

IMPACT OF THE ARMED CONFLICT IN UKRAINE ON RAIL FREIGHT BETWEEN ASIA AND EUROPE

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Abstract – In 2021, the rail freight industry proved its competitiveness despite the restrictions caused by the coronavirus pandemic. In the segment of rail freight transport between Asia and Europe, this was achieved by positive transport results. Container transport in international rail traffic was increased. The railways carried out work on the development and organization of the transport of high-capacity containers in international traffic, including the organization of container block trains in the Eurasian space. The year 2022 has brought about fundamental changes in the perception of safety and the role of rail transport in traffic between Asia and Europe. An unexpected armed conflict¹ caused chaos in trade, production and transport. In the corridors connecting Asia with Europe, problems arose, supply chains were disrupted. The geopolitical situation in Eastern Europe remains tense and unpredictable. This results in lasting consequences for production, supply and demand chains, transport corridors in the Eurasian space. This also applies to rail transport as part of the New Silk Road concept².

The aim of this article is to provide a synthetic analysis of the impact of geopolitical changes and the armed conflict in Ukraine on the functioning of the Silk Railroad and transport volumes in rail freight traffic between Asia and Europe. The above analysis was carried out on the basis of research on secondary sources and available source materials obtained from OSJD member countries that participate in rail transport on the Silk Road.

Key words – OSJD, container transport, New Silk Road, rail freight

JEL Classification – L92, N70, O18, R49

INTRODUCTION

The military actions in Ukraine have fundamentally changed the economic and political areas of life not only in Ukraine, but also throughout the world. Over the past few years, Ukraine has systematically sought to rebuild its position on the rail New Silk Road³ [17]. Since 2014, it has carried out activities to gain the trust of rail freight market stakeholders and encouraged carriers to use its railroads. These efforts began to

pay off, as more and more companies started to consider the possibility of transit through Ukraine and implemented new routes and services. The share of westward transit traffic through Ukraine was increasing, confirming the growing importance of Ukraine on the New Silk Road. In January 2022, the President of the People's Republic of China, Xi Jinping, stressed the importance of Ukraine to China's BRI project⁴. The importance of Ukraine and the need to develop a China-Ukraine strategic partnership was

¹ Armed conflict – a type of military violence that involves the pursuit of state objectives through the use of armed force. Aggression is the use of armed force against the sovereignty, territorial integrity or political independence of another state or in any other manner inconsistent with the Charter of the United Nations.

² See more in [9].

³ The New Silk Road concept – land and sea routes – was introduced by the President of the People's Republic of China, Xi Jinping, in autumn 2013. It involved creating a network of infrastructure links, mainly transport corridors, between the PRC and Europe – China's most important economic partner. The New Silk Road has a historical and symbolic significance for the development of the modern world economy and the rivalry of great powers in an era of political, economic and social turmoil. This is indicated, for example, in [9]. The overview of the role of China and the OSJD in the New Silk Road concept can be found, for example, in [6, 18].

⁴ President Xi Jinping's Belt and Road Initiative (BRI) is a vital instrument of China's strategy of maintaining internal control and political stability within the country and leading to the dynamization of the Chinese economy and economic exchange.

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emphasized at that time. At the beginning of 2022, however, the geopolitical situation has fundamentally changed. Transit through Ukraine became impossible as a result of the armed conflict, but the main route through Russia and Belarus remained open for rail traffic from China to Europe. After the shock from the aggression, companies that operated on the New Silk Road made every effort to reassure their customers about the safety of the main China-Europe corridor through Belarus and Poland⁵. Rail traffic in the Eurasian space between countries is characterized by significant distances (from 5000 to 10,000 km and more⁶), crossing many borders and overcoming legal and technical barriers. Therefore, the unobstructed and passable transport corridors / communication routes connecting Asia with Europe are an important instrument that influences the transport policy of many countries⁷. This is also confirmed by the interest in corridor initiatives from many international organizations and countries, e.g. China – an example of the New Silk Road Initiative. The aim of this article is to synthetically analyse the impact of the armed conflict/war in Ukraine on rail freight traffic between Asia and Europe under the New Silk Road concept. Silk Railroad routes supported by China are shown in Map 1. Due to insufficient development of rail infrastructure in the Southern Corridor, regular China-EU connections were and continue to be carried out through Russia via the Northern and Central corridors. The largest number of containers in transit through Russia has so far been transported using the Central Corridor that passes through Kazakhstan.

On the other hand, from the perspective of the European Union, three main Eurasian land transport corridors are distinguished: Northern, Central and Southern ones. Within the Central Corridor there is the Trans-Caspian International Transport Route, known as the TITR Corridor⁸. The analysis was based on statistical

and analytical reports created within the OSJD⁹ organization, carried out using source materials received from OSJD member countries.

1. SYNTHETIC DIAGNOSIS OF THE STATE OF TRAFFIC ON THE SILK RAILROAD UNTIL 2021¹⁰

During the COVID-19 pandemic, the China-Europe rail route continued to be a reliable transport route connecting the two continents. The main factor in the competitiveness of international rail transportation was the speed of transport and delivery time of goods. Because of the constraints imposed by the spread of coronavirus infection, railroads turned out to be a reliable mode of transport for delivering medical supplies necessary to combat the COVID-19 pandemic. Throughout the pandemic, freight trains on the China-Europe route transported large quantities of anti-epidemic supplies and packages shipped via cross-border e-commerce, as well as goods that had previously been delivered by sea or air. The organization of container trains in the China-Europe direction has made a contribution to international cooperation in epidemic prevention and to the stabilization of supply chains between countries along the Belt and Road project. The dynamics of the changes are shown in Table 1 below.

Table 1. Changes in traffic volumes on the China-Europe-China route

Year	Number of container trains
First half of 2022	7514
2021	15,183
2020	12,406
2019	8255
2018	6637

Source: [5]

⁵ One of such companies is the Chinese operator New Silk Road Intermodal from Sichuan. „In the last few years we did not use Ukraine as a transit country because of the local situation, Belarus and the Baltic states were always our first choice. In addition, the rail route is so important for China and Russia that we will do everything we can to assure that no train to Europe is affected by the situation in Ukraine”, it wrote on LinkedIn.

