SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2025
ORGANIZATION AND MANAGEMENT SERIES NO. 227

UKRAINE'S TRANSPORT INFRASTRUCTURE IN THE FACE OF WAR – THE CONTEXT OF THE FINANCIAL CHALLENGES OF RECONSTRUCTION

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Purpose: The aim of this article is to analyze and assess the impact of Russian aggression on Ukraine's transportation infrastructure and to identify the financial challenges of its reconstruction.
Design/methodology/approach: The article outlines the extent of damage to Ukraine's transport infrastructure caused by ongoing warfare. Within the context of rebuilding and restoring transportation services, it discusses the financial burdens faced by the Ukrainian population. The study is based on an analysis of secondary data.
Findings: The cost of rebuilding Ukraine's transport sector is estimated at nearly $74 billion, representing about 15% of the total funds needed to revitalize the war-damaged economy. This figure underscores the scale of the financial challenges confronting the country.
Research limitations/implications: Due to space limitations, the article focuses only on war-related damage and reconstruction needs. It does not include a full account of the transport sector's broader economic role. Future studies should examine international cooperation mechanisms and support instruments, as well as wartime adaptation measures across transport sectors and the territorial distribution of infrastructure damage. All cited sources emphasize that current data are incomplete and that the extent of damage remains an estimate, particularly in areas outside government control.
Social and Practical Implications: The findings highlight the urgent need for major financial investment in Ukraine's transport infrastructure. The destruction surpasses the state's financial capacity, necessitating international support both in the short and long term. Reconstruction should follow the "build back better" principle, ensuring higher standards than pre-war infrastructure. Such efforts will enhance mobility, economic activity, and recovery, ultimately improving citizens' quality of life, reinforcing national security, and advancing EU integration.
Originality/value: This article contributes to the existing body of knowledge by offering a structured analysis of the damage to Ukraine's transport infrastructure based on current and reliable data. It identifies key investment priorities and is particularly relevant to policymakers, international donors, and researchers engaged in post-war reconstruction.
Keywords: Ukrainian transport infrastructure, losses and damages to Ukraine's transport infrastructure, needs for the rebuilding and reconstruction of Ukraine's transport infrastructure, service delivery restoration needs.
Category of the paper: Research paper.

1. Introduction

Transport infrastructure is a subsystem of the transport system. In the context of economics, the development of transport infrastructure is of critical importance in ensuring the stability and continuous economic growth of a nation. In the event of armed conflict, the continued functioning of transport infrastructure assumes even greater significance. It is a prerequisite for the maintenance of daily life, the facilitation of economic development, and the assurance of national security.

Consequently, the transport sector must maintain its capacity to facilitate population mobility, ensure the delivery of food and goods, and support military logistics and humanitarian aid operations.

The present study is undertaken to analyse and assess the impact of Russian aggression on Ukraine's transport infrastructure, and to identify the financial challenges associated with its reconstruction.

The paper focuses on the significance of the transport sector in Ukraine, the magnitude of damages and losses in transport infrastructure, its current condition, looks at some essential requirements for rebuilding and reconstruction as well as the demand for restoration of service delivery.

The originality of the publication lies in its provision of a detailed and organized analysis of the damage to transport infrastructure in Ukraine, developed and based on a comprehensive set of reliable and up-to-date data. The presented estimates and forecasts provide insight into the financial prerequisites associated with the rebuilding of the studied infrastructure.

The work is of significance for a range of stakeholders, including decision-makers, international donors and economic planners. Firstly, it highlights the multifaceted challenges Ukraine faces. Secondly, it identifies the most damaged sectors of transport infrastructure. Thirdly, it provides guidance on priority areas for investment in the rebuilding process. This is crucial for developing practical and effective reconstruction strategies.

By emphasising the necessity for international cooperation and the role of external financial support, the article contributes to ongoing discussions in the international political circles regarding the importance of somehow coordinated international assistance in post-war reconstruction processes.

2. Selection of Variables for the Study and Description of Research Methods

The paper provides a detailed description of the scale of war-related damage to Ukraine's transport infrastructure. It identifies the challenges associated with the reconstruction of this infrastructure from a financial perspective. The estimated costs are presented in both short- and long-term terms, categorized by various types of transport infrastructure. The research section of the paper is based on secondary sources. During the analysis, the most up-to-date and reliable data from 2022-2023 were used, sourced from the OECD, the Ukrainian Statistical Office, the Statista research platform, KSE, and the Ukrainian Ministry of Economic Development.

The primary sources from which comprehensive information on the damages was obtained include reports and databases from the World Bank.

The research involved calculating the dynamics of phenomena, determining percentages, and sorting objects according to specific characteristics.

For the purposes of this paper, due to the multifaceted nature of the issues arising from the war and the availability of data, the concept of transport infrastructure was narrowed down to transport networks and infrastructure objects in Ukraine. The term "challenges" was used to refer to the financial needs for the reconstruction of the infrastructure under discussion.

3. Results

3.1. The Significance of the Transport Sector in Ukraine

Ukraine is a transit country between Europe and Asia. It is situated at the convergence of major trans-European corridors that connect Eastern Europe with Western Europe, as well as the Baltic states with the Black Sea. The country's extensive transport infrastructure network [1] results from its expansive territory and the distribution of its population [2] (World Bank).

