terminal in the railway node of City of Skopje and its micro-location are shown in Figures 35 and 36.

[42] Development of National Strategy for the Transport Sector, North Macedonia, 2018

[43] Annual capacity reported during the interview with terminal operator is higher. The estimate of the current capacity provided here is based on the number of tracks, the loading front length and the available equipment.

Figure 35 - Micro-location of Blue Bell Warehouse intermodal terminal Skopje

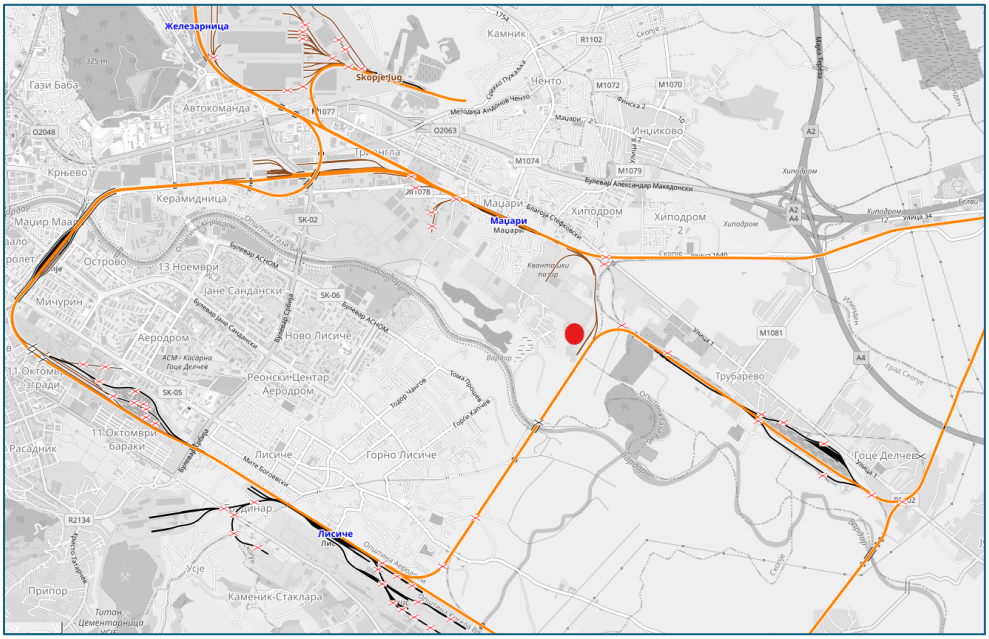

Figure 36 - Position of Blue Bell Warehouse intermodal terminal on the railway network in Skopje area (red dot mark)[44]

The total current capacity for intermodal transport in North Macedonia is 50,000 TEU. Current volumes reported by Blue Bell Warehouse container terminal are between 5-10,000 TEU.

Total number of containers circulating in North Macedonia, including transit and containers transported by road vehicles is estimated to 40,000 TEU.[45]

[44] Map source: OpenRailwayMap - www.openrailwaymap.org
[45] Estimation based on Statistical office data and COMEXT

Other multimodal freight transport facilities – railway stations

The basic characteristics of railway stations that are important for the development of multimodality in North Macedonia are summarized in Table 11.

Table 11 - Main railway stations in North Macedonia and characteristics

No.	Railway station	Location on the network	Number of tracks	Tracks length total (m)	Max permitted load (t/axle)
1	Madzari	Corridor X	8	4,500	22.5
2	Tabanovce	Corridor X	5	3,305	22.5
3	Gevgelija	Corridor X	27	9,293	22.5
4	Skopje Tovarna	Corridor X	20	9,270	22.5
5	Trubarevo	Corridor X	39	28,861	22.5
6	Bitola	Route 8 – Corridor Xd	10		
7	Skopje Jug	Corridor X	16	6,770	22.5

Railway station Madzari

Station Madzari is located on railway Corridor X. It is equipped with 8 tracks, with a total length of 4,500 m. The railway is connected to both the industrial zone and the business park. The station is open for both passenger and freight traffic. The station is category D4, with 22.5 t/axle and 80 t/m. The location of railway station Madzari in the railway node of Skopje is shown in Figure 36.

Railway station Tabanovce

Station Tabanovce is a border station, located on railway Corridor X (Skopje-Belgrade). It is open for both passenger and freight traffic and foreseen as a joint railway border crossing point, according to bilateral agreement between North Macedonia and Serbia. The station has 5 tracks with a total length of 3,305 m. Location of Tabanovce border railway station in relation to City of Kumanovo and border with Serbia is shown in Figure 37.

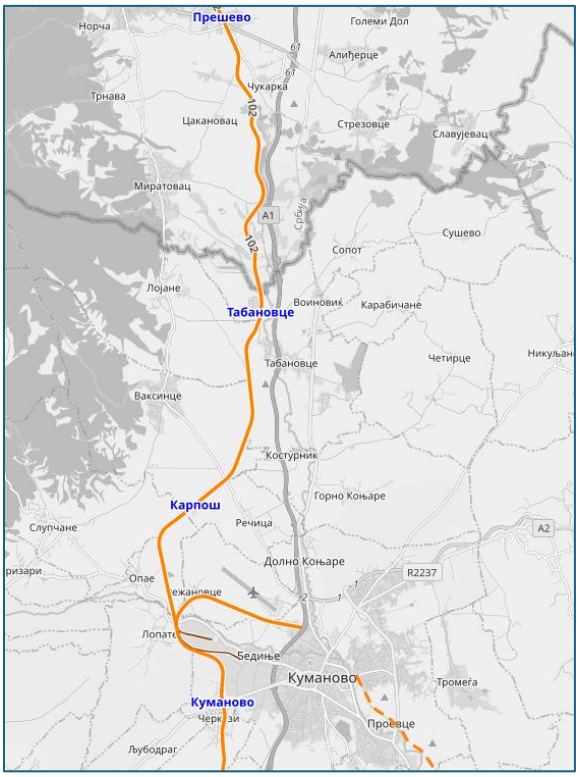

Figure 37 - Location of railway station Tabanovce

Railway station Gevgelija

Station Gevgelija is a border station, located on railway Corridor X (Thessaloniki-Skopje-Belgrade). Gevgelija railway station is equipped with 27 tracks with a total length of 9,293 m. The station is open for both passenger and freight traffic. The station is category D4, with 22.5 t/axle and 80 t/m. According to the users' satisfaction survey, border station Gevgelija could be a potential location for terminal development. However, this is not to be considered, due to serious limitations for expansion. Location of Gevgelija railway station in relation to the border with Greece is shown in Figure 38.

Figure 38 - Location of Gevgelija railway station[46]

Railway station Skopje Tovarna

Station Skopje Tovarna is located on railway Corridor X as well. The station is equipped with 20 tracks, with a total length of 9,270m. The station is at the moment open for freight traffic, and has a maximum permitted load of 22.5 t/axle. It is equipped with 2 longitudinal ramps and one lateral loading ramp. Crane exists in the station, but it is out of operation for a longer period [47]. The station was used as an intermodal terminal, equipped for container manipulation in the past. However, the equipment is out of order and there is no container manipulation at the moment.[48]

Trubarevo Marshaling Yard

Station Trubarevo Ranzirna Marshaling Yard is located on railway Corridor X. Trubarevo Ranzirna Marshaling Yard railway station is equipped with 39 tracks, with total length of 28,861 m. The railway is connected to both the industrial zone and the business park. The station is open to freight traffic. The station is category D4, with a maximum permitted load of 22.5 t/axle and 80 t/m.

The locations of freight railway station Skopje Tovarna and Trubarevo marshaling yard are shown in Figure 39.

[46] Map source: OpenRailwayMap - www.openrailwaymap.org
[47] According to information gathered during interviews and data collection conducted within Task 2
[48] According to information gathered during interviews

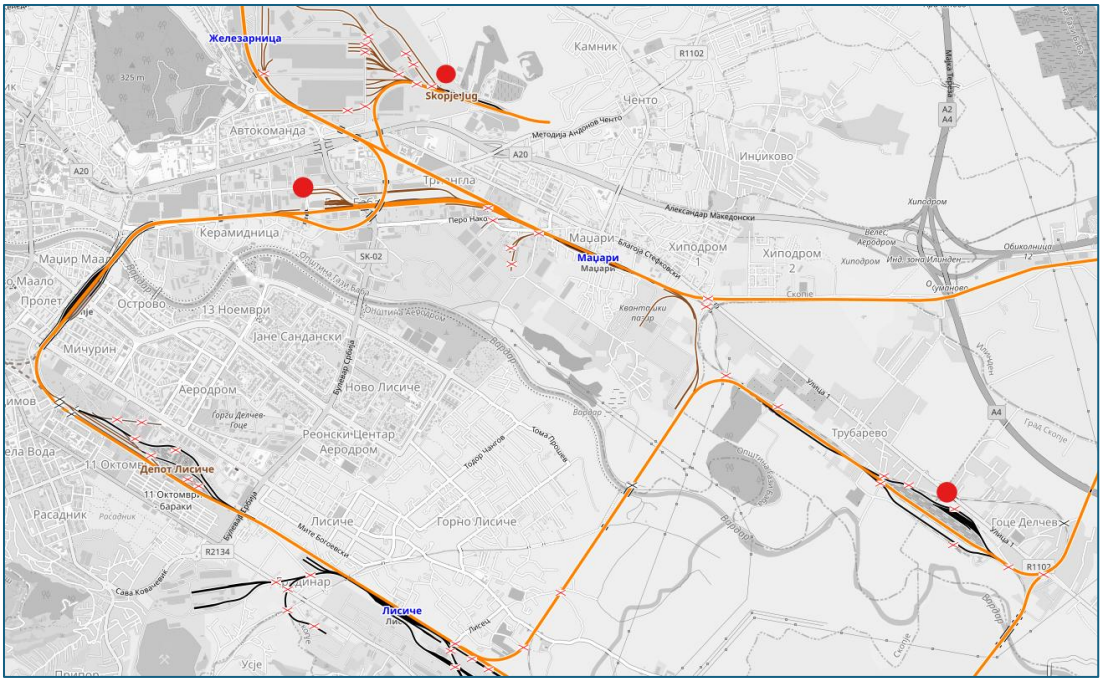

Figure 39 - Locations of Skopje Tovarna, Skopje Jug stations and Trubarevo marshaling yard in Skopje railway node[49]

Railway station Bitola

Station Bitola is a part of the Comprehensive rail network, branch D of Corridor X (Route 8). The station is served by trains to/from Skopje. The station has 10 tracks and 2 platforms for loading and unloading. The station is primarily important for internal traffic, since there are no services towards Greece. The railway station Bitola has the largest quantities of goods transshipped in North Macedonia (0.7 million tons in 2022). Proximity to the industrial zone Zhabeni and the border with Greece, with potential future alternative connection to Thessaloniki, create potential for this line and Bitola to become even more important nodal point. However, since the station is located in densely built urban area with strong limitations for expansion, in

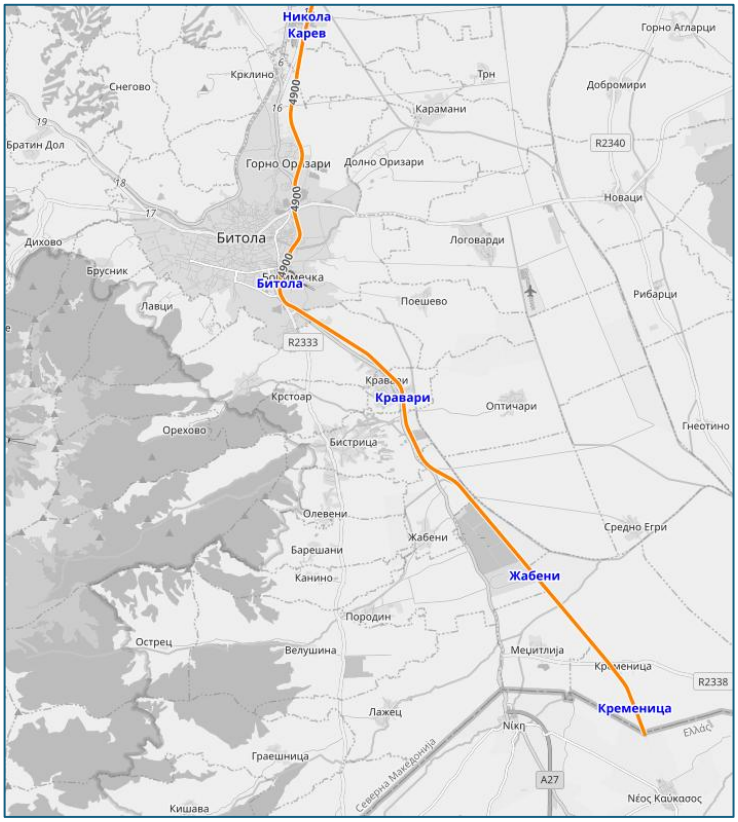

Figure 40 - Location of the Bitola railway station in relation to Zhabeni industrial zone and border with Greece

[49] Map source: OpenRailwayMap - www.openrailwaymap.org

case of terminal developing in Bitola area, the Zhabeni industrial zone or other suitable location should be considered.

Location of the Bitola railway station in relation to Zhabeni industrial zone and border with Greece is shown in Figure 40.

Railway station Skopje Jug

Skopje Jug station records the second largest quantities transshipped in North Macedonia (0.35 million tons in 2022), serving mainly Skopje steel mill connected by sidings to this station. The station is equipped with 16 tracks, with a total length of 6,770 m. The station is category D4, with a maximum permitted load of 22.5 t/axle and 80 t/m. It has 3 lateral loading ramps. There is a crane used for private purposes of the company, within the steel mill complex. Location of Skopje Jug station is shown in Figure 39, together with Skopje Tovarna station and Trubarevo marshaling yard.

Serbia

Serbia has invested heavily in its motorway network in recent years, which now fully covers Corridor X and its branches. Attention has now turned to the railway network and works have started in earnest to modernize the railway. A major investment programme for the main lines on Corridor X is now in progress. Before and during the works, however, the railway capacity and performance remain limited, so that intermodal services using the railway have not yet reached their potential.

Intermodal terminals and logistics centers are located in or near Belgrade, Niš, Pančevo and other cities, but the volume of intermodal traffic is still limited. It is expected to grow after the ongoing railway reconstruction and modernization projects are further advanced. Recent investments in the ports of Novi Sad and Pančevo show potential to develop intermodal container traffic, which has been absent at the Danube ports.

In the following table, the most important multimodal terminals in Serbia are listed, as identified based on available data and freight transport flows and available relevant studies and strategic documents.

Table 12 - Main multimodal Terminals in Serbia

No	Location	Terminal/freight station	Modality
1	Belgrade	ŽIT	Bimodal terminal (Rail-Road)
2	Belgrade	Batajnica	Bimodal terminal (Rail-Road)
3	Sremska Mitrovica	RTC Luka Leget	Trimodal terminal (Rail-Road-IWW)
4	Niš	MBOX Terminals	Bimodal terminal (Rail-Road)
5	Belgrade	Dobanovci - Nelt Co	Bimodal terminal (Rail-Road)
6	Pančevo	Port of Pančevo	Trimodal terminal (Rail-Road-IWW)
7	Inđija	Intermodal terminal Inđija	Bimodal terminal (Rail-Road)
8	Kruševac	Nelt Co	Bimodal terminal (Rail-Road)
9	Novi Sad	Port of Novi Sad	Potential Trimodal terminal (Rail-Road-IWW)
10	Prahovo	Port of Prahovo	Potential Trimodal terminal (Rail-Road-IWW)
11	Šabac	Port of Šabac	Potential Trimodal terminal (Rail-Road-IWW)
12	Smederevo	Port of Smederevo	Potential Trimodal terminal (Rail-Road-IWW)
13	Radinac (Smederevo)	Freight station	Potential Bimodal (Rail-Road)
14	Pancevo Varoš	Freight station	Potential Bimodal (Rail-Road)
15	Bor	Freight station	Potential Bimodal (Rail-Road)
16	Svilajnac	Freight station	Potential Bimodal (Rail-Road)
17	Nis-Marshaling yard	Freight station	Potential Bimodal (Rail-Road)
18	Nis -Trupale		
19	Novi Sad marshalling yard	Freight station	Potential Bimodal (Rail-Road)
20	Subotica	Freight station	Potential Bimodal (Rail-Road)
21	Sid	Freight station	Potential Bimodal (Rail-Road)
22	Pozega	Freight station	Potential Bimodal (Rail-Road)
23	Smederevo	Freight station	Potential Bimodal (Rail-Road)
24	Sabac	Freight station	Potential Bimodal (Rail-Road)
25	Sremska Mitrovica	Freight station	Potential Bimodal (Rail-Road)
26	Vreoci	Freight station	Potential Bimodal (Rail-Road)
27	Belgrade-Surcin	Freight station	Potential Bimodal (Rail-Road)
28	Jagodina	Freight station	Potential Bimodal (Rail-Road)

No	Location	Terminal/freight station	Modality
29	Kragujevac	Freight station	Potential Bimodal (Rail-Road)
30	Kraljevo	Freight station	Potential Bimodal (Rail-Road)
31	Pirot	Freight station	Potential Bimodal (Rail-Road)
32	Belgrade-marshalling yard	Freight station	Potential Bimodal (Rail-Road)

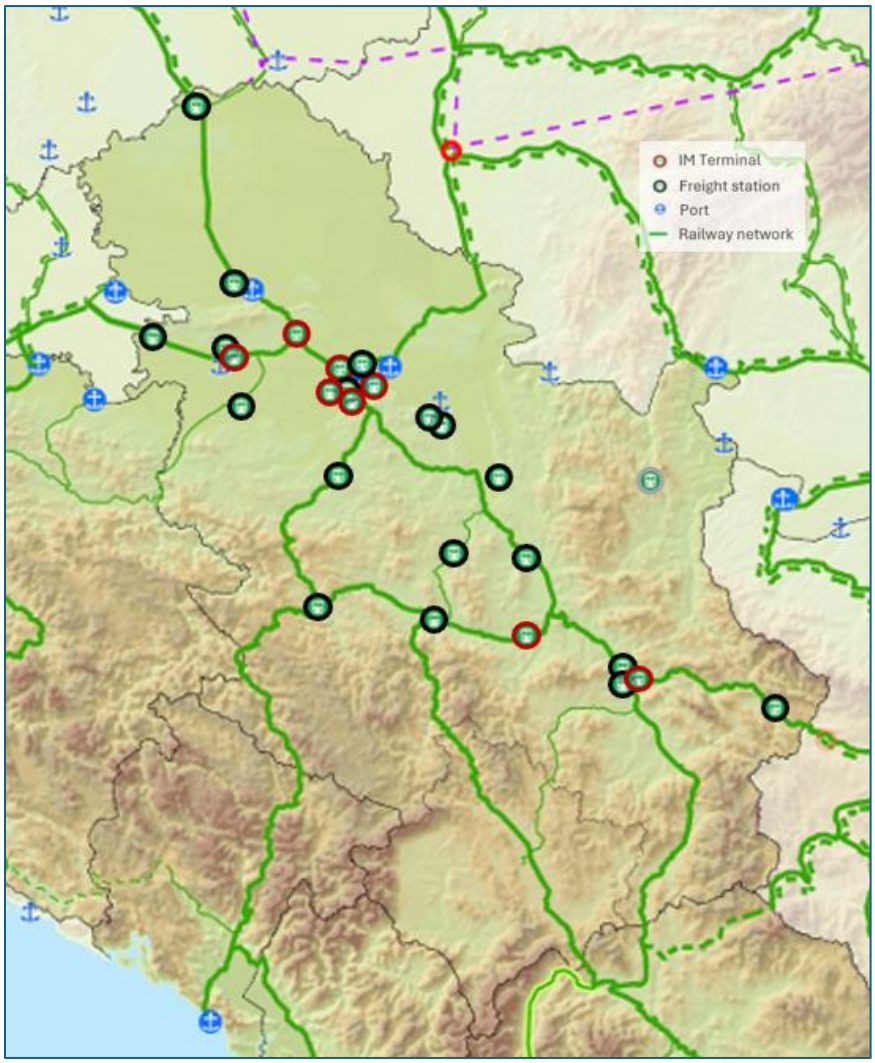

Figure 41 - Locations of listed existing multimodal terminals on the Core and Comprehensive railway network in Serbia[50]

There are eight intermodal terminals, with total annual turnover (2022) about 80,000[51], while the total number of containers in international exchange, including those transported by road, estimated at about 161,000 TEU[52].

- Belgrade area
    - Terminal ŽIT (state owned, at Belgrade marshaling yard, recently reconstructed)

[50] Map Background source: TENTec Map Viewers - https://webgate.ec.europa.eu/tentec-maps
[51] Based on reported transshipment volumes by terminals
[52] Estimation of Consultant based on COMEXT Eurostat, Customs, statistical data and interviews

- Intermodal terminal Batajnica (state owned, recently constructed)
- Intermodal terminal Dobanovci (owned by private company Nelt Co)
- Intermodal terminal Indjija (owned by international company Metrans)
- Intermodal terminal Pancevo (located in the Port of Pancevo, owned by private company Dry-Port Terminals)

- Sremska Mitrovica intermodal terminal, located in the Port of Leget, owned by private company RTC Leget
- Niš intermodal terminal, owned by private company M-Box Terminals
- Kruševac intermodal terminal, second terminal of private company Nelt Co, recently started

Container Terminal ŽIT

A temporary terminal was opened in 2016 at the location of the Belgrade marshaling yard, with a total area of about 1.5 ha, with about 1 ha of manipulative surface and a loading front of 200 m. Completion of the construction of the new terminal project is finished in the area of the 6th shunting group of the Belgrade marshaling yard, with a manipulative area of more than 2 ha and a loading front of about 750 m. The construction of an access road, two parking lots and a facility for terminal workers is also completed. Planned construction of the second phase of the intermodal terminal project includes the extension to the 5th shunting group of the Belgrade marshaling yard. This would create the conditions for the terminal to process more than 80,000 containers, that is, about 120,000 TEU per year. Terminal opening and start of operations was achieved in October 2024, with arrival of train from Port of Piraeus in Greece. In the past, the terminal had lines established to Port of Rijeka, where about 90% of the containers were coming from the route Rijeka - Belgrade - Rijeka.

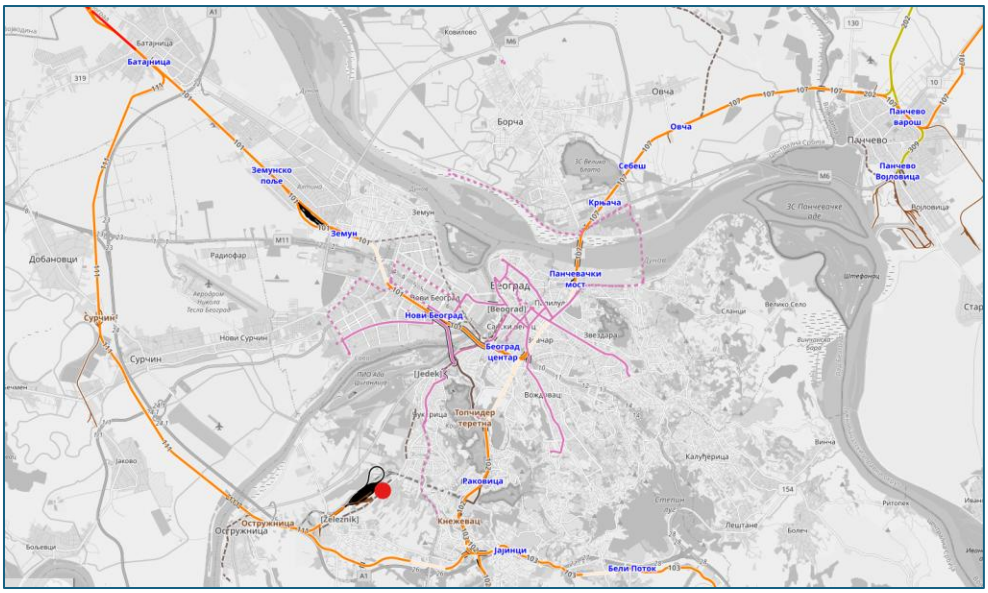

Figure 42 - Position of the ŽIT intermodal terminal on the railway network on the south of Belgrade City[53]

[53] Map source: OpenRailwayMap - www.openrailwaymap.org

ŽIT has 2 reach stackers of 45 t handling capacity. The current terminal capacity is 24,000 TEU. Terminal has its own shunting capacities which are performed at the last two sidings of Belgrade Shunting Station.