⁶ The longest rail transport corridor within the OSJD, i.e. Corridor No. 1, is more than 20,000 km long.

⁷ A transportation corridor is a transportation route of international importance. In this route there are at least two roads of different modes of transport with appropriate technical parameters with nodes located on them. An international corridor should be understood as a part of the national or international transport system that ensures the transfer of significant flows of passenger and freight traffic between geographic regions, includes infrastructure facilities and means of transport of all modes of transportation that are used in a given corridor, as well as the entirety of technological, organizational and legal conditions for the implementation of such transportation [22].

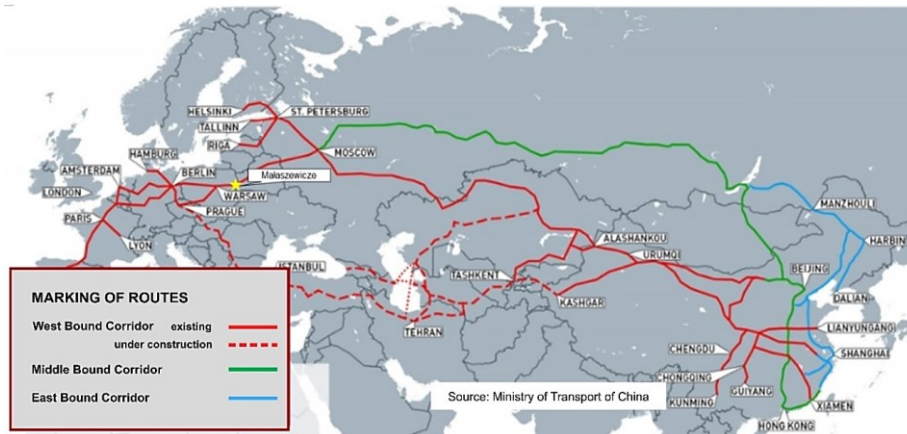
⁸ The TITR Corridor was established in 2014 in order to provide transport connection between China and Europe, via Kazakhstan, Azerbaijan, Georgia, Türkiye/Ukraine. The TITR Trans-Caspian International Route Association will include railroads of Ukraine, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Turkmenistan, Türkiye, China, Poland.

⁹ The Organization for Co-Operation between Railways, headquartered in Warsaw, was established on 28 June 1956 in Sofia at a meeting of ministers responsible for rail transport in the countries of Asia and Central and Eastern Europe.

¹⁰ The Author's own study was used – see [2].

In this respect, it should be emphasized that more than 13,000 container trains have passed through the infrastructure of OSJD member countries on 200 routes. Trains run regularly on these routes and depart according to traffic schedules. When analysing the traffic, it should be mentioned that in 2021, 15,183 container trains were dispatched by rail on the China-Europe-China route, i.e. there was a 22% increase compared to 2020. The trains transported 1.464 million TEU¹¹, i.e. a 29% increase occurred

compared to 2020. 8364 trains operated on China-Europe routes, i.e. there was a 20% increase compared to 2020. 831,000 TEUs were carried on this direction, which made a 29% increase compared to 2020. As regards Europe-China connections, 6819 trains were dispatched there, i.e. there was an increase of 26% in comparison to 2020. Container trains ran to 23 countries and 182 cities. A total of 14,350 CIM/SMGS¹² consignment notes were issued in export traffic at Chinese railway stations in 2021¹³. When analysing these



Map 1. Silk Railroad routes (Source: Ministry of Transport of China, Beijing 2018)

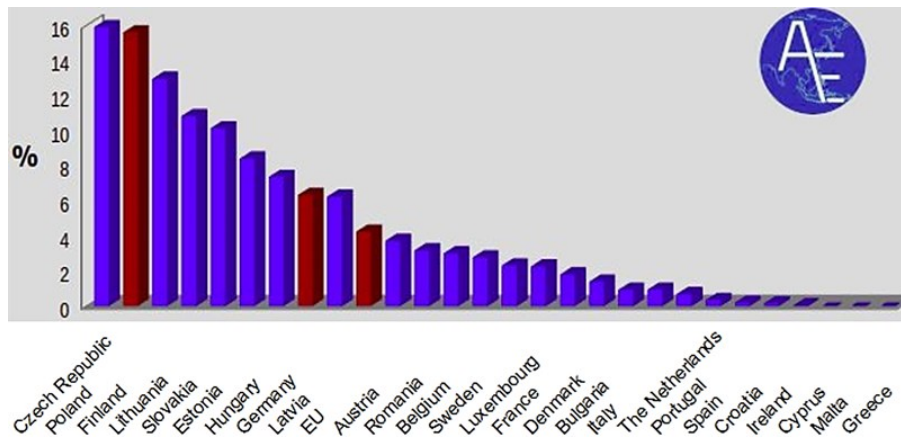


Fig. 1. Railroad transport share in import from China to EU countries (Source: [15])

¹¹ TEU (twenty-foot equivalent unit) – a unit of capacity often used in reference to ports and ships. It is equivalent to the volume of a 20-foot-long container.

¹² The CIM/SMGS consignment note is a uniform consignment note used to transport goods to countries that apply different international transport regulations (SMGS and CIM) and is issued for the entire journey without re-registration at the point of change of transport law. It is considered a customs document and it simplifies border crossing procedures for goods transported by rail.

¹³ For example, 11,075 CIM/SMGS consignment notes were issued at the Alashankou border crossing in export traffic, and 3275 CIM/SMGS consignment notes were issued at the Khorgos border crossing in export traffic.

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data, it should be noted that a lot of focus in container transport improvement activities has been given to:

- ensuring uninterrupted traffic through border crossings and carrying out work to modernize the infrastructure at border crossings, as well as actively increasing the capacity to deliver, tranship and receive goods;
- innovating the way transportation is organized and promoting work on the flexible replacement of broad and standard tracks with Russia, Kazakhstan and Mongolia;
- improving the efficiency of the use of empty wagons and containers on the way back;
- organizing work on the exchange of electronic data, based on the existing interaction mechanism with Kazakhstan, Russia and Mongolia, as well as actively studying the use of electronic digital signatures in transportation using electronic technologies¹⁴;
- promoting work on innovations in customs clearance at the borders based on the organization of work on electronic data exchange with customs;
- popularizing the use of the CIM/SMGS consignment note also in electronic form.

