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The railway ifrastructure of Bulgaria in the context of Balkan integration

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ABSTRACT

At the beginning of the 21st century—the era of communication—the role of transportation systems in the development of states began increasing, particularly in the Balkan states, which are situated on a crossroads between Central and Western Europe and the Middle East. However, the need for improved transit must be balanced with the need to safeguard nature by decreasing pollution and using alternative energy resources. The European Union (EU) is attempting to transfer freight from roads to water and rail systems, which are more efficient, thereby leading to an increased importance for rail transport that is becoming the basis of a combined approach toward transportation. The present research explores the significance of rail transport for the EU and its place in relation to other modes of transport as well as the development of the Bulgarian rail system in brief, its connections with the systems of neighboring Balkan countries as part of the Pan-European transport corridors, and views on the development of intermodal transport in the Balkan region, with a focus on container transport.

Keywords: rail transport, integration, Balkan region.

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1. INTRODUCTION

Rail transport plays an important role in the transportation system of the European continent. The rail network connects all the separate states on the continent and their regions, and it is the basis for further economic development. Rail transport provides regular, rapid, and secure transportation of large, economically important cargos over comparatively long distances at a comparatively low cost. Until the end of the 20th century, the main objectives of the rail systems of different European countries were to be constructed in their entirety and to be optimized; however, from the beginning of the 21st century, rail transport took on a new importance in terms of providing effective connections between transport hubs in the Balkans and in Bulgaria, in particular. It is the transportation policy of the European Union (EU) to prioritize the development of the Trans-European Transport Network (TEN-T), to redirect freight from road to rail and water transport, to develop modern public transport and reduce the usage of personal vehicles, and to involve more private capital in the schemes to develop transport. In this context, interconnections among the rail systems of different countries are of particular importance.

2. CONTEMPORARY SIGNIFICANCE OF RAIL TRANSPORT IN THE EU

Several factors are influential in the development of rail infrastructure. These can be separated into the physicogeographical group, including geographical position, relief, climate, water resources, and vegetation, and the socioeconomic group, including the location of production facilities, the development of national economy, the development of settlement networks, ongoing demographic changes, state policy, scientific and technological progress, and other factors, most of which are specific to a given territory. International inter-connectivity and the construction of transport corridors are becoming more important, as is their provision of comfortable and rapid travel among the different parts of Europe and its regions. Ecological factors are becoming increasingly tangible, and rail transport has an important role to play in environmental protection policies.

To a great extent, the construction of rail connections in the countries of Europe depends on all these factors and the place of this mode of transport in Europe's communication networks.

In 2017, roads were the most used means to transport freight in the EU with a share of 51.5%, followed by maritime transport at 32.4% and rail transport with 11.6%. If maritime transport, upon which a considerable amount of EU trade depends, is excluded, and only data on inland transport are considered, 76.7% of EU freight in that year was hauled via road transport, followed by rail with 17.3% and inland waterways with 6% (percent share calculated with ton-kilometers) (Eurostat freight transport statistics, 2019).