Transport is a significant sector of Ukraine's economy, accounting for 5.4% of the country's Gross Domestic Product (GDP) in 2021. This figure places it as the seventh largest sector in terms of its share of GDP [3]. The institution responsible for managing Ukraine's transport sector is the Ministry of Infrastructure. Auxiliary ministries, in conjunction with municipal governments, constitute executive bodies. Authorities and state-owned enterprises under the jurisdiction of the Ministry of Infrastructure are responsible for the provision of services, the execution of investments, and the management of assets (World Bank).

In 2021, Ukraine's transport networks included more than 164,275 kilometres of roads, including nearly 47,000 kilometres of highways (OECD). The area covered by bridges on national roads was approximately 18 million square meters, whereas on local roads,

it was almost 11 million. The railway network in Ukraine comprised approximately 1500 stations. The total length of the railway lines was 19,731 kilometres, of which more than 9000 kilometres were electrified (data-explorer.oecd.org). The entity responsible for managing Ukraine's railway infrastructure is the state-owned company Ukrzaliznytsia, which prior to the war employed 266,000 people and controlled 82% of freight transport (primarily metals, coal, iron ore, and construction materials) and 50% of passenger transport (Aebi, Hauri, Kambarage, 2024, p. 22).

In 2021, Ukraine had 25 airports (World Bank). The presence of passenger airlines was documented in twenty-one instances, while nineteen were designated as cargo and mail airlines (Aebi, Hauri, Kambarage, 2024, p. 22).

Airports were located in all oblast cities. The most significant in terms of international flights was Boryspil International Airport in Kyiv.

Other airports, the development of which was linked to the economic activities of cities, tourism, or labour migration, such as Zhuliany Airport in Kyiv and the airports in Odessa, Kharkiv, Dnipro, Lviv, Zaporizhzhia, Ivano-Frankivsk, Kryvyi Rih, Uzhhorod, Mariupol, Chernivtsi, and Rivne, were designated as international airports but mainly handled domestic traffic (PAIH S.A., 2021).

The responsibility for state policy in the field of airport infrastructure fell to the Ministry of Infrastructure, whereas the State Aviation Administration of Ukraine was the body charged with the supervision of civil aviation.

Ukraine had 13 seaports, including five ports: Kerch, Yalta, Sevastopol, Feodosia, and Yevpatoria, which were located on the territory of Crimea and had been occupied by Russia since 2014. In addition to those forementioned, there are 16 river ports, four navigable rivers (the Danube, the Dnieper, the Southern Bug and the Dniester, of which the Danube and Dnieper are among the longest rivers in Europe), with 1888 kilometres of navigable inland waterways. (World Bank).

It is evident that Ukrainian ports are state-owned. The primary governing body for these ports is the Ministry of Infrastructure of Ukraine, which exercises oversight of the Ukrainian Sea Ports Authority (USPA), an organisation established in 2013. The scope of the USPA encompasses the management of operational activities within Ukrainian ports, the responsibility for dredging riverbeds and bays where the ports are located, and the distribution of profits from these ports, with the subsequent investment of these profits in infrastructure projects (Radchenko et al., 2022, p. 11).

Seaports located on the continental territory of Ukraine, along the coastlines of the Black Sea and the Sea of Azov, included deep-water ports such as Mykolaiv, as well as three ports in the Odessa region—Odessa, Chernomorsk, and Yuzhny—that collectively handled approximately 60% of the total cargo volume. Other ports included the specialised seaport in Olvia, Berdiansk, Mariupol, Kherson, Skadovsk, as well as ports in the Danube Delta: Izmail, Reni, and the Ust-Dunaisk Commercial Seaport, along with Bilhorod-Dnistrovskyi. Prior to the

Russian invasion, 35,000 individuals were employed in these seaports. The port capacity was 62 million tons per year (Radchenko et al., 2022, p. 11).

The public transport fleet of major cities in Ukraine consists of metro systems, trolleybuses, trams, public buses, and private local buses known as "marshrutkas" (World Bank). In 2021, the public urban transport fleet consisted of approximately 81,000 vehicles. At the same time, there were 11 million registered private cars in Ukraine [4] (World Bank; OECD).

Ukrainian transport also includes the pipeline industry, which consists of the oil transport system, the gas transport system, and underground gas storage networks. Prior to 2020, the length of the oil transport system was approximately 4800 kilometres, with an input capacity of 114 million tons per year and an output capacity of 56.3 million tons per year (PAIH S.A., 2021).

Ukraine's gas transport system was the second largest in Europe. The total length of gas pipelines in Ukraine was estimated to be almost 40,000 kilometres, including 23,000 kilometres of trunk pipelines. The estimated input capacity of the pipelines was 290 billion cubic metres per year, while the output capacity was estimated at 175 billion cubic metres per year.

The gas transportation system, through direct connections to pipeline systems in Russia, Poland, Belarus, Slovakia, Hungary, and Romania, was integrated into the pan-European gas network (PAIH S.A., 2021).

Ukraine's gas storage networks are not only among the largest underground gas storage facilities in Europe, but they were also a crucial technological component of the transportation system, ensuring the reliability of Ukrainian gas supplies to domestic consumers and the transit of Russian gas to European countries.