Figure 43 - Micro-location of intermodal terminal ŽIT

Terminal Sremska Mitrovica

RTC Luka Leget is a private company who owns and operates the intermodal terminal Sremska Mitrovica. The terminal has direct access to the main line Belgrade – Zagreb of railway Corridor X and to the European highway E70 of the same Corridor. At the same time, it is located in the Port of Leget on the left bank of Sava River and it can be categorized as tri-modal terminal. This is the first private intermodal terminal in Serbia. The terminal is located near the city of Sremska Mitrovica and its industrial zone. The multimodal inland container terminal started operating in 2010. Direct train connection with the port of Rijeka is provided several times a week.

The terminal has one portal crane and equipment for transshipment of general and bulk cargo from IWW, and 6 reach stackers for container handling, including one with capabilities of handling swap bodies and semi-trailers.

The total length of railway tracks in the terminal is about 2,500 m, consisting of 4 sidings with length of 500 m and 2 sidings with length of 250 m. Maximal permitted gross weight of trains is 1,500-2,000 t, while axle load permitted is 22.5 t. Total length of road communication inside the terminal is about 1,000 m and the quay (container loading front) is 100 m long.

The terminal has 20,000 m^2 of open storage and 20,000 m^2 of warehouses. It also has facilities and equipment for maintenance of containers and machinery and a special warehouse for steel coils and equipment for loading and unloading heavy goods.

Storage capacity for containers is 5,000 TEU with possibility for extension, which positions the RTC Port of Leget as the biggest intermodal terminal in Serbia and in the region in terms of storage capacity.

As a port function, nearly one million tons of cargo are handled per year, in an area of 50 ha. The river fleet consists of 4 tugboats, 5 self-propelled vessels, with a total capacity of 3,000 t and 17 cargo facilities with a total capacity of 8,000 t.

This terminal is directly connected to Customs terminal Sremska Mitrovica, where, besides the Customs administration, a number of freight forwarding companies and other offices are located.

Figure 44 - Micro-location of tri-modal terminal Sremska Mitrovica

Projected capacity of the Terminal RTC Port of Leget is 100,000 TEU annually, while current utilization is 25-50% [54]. Terminal RTC Port of Leget is connected to the railway station Sremska Mitrovica which is located on railway Corridor X between Belgrade and the Croatian border, as shown in Figure 45. Shunting operations within the terminal are performed by 3 diesel locomotives.

Figure 45 - Railway connection of Sremska Mitrovica tri-modal terminal

[54] Interviewee didn't provide exact numbers

Intermodal terminal Niš

This intermodal terminal is located in the suburban area of Niš, owned and operated by the private company MBOX Terminals doo, which is the part of Milšped, one of the biggest logistics providers in Serbia and in the region. The terminal opened in 2021. The rail-road intermodal terminal is in the town of Popovac, in the new industrial zone near the City of Niš, on Corridor X.

The terminal is equipped with four industrial tracks with a total length of 1,000 m. Quay length is 250 m, while maximal permitted length of train is 600 m. Length of road connections within the terminal is 1,200 m in total.

Warehouse capacities are planned to be constructed, where the fourth industrial siding is meant to serve the future warehouse.

The maximum gross weight of train is over 2,000 t and axle load permitted is 22.5 t.

Manipulation of wagons and rolling stock is done with the "Unimog" road-railway vehicle. The terminal represents the first ADR certified terminal in Serbia. Handling of containers is ensured by 3 reach stackers, including one capable of handling swap bodies and semitrailers.

The terminal has a storage capacity of 2,700 containers at a time. Projected capacity of terminal is 50,000 TEU units per year. Current utilization is about 30%, or 16,150 TEU [55] handled in 2023.

MBOX Terminals in Niš provides security and electrical connections for containers with a temperature regime, the possibility of service and repairs, container cleaning, parking for 40 trucks, stuffing and destuffing of goods at the terminal, as well as modern access and video surveillance system.

The administrative building with premises for offices of Customs, forwarding and other entities, covers an area of about 2,000 m^2. Regular container trains operate on the routes Niš - Rijeka - Niš, Niš - Thessaloniki - Niš and the recently established line Niš - Wels (AT) - Niš.

Figure 46 - Micro-location of intermodal terminal Niš

[55] Estimate, based on reported number of containers

In the next two years, the plan is to build two large warehouses of 15,000 m^2 and 18,000 m^2. Considering the increase in goods flows in Serbia and the increasing congestion on roads, the priority for MBOX Terminals will be the connection with intermodal terminals in Hungary and Austria, as well as with terminals in Türkiye.

MBOX Terminal is located next to and connected to the Niš marshalling yard, which is on Railway Corridor X, as shown in Figure 47.

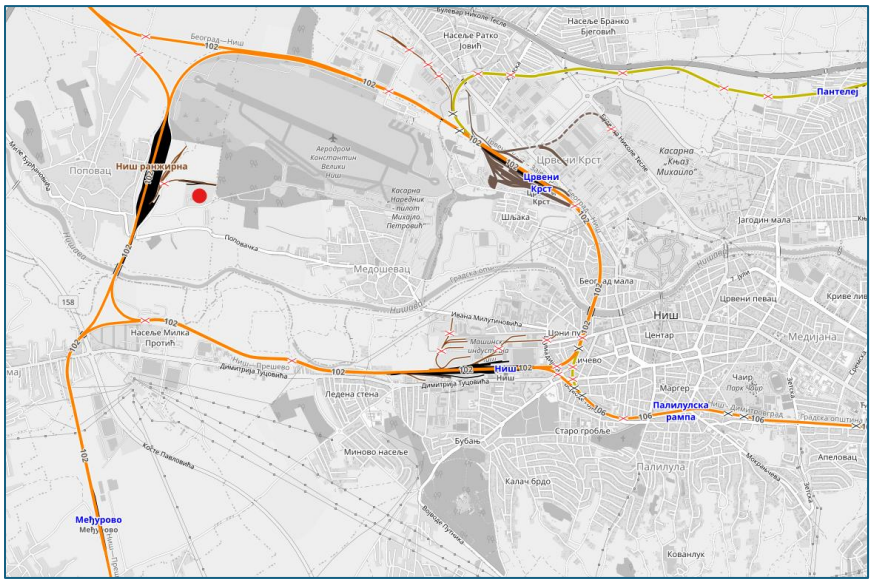

Figure 47 - Position of intermodal terminal Niš (red dot mark) on the railway network[56]

Intermodal terminal Dobanovci

Intermodal terminal in Dobanovci is owned and operated by the private company Nelt Co., one of the biggest logistics providers in Serbia and in the region. It opened at the end of 2016. It is located in the company's central distribution and logistics center in Dobanovci. The terminal is connected to railway station Surčin and by road to the E-75 and E-70 highways, which intersect at a distance of 6 km from the terminal, while Nikola Tesla Airport is 10 km away.

The usable area was expanded from 5,000 to 30,000 m^2. The improvements opened the possibility for receiving and storing 1,500 full and 500 empty containers, creating a storage capacity of 2,000 TEU in total. The terminal is connected to the ports of Rijeka, Bar and Piraeus and city of Ljubljana in Slovenia, by regular weekly lines.

Stuffing and destuffing of goods at the terminal and electrical connection for reefer containers is provided, as well as closed warehouse for containers.

[56] Map source: OpenRailwayMap - www.openrailwaymap.org

Figure 48 - Micro-location of intermodal terminal Dobanovci

Terminal Nelt in Dobanovci is equipped with 3 reach stackers. Total length of tracks is 1,100 m, while two sidings of 300 m are operational for container handling. The third industrial track of 500 m is owned by a neighboring company and leased by Nelt Co. for shunting operations.

Warehouse capacities in Dobanovci terminal are 75,000 m^2, while container open storage capacity is 30,000 m^2. The maximum permitted length of train is 600 m and maximal axle load is 20 t, or 6.4 t/m. The annual capacity of the terminal is 50,000 TEU, while current utilization is about 30,000 TEU.

The position of intermodal terminal Dobanovci (Nelt Co.) in relation to the railway network is shown in Figure 49.

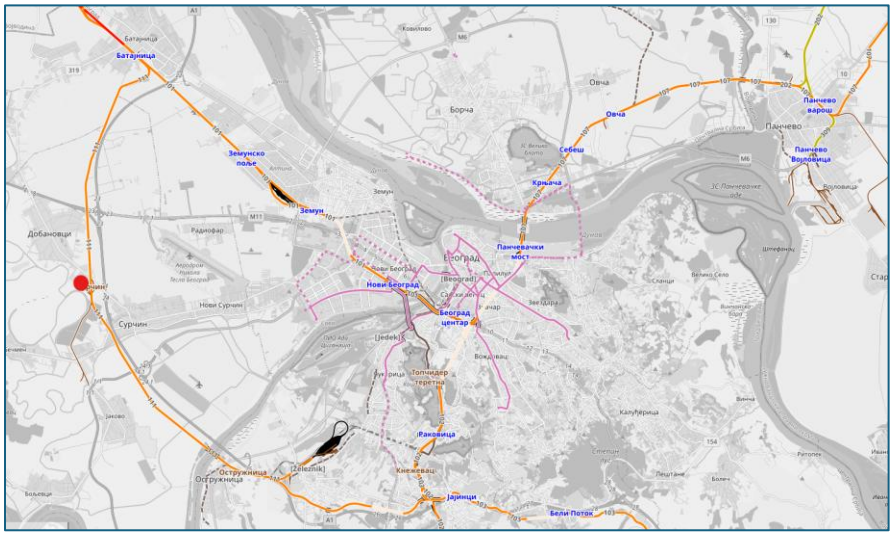

Figure 49 - Location of intermodal terminal Dobanovci on the Core railway network[57]

[57] Map source: OpenRailwayMap - www.openrailwaymap.org

Intermodal terminal Pančevo

Intermodal terminal Pančevo is operated by the private company Dry Port Terminals doo. This terminal is located inside the Danube Port of Pančevo. It opened in May 2020. It is a trimodal container terminal that offers all users the possibility of using rail, road and river transport.

The terminal has two industrial tracks with a total length of 1,000 m (2x500 m), allowing acceptance of trains over 750 m long. Open storage capacity for containers is 30,000 m^2 or 3,300 TEU.

The terminal is equipped with 2 reachstackers for container handling (45t), including one capable of handling swap bodies and semitrailers. Also, it has an automated system for filling containers with bulk cargo. The maximum permitted gross weight of trains is over 2,000 t and maximal permitted axle load is 22.5 t. Shunting operations are possible at 3-5 industrial sidings within the port and shunting operations are performed by diesel locomotive owned by terminal operator Dry Port Terminals.

The projected capacity of this trimodal terminal is 50,000 TEU annually and current utilization is 20-50%. The warehouse and open storage capacities of Port of Pančevo are available as an additional service, as well as Customs and other services of the port.

Intermodal terminal Pančevo is connected to railway station Pančevo Varoš and by regional road network is easily accessible from/to Corridor X highway. The terminal is connected to the Port of Rijeka and the intermodal terminal Cervignano located in the hinterland of Port of Trieste, by regular weekly lines. The location of the intermodal terminal Pančevo in relation to the railway network and its micro-location are shown in Figures 50 and 51.

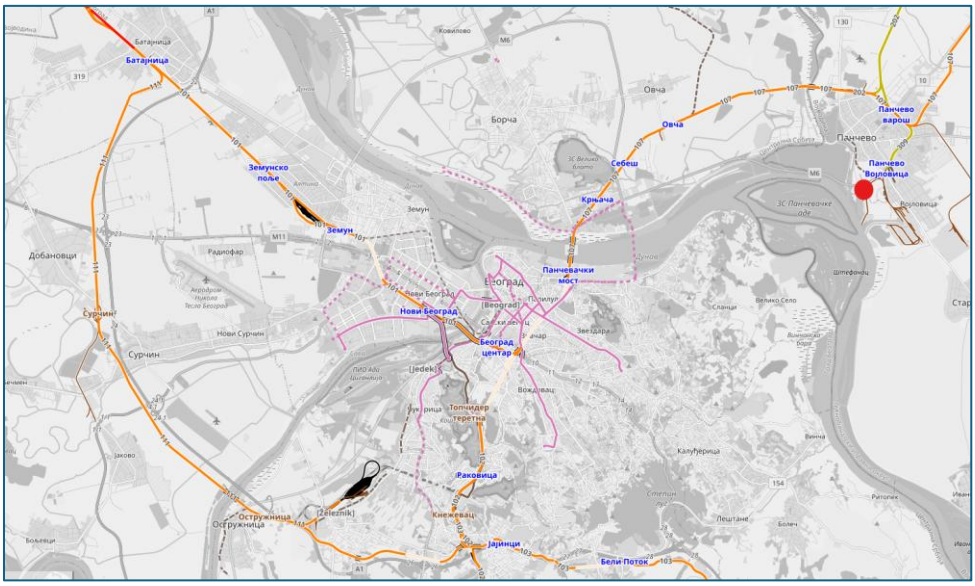

Figure 50 - Location of intermodal terminal Pančevo in relation to Belgrade city and the railway network[58]

[58] Map source: OpenRailwayMap - www.openrailwaymap.org

Figure 51 - Micro-location of intermodal terminal Pančevo (Dry Port Terminals)

Intermodal terminal Inđija

Intermodal terminal Inđija is located next to the railway station Inđija, at the crossing of the Main axis of Railway Corridor X towards Croatia and its Branch Xb towards Hungary, between the cities of Belgrade, Novi Sad and Sremska Mitrovica. The terminal is connected to Inđija railway station, located on the high-speed railway line recently established between Belgrade and Novi Sad. The position of the terminal is shown in Figure 52 and its micro-location in Figure 53.

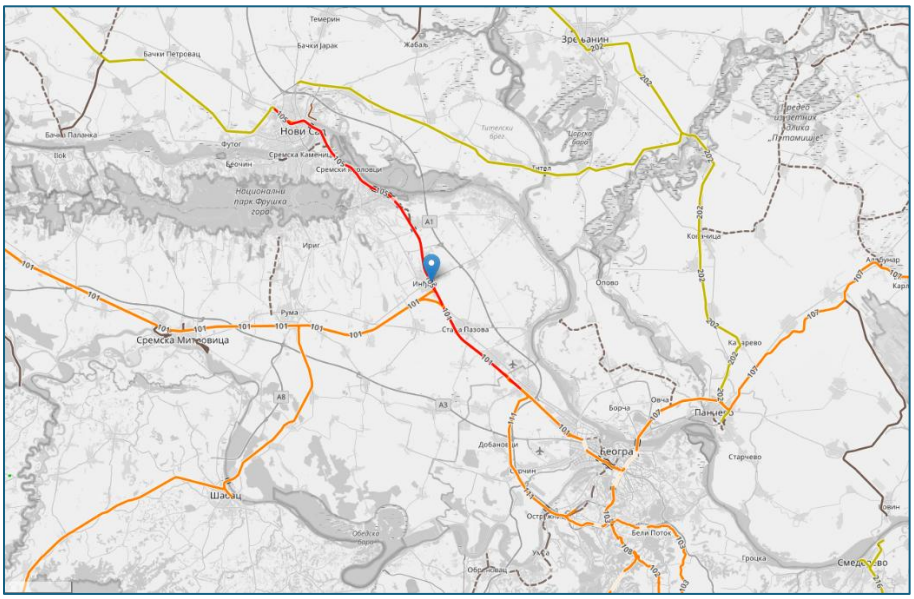

Figure 52 - Position of Inđija intermodal terminal (blue pin) on the railway network[59]

The Inđija intermodal terminal is operated by the private company Adria Rail, part of one of the biggest intermodal transport providers in Europe METRANS. Currently, the terminal is connected to Budapest and Port of Rijeka by regular weekly lines.

[59] Map source: OpenRailwayMap - www.openrailwaymap.org

The terminal's open storage capacity is 35,000 m^2. There are 2 railway sidings of total length of 500 m (2x250 m). The terminal is equipped with 2 reachstackers of 45 t capacity each, 6 trucks and 3 forklifts (12 t, 3 t and 2 t).

Shunting operations and transport of the container block trains are performed by vehicles (locomotives and wagons 28+57) owned by Adria Rail and METRANS.

Estimated capacity of the terminal is about 40,000 TEU, while utilization in 2023 was about 7,000 TEU.

Figure 53 - Micro-location of Inđija intermodal terminal

Intermodal terminal in Batajnica

The construction of the intermodal terminal, which should be part of the future logistics centre Belgrade, started in 2020, and the completion of the works finished in May 2024. The entire logistics complex should occupy about 10 ha, without access roads. It is planned that a complex will be built right next to the terminal, where all logistical operations related to road and rail transport will be carried out.

The location in Batajnica was chosen due to the intersection of the railway-road Corridor X and the proximity of the airport. The terminal has two transshipment tracks for containers and one additional manipulative track for locomotives. The total length of tracks is 2,295 m, where each of the two operational tracks are 695 m long and the third track for shunting is 905 m long.

The terminal is located on the left side of the existing Batajnica - Surčin - Ostružnica railway, and has dedicated road connections for trucks (access, loading-unloading, reserve and exit lane in case of emergency), as well as a container warehouse (with three lines for temporary storage of containers). Batajnica intermodal terminal is a rail-road terminal, connected to railway station Batajnica, which is located on the high-speed railway line Belgrade-Novi Sad. The location of the terminal on railway network is shown in Figure 54 (red dot mark).

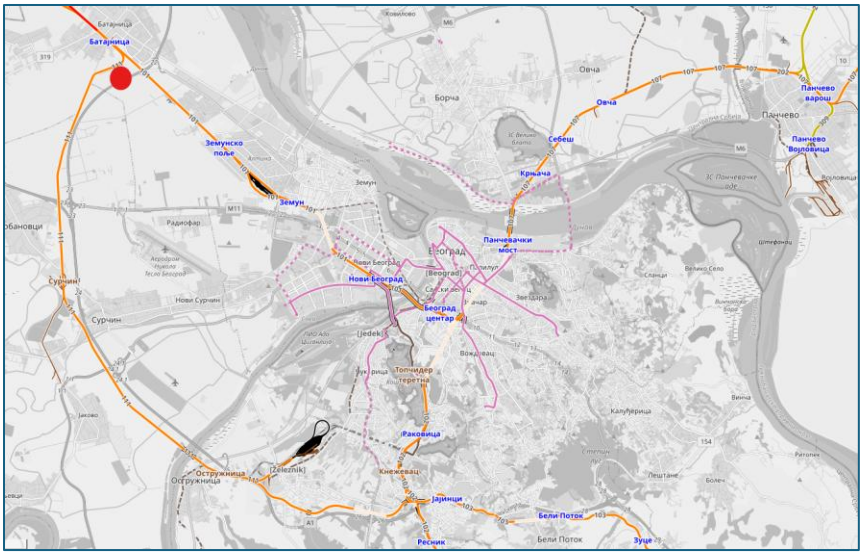

Figure 54 - Location of Batajnica intermodal terminal on the railway network[60]

Figure 55 - Micro-location of Batajnica intermodal terminal

Batajnica terminal is operated by a recently established state-owned company Logistički centri Srbije doo. Storage capacity is 6,050 m^2 or 906 TEU, while projected capacity is 80,000 TEU annually.

The terminal has one reachstacker of 45t capacity and one forklift of 10 t capacity for empty containers handling. A second reachstacker is in final phase of procurement. The number of plug-ins for frigo-containers is 117.

This completes the first phase of the construction of the intermodal terminal. The second phase envisages the construction of a logistics center and additional equipment that would increase the capacity to 150,000 TEU and enable additional services.

The terminal is officially open, started with operations in September 2024. Still, the equipping of the terminal is in its final phase and the fully operational capacities are expected by the end of 2024.

[60] Map source: OpenRailwayMap - www.openrailwaymap.org

Intermodal terminal Kruševac

Intermodal terminal Kruševac is the new facility of Nelt Co. company, who also operates the intermodal terminal in Dobanovci near Belgrade and it is the second phase of planned creation of the company's terminals network in Serbia. The terminal is located in Central Serbia in the industrial zone of City of Krusevac, connected to the railway station Dedina. The first terminal operations started in the second half of 2023, but no further details have been made available. The micro-location of the terminal and its connection to railway station Dedina are shown in Figures 56 and 57.

Figure 56 - Micro-location of Krusevac intermodal terminal

Figure 57 - Location of Krusevac intermodal terminal (red dot) in relation to railway network and railway station Dedina

Planned intermodal terminal in Port of Novi Sad

According to the previous studies presented in chapter 2.2.1 of the main report, one of the planned new intermodal transport facilities will be located in Port of Novi Sad. According to information gathered from publicly available sources (website of the Port of Novi Sad), the operator of the Port of Novi Sad (DP World) started construction of the new intermodal terminal (river-rail-road) in 2023 in the framework of investments programme of port modernization. Within those latest developments, a vertical quay is completed, and container terminal is expected to be open in 2025.

The estimation of the total current capacity for intermodal transport in Serbia is 385,000 TEU. The current volume in terminals is about 80,000 TEU, while total volume of containers including those transported by road is about 160,000 TEU. Here, it should be noted that out of mentioned current capacities, 80,000 TEU of capacities of intermodal terminal Batajnica, which started operations recently, and 24,000 TEU of capacities of intermodal terminal ŽIT (Makiš – at Belgrade marshaling yard), which has been out of operation until very recently.

Other multimodal freight transport facilities – Railway stations

The basic characteristics of railway stations that are important for the development of multimodality in Serbia are presented in Table 13.

Table 13 - Main railway stations in Serbia and characteristics

No.	Railway station	Location on the network	Number of tracks	Total length	Max permitted load (t/axle)
1	Radinac	Corridor X	7	4,642	22.5
2	Pančevo Varoš	Corridor X/Corridor VII/Route 4	13	7,774	22.5
3	Bor	-	3	1,794	22.5
4	Svilajnac	Corridor X	5	3,848	22.5
5	Niš marshaling yard	Corridor X	36	24,063	22.5
6	Niš Trupale	Corridor X	7	4,679	22.5
7	Novi Sad marshaling yard	Corridor X	48	22,101	22.5
8	Subotica	Corridor X	28	11,562	22.5
9	Šid	Corridor X	20	8,292	22.5
10	Požega	Route 4	10	6,055	22.5
11	Smederevo	Corridor X	9	4,089	20
12	Šabac	Route 9	11	4,110	
13	Sremska Mitrovica	Corridor X	10	6,436	22.5
14	Vreoci	Route 4	11	5,018	22.5
15	Beograd Surčin	Corridor X	5	3,410	22.5
16	Jagodina	Corridor X	8	6,339	22.5
17	Kragujevac	Corridor X	9	6,374	22.5
18	Kraljevo	Route 10	14	5,054	15
19	Pirot	Corridor X	6	3,604	20
20	Belgrade marshalling yard	Corridor X	79		22.5

Railway station Radinac

Radinac railway station has the highest turnover of goods, exceeding 2.4 million tons in total in 2023. This station is located in the industrial area of Iron factory – Steel mill HBIS Group, who is also the main operator of the Port of Smederevo, where the railway station Smederevo is located.