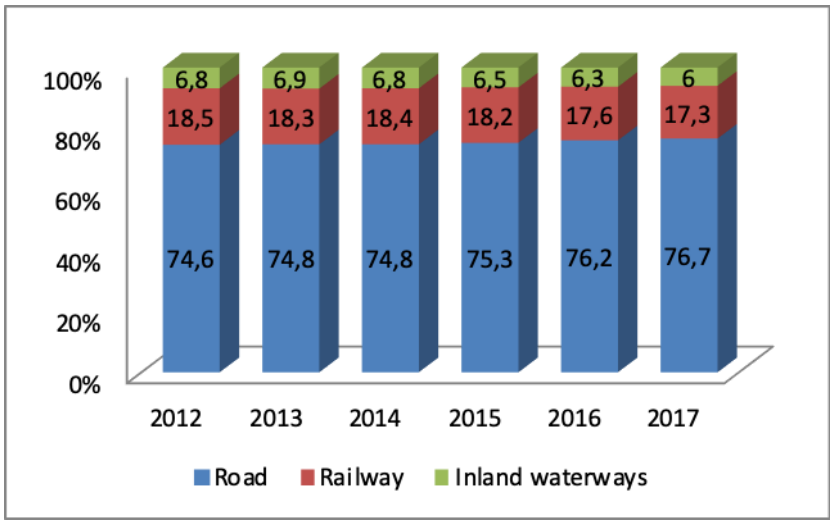

Figure 1: Modal split of inland freight transport in the EU for 2012–2017 (percentage shares in ton-kilometers)

Although the data show relative stability over the last few years (Figure 1), the share of road transport is increasing slightly at the expense of the other two modes, which shows that the results of policy to redirect freight toward rail are not satisfactory, meaning that

rail is still not attractive enough. However, it remains unclear why rail transport is unattractive. It is more economical, with a lower expenditure for fuel and wages; further, it is suitable for large cargos on average and over long distances. In addition, its use may lead to partial traffic reduction along the busiest motorways. Moreover, it pollutes the environment less than road transport does; the emissions of nitrogen oxide per person transported by train for a distance of one kilometer are one-twentieth those of transportation by bus and one-fiftieth those of transportation by diesel car (Valls, 2019). These are only some of the reasons that should stimulate rail freight transport.

In EU countries, the data for transportation in 2017 vary by physicogeographical and socioeconomic indicators between countries. Latvia (74%), Lithuania (66.7%), and Estonia (44.4%) show the largest share of rail freight transport. In Austria, Hungary, and Slovakia, the share is approximately 30%, and in the larger states, there is a range of figures: Spain has 4.9%, France has 10.5%, Italy has 13.6%, Germany has 17.8%, and Poland has 23.9%.

Turning our attention to the Balkan states (Figure 2), there is a greater share of the freight transported by inland waterways in Romania (27.4%) and Bulgaria (24.9%), which is, to a large extent, due to the use of the Danube River. In Greece, rail transport is not used much for freight (1.8%) owing to the dominance of maritime transport (Eurostat freight transport statistics, 2019).

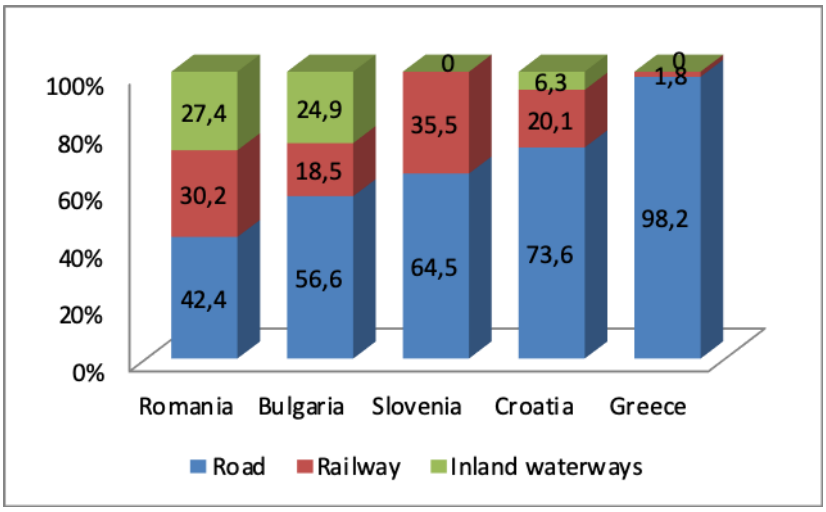

Figure 2: Modal split of inland freight transport in the Balkan members of the EU in 2017 (percentage shares in ton-kilometers)

3. HISTORICAL DEVELOPMENT OF THE RAIL SYSTEM OF BULGARIA

From a physicogeographical point of view, the main obstacles for the development of rail in Bulgaria and its connection with neighboring countries are the mountains of central Bulgaria (the Balkan Mountains) and in the southern parts of the country (the Rhodopes, Pirin, Strandzha, and Sakar Mountains) as well as the Danube River, which forms the northern border of the state. Crossing these divides requires the realization of expensive infrastructural projects. With respect to the socioeconomic factors, the development of the settlement network and the location of the sites of production, which together are the main consumers of rail freight, may be the most relevant. In terms of the international integration of transportation networks, international relations with its neighbors are strongly determinative for Bulgaria.