The total active capacity of the thirteen underground gas storage facilities in Ukraine amounts to 32 billion cubic metres. Filling the tanks only halfway to secure domestic needs has enabled the rental of these facilities to customers across Europe (PAIH S.A., 2021).

Analysing the structure of passenger transport in Ukraine in 2021 (Figure 1), the dominant modes of transport were road and air transport.

Prior to the war, air transport (primarily facilitated by transit fees amounting to $149 million) played a significant role in tourism and supply chain logistics, contributing approximately 1.1% to Ukraine's GDP (World Bank). Air transport in Ukraine has experienced a consistent annual increase in passenger numbers. However, in 2020, the global pandemic caused a significant decline of nearly 70% in air traffic (World Bank).

Rail transport also played the significant role. Waterway passenger transport accounted for 2% of total passenger transport. Taking 2014 as the base year, when the war in Ukraine began, it was observed that passenger transport using the examined modes, excluding air travel, systematically declined.

When considering population transport, it is noteworthy that in 2021, electric public transport in Ukraine carried 1.475 billion passengers [5]. Of these, 40% utilised trolleybuses, 33% employed the metro, and 27% opted for trams [6] (The Ukrainian Statistical Office).

Buses were the most popular public transport mode in Ukraine prior to 2022. In 2020, urban bus passengers accounted for over 43% of all public transport passengers. Concurrently, trolleybus services accounted for over 23% of public transport usage, while tram services accounted for nearly 17% (Statista).

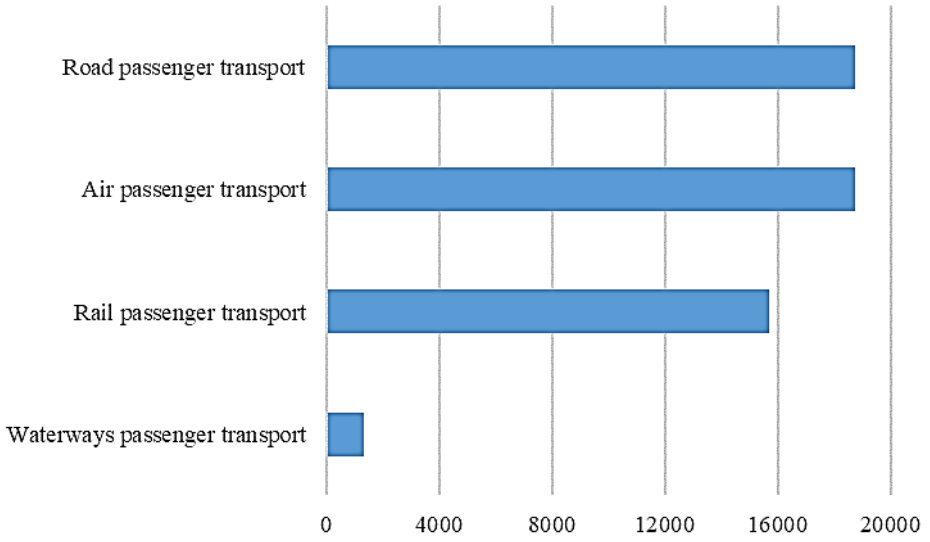

Figure 1. Passenger Traffic in Ukraine in 2021 [in million passenger kilometres].
Source: Own elaboration based on OECD data.

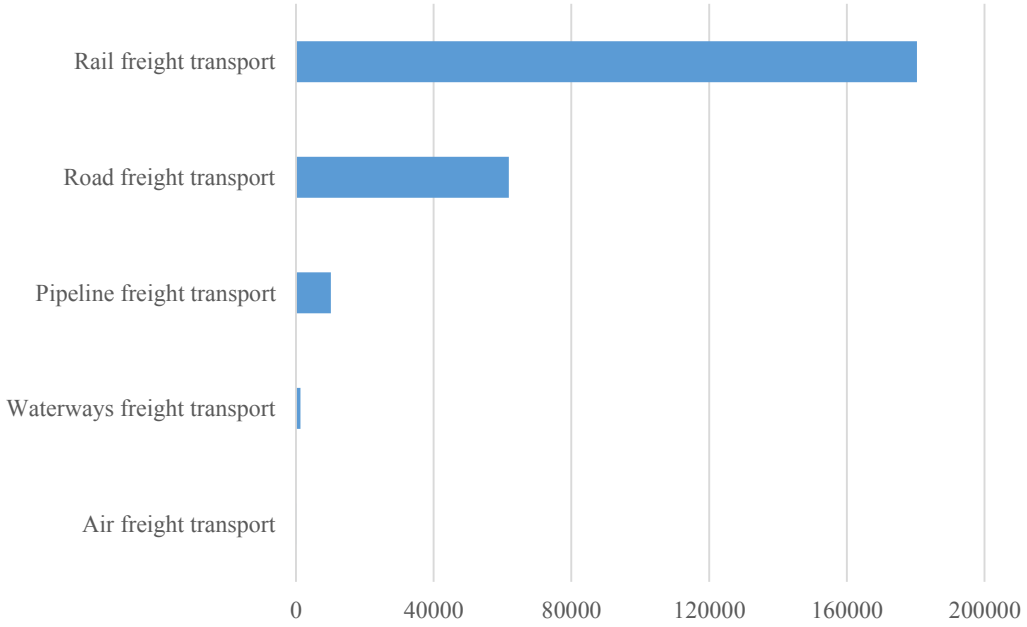

Figure 2. Freight Transport in Ukraine in 2021 [in million ton-kilometres].
Source: Own elaboration based on OECD data.