The station is connected to Corridor X, it has 7 tracks of total length of 4,642 m with maximal permitted axle load of 22.5 t.

Figure 58 shows the position of Railway stations Radinac and Smederevo in proximity to the City of Smederevo and the Port of Smederevo.

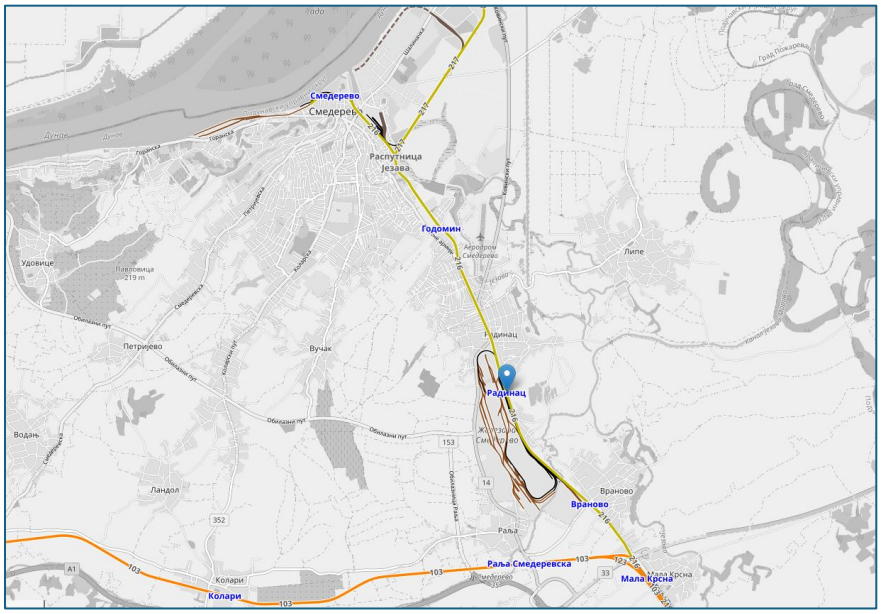

Figure 58 - Position of Railway stations Radinac, Smederevo in proximity to the city and port of Smederevo[61]

[61] Map source: OpenRailwayMap - www.openrailwaymap.org

Railway station Pancevo Varos

Railway station Pancevo Varoš is located near two corridors, the Rhine-Main-Danube and the road-rail Corridor X. Pancevo Varos railway station is equipped with 13 tracks with total length of 7,774 m (598 m each) and with maximal permitted axle load of 22.5 t. The station is open for both passenger and freight traffic and it's located near the industrial complex of Oil Industry of Serbia. Main goods transshipped in this station is oil and derivatives. The volume of goods handled exceeds 1.17 million tons in total. Location of the station in relation to the City of Pancevo, industrial area and future connections to Corridor X is shown in Figure 59.

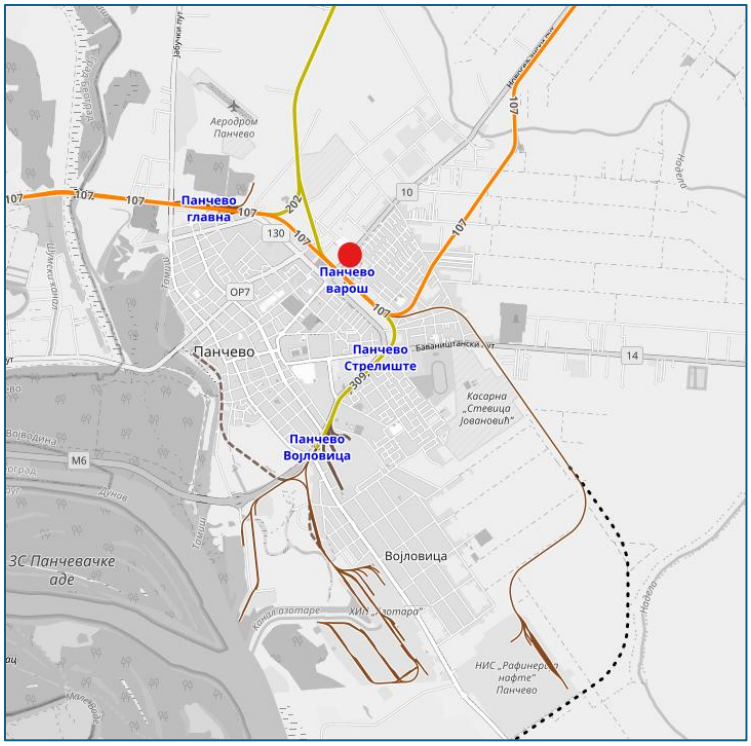

Figure 59 - Location of Pancevo Varos railway station in relation to the railway network, industrial area and City of Pancevo

Railway station Bor

Railway station Bor is located near the industrial complex of mining, where Chinese mining company ZiJin is located. Main goods transshipped in this station is metal ore. Turnover of goods exceeds 0.8 million tons in total. The station is out of Core and Comprehensive network. It has 3 tracks of total length of 1,794 m, with maximal permitted axle load of 22.5 t. Location of Bor railway station in relation to the city and industrial area Bor is shown in Figure 60.[62]

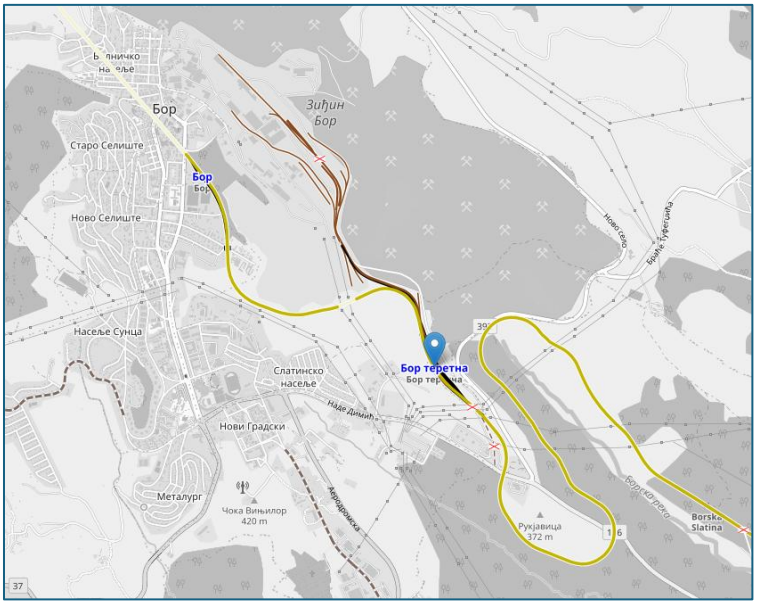

Figure 60 - Location of Bor railway station in relation to the city and industrial area Bor

[62] Map source: OpenRailwayMap - www.openrailwaymap.org

Railway station Svilajnac

Railway station Svilajnac is located in the industrial zone of Power plant and coal mining. Turnover of goods exceeds 0.7 million tons in total. The station is close and connected to railway Corridor X. It has 5 tracks of total length of 3,848 m and maximal permitted axle load of 22.5 t. Location of Svilajnac railway station is shown in Figure 61.[63]

Figure 61 - Location of Svilajnac railway station in relation to industrial area and connection to railway Corridor X

Niš marshalling yard

Niš marshalling yard is located on railway Corridor X (junction of main axis to North Macedonia and branch C from Nis-Dimitrovgrad to Bulgaria), near the industrial zone Popovac and the Nis airport. The station is equipped with 36 tracks of total length of 24,063m. The station is open for both passenger and freight traffic. The maximum permitted load at the station is 22.5 t/axle.

Nis railway node has a turnover of goods exceeding 0.66 million tons in total (Nis marshalling yard and Trupale stations together).

Railway station Niš Trupale

Niš Trupale is a smaller railway station that belongs to the Niš railway node. The station is located on Corridor X and its branch to Dimitrovgrad and Sofia. The station is equipped with 7 tracks with total length of 4,679 m and maximal permitted load of 22.5 t/axle.

The locations of Trupale railway station and Nis marshaling yard in relation to Nis railway node, Nis airport and planned new railway by-pass around City of Nis are shown in Figure 62 (red dots).

[63] Map source: OpenRailwayMap - www.openrailwaymap.org

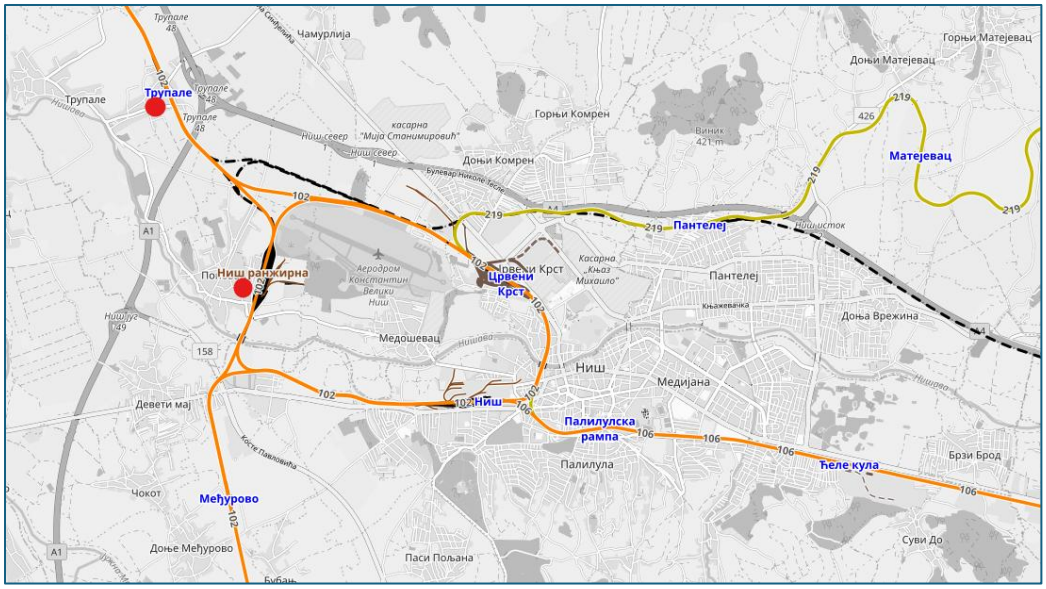

Figure 62 - Locations of Trupale railway station and Nis marshaling yard[64]

Novi Sad marshalling yard

Novi Sad marshalling yard is located on railway Corridor X, connected to the high-speed railway line from Belgrade to Subotica and to the Port of Novi Sad. Novi Sad marshaling yard is equipped with 48 tracks with total length of 22,101 m and maximal permitted axle load of 22.5 t. The station is in the industrial part of Novi Sad, second largest city in Serbia. Novi Sad marshalling yard has a turnover of goods exceeding 0.17 million tons annually. Due to the densely built area in its surroundings, it has limited possibilities for extension. The location of Novi Sad marshaling yard in relation to the city and high-speed line is shown in Figure 63.

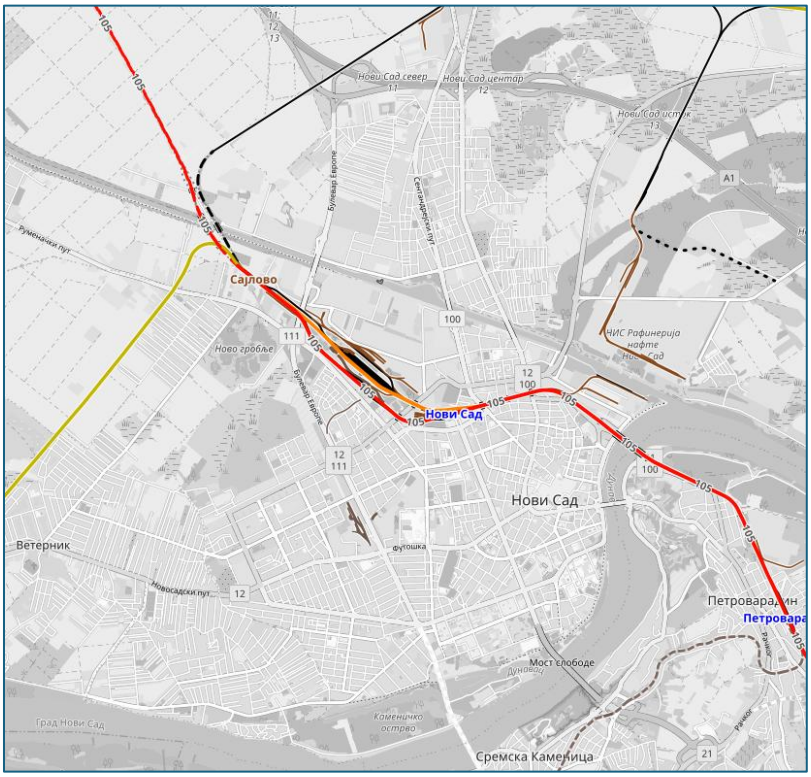

Figure 63 - Location of Novi Sad marshaling yard

[64] Map source: OpenRailwayMap - www.openrailwaymap.org

Railway station Subotica

Subotica station is located on railway Corridor X, within the urban zone and serves as the border railway station between Serbia and Hungary. Because it's located in a densely built urban area, it has very limited possibilities for expansion. The station is equipped with 28 tracks with a total length of 11,562 m and maximal permitted axle load of 22.5 t. The station is open for both passenger and freight traffic. In 2023, the turnover of goods exceeded 0.1 million tons in total.

Location of Subotica railway station in relation to the city, the border with Hungary and the high-speed railway line under construction is shown in Figure 64.

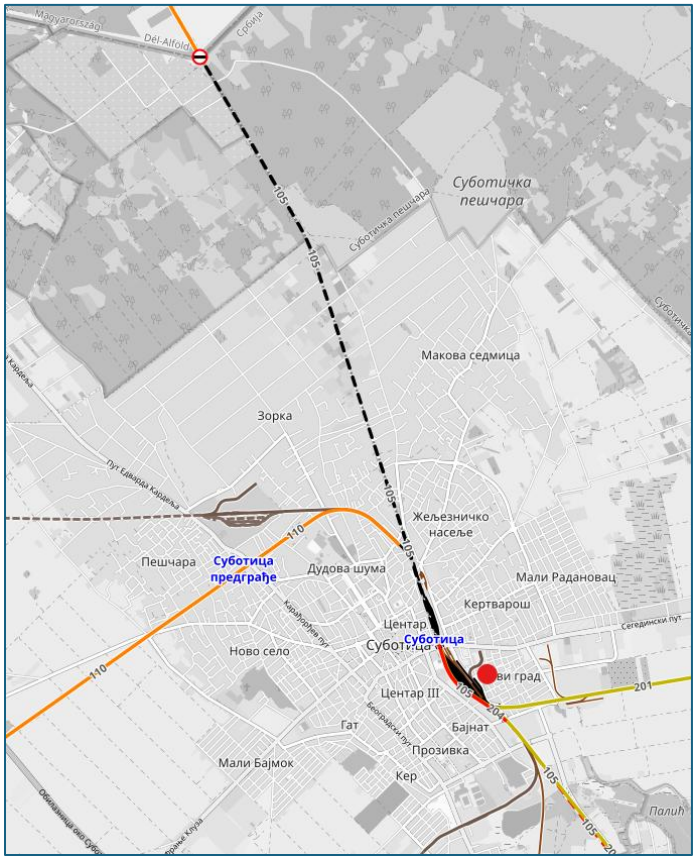

Figure 64 - Location of railway station Subotica[65]

Railway station Sid

Šid station is located on railway Corridor X and it is the railway border crossing point between Serbia and Croatia. Šid railway station is equipped with 20 tracks with a total length of 8,292 m. The station is open for both passenger and freight traffic. The station has a maximum permitted load of 22.5 t/axle. Since border station, it serves as bimodal border terminal. In 2023, the turnover of goods exceeded 0.14 million tons in total. Figure 65 shows the location of railway station Sid in relation to the border with Croatia.

[65] Map source: OpenRailwayMap - www.openrailwaymap.org

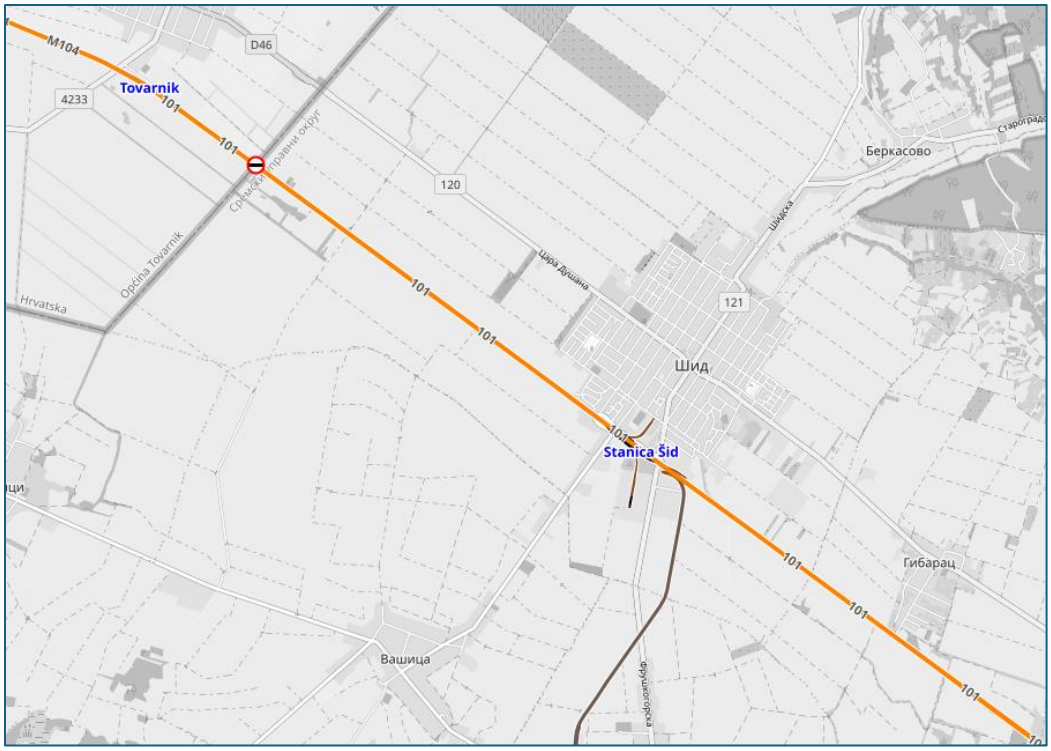

Figure 65 - Location of railway station Sid

Railway station Požega

Požega railway station is located in the western part of Serbia, near cities Čačak, Užice and Požega, on the railway junction of the Core network Route 4 from Belgrade to Montenegro and direction to Čačak-Kraljevo-Kruševac connection to Corridor X. The station is equipped with 10 tracks with total length of 6,055 m and maximal permitted axle load of 22.5 t. The station is currently used for transshipment of metal ore coming from Bor to Port of Bar in Montenegro. In 2023, the transshipment of goods exceeded 0.37 million tons in total. The location of the station is shown in Figure 66.

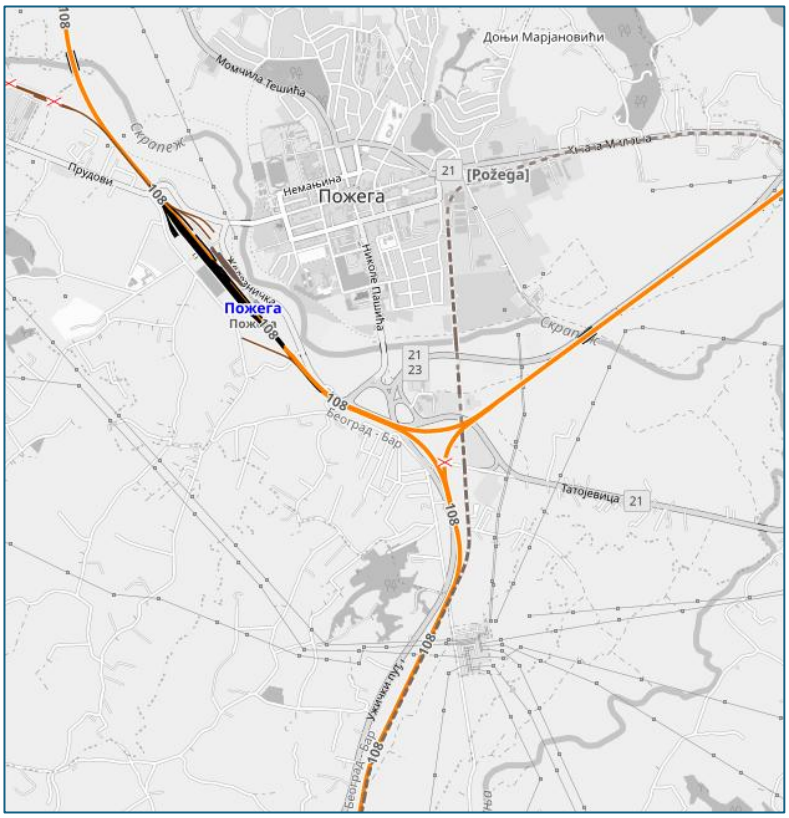

Figure 66 - Location of Požega raiway station in relation to the city

Railway station Smederevo

Smederevo railway station is located near to the Port of Smederevo and connected to Corridor X, passing Radinac railway station. It is equipped with 9 tracks with total length of 4,089 m and maximal permitted axle load of 22.5 t. In 2023, the transshipment of goods exceeded 0.54 million tons in total.

The location of the Smederevo railway station in relation to Port of Smederevo, Radinac railway station in industrial area and connection to Corridor X is shown in Figure 67.