The development of the rail system in Bulgaria features a certain logical consequence. The initial aim was to connect the capital, Sofia, with the two large seaside cities of Varna and Burgas through a construction of railways that would cross the middle parts of Northern and Southern Bulgaria, parallel to the Balkan Mountains. Thus, figuratively speaking, a rail ring would be formed from which the branches of the system would be subsequently constructed, leading to settlements on the periphery of the country. By crossing each other, meridian and parallel rail systems would form a grid-like territorial structure, composed of geographic modules defined by rail. These modules represented parts of the territory of the country, each surrounded by rail on all sides. The integral construction of this system would lead to an increased quality of transportation. Their improvement is connected with a gradual approximation to the rectangular geometric form, which is explained by the ambition to avoid curves and to follow the most direct routes in the east–west and north–south directions (Devedzhiev, 1996).

The initial development of rail transport in Bulgarian lands was connected with the provision of connections between Western Europe and Istanbul. The beginning came with the opening of the Ruse–Kaspichan–Varna railroad (223 km long), built by the English company of William Gladstone and the Barclay brothers in 1866. The Bulgarian state bought the line in 1888. In the same year, the Vakarel–Sofia–Tsaribrod rail was built as a part of the route between Vienna and Istanbul.

In 1899, the construction of the Sofia–Gorna Oryahovitsa–Varna line, which was important for Northern Bulgaria, was finished. It connected the capital with the Black Sea coast. Most of the rail system of the country was constructed before the Second World War, namely, Sofia–Plovdiv–Burgas, Sofia–Kyustendil–Gyueshevo, Ruse–Gorna Oryahovitsa–Stara Zagora–Podkova, and other lines. In 1939, the length of the entire rail network reached 4,426 km.

Following the war, the construction of lines continued in difficult regions (Lovech–Troyan, Karlovo–Sopot–Klisura, Samuil–Silistra, Simitli–Kulata, and other lines). This intensive construction was connected with the industrial boom in Bulgaria after the war.

After 1960, the construction of new rail decreased significantly, and during the 1970s, the rail system of the country was considered complete. It was connected with the systems of all neighboring countries except for Macedonia (Figure 3). The main ring of the system between Northern and Southern Bulgaria was completely electrified by 1985. The ensuing modernization updates included doubling the busiest lines and increasing their average speed, which increased the attractiveness of these branches.

Figure 3: Rail system of Bulgaria

The branches of the network entering the Balkan Mountain and the Rhodopes remained unfinished owing to the focus on construction on the central lines. Because the higher mountains were harder to reach, rail construction there demanded larger expenditures, and the profitability of the lines constantly decreased as a consequence of the depopulation of these regions; these branches did not feature in short-term plans. Thus, parts of the Southern Rhodopes, the Southern Strandzha, and the Northeastern Dobruja Mountains remained least served. During the last stages of the construction of the system, it was expected that the end points of the branches would be connected and that the system would be complete. However, this stage was not reached because the country entered the transition from a planned to a market economy in 1989, and it lost demographic potential, meaning that the planned lines, which were expected to connect smaller settlements, were unprofitable.

In 2000, the total length of the rail in Bulgaria was 6,518 km, of which 63.5% was electrified and 22.3% was doubled. This length included lines, junctions, and branches in stations that were not used for active transport (Kopralev, 2002). The density of the rail network was 39 km/1000 km^2, which was the same as in 1985. Most of the lines were constructed at least half a century ago and allow a maximum speed of 100 km/h, which is far below contemporary European standards.