In the structure of freight transport in Ukraine in 2021 (Figure 2), rail transport played a dominant role. Conversely, air transport had the smallest share. In the context of road freight transport, the predominant form was hire and reward transport, accounting for 77% of all shipments, with an average annual growth rate of 3.4% between 2014 and 2021 (OECD, 2025). The second most important type of road transport was own-account transport, which accounted for more than 14 billion tonne-kilometres in the year analysed. As in the previous data, there has been a decline in the volume of goods transported since 2014. With the exception of 2015, road transport was the only sector to show consistent growth, with an average annual growth rate of 1.4%.

In the export of cargo using waterway freight transport, grains and iron ore emerged as the predominant cargoes in exports, while coal dominated imports (PAIH S.A., 2021).

4. Impact of the War on Ukraine's Transport Infrastructure

Ukraine has been suffering war-related losses since 2014, when Russia began its occupation and subsequently annexed Crimea and part of the territory in eastern Ukraine. As a result of the Russian military invasion of Ukraine in 2022, the largest damage to transport infrastructure occurred in the eastern and southern parts of Ukraine, which were occupied by Russian forces. The estimated area affected by military actions throughout 2022 was about 15% of Ukraine's territory.

The damages are caused by: military operations, road and bridge overloads due to military equipment and supply convoys, as well as temporary repairs to infrastructure. At the same time, all of Ukraine remains constantly exposed to missile attacks and electricity supply problems (World Bank).

Figure 3 illustrates the financial implications of the damage to Ukraine's infrastructure resulting from military operations, categorised by sector, from 24 February 2022 to 31 December 2023.

While the total war-related damage to Ukraine's infrastructure was estimated at nearly USD 152 billion, damage to the transport sector was valued at USD 33,623.3 million, accounting for 22% of the total damage, placing transport in second place in the ordering of sectors by war damage in Ukraine.

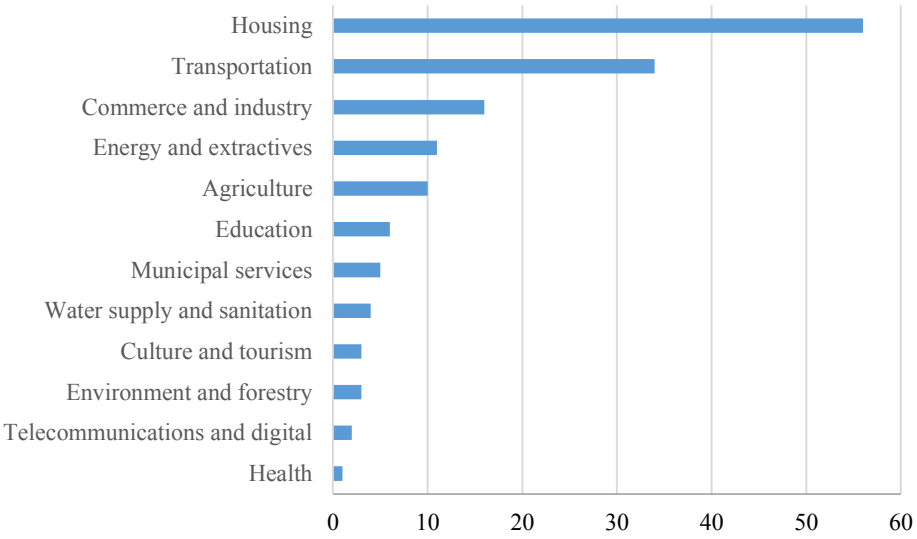

Figure 3. Estimated War Damage to Ukraine's Infrastructure in 2022-2023, by Sector [in billion USD].

Source: Own elaboration based on World Bank data.

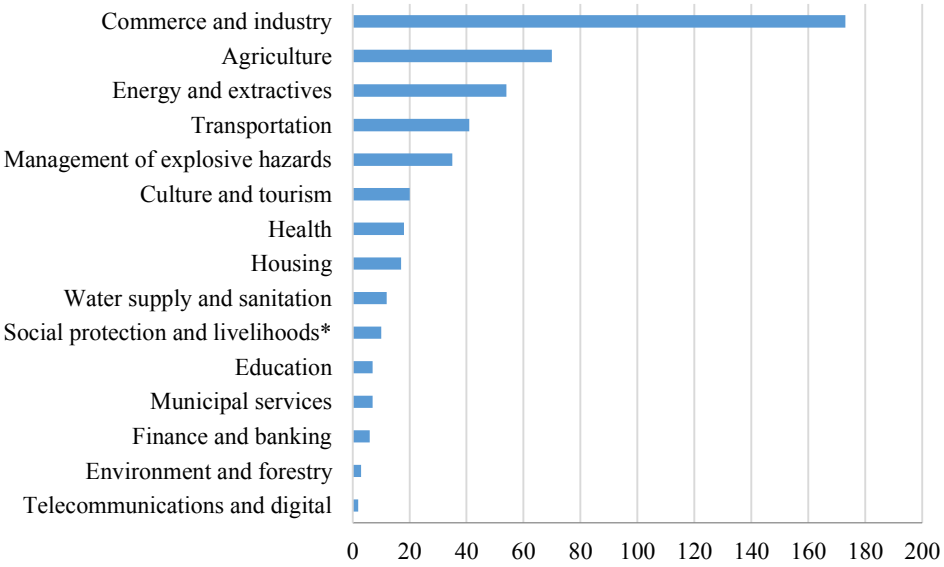

Figure 4. Estimated war losses in Ukraine's infrastructure from February 24, 2022, to December 31, 2023 [in billion USD].