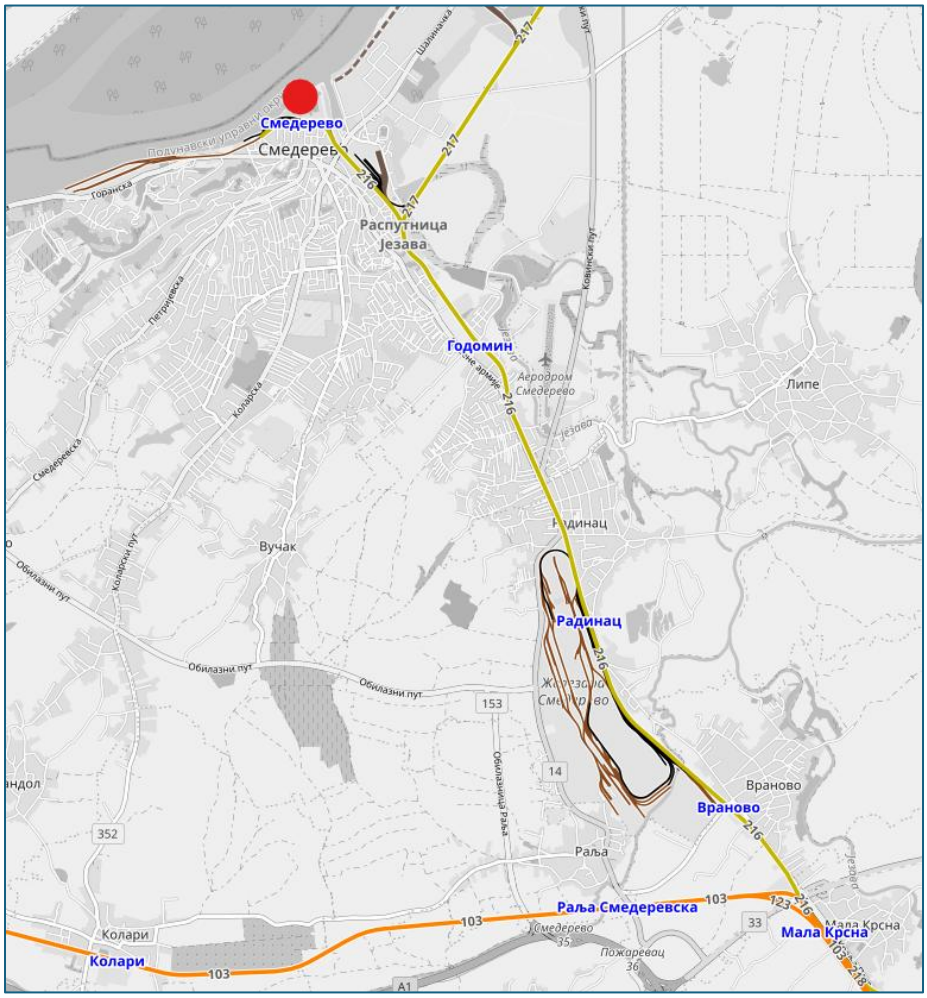

Figure 67 - Location of the Smederevo railway station[66]

Railway station Šabac

Šabac railway station is located on Route 9, on the railway connection from Ruma on Corridor X to Bosnia and Herzegovina. The station is connected to Port of Šabac and chemistry industrial complex. The station is equipped with 11 tracks with a total length of 4,110 m. In 2023, the transshipment of goods exceeded 0.44 million tons in total.

The location of the Sabac railway station in relation to industrial area and Port of Sabac is shown in Figure 68.

[66] Map source: OpenRailwayMap - www.openrailwaymap.org

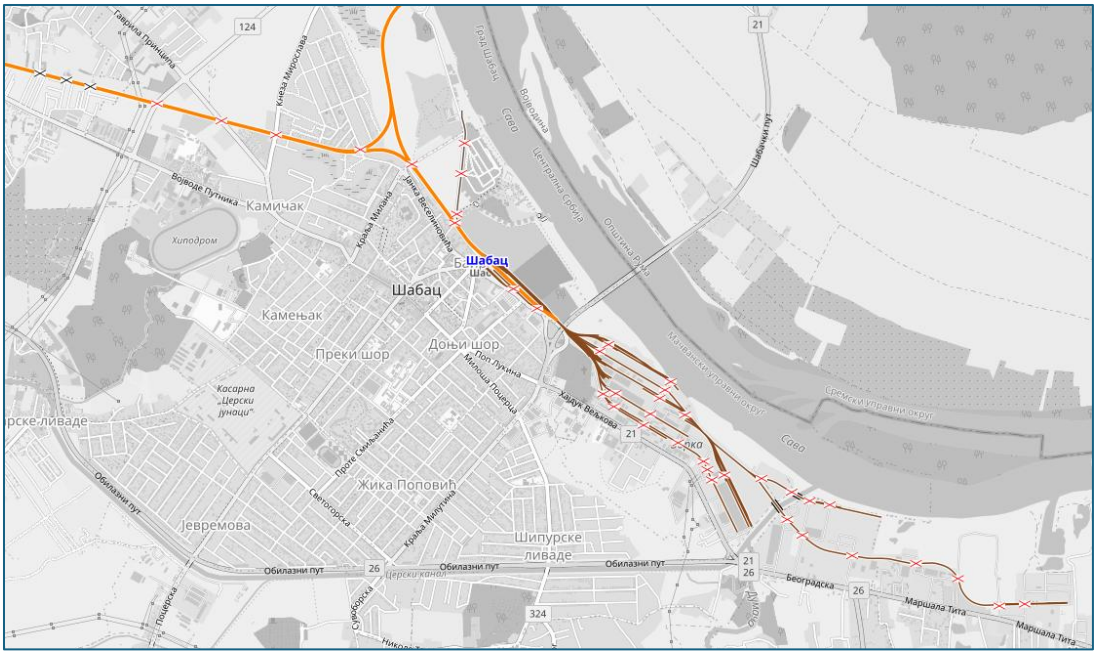

Figure 68 - Location of Sabac railway station[67]

Railway station Sremska Mitrovica

Sremska Mitrovica railway station is located on Corridor X, near the Croatian border. The station is connected to Port of Leget and the intermodal terminal. The station is equipped with 10 tracks with a total length of 6,436 m and maximal permitted axle load of 22.5 t. In 2023, the transshipment of goods exceeded 0.42 million tons in total. The location of the station is shown in Figure 69.

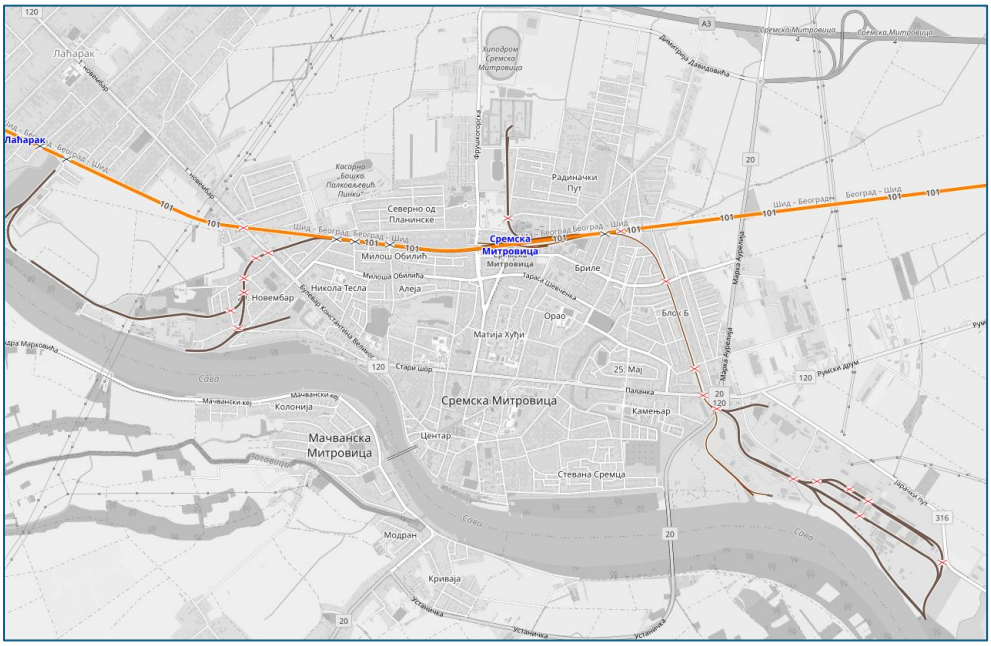

Figure 69 - Location of railway station Sremska Mitrovica in relation to the Port of Leget, city and Corridor X main axis

[67] Map source: OpenRailwayMap - www.openrailwaymap.org

Railway station Vreoci

Vreoci railway station is located on Route 4, near Lazarevac, in the coal mining basin near a thermal power plant. The station is connected to the industrial complex. It is equipped with 11 tracks with a total length of 5,018 m, with a maximum permitted axle load of 22.5 t. In 2023, the transshipment of goods exceeded 0.32 million tons in total.

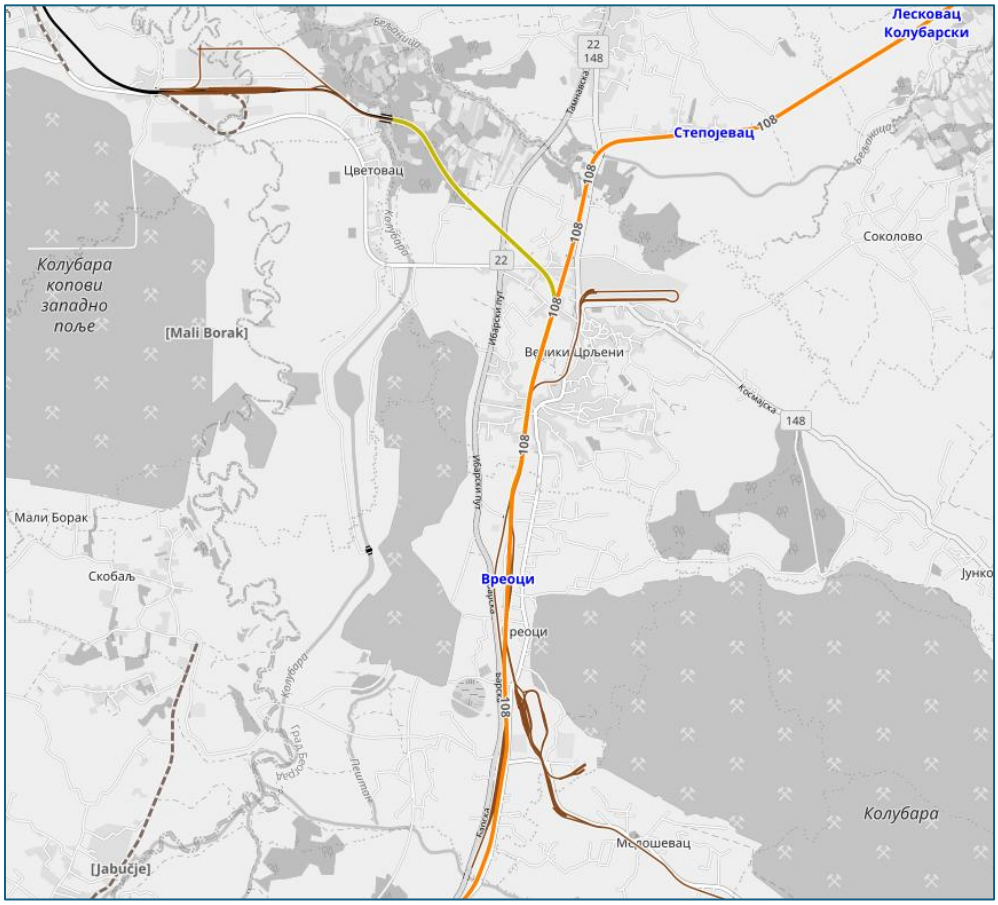

Figure 70 - Position of Vreoci railway station in relation to industrial areas[68]

Railway station Belgrade - Surčin

Belgrade-Surčin station is located on Corridor X, near Belgrade airport and in proximity to Belgrade logistics zone, where a number of logistics centers and warehouses are located. It also serves as a connection for intermodal terminal Dobanovci. The station is equipped with 5 tracks with a total length of 3,410 m, with maximum permitted axle load of 22.5 t. In 2023, the transshipment of goods exceeded 0.31 million tons in total. Location of the Surcin railway station in relation to the road Core network, railway network, city of Belgrade and Belgrade airport is shown in Figure 71 (red dot mark).

[68] Map source: OpenRailwayMap - www.openrailwaymap.org

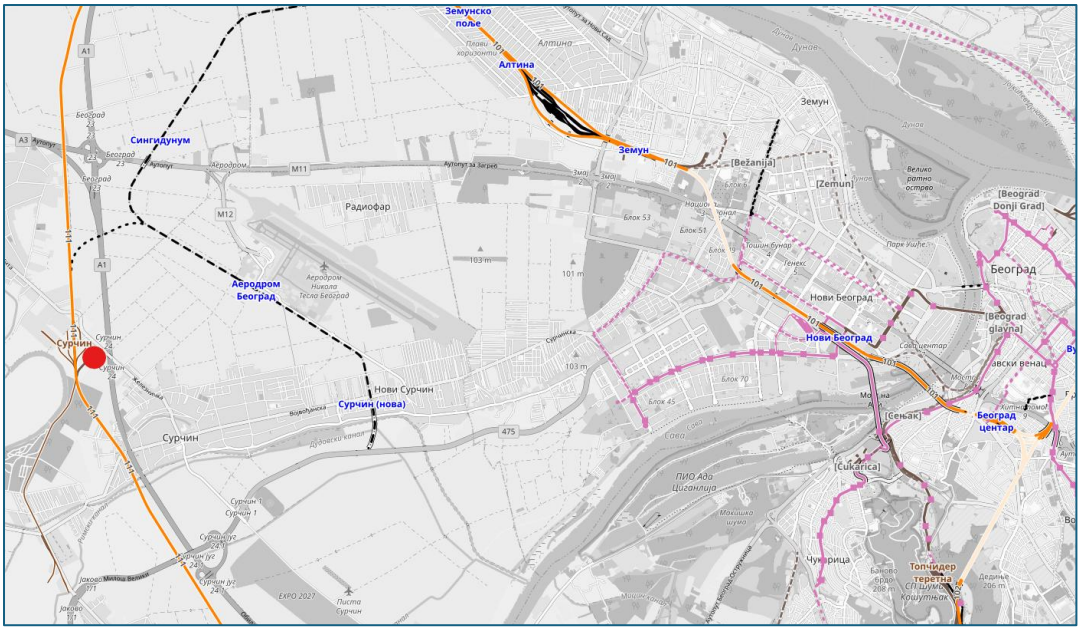

Figure 71 - Location of Surcin railway station[69]

Railway station Jagodina

Jagodina station is located on Corridor X, in central Serbia between Belgrade and Niš. It is connected to the industrial zone, and equipped with 8 tracks with a total length of 6,339 m. The maximum permitted axle load is 22.5 t. In 2023, the transshipment of goods exceeded 0.11 million tons in total.

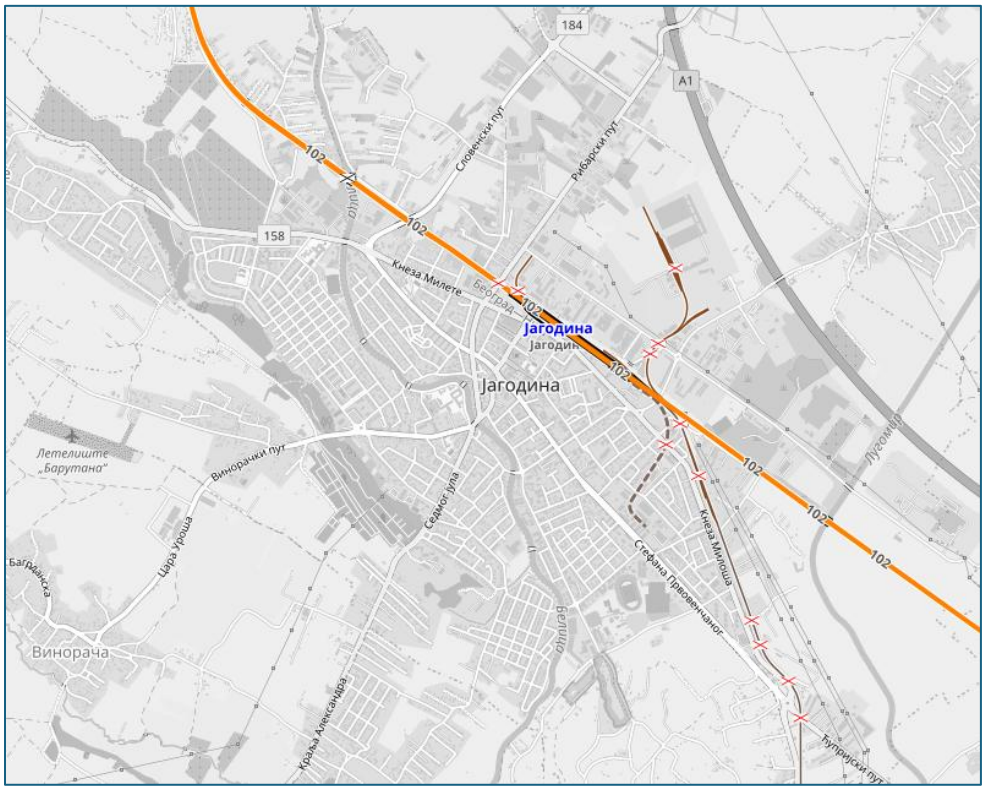

Figure 72 - Location of Jagodina railway station

[69] Map source: OpenRailwayMap - www.openrailwaymap.org

Railway station Kragujevac

Kragujevac railway station is located on the connection of Corridor X to Kraljevo, Route 10. It is in the urban area, with limited possibility for expansion, serving as a connection to an important industrial area. The station is equipped with 9 tracks with a total length of 6,374 m, with maximum permitted axle load of 22.5 t. In 2023, the transshipment of goods exceeded 0.02 million tons in total.

Railway station Kragujevac and its position in relation to the city and main industrial area is shown in Figure 73.

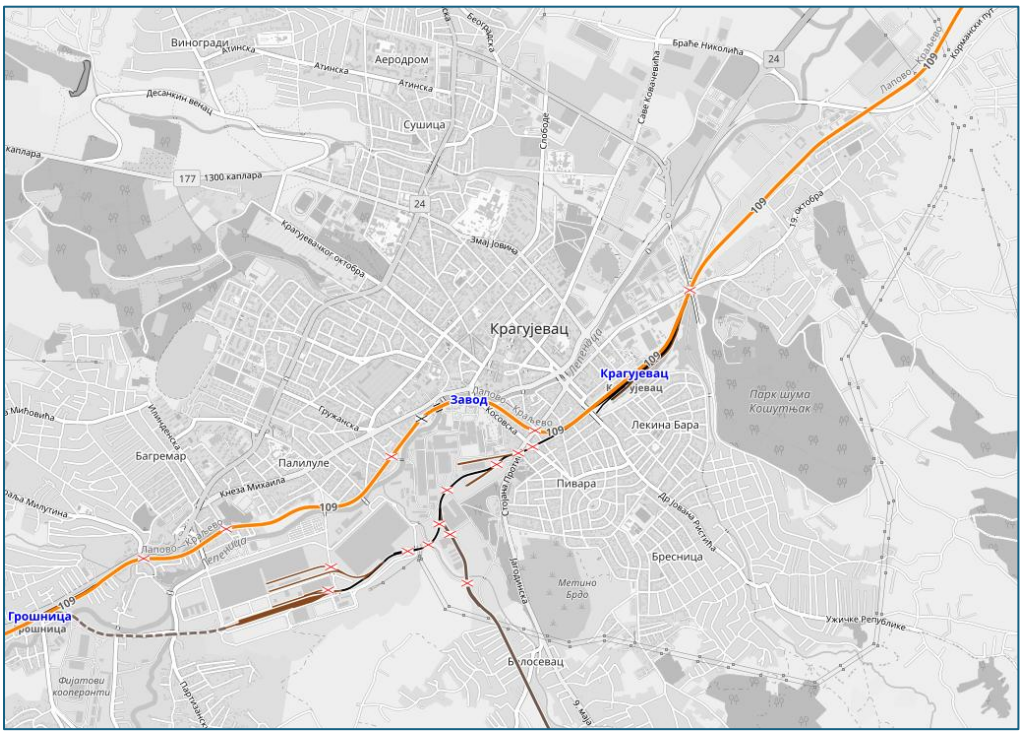

Figure 73 - Location of Kragujevac railway station[70]

Railway station Kraljevo

Kraljevo railway station is located on Route 10, at the railway junction connecting Bosnia and Herzegovina to the west, Corridor X to the north and east and Kosovo to the south. It is located in an urban area, with limited possibility for expansion, serving as a connection to an important industrial area. The station is equipped with 14 tracks with a total length of 5,054 m, with maximum permitted axle load of 15 t only. In 2023, the transshipment of goods exceeded 0.02 million tons in total.

[70] Map source: OpenRailwayMap - www.openrailwaymap.org

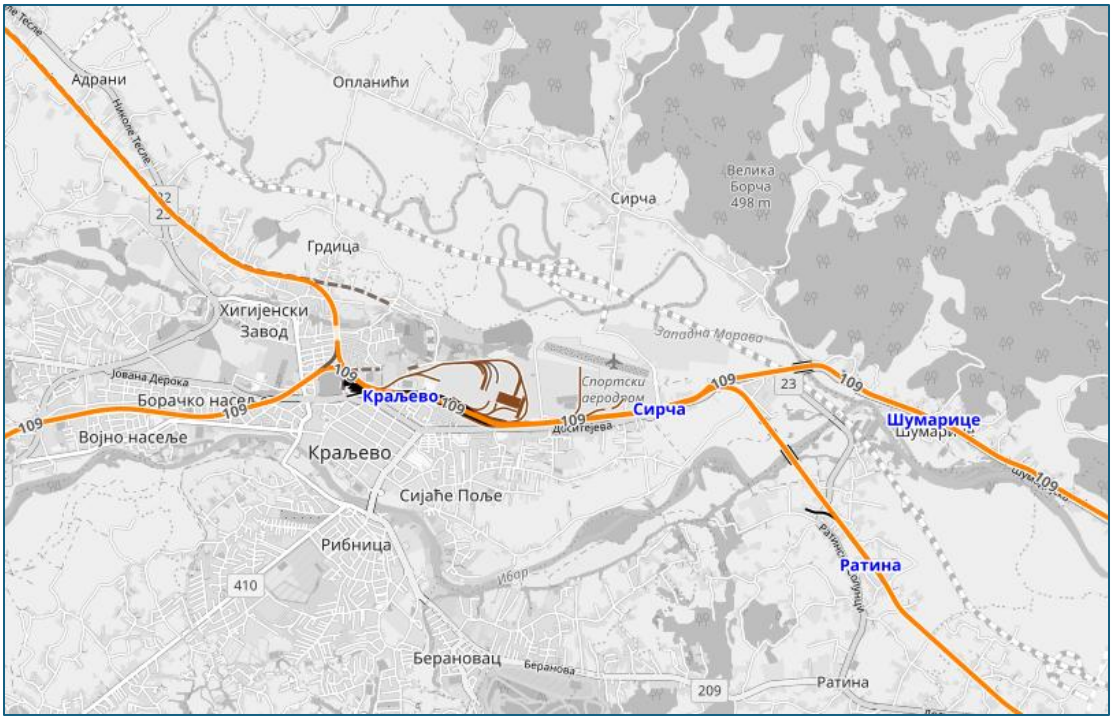

Figure 74 - Location of Kraljevo railway station in relation to railway node and industrial area

Railway station Pirot

Pirot railway station is located on Corridor X branch C to Sofia, near the Bulgarian border. It is located in an urban area, with limited possibility for expansion, serving as a connection to an important industrial area, where container terminal is planned to be constructed. The station is equipped with 6 tracks with a total length of 3,604 m, with maximum permitted axle load of 20 t. In 2023, the transshipment of goods was less than 0.01 million tons in total.

Location of railway station Pirot in relation to the industrial free zone Pirot and the city is shown in Figure 75.