The importance and role of rail freight on the New Silk Railroad for the European Union countries can be confirmed by the results of the railroad transport share of direct import from China, shown in Figure 1.

2. THE PLACE OF UKRAINE ON THE NEW SILK ROAD¹⁵

Carriage of goods by rail in Ukraine reached 314.3 million tons in 2021, i.e. about 3% more than in 2020. Transit transport through the territory of Ukraine reached 2 million tons, recording a decrease of 8.3% compared to the same period last year. In order to increase freight volumes, speed up deliveries and ensure the safety of goods, the Ukrainian Railway¹⁶ organized and operated more than 90 container trains, including 17 international ones. In total, more than 472 thousand TEUs were transported by rail through the territory of Ukraine in 2021, 11.1% more than the volume of container shipments in 2020, which accounted for 2.1% of total rail freight transport. In 2021, 226 container trains crossed the territory of Ukraine in the direction of EU countries (114 - in the direction of Hungary, 109 - in the direction of Poland and 3 - in the direction of Slovakia), as well as 15 container trains from Poland to China, 10 trains – from Hungary and 3 trains – from Slovakia. The trains carried forty-foot containers with consolidated cargo (mainly consumer goods). In 2021, transit through Ukraine accounted for 2% of the volume of westward container traffic on the New Silk Road. This figure increased compared to 2020. The dynamics of changes in container traffic over the past few years until 2020 are shown in Figure 2 below.

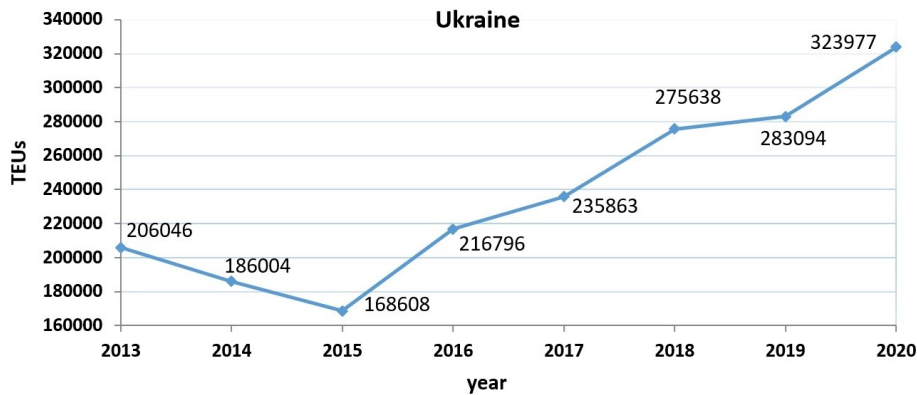


Fig. 2. Dynamics of changes in container traffic in Ukraine between 2013 and 2020 in TEUs

(Source: Compilation based on own analytical and OSJD materials)

¹⁴ E.g. as part of the UN project “Transport and Trade Communications during the Pandemic” on the delivery of goods (sulfated cellulose) from the Republic of Belarus to Serbia, results were presented by PLASKE JSC, an expert of the United Nations Economic Commission for Europe (UNECE), of a study of the application of international standards and data models to electronic documents used in the transportation of goods by inland waterways, including transport corridors across the Danube and Dnieper. The UNECE project compared the reference data model for multimodal transport (UN/CEFACT MMT RDM) with documents used in real business operations on these transport routes and prepared proposals for implementing the forms in accordance with UN/CEFACT requirements. Technology-neutral multimodal standards can serve as a basis for interoperability using XML, JSON API, blockchain or other new technologies.

¹⁵ The Author’s own study was used – see [2].

¹⁶ Ukrainian Railway JSC (UZ).

After the outbreak of war, the Ukrainian railroads went into emergency mode and started to coordinate all activities through the operations staff in cooperation with the government. The operations staff was established to ensure continuity of service under the exceptional conditions of the war zone. Due to the blockade of Ukrainian ports, the country's export products - mainly agricultural goods - have to find a new way out. In the current situation, rail freight transportation plays an important role in the continuation of these exports. Ukraine accounts for 0.3% of the world's goods export value, but the country is one of the world's largest exporters of wheat (more than 50 million tons per year). Ukraine is also among the world's exporters of sunflower oil, as well as iron and non-alloy steel. At least 241,000 companies worldwide rely on Ukrainian supplies [5]. All of this creates new freight flows and the need for new transportation routes in order to support Ukrainian trade and for the future reconstruction process. Important transport routes pass through the territory of Ukraine and Ukrainian railroads are members of the Association "Trans-Caspian International Transport Route" (TITR) or the TRACECA Program¹⁷. The course of the Trans-Caspian route is shown on Map 2.

When analysing shipments across Ukraine, it is worth noting the shipments carried out in 2021 by the Polish limited liability company PKP LHS¹⁸. The location of the line in Poland and its economic impact is shown on Map 3.

LHS is the westernmost railroad with a gauge of 1520 mm in Europe¹⁹. The company has taken active steps to maintain existing and develop new intermodal transportation, strengthening its position in the transportation market along the New Silk Road. A number of additional container transportation projects have been developed, including multimodal transport. In 2021, 105 container trains were sent to the LHS Sławków station from China in transit through Ukraine with the final section through Poland and 20 trains were sent in the opposite direction (in 2020, 40 trains arrived at the Sławków station from China in transit through Ukraine). In 2021, thanks to cooperation with the logistics platform Xi'an Free Trade Port Construction and Operation Co., Ltd, PKP LHS began providing operator services for shipping containers from the Chinese city of Xi'an to the LHS Sławków station and launched container transport from Sławków to Xi'an. The company's activities were aimed at expanding its logistics services related to the onward transportation of containers arriving from China to the target customer in Poland and other EU countries. In 2021, the company took part in work aimed at launching of long-distance container services from the Nakhodka station in the Far East to the Sławków LHS station. The noticeable upward trend in 2019-2021 halted in 2022. This is shown in Figure 3. In the first half of 2022, a decrease of 40% was observed compared to the same period last year.