Source: Own elaboration based on World Bank data.

During the same period, the losses, defined as the loss of income, for Ukraine's transport sector were estimated at $40,678 million USD, accounting for 8% of the total economic, social, and other financial losses incurred during the analysed period of the war across all sectors of Ukraine's economy [7]. In this comparison, transport was the fourth most affected sector of the economy in Ukraine (Figure 4).

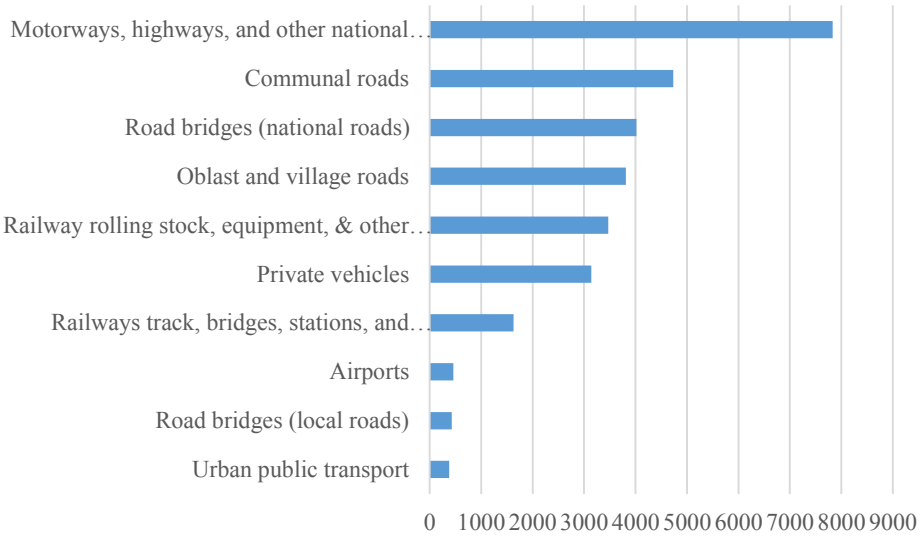

Figure 5. Damages by Asset Category as of June 1, 2022 [in million USD].

Source: Own elaboration based on World Bank data.

Based on data published by the World Bank, the transport sector assets of Ukraine were also organised by the value of damages recorded (Figure 5). As of June 1, 2022, the largest damages, estimated at nearly USD 8 billion, were attributed to highways, expressways, and other national roads. This accounted for 26% of the total damage to Ukraine's transport infrastructure and covered 8699 kilometres, or approximately 19% of highways, expressways, and other national roads.

The second most damaged category was local roads, with nearly 9500 kilometres of the roads destroyed, resulting in losses exceeding USD 4.7 billion.

Subsequent positions in the ranking of damages included road bridges on national roads (13% of the financial losses and 17% in infrastructure for this category of bridges), regional and rural roads (13% and 9%, respectively), railway rolling stock (12% of the total losses), and private vehicles (11% and 4% – nearly 400,000 of the 11 million registered vehicles were destroyed).

Railway tracks, bridges, stations, and electrical installations (including 1119 kilometres of railway lines, 93 railway stations, and more than 63,000 square metres of railway bridges) were also severely affected.

It should be noted that initially, railway infrastructure was not targeted, as it was essential for military logistics. Damages occurred more as collateral damage, primarily due to ongoing combat operations.

In urban transport, the greatest damage occurred in areas that experienced heavy fighting. The damage is estimated at USD 381 million, but this figure is likely underestimated (World Bank).

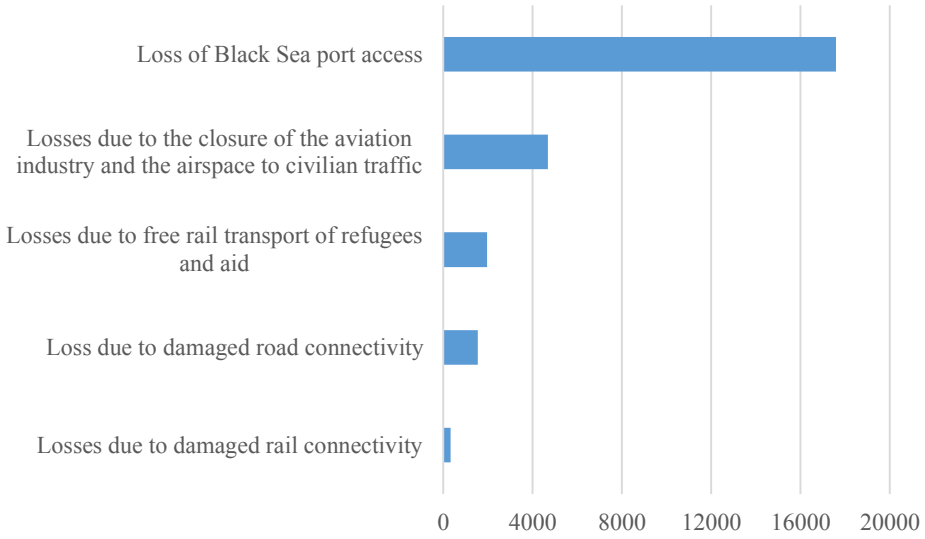

Figure 6. Losses by category [in million USD].