By the end of 2018, the total length of rail in the country was 4,030 km, 2,870 km of which was electrified and 990 km was doubled (NSI – Length of rail network, 2019).

4. CONTEMPORARY CONDITION AND TRENDS IN THE DEVELOPMENT OF THE NETWORK

International factors are important for the future development of the rail system of Bulgaria. Increased fuel prices, for instance, should stimulate the redistribution of freight to water and rail transport, which are more effective. The development of European and Asian economies requires the intensification of trade relations between the two and a consequent increase in commodity flows, some of which can be expected to be transported through Bulgaria because of its position as a crossroads country. Its infrastructure should be built according to these trends, and financial limitations will require prioritization, which should be consistent with the policies of neighboring countries and the EU to ensure maximum effectiveness so that additional transit flows can be attracted. Owing to the removal of borders among the countries in the EU, transport flows have intensified in the international corridors of Bulgarian territory. With the accession of the countries of the Western Balkans to the EU and the move of Bulgaria and Romania to the Schengen area, travel can be expected to become faster and more comfortable. Not least, Bulgaria should take account of the EU's ecological policy, which means that more money will need to be spent to reduce the negative effects of development on nature. The geopolitical situation in Southeastern Europe can be supported by the optimal interconnection of the transport systems of the different countries and the large-scale introduction of intermodal transportation.

An important task that remains for rail transport in Bulgaria is the provision of operative and technical compatibility, allowing the Bulgarian rail system to be properly integrated into the European one, allowing it to carry international traffic on Bulgarian territory, and vice versa. Open access should be provided to licensed carriers within the network of the country. The Bulgarian voltage is the standard voltage for most of Europe: 25 kV and a frequency of 50 Hz. The maximum speed is different in the different parts of the Bulgarian rail system. In sections, after recent modernization efforts, speeds were able to reach 160 km/h, but in others, because of their obsolete facilities, it is lower, which remains a main disadvantage of the system.

Important parts of the structure of the rail network are its hubs, formed at the crossings of the parallel and meridian corridors; these are the basis for intermodal transport. This, together with other circumstances, can allow some of them to develop into large transport centers. Their growth demands additional space for the construction of warehouses, duty free zones, and other facilities. Current commodity and passenger traffic, together with the settlement network, indicate that the main rail junctions are Sofia, Plovdiv, Stara Zagora, Burgas, Varna, Ruse, and Gorna Oryahovitsa. Container terminals are present in Stara Zagora, Kazanlak, Plovdiv, Dimitrovgrad, Pazardzhik, Sofia, and Vratsa; large containers are also processed in Dimitrovgrad and Pazardzhik.

In the European agreement on important international combined transport lines and related installations (AGTC, 2010), the following corridors are marked on Bulgarian territory:

- Ruse–Gorna Oryahovitsa–Dabovo–Dimitrovgrad (310 km), corridor IX;
- Sofia–Mezdra–Gorna Oryahovitsa–Kaspichan–Varna (543 km), corridor VIII;
- Dragoman–Sofia–Plovdiv–Dimitrovgrad–Svilengrad (382 km), corridors IV, VIII, and X;
- Plovdiv–Zimnitsa–Karnobat–Burgas (294 km), corridor VIII;
- Vidin–Sofia (279 km), corridor IV; and
- Sofia–Kulata (210 km), corridor IV.

These lines are parts of five (out of 10) Pan-European transport corridors that connect different European regions, in a system defined in Crete in 1994 (Figure 4).