Map 2. The course of the middle Trans-Caspian corridor (Source: Compilation based on own analytical materials)

¹⁷ TRACECA is an international transport program that involves the European Union and 13 member states of the Eastern Europe, Caucasus and Central Asia region. The program aims to strengthen economic relations, trade and transport in the Black Sea, South Caucasus and Central Asia regions.

¹⁸ PKP Linia Hutnicza Szerokotorowa (abbreviated as PKP LHS) is a Polish rail carrier and infrastructure manager of railroad line No. 65, based in Zamość. PKP LHS provides comprehensive door-to-door delivery services, customs services (inspections) and container storage. The company also provides depot-type services for Chinese partners at the Sławków LHS station.

¹⁹ The basic operating parameters are: the length of the line – 400 km, the number of stations – 10, operation of 12 pairs of trains per day, permissible rail axle load - 24.5 tons, train length - 900 m, maximum gross train weight - 5000 t.

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Map 3. Location of LHS broad-gauge railway line (Source: Own compilation based on PLP LHS materials)

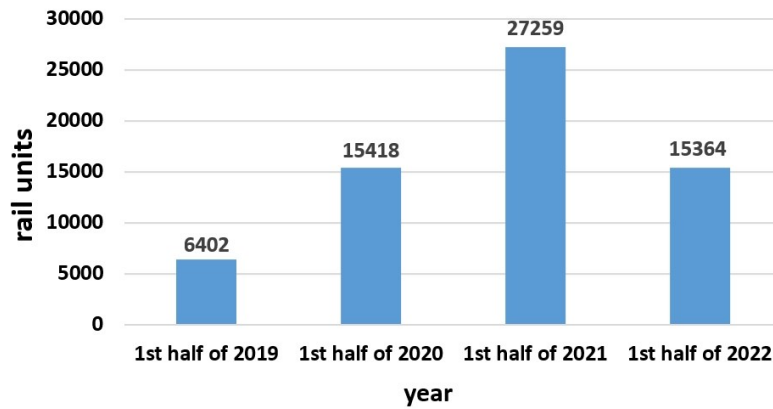


Fig. 3. Number of rail units transported in intermodal transport in Poland by PKP LHS in the first half of 2019-2022 (Source: [11])

3. CONTAINER TRAFFIC ON THE NEW SILK ROAD IN VIEW OF THE ARMED CONFLICT IN UKRAINE

SITUATIONAL CONTEXT

The conflict-related geopolitical situation has changed the economic landscape for freight traffic between China and Europe. It has also affected the global logistics processes²⁰. The evidence of this is the fact that both countries were an integral and important part of global supply chains²¹ of, for example, agri-food products, which have been disrupted. In terms of global logistics, new outbreaks of COVID-19 infections in China and a zero COVID policy are further causing problems in global supply chains, congestion at ports, as well as increased rail and sea freight. The direct impact of the war on international trade, as reported by DHL²², and global container shipping is limited, given the low volumes and a limited number of intercontinental routes in the region. However, the change in the routing of cargo that goes through Russia and additional customs controls on dual-use goods are increasing congestion at ports in Europe and affecting the rest of the world. Apart from rapidly rising marine insurance prices, container shipping lines are also trying to compensate for soaring fuel prices²³. The economic consequences of the conflict situation and its impact on logistics systems must be viewed in the long term [14].

TRAFFIC ON RAIL TRANSPORT CORRIDORS

A decline in the positive growth trend is noticeable in global land rail corridors. In the first half of the year, 7514 trains were dispatched on China-Europe routes, 20% more than in the previous year. 724,000 TEUs were transported, which is 3.3% more than in the same period last year²⁴. Nevertheless, declines are visible on the northern corridor through Russia and Belarus. The volumes for 9 months of 2022 do not reach the levels of 6 months of 2021 and 2020.

According to data from the Office of Rail Transport (UTK), 307,200 TEUs were transported from China to Europe in the first half of 2022. This constitutes a decrease of 8.7% compared to the first half of 2021. According to UTK, the reason for the decline is the international political situation – Russia's aggression in Ukraine and the sanctions imposed and implemented against Russia and Belarus. The sanctions do not directly affect the route operator. At the same time, the economic and political climate created around Russia and Belarus makes consignors cautious in their choice of rail transportation. However, despite sanctions and a decline in traffic, transcontinental intermodal rail transport²⁵ is operating stably. Due to China's economic situation, it is expected that there will be restrictions on the subsidization of product exports by rail in 2023. The estimated maximum subsidy level for 2023 is 10%. Meanwhile, estimates of the overall dynamics of container traffic on the two branches (northern and central) of the Silk Railroad indicate declines of more than 30%. This is shown in the estimates of the railroad alliance of operators on the Silk Road (see Figure 5). At the beginning of 2022, transport of freight passing through the Northern Corridor accounted for almost 96% of all traffic, as this route is the fastest and cheapest. Only two changes in axle width were required there²⁶. Thus, customers began to have problems paying for transportation, insuring cargo, etc. As a result, shipments from China began to be redirected to sea transport or cargoes were redirected to the Central and Southern Corridor railroads.

Analysis of the volumes of units carried on the China-Europe route on a monthly basis shows a slump in April 2022 compared to the same period in 2021. Since April 2022, a recovery of volumes transported between Asia and Europe is evident. The comparison is shown in Figure 6.

²⁰ The author understands global logistics in the context of knowledge and skills to manage the physical flow of products in different economic areas and large geographic spaces of the world (e.g. Eurasian space), beyond and across the borders of countries, political and cultural regions.

²¹ By global supply chain we will mean a sequence of events, a process of moving goods to meet demand for specific products in different regions of the world.

²² See [1].

²³ For example, in May, ocean freight rates in long-term contracts were 30% higher than in April, which is the highest monthly increase ever. Currently, long-term contract freight rates are 150.6% higher than in May last year. Since the beginning of 2022, they have increased by 55%.

²⁴ According to data from the National Railway Administration of China. For example, according to data from PLK S.A., in the first half of this year, 4226 freight trains were dispatched at Brest-Terespol – the primary border crossing for the Silk Road. In 2021, the number was 4620, which means a decrease of 8.5%.