Source: Own elaboration based on World Bank data.

Figure 6 presents, based on data from the World Bank as of June 1, 2022, the ranking of Ukrainian transport sector losses, starting from the most significant. The losses are determined based on the loss of revenues due to the following factors: the lack of access to the Black Sea caused by the blockade of ports [8], aviation revenue losses due to the closure of the industry and airspace for civil aviation, free railway transport for refugees, and the destruction of road and railway infrastructure.

A comparable evaluation of damages and losses, as of June 2023, was conducted by KSE. This report estimated damages to transport at nearly $37 billion, with losses amounting to over $23 billion. These figures include damages in areas under Ukrainian control, affecting 19 civilian and military airports, as well as blockades or seizures of seaports, 507 kilometres of disrupted railway lines, over 25,000 kilometres of damaged public roads, and more than 340 dysfunctional bridges. The estimated damages to transport vehicles amounted to $3.1 billion, with losses amounting to $300 million (KSE, 2023).

5. An Evaluation of the State of Ukraine's Transport Infrastructure

According to the definition provided in the Polish Language Dictionary, the term "challenge" refers to: "a difficult task, a new situation... serving as a test of someone's... resilience" (Doroszewski, 2000).

Even prior to the escalation of the conflict in 2022, users of Ukraine's transport system encountered numerous challenges. The condition of Ukraine's transport infrastructure had not been rated highly [9].

Based on an assessment conducted in 2016 on 20,760 km of international, national and regional road network, 46% of roads were rated as satisfactory, 38% as moderate and 17% as unsatisfactory (World Bank).

In the 2021 WCY [10], a study encompassing 64 countries, Ukraine attained the 54th position in the transport infrastructure category, signifying a notably substandard evaluation (Radchenko et al., 2022, p. 8).

It is also possible to identify problems in other areas.

A persistent challenge in Ukraine is the width of the tracks (1520 mm), which does not align with the European standard (1435 mm). Additionally, the capacity of border crossings was limited to 50% of their potential efficiency before the war due to the need for wheelset replacement in wagons. Furthermore, it should be noted that only half of the railway system is electrified, with approximately 9000 kilometres out of 19,700 kilometres being affected. In the context of inland ports, a persistent challenge pertains to seasonal river shallowing.

Moreover, it is estimated that more than 51% of roads are considered problematic. A significant proportion of these roads, approximately 90%, had not undergone repairs for a period of 30 years.

The average service life of the over 28,000 bridges in Ukraine exceeds 60 years, with more than 30% of these bridges in critical condition (Aebi, Hauri, Kambarage, 2024, p. 22).

Concurrently, alongside already existing challenges, the new ones are emerging. Nearly 40% of Ukraine's roads still features poor durability due to the damaged surface.

The electrified portion of the railway system requires a constant supply of electricity, which is currently scarce due to the war.

Currently, both sides of the conflict deliberately destroy transport infrastructure to hinder the logistics operations of the opposing side, and retreating military forces engage in looting of movable property. Another issue is unexploded ordnance and mined areas and facilities (Human Rights Watch, 2025).

6. The Most Crucial Reconstruction Requirements

The Ukrainian sectors of the economy have been ranked according to the size of the reconstruction needs, as determined by the estimates conducted by the World Bank evaluation team (Figure 7). The analysis revealed that the transport sector is the second-largest recipient of resources. The total estimated costs for the restoration of Ukraine's transport sector amount to nearly 74 billion USD, accounting for 15% of the total funds estimated to be required between 2024 and 2033 for the reconstruction of the war-damaged economy.

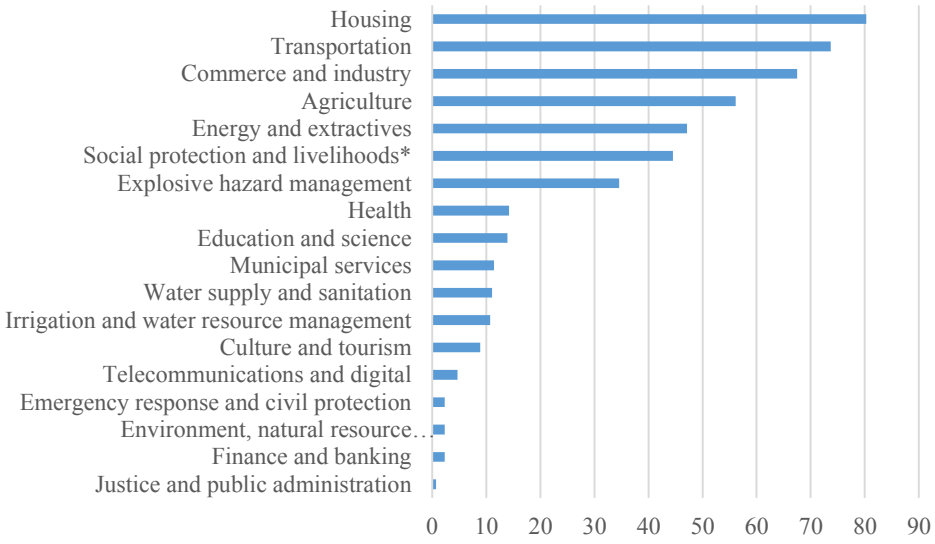

Figure 7. Total Estimated Needs for the Reconstruction of Ukraine 2024 - 2033 by Sector [in billion USD].