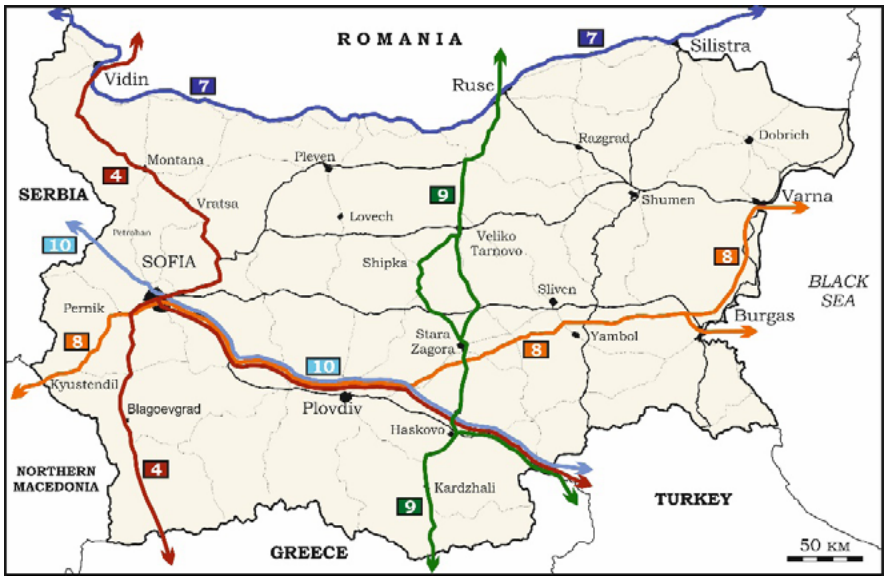

Figure 4: Pan-European transport corridors, crossing the territory of Bulgaria

Corridor IV begins from Dresden in Germany, passes through Prague, Bratislava, Budapest, and Arad (Romania). In Bulgaria, it passes through Vidin and Sofia, with branches to Kulata and Thessaloniki in Greece or to Plovdiv and Istanbul. The route only passes through the territories of EU member states, and the Vidin–Calafat Bridge on the Danube is one of the most important facilities on it. In 2016, the rail Svilengrad–Plovdiv was reconstructed, and it allows travel with speeds up to 200 km/h; for the Plovdiv–Sofia section, travel at such speeds will take place until 2023.

Corridor IX connects Northern Europe and the Aegean Sea, which allows freight to continue to Northern Africa and the Suez Canal. It begins in Helsinki and follows a Saint Petersburg–Moscow–Kiev–Kishinev–Bucharest line, reaching Bulgarian territory after crossing the Danube River on the Giurgiu–Ruse Bridge; subsequently, it goes to Dimitrovgrad and then reaches Alexandroupolis in Greece.

Corridor VIII begins in the Albanian ports of Durres and Vlore on the Adriatic Sea, continuing through Skopje to Bulgarian territory, where it passes through Sofia and Southern Bulgaria to reach the two main Bulgarian sea ports of Burgas and Varna. It connects the southern parts of Italy with the Black Sea. With the completion of the modernization of the rail between Plovdiv and Burgas after 2022, the trains will be able to reach speeds of 150 km/h.

Corridor X begins in Salzburg and passes through Ljubljana, Zagreb, Belgrade, Nish, Skopje, and Thessaloniki, and on Bulgarian territory, it follows the branch Nish–Sofia–Plovdiv–Istanbul (along corridor IV). The rail in Serbia from Nish to Dimitrovgrad (on the Bulgarian border) will be modernized using money from the EU, and the 100 km line will also be electrified.

The fifth corridor, which crosses the northern border of Bulgaria, is corridor VII. This corridor is not directly related to rail transport because it is a water corridor that connects the North Sea and the Black Sea along the Rhine–Main–Danube Canal; nevertheless, it is important for combined transport.

The long-term program for the development of the trans-European network until 2020 includes three projects on Bulgarian territory. One of these is connected with the removal of the narrow places on the aforementioned water corridor VII along the Rhine–Main–Danube Canal. The other two projects relate to the rail lines from the Greek border (Kulata) through Sofia to Vidin (corridor IV).