²⁵ Intermodal transport is the carriage of cargo in a single cargo unit (e.g. container, swap body) without handling the goods themselves in alternating modes of transport all the way from consignor to consignee [23].

²⁶ The first one – on the border with China and the second one – on the border Belarus/Poland or Ukraine/Poland (except for the PKP LHS line)/Slovakia (except for the line to Košice)/Hungary.

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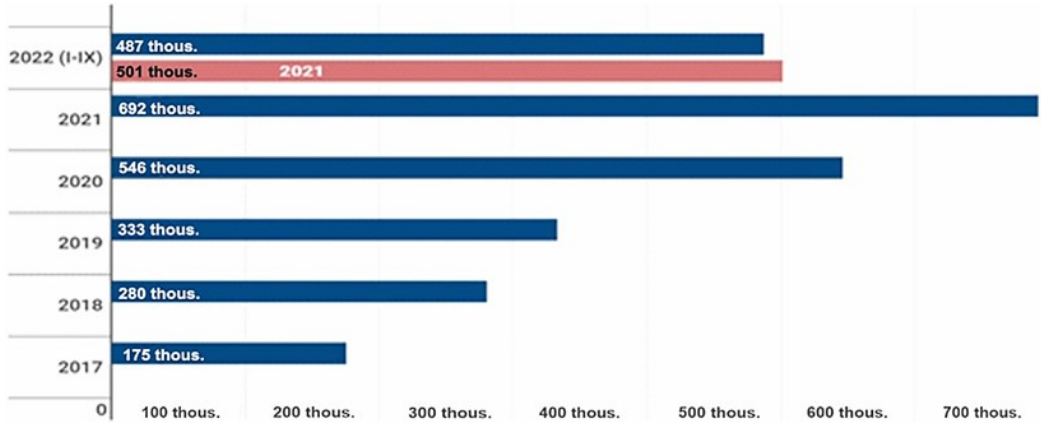


Fig. 4. Freight volumes in thousands of TEUs, 2017–2022 (VI) (Source: [7])

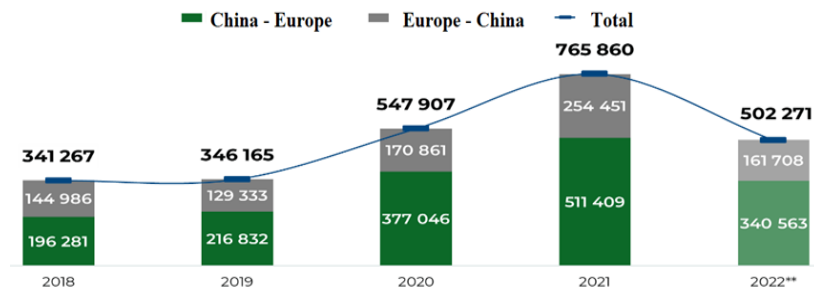


Fig. 5. Dynamics of the volume of rail container traffic* China-Europe-China, 2018-2022, TEU**
 * Through the Eurasian and Northern corridors, ** Forecast, (Source: [24])

NUMBER OF TRANSPORTED TEUS IN THOUSANDS BY MONTH

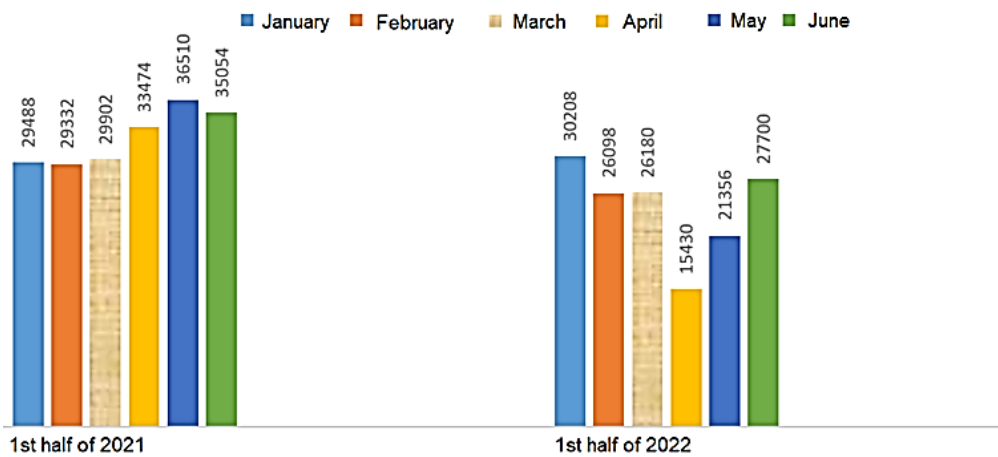


Fig. 6. Number of TEUs transported from Asia to Europe – a comparison of traffic in the first six months of 2022 and 2021 (Source: Own compilation based on [16])

In general, as opposed to the previous stable and continuous upward trend regardless of the source of the analyzed data, the half-year period of 2022 in comparison with the same period of 2021 is characterized by a significant decline and slowdown in the rate of growth. At the same time, it should be noted that after the first shock, subsequent months bring normalization of the situation.

The slowdown in the significant growth rate should be attributed to the following factors:

- the war in Ukraine and the related economic sanctions imposed on Russia and Belarus, as a consequence of which many companies have ended cooperation with the Russian Railways;
- the need to bear the additional cost of cargo insurance due to additional war risks in order to provide security guarantees in transportation;
- increasing perturbations of the Chinese economy²⁷, e.g. disruptions and stoppages at Chinese ports and the China-Kazakh border;
- a decline in the volume of transit through the Kaliningrad corridor due to the political situation; stopping ship visits by many foreign companies to

Russian Federation ports and banning Russian ships from entering many European ports.