Source: Own elaboration based on the World Bank data.

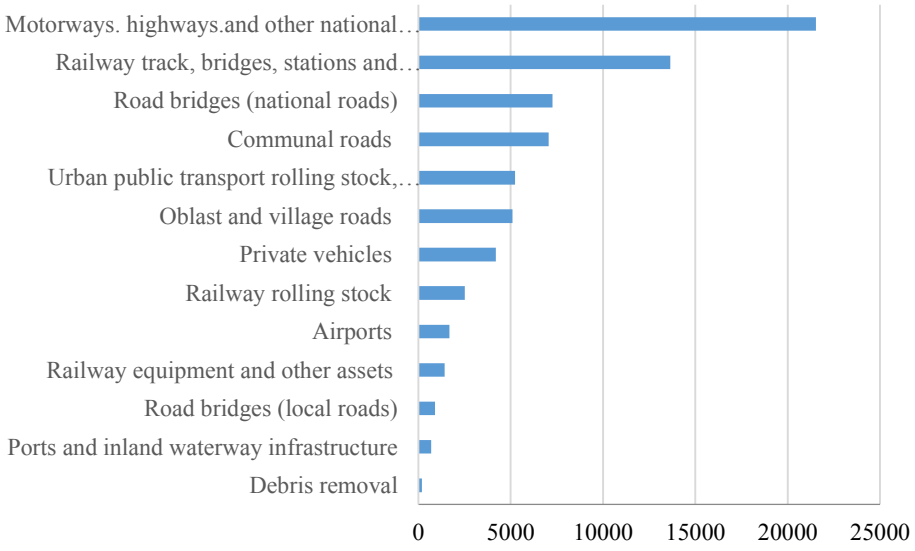

Figure 8. Recovery and Reconstruction Needs of Ukraine's Transport Infrastructure as of February 24, 2023 [in million USD].

Source: Own elaboration based on World Bank data.

A detailed classification of the recovery needs for transport infrastructure is shown in Figure 8. Among the thirteen categories listed, the most demanding in terms of investment—over 30% of the total funds required for reconstruction—are highways, expressways, and other national roads.

Another significant item in the list is railway tracks, bridges, stations, and electrical installations (over 19%). Road bridges on national roads and municipal roads require reconstruction investments at a similar level of approximately $7 billion USD, which accounts for about 10% of the expenditures. Further down, in 5th, 6th, and 7th place there are: urban

public transport, rolling stock, depots, and maintenance infrastructure (7.3%), ring roads and rural roads (7.1%), and private vehicles (5.9%). The next categories in the ranking, from 3.5% to 1%, will include: 8. railway rolling stock, 9. airports, 10. railway equipment and other assets, and 11. road bridges on local roads. The needs of the last category – ports and inland waterways infrastructure – are estimated at nearly $190 million USD, which accounts for 0.3% of the total expenditures for the reconstruction of Ukraine's transport resources.

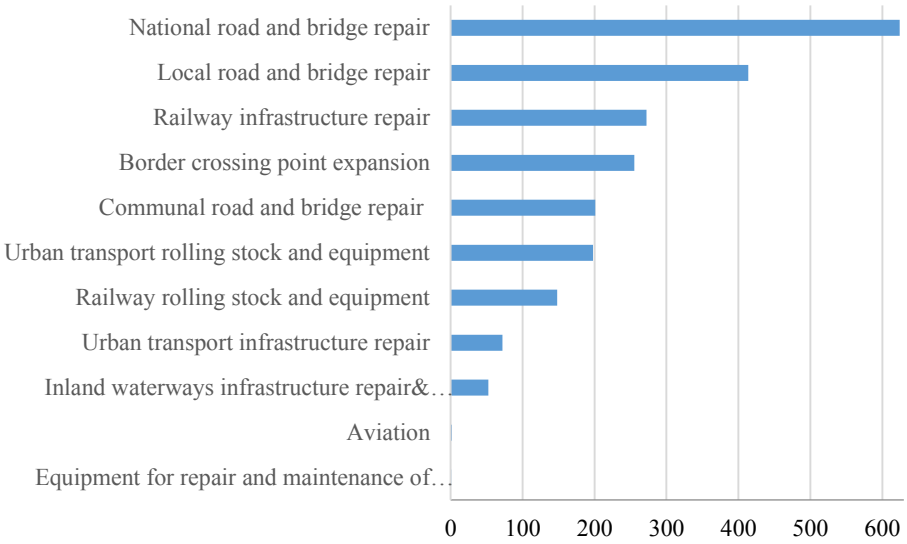

Figure 9. Service Delivery Restoration Needs as of February 24, 2023 [in million USD].
Source: Own elaboration based on World Bank data.