The border crossings (Dragoman, Ruse, Svilengrad, Vidin, and Kulata) are important for these international routes and combined transport, as are the terminals (in Burgas, Dimitrovgrad–Sever, Filipovo, Gorna Oryahovitsa, Ruse, Sofia, Stara Zagora, and Varna) and the ferries. Specialized container terminals are in operation at the rail stations for Sofia–Tovarna, Plovdiv–Filipovo, Dimitrovgrad–Sever, Stara Zagora, Gorna Oryahovitsa, Pleven–Zapad, Vratsa, Varna–Iztok, Varna–Zapad, and Burgas.

5. CONNECTIONS WITH THE NEIGHBORING RAIL SYSTEMS

The question of the integration of Bulgarian rail with Balkan and European rail systems in general remains important. A basic element at issue here is the border crossings. Bulgaria has three border crossings where its rail connects with the Romanian system, at Kardam–Cherna Voda, Ruse–Giurgiu (bridge), and Vidin–Calafat (bridge), along the priority corridor IV. With the construction of the second bridge over the Danube, the rail connections between the two countries were strengthened, and more bridges are under consideration.

The Bulgarian system is connected with the **Greek** one at Kulata–Promahon and at Svilengrad–Dikaia. Another connection can be made at Podkova through the Makaza passage along the Ruse–Veliko Tarnovo–Stara Zagora–Kardzhali–Podkova line (corridor IX), but it is not clear whether such a connection will be sufficiently profitable.

Between the rail systems of Bulgaria and **Turkey**, there is only one connection, that is, at Svilengrad–Kapikule.

The connection with **Serbia** is at Dragoman–Dimitrovgrad. This route (Sofia–Kalotina–Belgrade) is characterized by heavy traffic. The rail from the Serbian border through Sofia and Plovdiv to the Turkish border is categorized as a speedway, but it is still being modernized to meet technical requirements.

The connection between the Bulgarian and the **Northern Macedonian** rail systems (corridor VIII, Kyustendil–Skopje) is problematic. During the two world wars, when Macedonia was under the control of Bulgaria, a line was built from Skopje through Kumanovo and Bogdantsi, but it was not continued to the current Bulgarian border. This line is now part of the route connecting the Albanian Adriatic ports Durres and Vlore with the Black Sea ports Burgas and Varna. For this connection to be geopolitically substantiated (not only as a connection between two countries), Albania and Northern Macedonia must develop their rail systems to reach the requirements of corridor VIII. However, those two states have yet to commit to the project.

6. THE SEA PORTS IN THE REGION

In relation to general infrastructural interconnectivity, we should also discuss the main freight distribution centers and connections between the larger ports and the rail system, with an emphasis on intermodal and container transport, which are becoming increasingly important in combined transport. According to most authors, intermodal rail freight transport is largely involved with the following two categories: port-hinterland (or maritime) flows and continental/domestic (or non-maritime) traffic, but the differentiation is not always practical because freight can sometimes flow in both directions (Woodburn, 2017). The main advantage of freight containers is that transport expenses decrease significantly. Before containerization, the cost of maritime transport was between 5% and 10% of the retail price; however, after containerization, the share fell to 1.5%, depending on the precise nature of the goods transported. The main factors in this difference are the speed and flexibility of services as well as the enormous size of container ships, which helped reach a 35% decrease in cost (Rodrigue, 2013).

Most freight from Asia to Southeastern Europe arrives at sea ports in the region—Constanta, Thessaloniki, Istanbul, Varna, or Burgas—and then continues inland. Further transportation of freight to their consumers should follow inland modes of transport, and here the significance of rail networks and their integrity becomes evident.

Bulgaria has two main sea ports, Varna and Burgas, and several other, smaller ones with regional significance. In these ports, 27.9 million tons of cargo were processed in 2018 (NSI: Maritime transport, 2019).