ALTERNATIVE ROUTES

As a result of this situation, new routes are being sought, new development agreements are being made²⁸ and existing central and southern corridors bypassing Russia, Belarus and Ukraine are being improved. For example, a lot of attention is paid to the TMTM Corridor [3]. The length of the route is 9 to 11 thousand kilometers²⁹. Transportation time is up to 13 to 21 days. The development of traffic on this corridor is supported by a range of new logistics services and competitive tariff rates³⁰. Forecasts for this corridor in terms of transportation in 2022 compared to 2021 indicate an increase to 50,000 TEUs. The estimated increase in freight weight in this corridor is expected to reach 3.2 million tons. By the end of 2022, the volume of transported containers is planned to double with a number of projects being undertaken to make shipping on this corridor more dynamic³¹.

The development of traffic along this corridor through the Caspian Sea is shown in Figure 7.

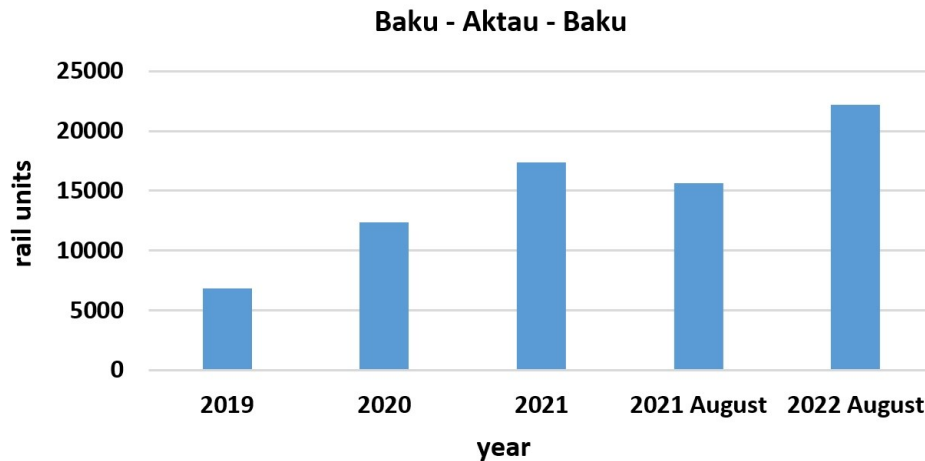


Fig. 7. Transport by feeder ships (in thousand TEUs) (Source: [8])

²⁷ E.g. Bloomberg predicts that China's economic growth will be only 2% this year, the lowest since the 1970s. The zero COVID policy further prolongs supply chains. Retail sales fell by 11.1% in April compared to a year earlier; see [15].

²⁸ E.g. agreement between Türkiye and Kazakhstan on cooperation and development of rail transport, agreement between Türkiye, Bulgaria, Serbia and Hungary for development of rail transport infrastructure.

²⁹ For example, this route is used to carry intermodal shipments through Kazakhstan, Azerbaijan, Georgia, Türkiye, Romania via the Caspian and Black Seas. The first train along the Central Corridor departed from Xi'an (capital of Shaanxi Province) on 13 April 2022. The train passed through Kazakhstan, Azerbaijan, Romania, Hungary, Slovakia, the Czech Republic and arrived in Germany, covering a total distance of 11,300 kilometers.

³⁰ Discounts reach up to 60% off base volumes.

³¹ For example, a joint venture between Georgia, Azerbaijan, Turkey and Kazakhstan is planned, involving the development of corridor infrastructure with the participation of major global operators: PSA Group, MSC, etc. It is planned to create a container hub based on the NC "Aktau Sea Commercial Port" JSC in Kazakhstan and Poti Port in Georgia.

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Due to the conflict, a 'roadmap' has been prepared for the development and increased use of the TMTM Corridor for the period 2022-2027. The aim is to increase the capacity of the Corridor ensuring regular and seamless freight traffic. Ultimately, 1.5 million tonnes of goods were transported through the TMTM in 2022, a 250% increase over the previous year, as well as 33 600 TEU containers, which is 33% more than in 2021. The growing exchange is influenced by China's inclusion of TMTM in the Belt and Road Initiative (BRI) and the European Union's inclusion in the EU's Silk Wind programme, which improves distribution operations with China. The challenge lies in the need to develop transport infrastructure in Georgia, Azerbaijan, Kazakhstan and Türkiye. Existing rail lines are being revitalized and new ones are being built along the corridor's route. Transportation capacity on the Caspian Sea is being expanded³². The corridor is increasingly attracting such international transport companies as Maersk, Nurminen Logistics, Nippon Express, Metrans, CEVA Logistics and other³³. There is a growing demand for transportation via this route across the Black Sea to the Romanian port of Constanța. The route through Romania is becoming a popular alternative, even though the transit time is relatively long (40 days). This is due to overcrowding at the Romanian port and insufficient technical parameters of the rail infrastructure on the Romanian side. The TMTM and TRACECA corridors (see Map 4) do not have sufficient capacity to handle all the increased volume of goods due e.g. to infrastructure quality and capacity. However, according to Asset Asavbayev – Secretary General of TRACECA [16], such initiatives as the development of multi-modal transport routes and the increase of traffic in the Corridor, as well as the agreement on a single transit contract, will help carriers to use a single permit in all countries, which will greatly simplify the shipment of goods via this route. The return to sea transport results in longer delivery times and increased costs³⁴. Many companies have redirected cargoes to the main China-Europe corridor via Belarus. Some customers prefer not to have their cargo transit through the Russian

Federation, so they choose to transport their cargo by rail through the Southern Corridor or to transport it using other modes, mainly by sea.

CONCLUSIONS

The economic and geopolitical situation is extremely unstable. Container traffic from China to Europe via Russia and Belarus is experiencing stagnation. Much depends on China's position and its attitude towards the geopolitical situation, as well as on the state of the Chinese economy³⁵. Because of the shutdown of Ukraine's rail infrastructure, transit is being redirected to other routes. Due to sanctions, customers are also choosing other rail routes, such as TITR from China via Kazakhstan, Azerbaijan, Georgia, Türkiye. Investment activities in alternative routes are taking place³⁶. Transportation on the "Southern" route "through the two seas" is much more difficult due to double loading and unloading operations³⁷, which increases both the time and cost of transportation. However, because of bans and sanctions on transit and transportation through Russia, this route began to gain more and more demand. On the other side of the Black Sea, there are several options to choose from. Apart from Constanța in Romania, part of the cargo is received by the Bulgarian port of Varna. In addition to the second sea leg, it is also possible to use the land route via Türkiye. This is a shorter route if there are no infrastructure obstacles along the way.