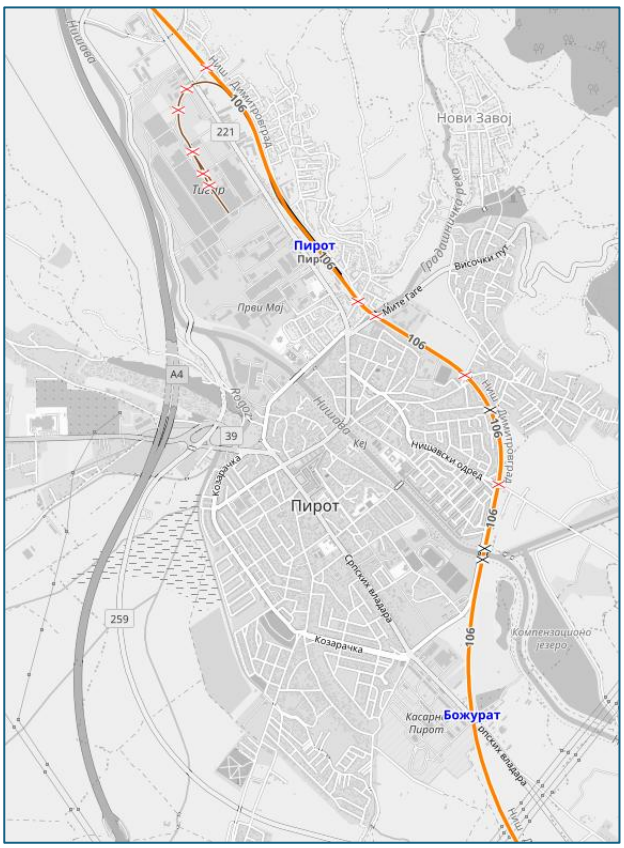

Figure 75 - Location of railway station Pirot

Belgrade marshaling yard

Belgrade marshaling yard is one of the biggest railway installations in Serbia. It is equipped with 79 tracks in total. The maximum permitted axle load is 22.5 t. Since the intermodal terminal ŽIT is located at the marshaling yard, more information on location and characteristics are provided in the section related to ŽIT terminal.

Other multimodal freight transport facilities – River- Ports

Ports on the Core and Comprehensive network in Serbia are Port of Belgrade, Port of Pančevo and Port of Novi Sad (Core), and Smederevo, Sremska Mitrovica and Prahovo (Comprehensive). All ports located on Core and Comprehensive network are connected to the railway network, except the Port of Belgrade.

River ports in Serbia are mainly used for transshipment of bulk cargo and there is currently no transshipment of containerized cargo, although there are plans and activities in this regard, especially in the Danube ports of Novi Sad and Pančevo.

Port of Belgrade

The existing Belgrade port is located on the right bank of the Danube River. The private siding (industrial railway track), over 12 km long, without connection to the main railway lines. The port operator is the shareholding company Port Belgrade JSC.

The port offers handling services for bulk cargo and containers. The handling equipment of Port Belgrade a.d. includes nine portal cranes with a carrying capacity of 3 to 6 t, three overhead cranes with a capacity of 3t, 20 t and 50 t, two truck-mounted cranes with a capacity of 16 t and 40 t, 30 forklifts with capacities of up to 12.5 t, container manipulator with a capacity of 27 t and other equipment. Port Belgrade a.d. disposes of 200,000 m^2 of indoor and 600,000 m^2 of outdoor storage facilities. The container terminal can store 10,000 TEU on an annual basis.

Total throughput in the Belgrade port in 2021 was about 0.2 million tons.

The fact that the port is now in the urban environment is the greatest obstacle to further develop the Belgrade port at its current location. Also, the Port of Belgrade is without railway connection, when urban construction projects in Belgrade (Belgrade Waterfront) started. For this reason, Serbia has started activities for the preparation of technical documentation for the construction and development of a new Belgrade port. The site for a new port needs to be identified, and particular attention paid to the development model of the future port area.

Port of Novi Sad

The Port of Novi Sad is located at km 1,254 on the left bank of the Danube, at the entrance to the Danube-Tisa-Danube Canal. Total quay length is 800 m, with five mooring places for simultaneous accommodation of vessels. Railway tracks, 6,000 m in total length, are connected to the national railway network.

From 2019, the P&O Ports FZE consortium managed by DP World from the United Arab Emirates became the owner of the port operator, a joint-stock company Luka Novi Sad AD. P&O Ports FZE is a specialist company that operates small, multi-purpose ports including container terminals, bulk and general cargo terminals.

DP World Novi Sad operates on an area of 6 hectares, where the water depth is from 4 to 10 m. The 800m-long quay can accommodate up to 5 vessels at the same time. DP World Novi Sad owns and operates closed warehouses with an area of 44,000 m^2 and open warehouses with an area of 100,000 m^2, which consist of public and customs warehouses.

Port operations include cargo handling and storage of bulk cargo, general cargo, container and liquid cargo. The handling equipment of the Port of Novi Sad consists of six portal cranes with a capacity of 5 t to 27.5 t, 14 forklifts with a capacity of 3 t to 12.5 t, one forklift with a capacity of 28 t and other equipment.

In addition to DP World, there is another operator at the Port of Novi Sad - NIS a.d., which operates at the terminal for the transshipment of oil and oil products.

Total quantity handled in the port in 2021 was 1.4 million tons, dropped to 0.96 million tons in 2023

Port of Pančevo

The port of Pancevo is located on 1,153 km of the Danube River, at the intersection of Pan-European Corridors VII for river navigation and X for road and rail traffic, which connect the market of Southeast Europe. It includes a complex of 127 hectares and a water area of 21 hectares, which makes it one of the largest international river ports in Serbia.

Along the navigable part of the dock there are two quays, closely linked-the oblique quay 200m long with one loading-unloading terminal and the vertical quay 250m long with three loading-unloading terminals.

The Port of Pančevo operates with four operators: Luka Dunav Pančevo (operator of the multipurpose terminal), Granexport (specialized grain terminal with a silo), Specijalna Luka (multipurpose terminal), and NIS a.d. (oil and oil derivatives terminal). Luka Dunav Pančevo and Granexport are located in the main basin, Specijalna Luka in the second basin, while NIS a.d. is situated on the main river flow.

Virtually all types of cargo are received here: bulk cargo and general cargo, but also cargo in bags of various sizes, as well as on pallets. The port possesses three cranes of up to five tonnes capacity, whereas the capacity for loading and unloading the goods in bulk, jumbo bags (500kg) and pallets ranges from 600 to 800t a day. The Port has about 20,000m^2 of warehouses. The handling equipment of Port Pancevo comprises three portal cranes of 5t capacity, two locomotives, six forklifts, seven loaders, one truck crane (50t capacity), two excavators, as well as other working equipment.

Total quantity handled in 2023 was over 1.6 million tons.

Port of Smederevo

The Port of Smederevo is located in Smederevo- from km 1,111 to 1,116 the of Danube, next to the M-24 road, and the highway Belgrade-Nis. Main port operator is HBIS GROUP Serbia Iron & Steel. Two portal cranes, (6 and 27.5t) reload the crude ore from barges into trucks. The Port facility consists of two units - "Old" and "New" Port in Smederevo. Ports are fully equipped facilities that HBIS Serbia uses for unloading raw materials delivered by the Danube and loading barges for river transport of products to customers. Within the Old Port, there is also a closed warehouse with an area of 420 m^2.

The largest operator is HBIS, which handles transshipment for Stee Mill at both the old and new ports. Additionally, there are three other operators in the Port of Smederevo: Tomi Trade at the multipurpose terminal, NIS a.d., and Mitan Oil, which operate at two terminals for the transshipment of oil and oil derivatives.

The port of Smederevo is with largest quantities handled, over 2.8 million tons in 2023.

Port of Leget Sremska Mitrovica

The Port of Leget is located in the eastern industrial zone of Sremska Mitrovica, on the left shore of the Sava River, 133 km away from the mouth of the Danube River i.e. from Belgrade. The Port Leget Sremska Mitrovica has been described in previous paragraphs, in the context of the intermodal terminal.

Total quantities handled in 2023 were above 0.7 million tons.

Port of Prahovo

The Port of Prahovo is located on the Danube River, at the border of Serbia, Romania and Bulgaria. The international port of Prahovo is an important logistics hub, which is of great importance not only for Elixir Group, which is the port operator, but also for the entire region. The operator of the Port of Prahovo – Elixir Prahovo is planning significant investments in the development of this port, namely superstructure.

The port has a transshipment capacity of over 1.5 million tons per year and enables the reception and transshipment of various types of cargo and all-important raw materials that are suitable for the production of mineral fertilizers, which come from the Black Sea ports on the Danube.

In addition to the multipurpose terminal operated by Elixir Prahovo, there is also an oil terminal where operations are conducted by the operator NIS a.d.

Total quantities handled in 2023 were above 1.07 million tons.

Appendix IV – Description of main industrial and urban areas per RP

Aiming to assess the needs for development of multimodal/intermodal terminals network, besides the flows and existing infrastructure and terminals analyzed, it is necessary to identify and consider the position of the main industrial and urban areas as generators and attractors of flows.

Given that urban nodes on the indicative extension of the TEN-T network to the Western Balkans are not defined, the largest urban areas by population will be listed for spatial analysis purposes, as locations that attract transport flows.

Since quantitative analysis of volumes of goods attracted by and generated in industrial zones was not possible due to lack of such data, identification of main industrial areas was conducted through the research of main mining, wood processing, quarrying, agriculture and heavy industrial production and logistics areas and notable companies.

Albania

Albania's industry is based on several key sectors:

Mining Industry – Mineral resources, especially chrome, copper, nickel, and oil. Key mining regions include Bulqiza (chrome), Puka, and Fushe Arrez (copper).

Oil Industry – Significant oil reserves are located in the Fier region (Patos-Marinza field). Oil is one of Albania's main export products.

Food Industry – Regions like Korça, Berat, and Lushnja have well-developed food production sectors.

Construction Industry – With the growth of urbanization and tourism, the construction industry is on the rise. Albania has substantial reserves of building stone, limestone in areas like Fier, Elbasan, Korça, Durres, and marble in regions such as Tropoja and Shkoder.

Metallurgical Industry – Primarily located in Elbasan, the metallurgical industry focuses on the production of steel and other metal products.

Textile and Footwear Industry – Major production facilities are based in Tirana and Durres.

Tourism – Although not a traditional industry, tourism is rapidly developing and it’s crucial for attracting flows of food, beverages, agricultural products, and construction materials. Key locations are in coastal areas like Vlora, Durres, and Shengjin.

As shown in the detailed analysis presented in Appendix I, the largest volumes of exports from Albania are related to Crude oil; non-metallic products and minerals; metal ores and other mining products; metals and basic metal products excluding machinery, as well as chemical industry products. In imports, the highest volumes pertain to product groups such as petroleum derivatives; non-metallic products and minerals; basic metal products excluding machinery; food and beverages; agricultural products; coal and crude oil; wood and paper; and chemical products.

In terms of locations, it is essential to identify the key industrial zones, mining locations, logistics centers, and other production/ manufacturing facilities that generate flows of these significant product types.

Mining industry in Albania is mostly based on mining of chromium, nickel and copper as well as minerals. The most significant are the chrome mining around Bulqiza and Tropoja in northern Albania, the copper mine near Puka, where deposits of gold, silver, and cobalt are also found, in Northern Albania, as well as the nickel and coal mining around Korca in southeastern Albania.

Albania is rich in natural stone resources, particularly marble and limestone, which are extensively quarried and exported. Key regions involved in the extraction and processing of these materials include Mat District, north of Tirana, near Milot; Fier area including Berat in the east, and Kukes area in the north of Albania. Also, cement factories are located in Elbasan and Tirana area (Fushe-Kruje, north of Tirana).

Steel and metal production is located in Elbasan area, while crude oil and refinery facilities are situated in Vlore and Fier areas.

Regarding logistics and distribution, the highest concentration of logistics facilities is in the Tirana and Durres area.

Numerous industrial zones are established in Albania, such as the zones near Tirana, Durres, Elbasan, Fier, Vlora, Korca, Koplik, Bushat, Kashar, Peqin, Pogradec, Kavaja, Maliq, Berat, Delvina, Rreshen, Kukes, Bilisht, Rubik, Burrel, Librazhd and others. Still, according to the research of publicly available information, the most important industrial areas in Albania are:

1. Industrial area Tirana
Location: Central Albania, around the capital Tirana.
Key Sectors: Food processing, construction materials, textiles, agriculture.
Notable Companies: Devolli Corporation (food), Coca-Cola Bottling Shqiperia, Albdesign, Antea Cement (construction), Bankers Petroleum, Agna Group (distribution), Kler (textile), Birra Tirana (beverages).
Description: As the largest industrial zone in Albania, Tirana's area supports a diverse range of industries, with a strong emphasis on food processing and construction materials. The zone also includes textile and agricultural production, making it a key hub for both domestic and international trade.

2. Industrial area Durres
Location: Western Albania, near the port city of Durres.
Key Sectors: Logistics, food processing, textiles, construction materials.
Notable Companies: Balfin Group (retail logistics), Heineken Group (beverages), Euromax (distribution), Kurum International (steel), Alba Shoes Group (footwear), Teuta (food).
Description: Durres is Albania's primary logistics and transport hub due to its proximity to the main port. The area is a central point for distribution in Albania.

3. Industrial area Fier

Location: Southwestern Albania.

Key Sectors: Oil industry, energy production, construction materials.

Notable Companies: Bankers Petroleum, Transoil Group, Phoenix Petroleum, Albpetrol (oil and derivatives), Kurum International (steel), Fier Cement Factory (construction).

Description: Fier is a major hub for Albania's oil industry, with significant production and refining activities. The industrial zone also supports energy production and has companies involved in the production of construction materials.

4. Industrial area Elbasan

Location: Central Albania, around the city of Elbasan.

Key Sectors: Metal production, chemical industry, energy.

Notable Companies: Kurum Holding (steel), EHW (energy), Elbasan Cement Factory (construction), Elbasan Ferrochrome Plant (alloys), Elbasan Chemical Plant.

Description: Elbasan is a traditional industrial center in Albania, particularly known for its metallurgy and steel production. The industrial zone also includes facilities for the production of construction materials and chemicals.

5. Industrial area Vlora

Location: Southern Albania, near the port city of Vlora.

Key Sectors: Oil and energy, logistics, construction, agriculture, fishing and food.

Notable Companies: Albpetrol, Trans-Adriatic Pipeline (TAP) consortium, Balfin gruoup.

Description: Vlora serves as a crucial zone for Albania's oil and energy sectors, with projects like the TAP pipeline increasing its strategic importance. This area is also evolving as a logistics hub.

Summarizing the analysis of freight flows, locations and characteristics of existing terminals and their connectivity with (and the locations of) main industrial areas presented in this Appendix, Figure 1 presents the actual situation and needs in terms of locations important for multimodality.

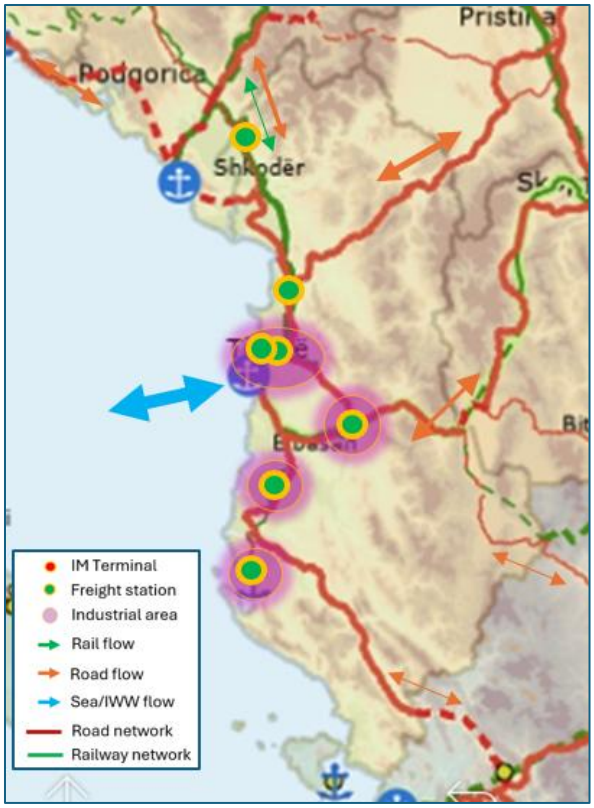

Figure 1 - Industrial areas, existing terminals and main international freight flows in Albania[1]

The main urban areas in Albania, with population above 35,000 inhabitants, are presented in Table 1.

Table 1 - Main cities in Albania according to population and share of total population[2]

City	Population	Share of total RP population
Tirana	622,190	22.4%
Durres	203,917	7.3%
Vlore	135,032	4.9%
Elbasan	124,179	4.5%
Shkoder	111,686	4.0%
Korce	86,994	3.1%
Fier	84,638	3.0%
Kamza	81,688	2.9%
Berat	63,132	2.3%
Lushnje	53,507	1.9%
Saranda	40,736	1.5%
Paskuqan	39,553	1.4%
Kavaja	39,478	1.4%
Pogradec	38,642	1.4%

[1] Map Background source: TENTec Map Viewers - https://webgate.ec.europa.eu/tentec-maps

[2] Source: Population Census 2023, https://observator.org.al

Bosnia and Herzegovina

The most important industrial sector in Bosnia and Herzegovina is the metal industry, primarily located around Zenica and Mostar, with smaller-scale metal processing in Tuzla and other areas. The energy sector is also significant, especially concerning transportation needs, with coal mining linked to thermal power plants. Key locations include areas around Tuzla (Kreka), Sarajevo (Kakanj), Ugljevik, and Gacko.

Wood processing is mainly based in the regions of Banja Luka, Sarajevo, and Teslić. The textile and leather industries are located in Tešanj, Gračanica, Bugojno, and Travnik. Agriculture and food production are also vital sectors in BiH, with important areas in Laktaši and Gradiška in the north, near Banja Luka; Trebinje and Čitluk in the south; Bijeljina in the east; and Brčko in the northeast of Bosnia and Herzegovina.

The automotive industry is another significant industrial sector, with several locations for automotive parts production. Notable centers include Sarajevo, Gradačac in northern Bosnia and Herzegovina, Goražde in the east, and Tešanj in central Bosnia and Herzegovina.

As shown in the analysis presented in Appendix I, the largest volumes of exports from Bosnia and Hercegovina are related to groups of goods: Metal ores, mining products; Chemicals, fibers, rubber and plastics; Coal and lignite; Basic metals and products; minerals; Wood and paper; Secondary raw materials; and Agriculture products. On the import side, Food and drinks; Agriculture products; Minerals; Petroleum products; Chemicals; and Basic metals and products are dominant in terms of quantities.

In terms of locations, it is essential to identify the key industrial zones, mining locations, logistics centers, and other production/ manufacturing facilities that generate flows of these significant product types.

The most important metal mines in Bosnia and Herzegovina are the Sase mine (lead and zinc) near Srebrenica in eastern Bosnia and Herzegovina; the bauxite mining in Jajce in central Bosnia and Herzegovina and Posušje in the south; the lead mine in Olovo in the central-eastern part of the country; and the Vareš mine (zinc, lead, silver) in central Bosnia and Herzegovina.

In addition to the coal mine near thermal power plants (Kreka near Tuzla, Ugljevik, and Gacko in eastern Bosnia and Herzegovina, Kakanj near Sarajevo in central Bosnia and Herzegovina), there are also significant coal mine in Breza near Sarajevo and in Banovići in northeastern Bosnia and Herzegovina.

Notable locations for limestone and stone extraction are found in northeastern Bosnia and Herzegovina. In terms of minerals, Bosnia and Herzegovina imports mineral fertilizers for primary agricultural production, which is primarily located near Šamac in the north, Brčko and Bijeljina in the northeast, and Mostar, Trebinje, and Čapljina in the south of the country.

The production of base metals is one of the most important industrial sectors in Bosnia and Herzegovina, with key locations in Zenica (steel and iron) and Mostar (aluminum).

Oil refining and processing of petroleum products are found in the northern part of Bosnia and Herzegovina, near the border with Croatia (Brod, Modriča), while significant chemical industry

facilities are found in Lukavac near Tuzla and in Tuzla itself (coke, ammonia, tar, soda, salt, cement) in eastern Bosnia and Herzegovina.

Timber harvesting and primary wood processing are concentrated in areas rich in forest resources in the northern and central parts of Bosnia and Herzegovina (near Banja Luka, Prijedor, Teslić, and Drvar).

There are more than 100 industrial zones in Bosnia and Herzegovina, with several of them located around Sarajevo, Banja Luka, Doboj, and Tuzla. Additionally, there are notably large industrial zones in Zenica and Mostar. Other cities with significant industrial zones include Bijeljina, Bihać, Brčko, Goražde, Prijedor, Bugojno, Bileća, Jajce, Srebrenik, Gračanica, and others. Still, according to the research of publicly available information, the most important industrial areas in Bosnia and Herzegovina are:

1. Industrial area Sarajevo

Location: Central Bosnia and Herzegovina, the capital and largest city.
Key Sectors: Automotive, metal processing, electronics, logistics, pharmacy.
Notable Companies: ASA Prevent Group, Selzer, Veritas (automotive), Energoinvest (energy sector), Bekto Precisa (precision engineering), Bosnalijek (pharmacy), Sarajevo brewery (beverages), SurTec, Unis (manufacturing), Igman (defence), Famos (construction), Alba Uniprom (furniture).
Description: The area also hosts companies involved in metal processing, automotive and electronics, food production, pharmacy and others. There are 4 industrial zones in Sarajevo, where Rajlovac is the one most developed. The area of Sarajevo also includes industrial zones in Goražde, Vogošća, Konjic, and Vareš and Olovo mining locations.

2. Industrial area in Banja Luka

Location: Northwestern part of Bosnia and Herzegovina, administrative center of Republika Srpska.
Key Sectors: Wood processing, metal industry, construction materials, textiles, food.
Notable Companies: Hemofarm (pharmaceuticals), Jelšingrad (metal processing), BEMA (footwear), Banjalučka pivara (brewery), Mlijekoprodukt (food), several companies in wood processing and furniture industry; in Laktaši: Iskra Tela (manufacturing), Mahle Electric (automotive), PMP Industries (machinery)
Description: Banja Luka has a diverse industrial base. It is one of the key areas, hosting companies in wood processing, metalworking, and light manufacturing. In Banja Luka, there are 3 industrial zones, and the area also includes Ramići, Laktaši and Gradiška industrial zones.

3. Industrial area Zenica

Location: Central Bosnia and Herzegovina, along the Bosna River
Key Sectors: Steel production, metallurgy, construction materials.
Notable Companies: ArcelorMittal Zenica (steel production), Cementara Kakanj (cement production), several metal processing companies, Delta Frost, ZIM (food).
Description: Zenica is home to one of the largest steel production facilities in the region, operated by ArcelorMittal. In Zenica area, industrial zones in Kakanj (mining), Travnik (wood processing) and Vitez (chemistry, manufacturing).

4. Industrial area Tuzla

Location: Northeastern Bosnia and Herzegovina.

Key Sectors: Chemical industry, energy, mining, manufacturing.

Notable Companies: GIKIL Lukavac (Coke, chemical industry), Elektroprivreda BiH - Kreka (energy, coal mining), Solana Tuzla (salt production), DITA (Chemistry), Menpron (food), in Živinice industrial zone: Elsta Mosdorfer, AFT (plastics).

Description: Tuzla is an important industrial center, particularly in the chemical, energy, and mining sectors. There are 4 industrial zones in Tuzla or nearby.

5. Industrial area Mostar

Location: Southern Bosnia and Herzegovina, along the Neretva River.

Key Sectors: Aluminum production, construction materials, food processing.

Notable Companies: Aluminij Industries (aluminum production), Hepok (wine), Fe-Al (aluminum profiles), Marinada (food processing).

Description: Mostar's industrial zone is centered around aluminum production, with Aluminij Mostar being a key player. One of the advantages is proximity to Port of Ploče. Mostar area also includes mining and other industries in its surroundings, such as Posušje, Široki Brijeg and food production in Čapljina.

6. Industrial area Bihać

Location: Northwestern Bosnia and Herzegovina, near the Una River, close to the Croatian border.

Key Sectors: Wood processing, food, machinery, automotive, logistics.

Notable Companies: Meggle Bihać (dairy products), Sani Global (wood processing), Bihać brewery (beverages), BIRA (machinery), Č.J. and CNC Production Bajric (metal, machinery, automotive).