Burgas is closer to the Bosporus than Varna and Constanta, and it features a convenient bay. The town is at the end point of the Thrakia highway (Sofia–Plovdiv–Burgas) and is also the end station of the rail line following the same route, which is part of corridors VIII and X, and part of the Orient/East Med corridor, which is a fundamental corridor for the TEN-T network. The rail here is being reconstructed; by 2022, trains are expected to be able to travel with speeds up to 160 km/h. In the port of Burgas, 5.8 million tons of cargo were processed in 2018, indicating an annual growth of 11% for the second year in a row (Freights in Port Burgas, 2019). It has a container terminal with a capacity of 200,000 TEU per year.

Varna features a rail connection with a sea–river destination of the town of Ruse (on the Danube River, where corridors VII and IX cross each other). The ferry complex in Varna can carry wagons across the Black Sea to Russia, other Black Sea countries, and Caucasian countries. Although the port has been modernized over the last few years, its main disadvantage remains the insufficient infrastructural connections that it has with the interior of the country. There is no complete highway for Northern Bulgaria, and the rail lines do not allow high-speed transportation, an obstacle to the increased quality and competitiveness of the services provided by the port. In Varna, 9.9 million tons of cargo were processed in 2017 along with 150,000 TEU containers (Freights in Port Varna, 2017).

Constanta is situated on the Romanian Black Sea coast, 70 km to the northeast of the Bulgarian border. The city is an end point on the rail and highway corridor Constanta–Bucharest–Arad–Budapest–Vienna (corridor IV). It is also the end point for two rail freight corridors, the Baltic Sea–Black Sea (Gdansk–Constanta) corridor, which is mainly used for container cargo, and the North Sea–Black Sea (Rotterdam–Constanta) corridor, along which cargo is transported for 80 hours (Stanev, 2013).

Its location, integration with the national and European transport networks, and concessions by world port operators transformed Constanta into one of the largest Balkan ports. In 2018, 55 million tons of bulk cargo were processed along with 668,000 TEU containers. Statistical data show a stable annual increase over the last eight years. The container terminal had a capacity of one million TEU per year (Statistics of the Port of Constanta, 2019).

Thessaloniki is 110 km from Kulata on the Bulgarian border. It has a good geographical position and is a crossing point for the Egnatia motorway, which connects Igoumenitsa (on the Ionian Sea) with the Turkish border and Istanbul, and for the motorway from Athens, which extends north to the Bulgarian border (as part of corridor X and corridor Orient/East Med, which is a basic aspect of the TEN-T network). In 2018, the port processed 14.2 million tons of cargo, of which conventional cargo comprised 3.8 million tons; there were also 424,500 TEU containers, which represents an increase of 5.6% over the previous year, reaching a record for the last 10 years (Thessaloniki Port Authority, 2018).

Istanbul is situated 250 km from Kapitan Andreevo (on the southeastern Bulgarian border). It is a metropolis with a population of over 15 million people, with intensive traffic and high production and consumption. The advantages of its geopolitical position were recognized in antiquity. It is served by two main ports. The first is Ambarli (with the container terminal Marport, which has a capacity of 2.5 million TEU containers per year), and it processed 3,131,000 TEU containers in 2017 (the ninth-highest rate in Europe) but with no rail connection. The second is Haidar Pasha, with an annual capacity of 750,000 TEU that is processed at five terminals. It has a rail–ferry connection (Lloyd's list – One hundred ports, 2018).

The Marmaray tunnel under the Bosporus is a great advantage for the rail system. A high-speed rail is planned to be built from Istanbul (Halakli) to Kapukule, which will provide a fast and convenient connection to the Bulgarian border. In 2016, the Svilnegrad–Plovdiv rail line was modernized and now allows travel at higher speeds.