The current political and economic situation is not favourable to rail transportation, especially its international component. The rapid increase in energy prices fundamentally increases the share of the transportation component in the cost of goods, also affecting the end consumers. Investment in transport corridors should be considered as a source of activation of economic cooperation of countries and regions, especially since the distinctive features of a transport corridor include the expanded economic and production potential of regions located at the ends of the corridor or the possibility of using multimodal transport technologies³⁸.

³² From September, there was an increase to 6 feeder ships and an increase in capacity to 26,000 TEUs/month.

³³ ADY Container LCC, which is a subsidiary of Azerbaijani Railways CJSC, launched a new project connecting China with Europe via the port of Batumi (Georgia). Within the framework of a joint project, ADY Container and ASCO (Azerbaijan Caspian Shipping Company) launched container transport with the use of feeder ships under the flag of Azerbaijan between the ports of Batumi (Georgia) and Constanta (Romania) on the Black Sea. The ship makes 6 trips per month.

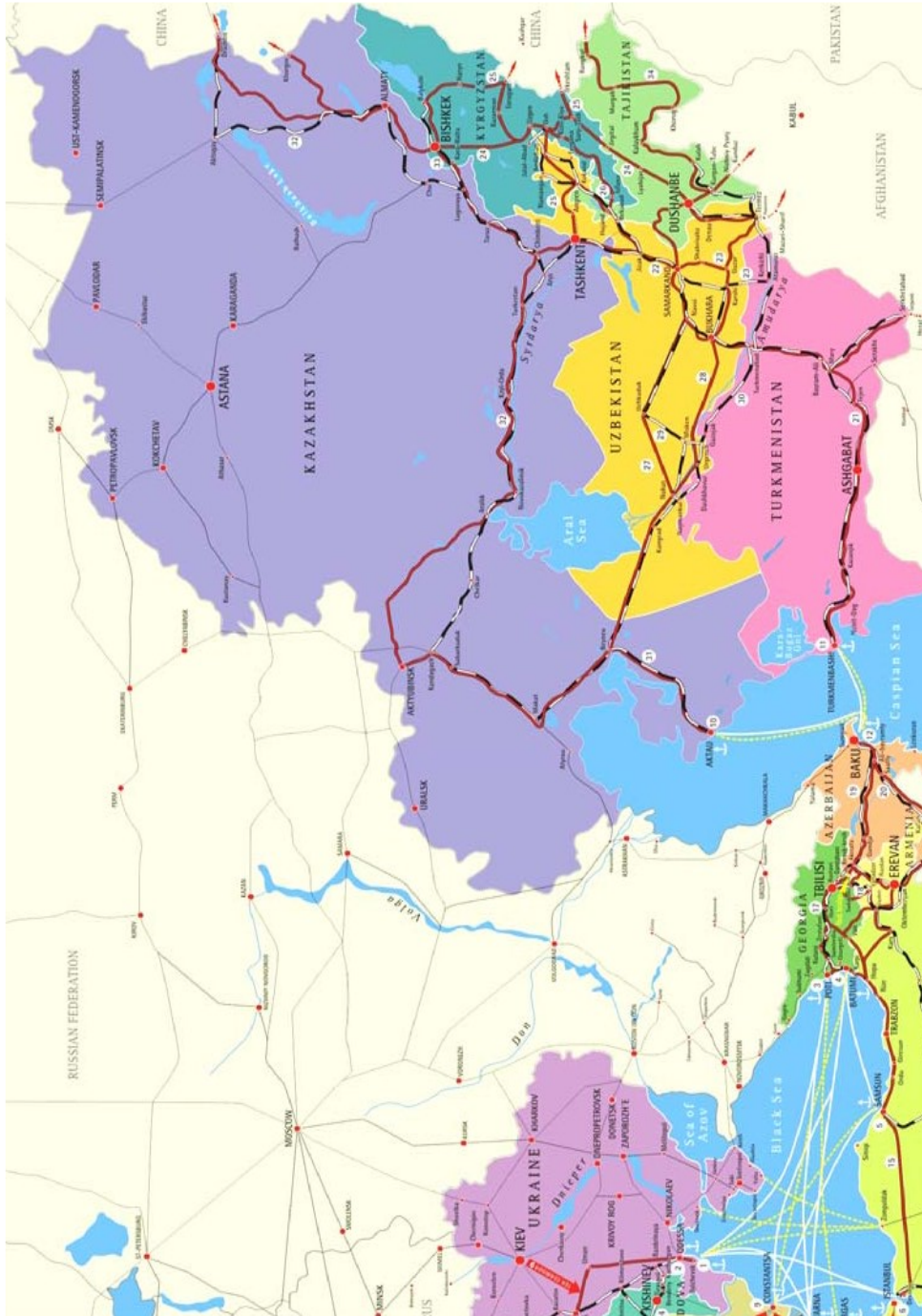
³⁴ In May 2022, long-term contract freight rates were 150.6% higher than in May last year. Since the beginning of 2022, they have increased by 55%.

³⁵ E.g. in light of the World Bank lowering its GDP growth forecast for China from 5 to 2.8% in 2022.

³⁶ Türkiye, for example, has increased its budget for transit rail projects by 60% and plans to increase rail freight's market share to 20%.

³⁷ I.e. it was required to load the cargo at least twice and unload twice from ferries (via the Caspian and Black Seas).

³⁸ Multimodal transportation is the transport of goods by at least two different modes of transport. This is done by the central corridor through the Black Sea being a viable alternative, as demonstrated, for example, by the Azerbaijani company ADY Container, which has launched a line connection to the port of Constanța in Romania.



Map. 4. TRACECA international transport corridor (Source: [18])

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Since, as I mentioned, the sanctions do not directly affect route operators or transit rights, rail transportation between China-Europe-China via Russia and Belarus continued to be performed with a stabilizing trend. Taking all economic and geopolitical aspects into account, the railway Silk Road has shown resilience

to the shock changes in Eurasia since February 2022. According to Chinese railway data, the number of trains running to Europe was higher than in 2021, as shown in the chart below. The growth rate has slowed down. An increase of 9-10% was noted. Destinations have shortened. The trends are shown in Figure 8.