Description: Bihać, located in the northwestern part of the country, has two industrial zones, supporting various industries, wood processing, food, machinery and others.

7. Industrial area Bijeljina

Location: Northeastern Bosnia and Herzegovina, near the border with Serbia.

Key Sectors: Agriculture, food processing, construction materials, textiles, trade.

Notable Companies: PASS (Automotive), Orao, RS Steel (machinery), Sava Semberija (agriculture and food processing), Textil LT (textile) and number of trade companies.

Description: Bijeljina is an agricultural and industrial center in the northeastern part of Bosnia and Herzegovina. The industrial area supports various sectors, including metals, automotive, food processing and construction materials. Bijeljina has 4 industrial zones.

8. Industrial area Brčko

Location: Northeastern Bosnia and Herzegovina, located on the Sava River, near the border with Croatia.

Key Sectors: Logistics, food processing, manufacturing.

Notable Companies: Bimal (edible oil production), Studen-Agrana (agriculture, sugar production), TMD Mibo (automotive), FAMM (construction products).

Description: Brčko District's unique status as an autonomous district gives it special significance in Bosnia and Herzegovina. The industrial zone here is a key logistics hub due to its strategic location on the Sava River, and it supports significant food processing and manufacturing industries. Brčko is developing one of the biggest industrial zones "Brod" on the west side of the city.

9. Industrial area Doboj

Location: Northern Bosnia and Herzegovina, situated along the Bosna River, at a key crossroad connecting central and northern regions.

Key Sectors: Metal processing, logistics, manufacturing.

Notable Companies: Power Plant Stanari (mining and energy), Šipad Komerc (wood processing), Dobojinex (metal), Trudbenik (machinery), Carmeuse (lime); in Tešanj: Hifa-Oil (oil distribution), Madi (poultry), Mann+Hummel (Automotive); in Gracanica: Index and HST CNC Technik (metal and automotive); in Maglaj: Natron-Hyat (paper).

Description: Doboj's industrial zone benefits from its location at the crossing of major transport routes. The zone has a mix of industries, including metal processing, manufacturing, and logistics, serving both domestic needs and export markets. Within this area, industrial zones of Tesanj and Maglaj are included.

Summarizing the analysis of freight flows, locations and characteristics of existing terminals and their connectivity with (and the locations of) main industrial areas presented in this Appendix, Figure 2 presents the actual situation and needs in terms of locations important for multimodality.

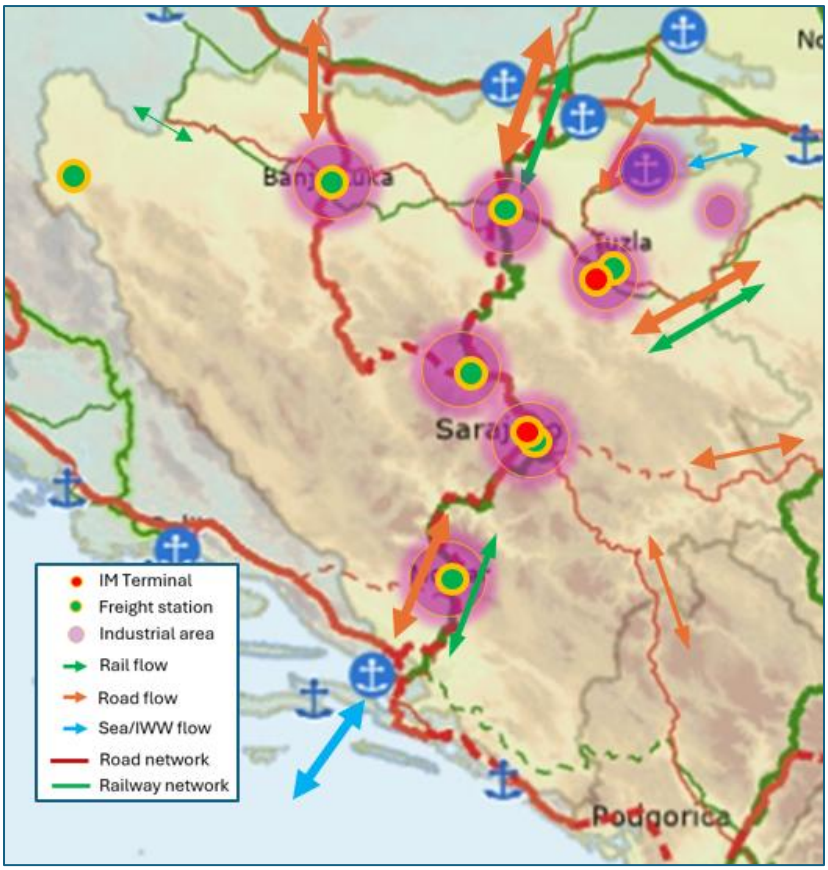

Figure 2 - Industrial areas, existing terminals and main international freight flows in Bosnia and Herzegovina[3]

[3] Map Background source: TENTec Map Viewers - https://webgate.ec.europa.eu/tentec-maps

The main urban areas in Bosnia and Herzegovina, according to the population above 50,000 inhabitants, are presented in Table 2.

Table 2 - Main cities in Bosnia and Herzegovina according to population and share of total population[4]

City	Population	Share of total RP population
Sarajevo	275,504	8.5%
Banja Luka	185,042	5.7%
Tuzla	110,979	3.4%
Zenica	110,663	3.4%
Bijeljina	107,715	3.3%
Mostar	105,797	3.3%
Prijedor	89,397	2.8%
Brčko	83,516	2.6%
Doboj	71,447	2.2%
Ilidža	66,730	2.1%
Cazin	66,149	2.0%
Zvornik	58,856	1.8%
Živinice	57,765	1.8%
Bihać	56,261	1.7%
Travnik	53,482	1.7%
Gradiška	51,727	1.6%

[4] Source: 2013 Census of Population in Bosnia and Herzegovina – Agency for Statisitcs of Bosnia and Herzegovina

Kosovo*

The most important industrial sectors in Kosovo are: mining and minerals, located in the surroundings of Pristina and Mitrovice; energy sector and coal mining located near Pristina; manufacturing - metal processing and construction materials in Pristina and Ferizaj areas; and food and beverage processing in Peje area. Construction activity is concentrated in the biggest cities Pristina, Prizren, Peje and Ferizaj, as well as infrastructure construction from Pristina towards North Macedonia and Albania. Agriculture and food production is also important for Kosovo, more intensively found in the eastern and southwestern parts of Kosovo.

As shown in the detailed analysis presented in Appendix I, the largest volumes of exports from Kosovo are related to groups of goods: Basic metals and products; Food and drinks; Coal and Non-metallic products and minerals. On the import direction, largest quantities are related to Non-metallic products and minerals; Coke and petroleum products; Food and drinks; Basic metals; Chemicals; and Agriculture products.

In terms of locations, it is essential to identify the key industrial zones, mining locations, logistics centers, and other production/ manufacturing facilities that generate flows of these significant product types.

Main mining activities in Kosovo are found in Pristina area (Drenas nickel mine, Novo Brdo with lead and zinc and Sibovc coal mine), Mitrovice area (Trepca mining of lead, zinc and silver), and Peje area where bauxite mining is located.

Metal industries are connected to mining, located in Pristina area (Drenas), and Mitrovice (Trepca). Also, significant metal processing is located in Ferizaj.

Main energy area is Pristina (Obiliq), where several blocks of Power Plant are located (Kosovo Energy Corporation).

Agriculture and food processing are concentrated in the areas of Peje, Pristina, Prizren and Ferizaj.

Logistics services are mainly located in the Pristina area.

There are numerous industrial zones in Kosovo, such as Drenas and Mitrovica business Parks, industrial zones Shtime, Suva Reka, Prizren, Vushtrri, Gnjilan, Ferizaj, Lipjan and other. Still, according to the research of publicly available information, the most important industrial areas in Kosovo are:

1. Industrial area Pristina

Location: Central Kosovo, surrounding of the capital city.

Key Sectors: Metal processing, Energy, construction materials, manufacturing.

Notable Companies: NewCo Ferronikeli (nickel production), KEK (Kosovo Energy Corporation), Bechtel-Enka (construction), Xella, Vatani (construction materials).

Description: Particularly known for its metal processing industry, construction materials, and energy sector. There are 5 industrial zones around the city, including 2 mining facilities.

* This designation is without prejudice to positions on status and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

2. Industrial area Mitrovica

Location: Northern Kosovo.

Key Sectors: Mining, metallurgy, metal processing.

Notable Companies: Trepça Mining Complex (mining and metallurgy), Mitroplast (manufacturing), Camel (food production).

Description: Beside the Trepca industrial complex, Mitrovica has 2 industrial parks, hosting a number of SMEs in various industries, wood and furniture, chemicals and other.

3. Industrial area Peje

Location: Western Kosovo.

Key Sectors: Food processing, beverage production, wood processing.

Notable Companies: Birra Peja (brewery), Devolli Group, Rugove (food and beverage), several small companies in wood processing and furniture.

Description: Peje is known for its food and beverage industries. The industrial zone also supports wood processing and manufacturing, including industry zones in nearby cities Klina and Gjakova.

4. Industrial area Ferizaj

Location: Southern Kosovo.

Key Sectors: Metal processing, furniture manufacturing, construction materials, food and beverage.

Notable Companies: IMK, Aldi Steel, eurometal (metal products) Elnor (furniture), Xella Kosovo, Sharrcem (construction materials), Balkan Drinks (beverages and packaging), CM Kosova (construction), K Cabinetry (furniture).

Description: Ferizaj area includes 4 industrial zones, including zones in Shtime, Babushan and Hani i Elezit.

5. Industrial area Prizren

Location: Southwestern Kosovo.

Key Sectors: Manufacturing, wood processing, food and beverage, construction materials, metal processing.

Notable Companies: Rizam Holding (construction materials), Ritupack (plastics), Celiku Plast (manufacturing, construction), Koshi Group (automotive), Nikel Inox, Jasin Metal, ARD Dekor (metal processing), Mix Produkt, Albad, Gerti Foods (food production), ArtaTex (textile).

Description: Prizren area includes several industrial development parks and zones, including zones in Rahovec and Suhareka.

Summarizing the analysis of freight flows, locations and characteristics of existing terminals and their connectivity with (and the locations of) main industrial areas presented in this Appendix, Figure 3 presents the actual situation and needs in terms of locations important for multimodality.

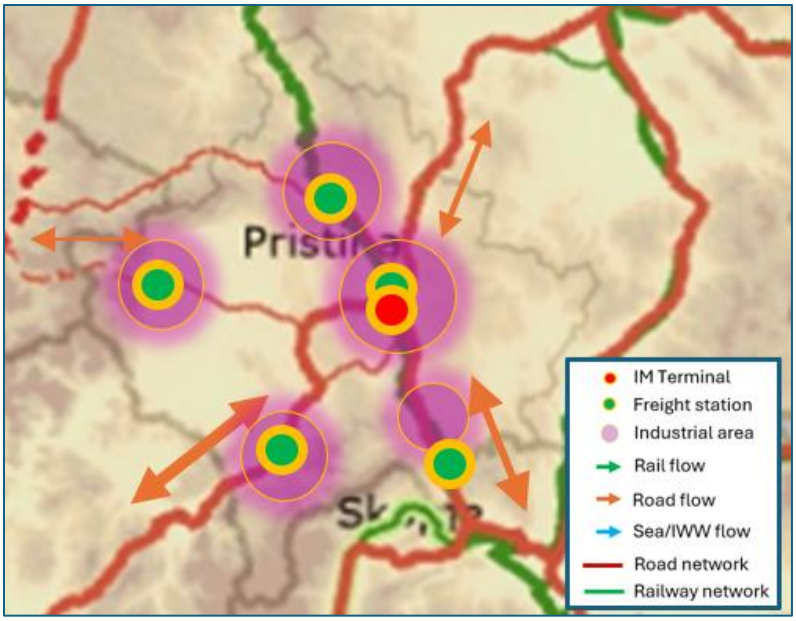

Figure 3 - Industrial areas, existing terminals and main international freight flows in Kosovo [5]

The main urban areas in Kosovo, with population above 50,000, are presented in Table 3.

Table 3 - Main cities in Kosovo according to population and share of total population[6]

City	Population	Share of total RP population
Pristina	198,897	11.3%
Prizren	177,781	10.1%
Ferizaj	108,610	6.2%
Peje	96,450	5.5%
Gjakova	94,556	5.4%
Gjilan	90,178	5.1%
Podujeva	88,499	5.0%
Mitrovica	84,235	4.8%
Vushtrri	69,870	4.0%
Suhareka	59,722	3.4%
Drenas	58,331	3.3%
Lipjan	57,605	3.3%
Rahovec	56,208	3.2%
Malisheva	54,613	3.1%
Skenderaj	50,858	2.9%

[5] Map Background source: TENTec Map Viewers - https://webgate.ec.europa.eu/tentec-maps
[6] Source: http://pop-stat.mashke.org/kosovo-census-ks.htm (Poulation Census 2011)

Montenegro

The most important industrial sectors in Montenegro are mining and quarrying, primarily found around Nikšić and Podgorica (bauxite) in central part of Montenegro, and Pljevlja (coal lignite, zinc and lead) in the north. The energy sector facilities are mostly located near the coal mining, with power plant in Pljevlja. The metal industry is based in Nikšić (steel) and Podgorica (aluminium) as well as metal processing located mostly in central and south Montenegro. Agriculture and food production are in the central part of the country, along Zeta Plain, and in the south part of the country, where wine and olive oil are the most important food processing areas. Tourism is one of the most important business activities in Montenegro, with facilities located mostly on the south and south-west, on the coast of Adriatic Sea. The biggest logistics center is Port of Bar.

As shown in the detailed analysis presented in Appendix I, the largest volumes of exports from Montenegro are related to groups of goods: Metal ores, mining products; Coal, lignite; and Wood and paper. And on the import direction, non-metallic products and minerals; food and drinks; and petroleum products are dominant.

In terms of locations, it is essential to identify the key industrial zones, mining locations, logistics centers, and other production/ manufacturing facilities that generate flows of these significant product types.

Main metal ores exploitation in Montenegro are mining in Brskovo near Mojkovac in the area of Bijelo Polje at the central-east part of the country (lead, zinc, copper, silver), mining in Pljevlja on the north (lead, zinc) and mining in Nikšić (bauxite) in the central part of Montenegro. Main coal lignite mining is in Pljevlja, on the northern part of Montenegro. Forest and wood industry is mainly concentrated in the northern part of the country, in the area of Bijelo Polje and nearby the cities of Berane, Mojkovac, Kolašin and further to Pljevlja and Nikšić.

Construction materials are distributed to coastal – southern and central part of Montenegro, where construction activities are intensive. Montenegro does not have significant cement factory (it is imported), while quarrying is located in Bijelo Polje area on the north, Podgorica-Nikšić area in central part and Budva-Tivat area in the coastal side of Montenegro.

Regarding oil and derivatives, the biggest warehouses of liquid fuels, with plans for further expansion, are located in the Port of Bar.

Main logistics facility in Montenegro is the Port of Bar, with high volume of goods, warehouses and logistics services provided by a number of domestic and foreign logistics providers. Another important logistics area is the capital city Podgorica, where the biggest consumer goods distribution companies are located.

There are numerous industrial zones in Montenegro, such as Nikšić, Bar, Podgorica, Bijelo Polje and Pljevlja, then in smallest coastal cities Kotor, Budva, Herceg Novi and Tivat and in continental cities Cetinje, Danilovgrad, Mojkovac, Berane, Kolašin and other. Still, according to the research of publicly available information, the most important industrial areas in Montenegro are:

1. Industrial area of Podgorica

Location: Central Montenegro, the capital city.

Key Sectors: Metal processing, Food processing, beverage production, construction materials, logistics.

Notable Companies: Uniprom KAP (metal processing), Plantaže (wine and beverages), Zetatrans (logistics), Bekom Co (Wood processing), Falcon Group (food production).

Description: Podgorica is the main industrial hub in Montenegro, with a diverse industrial activity focused on aluminium alloys and metal processing, wood processing, food and beverage production. Includes several industrial zones, including Danilovgrad (stone processing) and Tuzi (agriculture and food) in its surroundings.

2. Industrial area Niksic

Location: Central-western Montenegro.

Key Sectors: Steel production, metal processing, mining, energy, beverages.

Notable Companies: Tosçelik Nikšić Steel, Uniprom metals, Nikšić mining (mining and metal processing), Niksic brewery (beverages).

Description: Nikšić is a traditional industrial center in Montenegro, particularly known for its steel production and metal processing industries. The industrial area also supports mining, food production, agriculture and forestry. It includes 3 industrial zones, including the nearby zone in Budoš.

3. Industrial area Bar

Location: Coastal Montenegro, Adriatic Sea.

Key Sectors: Logistics, food processing, tourism.

Notable Companies: Port of Bar, Port of Adria (logistics and shipping), Jugopetrol (oil and gas), Jadroagent (logistics), Bar Olive Oil Factory (food).

Description: Bar's industrial zone benefits from its strategic coastal location and the presence of Montenegro's main port. The area is focused on logistics, shipping and trade, with additional activities in food processing and agriculture. The area also supports fishing and fish processing and smaller shipbuilding. Since the Port of Bar is a biggest logistics center in Montenegro, located in coastal area where tourism is dominant economic activity, the wider catchment area may include the smaller industries located in other coastal cities (e.g. Tivat, Kotor, Ulcinj).

4. Industrial Zone Bijelo Polje

Location: Northern Montenegro, near the Serbian border.

Key Sectors: Wood processing, food processing, textiles, manufacturing, trade.

Notable Companies: Franca (meat processing), Pelengic Trade (wood processing).

Description: Bijelo Polje is known for its wood processing and food processing industries. The zone also supports textile manufacturing and other light industries, benefiting from the region's natural resources and agricultural base as well as the proximity to the Serbian border. Bijelo Polje area also includes Mojkovac, Berane and Kolašin, where forestry and wood processing and agriculture prevail.

5. Industrial Zone Pljevlja

Location: Northern Montenegro, near the Serbian border.

Key Sectors: Energy production, mining, wood processing, agriculture.

Notable Companies: Pljevlja Thermal Power Plant, Rudnik Uglja Pljevlja (coal mining), Vektra Jakić (wood processing).

Description: Pljevlja is a key industrial zone for energy production in Montenegro, with significant coal mining activities and the Pljevlja Thermal Power Plant. The zone also supports wood processing and agriculture, playing a vital role in the country's energy and industrial sectors.

Summarizing the analysis of freight flows, locations and characteristics of existing terminals and their connectivity with (and the locations of) main industrial areas presented in this Appendix, Figure 4 presents the actual situation and needs in terms of locations important for multimodality.

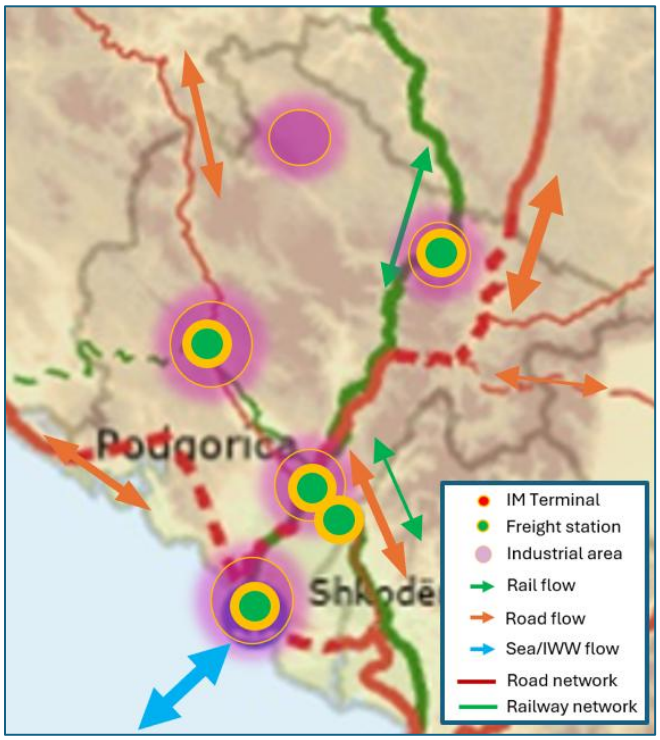

Figure 4 - Industrial areas, existing terminals and main international freight flows in Montenegro[7]

[7] Map Background source: TENTec Map Viewers - https://webgate.ec.europa.eu/tentec-maps

The main urban areas in Montenegro, with population above 10,000 inhabitants, are presented in Table 4.

Table 4 - Main cities in Montenegro according to population and share of total population[8]

City	Population	Share of total RP population
Podgorica	180,186	28.5%
Nikšić	66,725	10.5%
Bar	46,171	7.3%
Bijelo Polje	39,710	6.3%
Herceg Novi	31,471	4.9%
Budva	26,667	4.2%
Rožaje	25,247	4.0%
Berane	25,182	4.0%
Pljevlja	24,542	3.9%
Kotor	21,916	3.5%
Ulcinj	21,395	3.4%
Danilovgrad	18,832	3.0%
Tivat	16,340	2.6%
Zeta	16,206	2.6%
Cetinje	14,465	2.3%
Tuzi	13,142	2.1%
Plav	10,378	1.6%

[8] Source: MONSTAT - Institute for statistics of Montenegro, Population Census 2023

North Macedonia

The most important industrial sectors in North Macedonia are the manufacturing and automotive industries, supported by numerous international companies, the energy sector supporting the electricity and oil industry, mining and metal processing, Agriculture and food processing and Textile.

As shown in the detailed analysis presented in Appendix I, the largest volumes of exports from North Macedonia are related to groups of goods: Basic metals and metal products except machinery; Metal ores and mining products; Non-metallic products and minerals; and Chemical products, fibers, rubber and plastics. On the import direction, the main quantities imported are Coal and crude oil; Coke and petroleum products; Basic metals; Food and drinks; and Non-metallic products and minerals.

In terms of locations, it is essential to identify the key industrial zones, mining locations, logistics centers, and other production/ manufacturing facilities that generate flows of these significant product types.

Metal mining in North Macedonia is mostly found in eastern part of the country, where Sasa (Zinc and Lead), Zletovo (Zinc and Lead), Bichim and Borov Dol (Copper) mines are located.

Main coal mining is located near Bitola in the south of North Macedonia, supplying the thermal power plant with lignite.

Quarrying in North Macedonia is mostly found in its southwestern part, near the city of Prilep, where marble is exploited, while stone and limestone are mostly found in the Skopje area.

The largest metal production sites in North Macedonia are in Skopje (Maksteel, Liberty) and near Dojran Lake (Dojran Steel) on the southeast of the country, as well as Nikel production in Kavadarci on the central-southern part of North Macedonia.

The oil and derivatives industry is based mostly in Skopje, where old refinery is located, nowadays serving as storage and distribution hub, connected with a pipeline to the Hellenic Petroleum refinery in Thessaloniki.

The chemical industry is mainly based in Skopje and the surrounding area.

Automotive industry is one of the largest economic contributors in North Macedonia. Over 50 companies operate in this sector, with the most significant manufacturing taking place in Bitola, Skopje, Tetovo, Prilep and Kavadarci.

Agriculture and food production is mostly concentrated in the southern, southwestern and eastern parts of the country as well as along the Vardar valley in central part of North Macedonia.