7. THE BULGARIAN DANUBIAN PORTS

Owing to its poor economy, which required substantial importation of raw materials and minerals, its large industrial enterprises, and its state policy, Bulgarian Danubian ports had significant commodity turnover until 1989; during the years of transition from a planned to market economy, with the loss of the secured Russian markets and the closing down of some of the major factories, it decreased significantly. Together with this was a decrease in the commodity turnover of rail transport as well. Additional unfavorable influences were the peripheral position of the Bulgarian Danubian towns in the territory of Bulgaria and their falling populations. At present, the state still does not have an integral infrastructural policy for their development, as is apparent from their concessions, for which the ports were separated to be able to cater to the interests of firms of local or regional significance. That led to a considerable lag in the development of port infrastructure, and their lack of container terminals was another disadvantage. In 2018, the Bulgarian Danubian ports processed 3.5 million tons of cargo (NSI – Inland waterway transport, 2019) (this number does not include roll-on/roll-off (ro-ro) freight, which reached over two million tons), concentrated in the main ports of Ruse, Lom, Vidin, and Svishtov. On the Bulgarian side of the river, there are several ports with lower turnover, including Oryahovo, Somovit, Tutrakan, and Silistra. The ports are part of the Rhine–Main–Danube corridor VII, connecting the North Sea and the Black Sea.

Vidin is situated 250 km to the north of Sofia. It is a crossing point for corridors IV and VII. There are a duty free zone and a ro-ro terminal near the port, and it is not near the shallow sections in the Lower Danube. Moreover, it is open all year long. In 2013, along the route of corridor IV, a bridge was constructed between Vidin and Calafat (Romania), which was also a rail bridge. Vidin is the closest Bulgarian port to Central Europe. It has no motorway connection or high-speed rail, which are necessary to connect the port with Sofia. The modernization of the existing Vidin–Sofia line will begin in the next program period of the EU (2021–2027), which will result in an increased maximum speed of 120 km/h for cargo trains and 160 km/h for passenger trains. This work will be done in cooperation with the Romanian state, which will be working to reconstruct the Calafat–Craiova rail.

Lom is situated closer to Sofia than Vidin, and it was once closely tied to production in Sofia. It is connected to the rail system, but it also lacks modern connections to the country's interior.

Svishtov is situated at the southernmost point of the Danube River, almost in the middle of the northern Bulgarian border, which makes it a convenient center for the redistribution of Danubian freight. It is connected to the rail system of Bulgaria and is near corridor IX. The port has a container terminal.

Ruse is a crossing point at corridors VII and IX. It is 70 km to the south of the Romanian capital Bucharest and is a station at the Ruse–Varna rail line, the connection between the Danube River and the Black Sea through Bulgarian territory. There is a bridge over the Danube (serving automobiles and rail), which is an important element along corridor IX from Northern Europe to the Mediterranean Sea and the Near East, but after the accession of Bulgaria and Romania to the EU and increased traffic between the countries, it appears that the bridge is almost at full capacity. Ruse also has necessary connections along the noted corridors, but they are not modernized and do not allow higher-speed transportation. The Giurgiu–Bucharest line in Romania (to the north of Ruse) is expected to receive upgrades for higher speeds.

The main Bulgarian Danubian ports are connected to the country's rail system. Although the share of cargo they process is less than that of the sea ports, they have a notable economic significance for the routes between the Black Sea and the North Sea. With the modernization of the rail lines that pass through them and their infrastructure facilities, they will be able to provide better services.

8. DISCUSSION AND CONCLUSION

At the beginning of the 21st century, the rail system of Bulgaria seems constructed well enough to serve the economic needs of the country. A future widening of the rail network seems impossible because of the lack of economic incentive. The main transport hubs are interconnected with rail, and connections have been built with the other modes of transport. However, for convenient and fast transport of cargo and passengers, transit times between the borders of the country must be decreased as much as possible, and transport to the most distant points of Europe should be secured, which will be impossible without the cooperation of all the states through which the main international routes must pass. The modernization of the rail infrastructure must be accomplished in coordination with the policies of Bulgaria's neighbors and the EU, especially in reference to Pan-European transport corridors, which have great significance for the region because of its position on a crossroads, particularly as combined transport is becoming increasingly important for contemporary consumer societies. This will contribute to the redirection of loads from road to rail transport, which is a pressing need from the point of view of sustainable development.

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