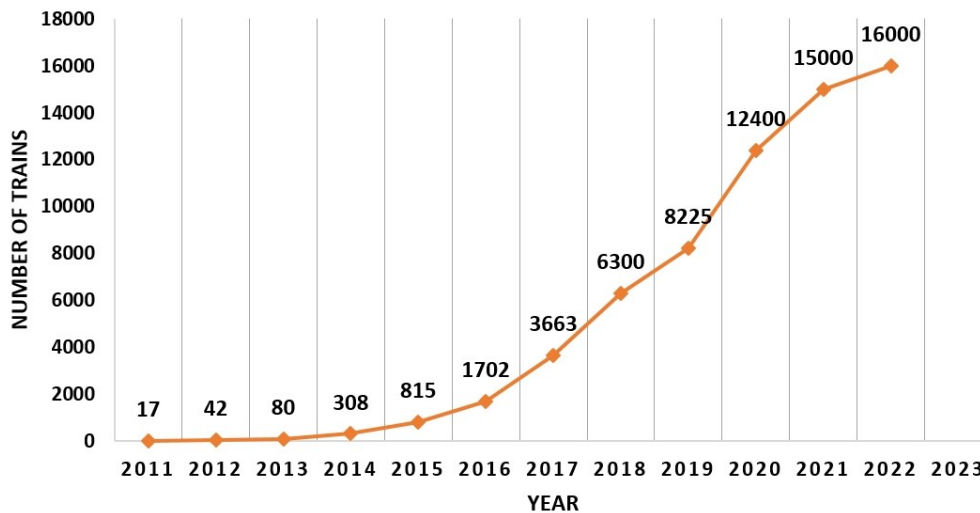


Fig. 8. The number of trains running in the China – Europe direction (Source: [12, 21])

Overall, according to OSJD statistics [4], the number of trains running on the Asia-Europe-Asia route was more than 16,500. As the sanctions do not cover transit agreements, transit, customs clearance and deliveries remained uninterrupted. China's trade surplus in 2022 was at a record level. The country's export in 2022 increased by 7 per cent to \$3.59 trillion and imports by 1.1 per cent to \$2.72 trillion [13]. At the same time, the fall of China's PMI index³⁹ below 50 points in April 2023 does not represent a positive development. However, China's relations with the European Union inspire hope for improvement, especially after China's recent support of the UN resolution. There is room for further development of the New Silk Road and alternative corridors. In an uncertain geopolitical situation, future research directions should concern the attractiveness of the

northern corridor of the New Silk Road in the context of the TRAX indicator⁴⁰ and the role of alternative corridors, e.g. the middle corridor through the Caspian Sea. Research related to the impact of the new technologies, e.g. digital corridors, a digital one-window system in the field of border procedures or electronic consignment notes CIM/SMGS, is extremely important in terms of the further development of the capacity of corridors and their attractiveness for rail transport in the Asia-China traffic.

WPLYW KONFLIKTU ZBROJNEGO NA UKRAINIE NA KOLEJOWY TRANSPORT TOWAROWY POMIĘDZY AZJĄ A EUROPA

W 2021 r. branża kolejowych przewozów towarowych udowodniła swoją konkurencyjność pomimo ograniczeń spowodowanych pandemią koronawirusa. W segmencie

³⁹ The PMI (Purchasing Managers' Index) is a monthly published indicator used to assess the economic situation in the manufacturing sector. It is an important measure as it provides a quick assessment of the state of the manufacturing sector. It is also an important forecasting tool. China's PMI provides the first information on the economic activity in China's manufacturing sector each month. The data is compiled by the China Federation of Logistics and Purchasing (CFLP) and the China Logistics Information Center based on data collected by the National Bureau of Statistics (NBS).

⁴⁰ The TRAX index assesses the attractiveness/competitiveness of a transport route/corridor using attractiveness criteria for the carrier's choice of route. The criteria which carriers apply in their practice should be comparable. The weight of each criterion reflects the priorities and importance of that criterion for the operator/carrier and is determined directly by the carrier. The purpose of the TRAX Index is to compare the attractiveness of the TRACECA rail routes through the Caucasus and Turkey/Iran with each other and in comparison with the attractiveness of transport on the route running through the Russian Federation.

kolejowych przewozów towarowych między Azją a Europą osiągnięto to dzięki pozytywnym wynikom przewozowym. Zwiększono przewozy kontenerów w międzynarodowym ruchu kolejowym. Kolej prowadziła prace nad rozwojem i organizacją transportu kontenerów o dużej pojemności w ruchu międzynarodowym, w tym organizacją kontenerowych pociągów blokowych w przestrzeni euroazjatyckiej. Rok 2022 przyniósł fundamentalne zmiany w postrzeganiu bezpieczeństwa i roli transportu kolejowego w ruchu między Azją a Europą. Niespodziewany konflikt zbrojny spowodował chaos w handlu, produkcji i transporcie. W korytarzach łączących Azję z Europą pojawiły się problemy, przerwane zostały łańcuchy dostaw. Sytuacja geopolityczna w Europie Wschodniej pozostaje napięta i nieprzewidywalna. Skutkuje to trwałymi konsekwencjami dla produkcji, łańcuchów dostaw i popytu, korytarzy transportowych w przestrzeni euroazjatyckiej. Dotyczy to również transportu kolejowego w ramach koncepcji Nowego Jedwabnego Szlaku.

Celem niniejszego artykułu jest syntetyczna analiza wpływu zmian geopolitycznych i konfliktu zbrojnego na Ukrainie na funkcjonowanie Jedwabnego Szlaku oraz wielkość przewozów w kolejowym ruchu towarowym pomiędzy Azją a Europą. Powyższa analiza została przeprowadzona na podstawie badań źródeł wtórnych i dostępnych materiałów źródłowych uzyskanych od krajów członkowskich OSJD, które uczestniczą w transporcie kolejowym na Jedwabnym Szlaku.

Słowa kluczowe: OSJD, transport kontenerowy, Nowy Jedwabny Szlak, transport kolejowy.

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