North Macedonia has established 14 Technological-Industrial Development Zones (TIDZs) to attract investments in various sectors. Currently, 8 of them are active, while the remaining are under development. Three of them are located in Skopje, then in Tetovo in the north, Stip in the east, Prilep and Struga in the southwest, and Strumica in the southeast. Most of them are involved in automotive and electronics industries. In addition, there are about 40 locations with active industry, agriculture,

manufacturing and other business activities. Still, according to the research of publicly available information, the most important industrial areas in North Macedonia are:

1. Industrial area of Skopje

Location: Near Skopje, the capital city.

Key Sectors: Automotive industry, electronics, metal processing, manufacturing, logistics.

Notable Companies: Johnson Matthey, VDL Van Hool, Kromberg & Schubert (automotive), Maksteel, Liberty (metal processing), Titan Usje (construction materials), Alkaloid (pharmaceuticals, chemistry), Skopje brewery (beverages), Zito Luks, Skopje dairy, Frikom (food production).

Description: The most significant industrial area in North Macedonia, focusing nowadays on high-tech industries such as automotive parts, electronics, and manufacturing. The Skopje area has 3 Technological-Industrial-Development Zones established as well as a number of industries outside of TIDZs, including the surrounding area of the City of Skopje.

2. Industrial area Bitola

Location: Southwestern part of North Macedonia.

Key Sectors: Energy, automotive, food processing, manufacturing, agriculture, quarrying, textile.

Notable Companies: REK Bitola (energy), Kromberg & Schubert (automotive), Bimilk, Nick's (food), ERI Corporation (machinery).

Description: Bitola is one of the key industrial areas in North Macedonia. The area includes industrial facilities Bitola, Suvodol mining and power plant, and industrial zone Zhabeni, where Kromberg & Schubert is located and several international companies are developing their industrial sites for wood processing, machinery, food processing and metal processing. Industrial zone Zhabeni is important for Bitola area since the railway station in Bitola has no possibility of extension, while situation is different with Zhabeni. Also, future possible development of railway operations to/from Greece from Bitola can create alternative connection to Thessaloniki port.

3. Industrial area Prilep

Location: Southern part of North Macedonia.

Key Sectors: Automotive, Tobacco and food processing, beverages, metal processing, quarrying.

Notable Companies: JV Philip Morris Tutunski Kombinat Prilep (tobacco), Vitaminka (food processing), WIK Macedonia (automotive), Mermeren Kombinat (marble), Prilep Brewery (beverages), Comfy Angel (textile).

Description: Prilep's industrial area is known for its tobacco and food processing industries and marble production. There are 3 industrial zones in Prilep, including the Technical-Industrial Development free zone.

4. Industrial area Veles-Kavadarci

Location: Central part of North Macedonia.

Key Sectors: Metal processing, automotive, agriculture and food processing.

Notable Companies: Dräxlmaier Group, Marquardt Macedonia (automotive), Euronickel Industries (metal processing), Tikveš Winery (beverages), Leov Company (electric appliances), Veteks (textile), Joopune (textile and metal products).

Description: The central area along the Vardar valley has diverse industrial and agricultural production, historically known for agriculture and wine production, nickel excavation (ex. Feni

industries) and textile production. Nowadays, the growing automotive industry is taking advantage. The industrial area includes zones in Veles, Kavadarci and Negotino.

5. Industrial area Tetovo

Location: Northwestern part of North Macedonia.

Key Sectors: Automotive, textile, metal processing, agriculture and food processing.

Notable Companies: Lear Corporation (automotive), Renova (construction materials), Teteks (textile).

Description: The area is focused on automotive parts, with major international companies operating there. Includes the industrial zone of Gostivar as well as Technological-Industrial development Zone Tetovo.

6. Industrial area Strumica-Gevgelija

Location: Southeast part of North Macedonia.

Key Sectors: Agriculture, food production, textile, automotive.

Notable Companies: Grozd (beverages), Edinstvo (textile), HRB Fruit, Z-Plast (food), Geplastik (plastics), Adient (automotive).

Description: Strumica-Gevgelija area is mostly oriented to agriculture and food production and packaging, developing automotive and other industry in TID Zone Strumica. TIDZ in Gevgelija is under development. Main advantage of the area is the proximity to the Bulgarian and the Greek borders.

7. Industrial Zone Kumanovo

Location: Northern part of North Macedonia.

Key Sectors: Metal processing, automotive, textile, agriculture and food processing.

Notable Companies: FZC 11 October, Steel Con, Kentaur Iskra (metal processing), Draexlmaier Group (automotive), EuroSolid (textile), Palplast (packaging).

Description: Kumanovo is a smaller industrial site located in the northern part of the country, on the junction of railway Corridor X and Corridor VIII.

8. Industrial area Štip

Location: Eastern part of North Macedonia.

Key Sectors: Textiles, automotive, metal processing, food processing.

Notable Companies: Aktiva, Ruen Inox, Adient (metal processing, automotive), Astibo FG, Albatros, Technical textiles (textiles), Makprogres (food production), Paper mill Kochani (paper production), Buchim Radovis (copper mining).

Description: The Štip area has intensive industrial development in recent years, known for its textile industry and agriculture and food processing, but various sectors are under development, such as automotive and metal processing. Štip area includes Technological-Industrial development zone Štip and the industrial zones in Kochani and Vinica, as well as Radoviš.

9. Industrial area Kičevo

Location: Western part of North Macedonia.

Key Sectors: Automotive parts, agriculture.

Notable Companies: Joyson Safety Systems, Johnson Controls (automotive parts).

Description: Smaller but an emerging industrial hub focused on automotive parts. The area is located in the western part of the country, crossed by Corridor VIII.

Summarizing the analysis of freight flows, locations and characteristics of existing terminals and their connectivity with (and the locations of) main industrial areas, Figure 5 presents the actual situation and needs in terms of locations important for multimodality.

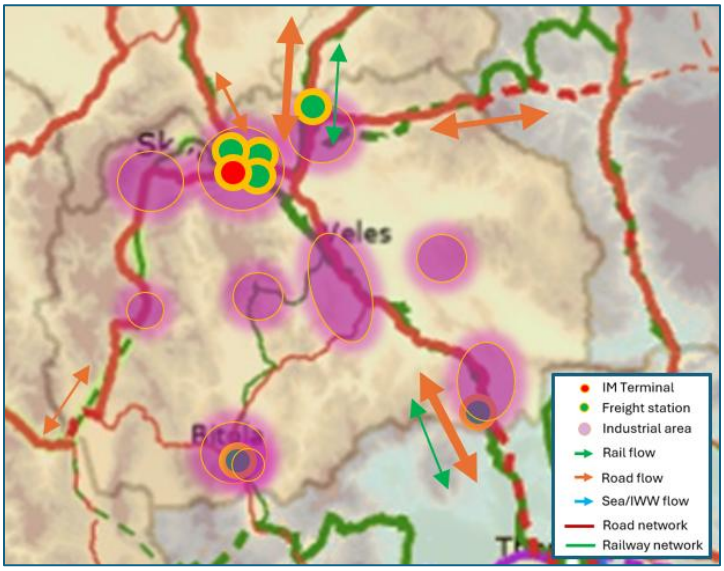

Figure 5 - Industrial areas, existing terminals and main international freight flows in North Macedonia[9]

The main urban areas in North Macedonia, with population above 20,000 inhabitants, are presented in Table 5.

Table 5 - Main cities in North Macedonia according to population and share of total population[10]

City	Population	Share of total RP population
Skopje	467,257	25.4%
Kunanovo	98,104	5.3%
Bitola	85,164	4.6%
Tetovo	84,770	4.6%
Gostivar	59,770	3.3%
Ohrid	51,428	2.8%
Strumica	49,995	2.7%
Veles	48,463	2.6%
Štip	44,866	2.4%
Kičevo	39,669	2.2%
Kavadarci	35,733	1.9%
Kočani	31,602	1.7%

[9] Map Background source: TENTec Map Viewers - https://webgate.ec.europa.eu/tentec-maps

[10] Source: Makstat - State statistical Office, Census of Population 2021

Serbia

The most important industrial sectors in Serbia are Metallurgy and Energy sector supporting electricity and oil industry, mining and metal processing, Automotive industry, Agriculture and food processing, Chemical industry and Textile industry.

As shown in the detailed analysis presented in Appendix I, the largest volumes of exports from Serbia are related to groups of goods: Food and drinks; Agriculture; Chemicals, fibers, rubber and plastic; Metal ores and mining products; Basic metals and products; Non-metallic products and minerals; Wood and paper; Coke and petroleum products; and Machinery, equipment and electronics. On the import side, the most significant groups of goods are Coal, lignite, crude oil & gas; Metal ores and mining products; Chemicals; Basic metals; Non-metallic products and minerals; Coke and petroleum products; Wood and paper; Food and drinks; Agriculture products; and Machinery and equipment.

In terms of locations, it is essential to identify the key industrial zones, mining, logistics centers, and other production/ manufacturing facilities that generate flows of these significant product types.

Metal ores are mainly mined in eastern Serbia (Bor and Majdanpek), western Serbia (the Veliki Majdan and Rudnik mines), and southern Serbia (Lece, Grot, and Podvirovi), where copper, gold, lead, silver, and zinc ores are prevalent.

The largest lignite coal mines in Serbia are the Kolubara mining basin in central Serbia and Kostolac in the east. These mines supply coal to the largest thermal power plants in Obrenovac and Kostolac. In addition, brown coal mines are in eastern Serbia, in Resavica.

When it comes to metallurgy, the largest plants are mostly concentrated in Smederevo (the Smederevo steel plant) in the central part of the country and copper production in Bor, in eastern Serbia.

The automotive industry is particularly significant in Serbia. The automobile factory in Kragujevac, along with a large number of automotive parts manufacturing facilities around Novi Sad, Belgrade, western and southeastern Serbia, and other areas, hold an important place in Serbia's industry. The production of automobile tires in Kruševac, Pirot, Zrenjanin and the surroundings of Novi Sad and Belgrade stand out in particular, where large international companies have their plants.

Non-metallic and mineral mining is a significant sector, contributing to various industries such as construction, ceramics, and glass production. Limestone for cement and construction materials is mined in Beočin, Popovac and Kosjerić, in central, western and northern parts of Serbia. Clay mining and production of bricks and tiles is concentrated in northern part of Serbia, as well as quartz sand for glass production. Marble and granite quarries are situated in the regions of Aranđelovac (Venčac) and Vranje in central and south Serbia. Gravel and sand are mostly extracted from the bottom of the Danube.

Oil refinery and petrochemical industry are in Pancevo, near Belgrade. Fertilizer production is in Šabac (west Serbia) and Prahovo (east Serbia). Pharmaceutical industry is mostly found in Belgrade area, while biggest production of household chemicals is located in Krusevac, in central Serbia.

Wood processing and furniture production are spread in central, northern, and eastern Serbia, with a large number of companies and manufacturers.

Agriculture production in Serbia is most intensive in northern part of the country in terms of cereals production, while other agriculture products and food processing is represented in all parts of the country.

There are 374 registered industrial zones in Serbia, located in 133 municipalities (out of a total of 168). There are 15 free zones, evenly distributed geographically, where mainly international companies operate, benefiting from tax and Customs incentives.

The highest concentration of industrial facilities is found around the largest cities, such as Belgrade, Novi Sad, Niš, Kragujevac, Kruševac, and others. Mines and energy plants, along with agricultural production in the northern part of Serbia, are significant for generating flows.

Still, according to the research of publicly available information, the most important industrial areas in Serbia are:

1. Industrial area Belgrade

Location: Near Belgrade.

Notable Companies: HBIS, Mei Ta Europe, Ball Packaging (metal processing), Robert Bosch, Brose, ZF, Rivian, Ikarbus, IGB Automotive, Toyo Tire (automotive), Coca-Cola HBC (beverages), Hemofarm (pharmacy) Imlek (Diary), Nelt Co (food and logistics), Milsped (logistics), Nestlé, Al-Dahra, Atlantic Group, Frikom (food), Tarkett (wood), Comtrade (electronics), Delta Holding (varios industries).

Description: Biggest economic and industrial area in the region. Various industries, services and logistics hub. Includes number of industrial zones in Belgrade and nearby cities and suburban areas belonging to Belgrade administrative region. Also, one of the largest industries in Serbia, the steel mill in Smederevo, is included in this area due to its proximity, even it is out of administrative area of Belgrade. The same applies for Pancevo and Idjija.

2. Industrial area Novi Sad

Location: northern Serbia, Novi Sad.

Key Sectors: Agriculture and food processing, automotive, oil industry, construction materials.

Notable Companies: Nidec, Lear, Continental, Aptiv (automotive) Schneider Electric (R&D), NIS Petroleum Industry of Serbia (oil refinery), Lafarge, Nexe Group (construction materials), Matijevic, Neoplanta, Sunoko, Sojaprotein (food processing), Carlsberg (brewery), BMTS Technology, Novkabel (electric materials), and many others.

Description: Novi Sad, as the second-largest city in Serbia, has a diverse industrial base. The city is a growing logistics and manufacturing hub, with a significant presence of tech companies, as well as a strong manufacturing sector.

3. Industrial area Niš

Location: Southern Serbia.

Key Sectors: Electronics, automotive, machinery, textiles, food and tobacco.

Notable Companies: Tigar Tyres, Johnson Electric, Yura Corporation, Leoni Wiring Systems (automotive), Philip Morris (tobacco), Integrated Micro-Electronics, Tridonic, Shinwon (electronic), Grammer, Benetton, Aster (textile), Milk House (diary), Vossloh MIN (metal processing), Jugo-impex (recycling).

Description: Niš is a traditional industrial center with a strong legacy in electronics and machinery. In recent years, it has attracted significant investments in the automotive and electronics sectors. This area includes the industrial zones in City of Niš as well as industries located in nearby cities such as Leskovac, Prokuplje and others.

4. Industrial area Ruma – Sremska Mitrovica

Location: northwestern Serbia, near Croatian border

Key Sectors: Automotive, construction materials, metal processing, logistics, electronics, agriculture and food processing.

Notable Companies: Hutchinson, Albon, IGB (automotive), Metalfer Steel Mill, Technosteel, Alumil (metal processing), Eaton Corporation, Modine, Coficab, Grundfos (electronic and machinery).

Description: The area is known for its automotive industry, metal production, food processing, and agriculture.

5. Industrial area Kragujevac

Location: Central Serbia.

Key Sectors: Automotive, electronics, wood processing, agriculture and food, construction materials.

Notable Companies: Yura Corporation, Stelantis FCA, Siemens, Yanfeng, Aunde, Wacker Neuson (automotive), Peštan, Moretto, Stublina, AMM Manufacturing, Flex (metal processing), Kronospan, Forma Ideale (wood and furniture), Moravcem (construction materials) Meggle, Yuhor (food), Vibac (chemistry).

Description: The area is known for its automotive and machinery industry. It includes several industrial zones, in Kragujevac and the surrounding smaller cities.

6. Industrial Zone Subotica

Location: Northern Serbia, near the Hungarian border.

Key Sectors: Automotive, agriculture and food processing, metal and machinery, textile.

Notable Companies: Continental, Contitech, Siemens, Boysen Abgassysteme (automotive) Norma Group, Tetravagonka (metal processing) Amatek, Flander (electric components), Gebi, Patent-Co, Perutnina, Ravnica, AL Rawafed (agriculture and food), Gordon (textile).

Description: Subotica's industrial zone has a strong presence of multinational companies, particularly in the automotive and metalworking sectors. Also, it includes food processing and agriculture industries.

7. Industrial Zone Zrenjanin

Location: Northern Serbia, near Romanian border.

Key Sectors: Food processing, automotive, electrics.

Notable Companies: Linglong Tire, Drexler Mayer (automotive) Dijamant (edible oil), Essex Solutions (electric components), number of companies in agriculture and food production.

Description: Zrenjanin’s industrial zone is diverse, developing the automotive and electric industry recently.

8. Industrial area Krusevac

Location: Central Serbia

Key sectors: Chemistry, Automotive, Metal production, food processing.

Notable Companies: Goodyear, Kromberg & Schuber, 14. Oktobar (automotive), Henkel, Trayal, Valvoline (chemistry and rubber), Rubin (beverages).

Description: Known for its automotive and chemistry industry, this area includes 2 industrial zones in Krusevac and several smaller industrial zones in the surrounding cities of Brus, Ćićevac, Trstenik.

9. Industrial area Čačak-Požega-Užice

Location: Western Serbia

Key sectors: Automotive, Metal processing, Food production, defence.

Notable Companies: Coper mill Sevojno, Impal Seval, Alpos, Potens, Inmold, Unipromet, Metalac (metal production and processing), Vorwerk Autotec/Drivetec (automotive), Tetra Pak (packaging), Titan (construction materials), Sirogojno, Zlatiborac (food processing), MB Namenska, Prvi partizan, Sloboda (defence), Gorenje (Electronics), Kansai Helios (chemistry), Matis (furniture).

Description: The area includes 3 cities with a number of industrial zones, and various industries active in metal production and processing, automotive, defence, agriculture and food production.

10. Industrial area Kraljevo

Location: Central Serbia.

Key Sectors: Metal processing, Automotive.

Notable Companies: Belt Ratina, Elektromontaža, Tehnograd, Radijator (metal processing), Leoni Wiring Systems (automotive), Magnohrom (electric components and heaters).

Description: Smaller industrial area, located at the crossroad of important transport corridors. Development of automotive industry.

11. Industrial area Pirot

Location: Eastern Serbia

Key sectors: Automotive.

Notable Companies: Tigar Tyres (Michelin).

Description: Tigar Tires as part of the Michelin group is leading the industry of Pirot, located within free zone of Pirot. Traditionally, the area is known for carpet production and food production, where a large number of smaller companies is active. It also includes industrial zones in the nearby cities of Babusnica and Dimitrovgrad, at the border with Bulgaria.

Generating significant quantities of bulk goods to be transported, two more zones are identified as important, related to mining activities: Bor (copper mining) and Vreoci (coal mining and power plant).

12. Industrial area Bor

Location: Eastern Serbia, near Romanian and Bulgarian borders
Key sectors: Mining, Metal production, Chemical products.
Notable Companies: ZiJin Mining/Copper (copper mining and production) Elixir Prahovo (chemical products), Heineken Zajecar (brewery).
Description: The biggest copper, gold, zinc and silver mining and copper production in Serbia. The area also includes the nearby cities of Prahovo (where chemical industry and port are located) and Zaječar.

13. Industrial zone Vreoci (mining basin "Kolubara")

Location: Central Serbia
Key sectors: Mining, Energy.
Notable Companies: Power Plant and mining (EPS), (coal mining), Xella (construction materials).
Description: One of the biggest coal mining areas, biggest power plant in Serbia. Generates the significant flows of goods (Coal, lignite), especially in import of lignite in recent years.

Summarizing the analysis of freight flows, locations and characteristics of existing terminals and their connectivity with (and the locations of) main industrial areas presented in this Appendix, Figure 6 presents the actual situation and needs in terms of locations important for multimodality.

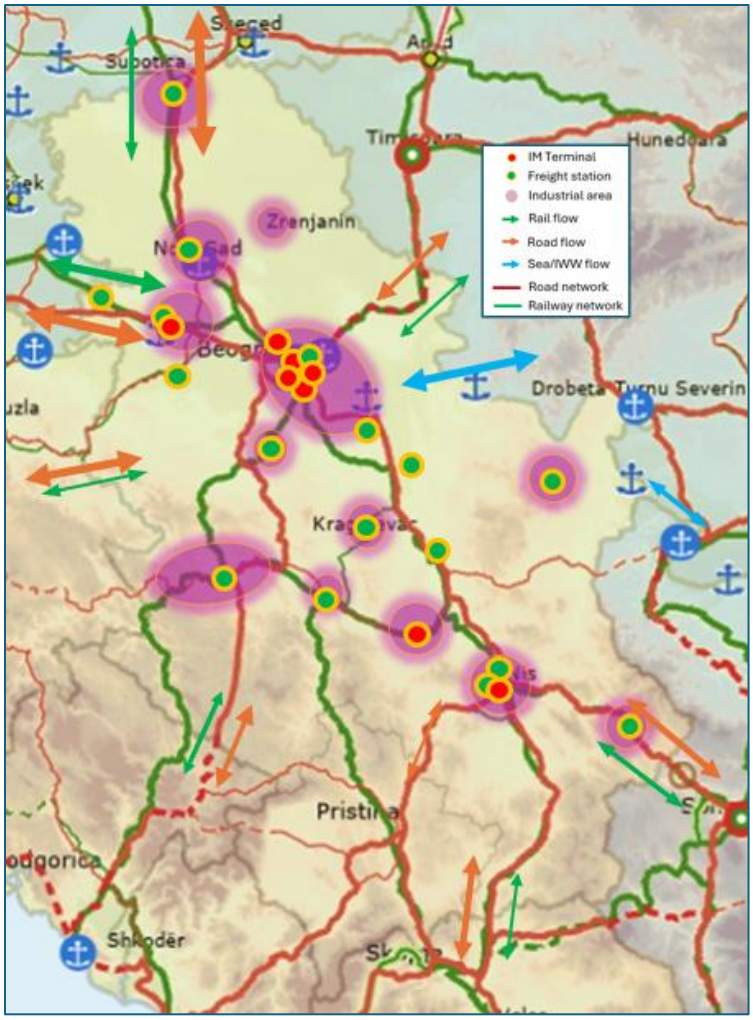

Figure 6 - Industrial areas, existing terminals and main international freight flows in Serbia[11]

The main urban areas in Serbia, with population above 60,000 inhabitants, are listed in Table 6.

[11] Map Background source: TENTec Map Viewers - https://webgate.ec.europa.eu/tentec-maps

Table 6 - Main cities in Serbia according to population and share of total population[12]

City	Population	Share of total RP population
Belgrade	1,681,405	24.9%
Novi Sad	368,967	5.5%
Niš	249,501	3.7%
Kragujevac	171,186	2.5%
Subotica	123,952	1.8%
Leskovac	123,950	1.8%
Pančevo	115,454	1.7%
Kruševac	113,582	1.7%
Kraljevo	110,196	1.6%
Novi Pazar	106,720	1.6%
Zrenjanin	105,772	1.6%
Čačak	105,612	1.6%
Šabac	105,432	1.6%
Smederevo	97,930	1.4%
Valjevo	82,169	1.2%
Vranje	74,381	1.1%
Sremska Mitrovica	72,580	1.1%
Loznica	72,062	1.1%
Sombor	70,818	1.0%
Užice	69,997	1.0%
Požarevac	68,648	1.0%
Jagodina	64,644	1.0%

[12] 2022 Census of Population, Households and Dwellings – Statistical Office of the Republic of Serbia

Appendix V – Action Plans for the development of a Multimodal Freight Terminals network and last-mile connectivity per RP

Action plan for the development of a Multimodal Freight Terminals network and last-mile connectivity in Albania

Group of Actions and Measures 1: Construction/ Reconstruction of intermodal/ multimodal (Road-Rail) terminals and purchase of related equipment			
Institution responsible for coordination and reporting: Ministry responsible for transport			
Implementation period: 2025–2030			Type: Construction and procurement of relevant equipment
Name of activity:	Estimate of Investment Cost (million €)	Deadline for completion	Remarks
Construction of new terminal in or adjacent to the new Porto Romano in Durres – Tirana area	n.a.*	2030	The ongoing project "Development of the new port of Durres in Porto Romano, relocating the operations of the existing terminal and building in the 1st phase of development the new Container Terminal and the new rail track into the new port" aims at the consolidation of industrial activity and establishment of a cargo facility that will improve trade throughout the region. The foreseen capacity of the Container Terminal of the new port will be not less than 500,000 TEU. Provision of facilities and equipment and road-rail connectivity within and out of the terminal for full compliance with the provisions of the TEN-T Regulation for multimodal freight terminals. *The investment cost for the new terminal is included in the total investment cost for the port development.

Group of Actions and Measures 2: Network improvements (bottlenecks and missing links) for ensuring the last-mile multimodal connectivity to existing terminals and intermodal transport operations			
Institution responsible for coordination and reporting: Ministry responsible for transport			
Implementation period: 2025–2027			Type: Construction
Name of activity:	Estimate of Investment Cost (million €)	Deadline for completion	Remarks
Reconstruction of railway bridge over the Ishem river	n.a.*	2027	Reconstruction of bridge damaged in earthquake in 2019 is necessary to reconnect the northern part of the Albania to the central and southern parts, enabling rail freight flows between Montenegro and Durres-Tirana and Elbasan areas. *It is assumed that the investment cost for the Isham river bridge reconstruction is included in the total investment cost of the secured project for rehabilitation or railway line Vore – Hani I Hotit.

Group of Actions and Measures 3: Introduction of ICT and digital solutions to improve multimodality			
Institution responsible for coordination and reporting: Ministry responsible for transport in each RP			
Implementation period: 2025–2030		Measure type: Deployment	
Regulations to be adopted for the implementation of the measures: eFTI Regulation			
Name of activity:	Cost estimate (million €)	Deadline for completion	Remarks
Deployment of solutions for eFTI implementation by all RPs	17.5 (in total for all RPs)	2030	Deployment of e-freight in the WB region according to the Action Plan developed in the study "Deployment of e-freight in the Western Balkans and implementation of the Regulation (EU) 2020/1056 on electronic freight transport Information". This would be a significant step forward in the digital transformation of freight transport, including multimodal freight, and offers important benefits for both operators and authorities, such as: reduced administrative costs in transport and logistics; improved overall efficiency of logistics chains; and more efficient enforcement of freight transport rules across the EU.
Deployment of selected IT applications along main Corridors and Routes in the region (Multimodal Digitalisation Project) by all RPs	8.12 (in total for all RPs)	2030	Deployment of - Solution for match making and ordering for rail cargo (Rail-Flow or similar), - IT platform for stakeholders networking (IMSLOT or similar) - Multimodal Transportation Management Systems (Transport Management System for terminals) on selected Corridors and Routes in each RP, as follows: ALB: Corridor VIII, BIH: Corridor Vc, KOS: Route 10 (Corridor X link from Pristina to Hani i Elezit), MNE: Route 4, MKD: Corridor X and Corridor VIII, SRB: Corridor X and Route 4. Deployment should start from already functional Corridors and Routes (Corridors Vc, X and Routes 4, 6) and continue with Corridor VIII once missing links are constructed.

Other measures for the development of multimodality in Albania

It is considered that these measures below would contribute to faster development of multimodality in Albania and the WB region (for more details see Chapter 7.1):

1. Harmonization with the provisions of the Combined Transport Directive 92/106/EEC.
2. Definition of the activity of intermodal transport as an economic activity of special interest.
3. Improvement and procurement of railway rolling stock.
4. Facilitation of railway crossing points, through improvement and introduction of joint border/ common crossing points.
5. Improvement of education, cooperation with universities, professional schools and associations in order to establish qualified human capital able to contribute to the improvement of intermodal/multimodal transport at operational and strategic level.

Action plan for the development of a Multimodal Freight Terminals network and last-mile connectivity in Bosnia and Herzegovina

Group of Actions and Measures 1: Construction/ Reconstruction of intermodal/ multimodal (Road-Rail) terminals and purchase of related equipment			
Institution responsible for coordination and reporting: Ministry responsible for transport			
Implementation period: 2025–2030			Type: Construction and procurement of relevant equipment
Name of activity:	Estimate of Investment Cost (million €)	Deadline for completion	Remarks
Construction of Intermodal terminal Sarajevo in Rajlovac	20	2030	The project includes the preparation of the necessary studies and the reconstruction of the station for multimodal/ intermodal terminal operations and improvement of capacities, facilities and equipment and road and rail connectivity within and out of the terminal according to the provisions of the TEN-T Regulation for multimodal freight terminals. Estimated annual capacity: 80,000 TEU.
Construction of Intermodal terminal in Doboj	15	2030	The project includes the preparation of the necessary studies for decision on exact location of the terminal and the construction of the new terminal for multimodal/intermodal operations, construction of facilities and road and rail connectivity within and out of the terminal, and procurement of equipment, for full compliance with the provisions of the TEN-T Regulation for multimodal freight terminals. Estimated annual capacity: 50,000 TEU.

Group of Actions and Measures 2: Network improvements (bottlenecks and missing links) for ensuring the last-mile multimodal connectivity to existing terminals and intermodal transport operations			
Institution responsible for coordination and reporting: Ministry responsible for transport			
Implementation period: 2025–2027			Type: Construction
Name of activity:	Estimate of Investment Cost (million €)	Deadline for completion	Remarks
Reconstruction of the railway tunnel “Ivan” at Sarajevo-Bradina section of Corridor Vc	n.a.*	2027	The reconstruction of the 3.2 km long tunnel is aiming to enable safe and efficient transport of large intermodal units such as containers, swap-bodies and semitrailers by railway. This reconstruction is a part of the secured and ongoing project of rehabilitation of railway line Visoko-Mostar. Resolving the Tunnel Ivan bottleneck even before the entire project completion would enable transport of intermodal units. *It is assumed that the investment cost for the Tunnel reconstruction is included in the total investment cost of the secured project for rehabilitation or railway line Visoko-Mostar (Corridor Vc).
Reconstruction of damaged railway section in Jablanica area (Donja Jablanica-Grabovica section)	2.5	2025	Urgent reconstruction of damaged railway section caused by floods and landslides in 2024. This event caused that railway traffic in south part of Corridor Vc from central Bosnia and Herzegovina to Port of Ploce is completely stopped.

Name of activity:	Estimate of Investment Cost (million €)	Deadline for completion	Remarks
Improvement of road last mile connection of existing container terminal at Sarajevo freight railway station	3	2025	Sarajevo freight station is currently the only intermodal terminal in central Bosnia and Herzegovina, facing very difficult access for trucks, as well as their movement within the terminal. Providing better conditions would facilitate intermodal transport operations, until the realization of the new terminal planned at the Rajlovac location.
Construction of last mile railway connection of Port of Brčko	n.a.*	2025	Connecting the Port of Brčko to the railway network with a new industrial track represents one of the important phases of the modernization of the port, which will enable an increase in the port's capacity and a larger volume, especially of intermodal transport in the terminal. *It is assumed that the investment cost for the construction of new railway connection is included in the total investment cost of the ongoing project of revitalization of the port, funded through EBRD loan and EU grant.

Group of Actions and Measures 3: Introduction of ICT and digital solutions to improve multimodality			
Institution responsible for coordination and reporting: Ministry responsible for transport in each RP			
Implementation period: 2025–2030		Measure type: Deployment	
Regulations to be adopted for the implementation of the measures: eFTI Regulation			
Name of activity:	Cost estimate (million €)	Deadline for completion	Remarks
Deployment of solutions for eFTI implementation by all RPs	17.5 (in total for all RPs)	2030	Deployment of e-freight in the WB region according to the Action Plan developed in the study "Deployment of e-freight in the Western Balkans and implementation of the Regulation (EU) 2020/1056 on electronic freight transport Information". This would be a significant step forward in the digital transformation of freight transport, including multimodal freight, and offers important benefits for both operators and authorities, such as: reduced administrative costs in transport and logistics; improved overall efficiency of logistics chains; and more efficient enforcement of freight transport rules across the EU.
Deployment of selected IT applications along main Corridors and Routes in the region (Multimodal Digitalisation Project) by all RPs	8.12 (in total for all RPs)	2030	Deployment of - Solution for match making and ordering for rail cargo (Rail-Flow or similar), - IT platform for stakeholders networking (IMSLOT or similar) - Multimodal Transportation Management Systems (Transport Management System for terminals) on selected Corridors and Routes in each RP, as follows: ALB: Corridor VIII, BIH: Corridor Vc, KOS: Route 10 (Corridor X link from Pristina to Hani i Elezit), MNE: Route 4, MKD: Corridor X and Corridor VIII, SRB: Corridor X and Route 4. Deployment should start from already functional Corridors and Routes (Corridors Vc, X and Routes 4, 6) and continue with Corridor VIII once missing links are constructed.

Other measures for the development of multimodality in Bosnia and Herzegovina

It is considered that these measures below would contribute to faster development of multimodality in Bosnia and Herzegovina and the WB region (for more details see Chapter 7.1):

1. Harmonization with the provisions of the Combined Transport Directive 92/106/EEC.
2. Harmonization of the standards and rules on Customs treatment of intermodal units in international transport.
3. Definition of the activity of intermodal transport as an economic activity of special interest.
4. Improvement and procurement of railway rolling stock.
5. Facilitation of railway crossing points, through improvement and introduction of joint border/ common crossing points.
6. Improvement of education, cooperation with universities, professional schools and associations in order to establish qualified human capital able to contribute to the improvement of intermodal/multimodal transport at operational and strategic level.

Action plan for the development of a Multimodal Freight Terminals network and last-mile connectivity in Kosovo*

Group of Actions and Measures 1: Construction/ Reconstruction of intermodal/ multimodal (Road-Rail) terminals and purchase of related equipment			
Institution responsible for coordination and reporting: Ministry responsible for transport			
Implementation period: 2025–2030			Type: Construction and procurement of relevant equipment
Name of activity:	Estimate of Investment Cost (million €)	Deadline for completion	Remarks
Construction of Intermodal terminal Pristina in Shkabaj	20	2030	The project includes the preparation of the necessary studies and the construction of a new planned hub for multimodal/ intermodal terminal (dry port), construction of facilities and procurement of equipment and road and rail connectivity within and out of the terminal for full compliance with the provisions of the TEN-T Regulation for multimodal freight terminals. Estimated annual capacity: 80,000 TEU.

Group of Actions and Measures 3: Introduction of ICT and digital solutions to improve multimodality			
Institution responsible for coordination and reporting: Ministry responsible for transport in each RP			
Implementation period: 2025–2030			Measure type: Deployment
Regulations to be adopted for the implementation of the measures: eFTI Regulation			
Name of activity:	Cost estimate (million €)	Deadline for completion	Remarks
Deployment of solutions for eFTI implementation by all RPs	17.5 (in total for all RPs)	2030	Deployment of e-freight in the WB region according to the Action Plan developed in the study "Deployment of e-freight in the Western Balkans and implementation of the Regulation (EU) 2020/1056 on electronic freight transport Information". This would be a significant step forward in the digital transformation of freight transport, including multimodal freight, and offers important benefits for both operators and authorities, such as: reduced administrative costs in transport and logistics; improved overall efficiency of logistics chains; and more efficient enforcement of freight transport rules across the EU.
Deployment of selected IT applications along main Corridors and Routes in the region (Multimodal Digitalisation Project) by all RPs	8.12 (in total for all RPs)	2030	Deployment of - Solution for match making and ordering for rail cargo (Rail-Flow or similar), - IT platform for stakeholders networking (IMSLOT or similar) - Multimodal Transportation Management Systems (Transport Management System for terminals) on selected Corridors and Routes in each RP, as follows: ALB: Corridor VIII, BIH: Corridor Vc, KOS: Route 10 (Corridor X link from Pristina to Hani i Elezit), MNE: Route 4, MKD: Corridor X and Corridor VIII, SRB: Corridor X and Route 4. Deployment should start from already functional Corridors and Routes (Corridors Vc, X and Routes 4, 6) and continue with Corridor VIII once missing links are constructed.

* This designation is without prejudice to positions on status and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

Other measures for the development of multimodality in Kosovo

It is considered that these measures below would contribute to faster development of multimodality in Kosovo and the WB region (for more details see Chapter 7.1):

1. Harmonization with the provisions of the Combined Transport Directive 92/106/EEC.
2. Definition of the activity of intermodal transport as an economic activity of special interest.
3. Improvement and procurement of railway rolling stock.
4. Facilitation of railway crossing points, through improvement and introduction of joint border/ common crossing points.
5. Improvement of education, cooperation with universities, professional schools and associations in order to establish qualified human capital able to contribute to the improvement of intermodal/multimodal transport at operational and strategic level.

Action plan for the development of a Multimodal Freight Terminals network and last-mile connectivity in Montenegro

Group of Actions and Measures 1: Construction/ Reconstruction of intermodal/ multimodal (Road-Rail) terminals and purchase of related equipment			
Institution responsible for coordination and reporting: Ministry responsible for transport			
Implementation period: 2025–2030			Type: Construction and procurement of relevant equipment
Name of activity:	Estimate of Investment Cost (million €)	Deadline for completion	Remarks
Construction of new rail-road terminal in or adjacent to the Port of Bar	15	2030	The project includes the preparation of the necessary studies for decision on exact location of the terminal (within the port or railway freight station Bar) and construction of the multimodal/ intermodal terminal, ensuring improvement of capacities, facilities, equipment and road and rail connectivity within and out of the terminal for full compliance with the provisions of the TEN-T Regulation for multimodal freight terminals. Estimated annual capacity: 50,000 TEU.

Group of Actions and Measures 3: Introduction of ICT and digital solutions to improve multimodality			
Institution responsible for coordination and reporting: Ministry responsible for transport in each RP			
Implementation period: 2025–2030			Measure type: Deployment
Regulations to be adopted for the implementation of the measures: eFTI Regulation			
Name of activity:	Cost estimate (million €)	Deadline for completion	Remarks
Deployment of solutions for eFTI implementation by all RPs	17.5 (in total for all RPs)	2030	Deployment of e-freight in the WB region according to the Action Plan developed in the study "Deployment of e-freight in the Western Balkans and implementation of the Regulation (EU) 2020/1056 on electronic freight transport Information". This would be a significant step forward in the digital transformation of freight transport, including multimodal freight, and offers important benefits for both operators and authorities, such as: reduced administrative costs in transport and logistics; improved overall efficiency of logistics chains; and more efficient enforcement of freight transport rules across the EU.
Deployment of selected IT applications along main Corridors and Routes in the region (Multimodal Digitalisation Project) by all RPs	8.12 (in total for all RPs)	2030	Deployment of - Solution for match making and ordering for rail cargo (Rail-Flow or similar), - IT platform for stakeholders networking (IMSLOT or similar) - Multimodal Transportation Management Systems (Transport Management System for terminals) on selected Corridors and Routes in each RP, as follows: ALB: Corridor VIII, BIH: Corridor Vc, KOS: Route 10 (Corridor X link from Pristina to Hani i Elezit), MNE: Route 4, MKD: Corridor X and Corridor VIII, SRB: Corridor X and Route 4. Deployment should start from already functional Corridors and Routes (Corridors Vc, X and Routes 4, 6) and continue with Corridor VIII once missing links are constructed.

Other measures for the development of multimodality in Montenegro

It is considered that these measures below would contribute to faster development of multimodality in Montenegro and the WB region (for more details see Chapter 7.1):

1. Full harmonization with the provisions of the Combined Transport Directive 92/106/EEC.
2. Definition of the activity of intermodal transport as an economic activity of special interest.
3. Improvement and procurement of railway rolling stock.
4. Facilitation of railway crossing points, through improvement and introduction of joint border/ common crossing points.
5. Improvement of education, cooperation with universities, professional schools and associations in order to establish qualified human capital able to contribute to the improvement of intermodal/multimodal transport at operational and strategic level.

Action plan for the development of a Multimodal Freight Terminals network and last-mile connectivity in North Macedonia

Group of Actions and Measures 1: Construction/ Reconstruction of intermodal/ multimodal (Road-Rail) terminals and purchase of related equipment			
Institution responsible for coordination and reporting: Ministry responsible for transport			
Implementation period: 2025–2030			Type: Construction and procurement of relevant equipment
Name of activity:	Estimate of Investment Cost (million €)	Deadline for completion	Remarks
Construction of Intermodal terminal in Skopje area	20	2030	The project includes construction of a new terminal for multimodal/ intermodal operations and ensuring capacities, facilities, equipment and road and rail connectivity within and out of the terminal for full compliance with the provisions of the TEN-T Regulation for multimodal freight terminals. Based on the results of the ongoing project for preparation of the necessary studies and design for new intermodal terminal at Trubarevo marshalling yard location, it is to be decided if the location of the Trubarevo marshalling yard is suitable or new location in Skopje area will be defined. Estimated annual capacity: 80,000 TEU.

Group of Actions and Measures 3: Introduction of ICT and digital solutions to improve multimodality			
Institution responsible for coordination and reporting: Ministry responsible for transport in each RP			
Implementation period: 2025–2030			Measure type: Deployment
Regulations to be adopted for the implementation of the measures: eFTI Regulation			
Name of activity:	Cost estimate (million €)	Deadline for completion	Remarks
Deployment of solutions for eFTI implementation by all RPs	17.5 (in total for all RPs)	2030	Deployment of e-freight in the WB region according to the Action Plan developed in the study "Deployment of e-freight in the Western Balkans and implementation of the Regulation (EU) 2020/1056 on electronic freight transport Information". This would be a significant step forward in the digital transformation of freight transport, including multimodal freight, and offers important benefits for both operators and authorities, such as: reduced administrative costs in transport and logistics; improved overall efficiency of logistics chains; and more efficient enforcement of freight transport rules across the EU.
Deployment of selected IT applications along main Corridors and Routes in the region (Multimodal Digitalisation Project) by all RPs	8.12 (in total for all RPs)	2030	Deployment of - Solution for match making and ordering for rail cargo (Rail-Flow or similar), - IT platform for stakeholders networking (IMSLOT or similar) - Multimodal Transportation Management Systems (Transport Management System for terminals) on selected Corridors and Routes in each RP, as follows: ALB: Corridor VIII, BIH: Corridor Vc, KOS: Route 10 (Corridor X link from Pristina to Hani i Elezit), MNE: Route 4, MKD: Corridor X and Corridor VIII, SRB: Corridor X and Route 4. Deployment should start from already functional Corridors and Routes (Corridors Vc, X and Routes 4, 6) and continue with Corridor VIII once missing links are constructed.

Other measures for the development of multimodality in North Macedonia

It is considered that these measures below would contribute to faster development of multimodality in North Macedonia and the WB region (for more details see Chapter 7.1):

1. Harmonization with the provisions of the Combined Transport Directive 92/106/EEC.
2. Definition of the activity of intermodal transport as an economic activity of special interest.
3. Improvement and procurement of railway rolling stock.
4. Facilitation of railway crossing points, through improvement and introduction of joint border/ common crossing points.
5. Improvement of education, cooperation with universities, professional schools and associations in order to establish qualified human capital able to contribute to the improvement of intermodal/multimodal transport at operational and strategic level.

Action plan for the development of a Multimodal Freight Terminals network and last-mile connectivity in Serbia

Group of Actions and Measures 1: Construction/ Reconstruction of intermodal/ multimodal (Road-Rail) terminals and purchase of related equipment			
Institution responsible for coordination and reporting: Ministry responsible for transport			
Implementation period: 2025–2030			Type: Construction and procurement of relevant equipment
Name of activity:	Estimate of Investment Cost (million €)	Deadline for completion	Remarks
TBD: - Development of the Batajnica terminal, or - Development of terminal ŽIT (Makis – Belgrade marshalling yard), in Belgrade	10	2030	The Serbian Ministry is to decide on the future actions, i.e. whether to proceed with phase 2 of development of Batajnica terminal and logistics center or with development of ŽIT terminal at Belgrade marshalling yard. In the case of Batajnica further development, the project will include phase 2 of the Intermodal terminal Batajnica project, with an increase of the capacity of the terminal from 80,000 to 150,000 TEU. In this phase, it is planned to develop capacity through procurement of equipment and development of a logistics area on about 67 ha. This expansion should ensure that the terminal complies with the provisions of the TEN-T Regulation for multimodal freight terminals regarding infrastructure, facilities and equipment. In the case of terminal ŽIT, the project will include extension to the 5th shunting group of the Belgrade marshaling yard. This would create the conditions for the terminal to process about 120,000 TEU per year, compared to the current annual capacity of 24,000 TEU.
Construction of Intermodal terminal in Novi Sad area	15	2030	The project includes the preparation of the necessary studies for exact location decision, feasibility and design, and construction of the intermodal terminal, last mile road and railway connections and facilities/equipment to ensure full compliance with the provisions of the TEN-T Regulation for multimodal freight terminals. Estimated annual capacity: 50,000 TEU.
Improvement and integration of the existing intermodal terminal Nis, Nis marshalling yard and the Niš airport or, Construction of new terminal	15	2030	Bearing in mind the plans and current activities for the construction of a railway bypass around Niš, which passes through the Niš marshalling yard and connects the Niš airport with the Corridor X branch to Bulgaria, and that the existing private intermodal terminal is located in the same zone, connected to the Niš marshalling yard, it is recommended to consider public-private partnership modalities, concessions or blended investments, for the establishment of an integrated logistics center in which the existing private intermodal terminal would have an interest in expanding and meeting the infrastructure requirements to be included into the TEN-T terminals network. By this, annual capacity of Niš marshaling yard and intermodal terminal would be increased, and volumes of goods and services would increase enabling the introduction of the cargo terminal at the airport. It is necessary to examine public-private partnership or other blended investments modalities, in order to ensure compliance with Article 58 of the Regulation that this should not create obligation to private sector to invest in terminals. In case that such proposal is not acceptable for private terminal and government, a new location for new terminal is to be defined.

Group of Actions and Measures 3: Introduction of ICT and digital solutions to improve multimodality			
Institution responsible for coordination and reporting: Ministry responsible for transport in each RP			
Implementation period: 2025–2030		Measure type: Deployment	
Regulations to be adopted for the implementation of the measures: eFTI Regulation			
Name of activity:	Cost estimate (million €)	Deadline for completion	Remarks
Deployment of solutions for eFTI implementation by all RPs	17.5 (in total for all RPs)	2030	Deployment of e-freight in the WB region according to the Action Plan developed in the study "Deployment of e-freight in the Western Balkans and implementation of the Regulation (EU) 2020/1056 on electronic freight transport Information". This would be a significant step forward in the digital transformation of freight transport, including multimodal freight, and offers important benefits for both operators and authorities, such as: reduced administrative costs in transport and logistics; improved overall efficiency of logistics chains; and more efficient enforcement of freight transport rules across the EU.
Deployment of selected IT applications along main Corridors and Routes in the region (Multimodal Digitalisation Project) by all RPs	8.12 (in total for all RPs)	2030	Deployment of - Solution for match making and ordering for rail cargo (Rail-Flow or similar), - IT platform for stakeholders networking (IMSLOT or similar) - Multimodal Transportation Management Systems (Transport Management System for terminals) on selected Corridors and Routes in each RP, as follows: ALB: Corridor VIII, BIH: Corridor Vc, KOS: Route 10 (Corridor X link from Pristina to Hani i Elezit), MNE: Route 4, MKD: Corridor X and Corridor VIII, SRB: Corridor X and Route 4. Deployment should start from already functional Corridors and Routes (Corridors Vc, X and Routes 4, 6) and continue with Corridor VIII once missing links are constructed.

Other measures for the development of multimodality in Serbia

It is considered that these measures below would contribute to faster development of multimodality in Serbia and the WB region (for more details see Chapter 7.1):

1. Full harmonization with the provisions of the Combined Transport Directive 92/106/EEC.
2. Definition of the activity of intermodal transport as an economic activity of special interest.
3. Improvement and procurement of railway rolling stock.
4. Facilitation of railway crossing points, through improvement and introduction of joint border/ common crossing points.
5. Improvement of education, cooperation with universities, professional schools and associations in order to establish qualified human capital able to contribute to the improvement of intermodal/multimodal transport at operational and strategic level.