Additionally, Figure 9 ranks the service restoration needs of transport, which was identified as a priority for the rebuilding and reconstruction of Ukraine's infrastructure in 2024. As of February 24, 2023, total expenses in this area were estimated at USD 2239.7 million (World Bank). The categories requiring the most urgent and largest investments were the repair of national and local roads and bridges, which together accounted for over 46% of the needs. Following these were repairs to railway infrastructure (3rd position) and the expansion of border crossings (4th place), the repair of communal roads and bridges (5th place), rolling stock and urban transport equipment (6th place), and railway rolling stock along with equipment (7th place). The lowest-ranking expenditures, ranging from $40,000 to $72 million USD, are allocated for the repair of urban transport infrastructure, inland waterways with the expansion of the Danube port, aviation, and equipment for the repair and maintenance of national and regional roads and bridges.

7. Discussion and Summary

The present article sought to ascertain and evaluate the repercussions of the war on Ukraine's transport infrastructure, in addition to the requisite expenditures for the reconstruction of the aforementioned infrastructure. The objective was achieved by utilising the most up-to-date available secondary sources, including data and reports from the World Bank, OECD, KSE, the Ukrainian Statistical Office, and the Statista research platform. The paper discusses the significance of the transport sector in Ukraine, presents the magnitude of damage and losses in transport infrastructure, assesses its condition, and examines the crucial recovery and reconstruction needs, as well as the service delivery restoration needs.

According to estimates as of June 2022, the most damaged roads were highways, expressways, and other national roads, as well as many other local roads. The war damage in these two categories generated almost 42% of the total damage to Ukraine's transport infrastructure.

In 2023, when Ukraine's GDP was just under USD 180 billion, the amount needed to rebuild Ukraine's transport sector was estimated to be almost USD 74 billion, or about 41.4% of Ukraine's GDP in 2023 [11].

For comparison, in 2022, Ukraine's projected budget revenues were over 46 billion USD, while expenditures were more than 52 billion USD.

Short-term transport infrastructure needs have been estimated at nearly $2.24 billion. Addressing these needs is critical in the context of the ongoing conflict. However, long- and medium-term infrastructure investment must also be considered. Those requirements have been estimated at almost USD 71.5 billion. Meeting them is expected to accelerate Ukraine's reconstruction process, strengthen its integration with the European Union, and contribute to further economic recovery.

Admittedly, the available data are estimates, so they are subject to error. However, in a situation of persistent information shortages, when, due to the ongoing armed conflict, restrictions are imposed that limit the disclosure of data, including statistical data, every piece of knowledge helps mitigate the risk of making wrong decisions. Orienting oneself to the level of losses, one can try to estimate the size of the needs so as to be able to take on the next challenge, this time of rebuilding the damage.

All amounts analysed in the article indicate the vast scope of financial needs that Ukraine faces. The reconstruction of Ukraine's transport infrastructure will be a major challenge, requiring not only significant financial investments but also strategic planning, the swift implementation of corrective actions, and, of course, international support and coordination of assistance throughout the process [12]. These areas represent promising directions for future research.

From a scientific perspective, it is also noteworthy to ascertain the impact of the war on the state of transport infrastructure in the regional division of Ukraine. Furthermore, a comprehensive description of the corrective measures implemented in various transport sectors to adapt to the wartime situation is of interest. A detailed review of extant global literature should be a subject of separate analyses.

Poland, as the closest contiguous state that has repeatedly supported Ukraine during the war, plays a key role, both due to its geopolitical proximity and previous commitments to provide support. Consequently, Poland leveraging its experience and resources, should actively participate in the reconstruction of Ukraine's transport infrastructure.

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Footnotes

1. In terms of area, Ukraine is the largest country located entirely on the European continent, covering over 603,000 square kilometres. The meridional span of Ukraine is 1300 kilometres, and its latitudinal span is 900 kilometres.
2. In 2021, Ukraine's population exceeded 41.5 million (The Ukrainian Statistical Office. Retrieved from: https://stat.gov.ua, 29.01.2025).
3. In 2021, the share of transport and warehousing in Poland's GDP was 5.7% (GUS, 2024, pp. 664-665).
4. Concurrently, analogous metrics in Poland were as follows: 429,816 kilometres of roads, including 1761 kilometres of highways, 19,326 kilometres of railway lines (of which 12,137 kilometres were electrified), 15 fully certified public airports meeting European Commission standards, 34 seaports, and 3768 kilometres of navigable inland waterways, over 16,000 urban public transport vehicles, and nearly 26 million private cars (GUS, 2022, pp. 542, 548, 555).
5. At that time, about 70% of Ukraine's population lived in cities (compared to 60% in Poland), of which five cities had around one million inhabitants, four between 500,000 and one million, and fifteen between 500,000 and 250,000.
6. In Poland, 2,617,926 passengers were transported by public transport during the same period, including 3083 by metro (GUS, 2022, pp. 546, 548).
7. Total losses across all economic sectors are estimated at nearly 499 billion USD (World Bank. Retrieved from: https:// documents1.worldbank.org, 16.02.2025).
8. In 2021, Ukraine accounted for 34.2% of all loaded containers in the Black Sea region. In 2022, as a result of the war, this figure dropped to 7% (Statista. Retrieved from: https://statista.com, 19.01.2025).
9. For instance (Radchenko et al., 2022, p. 8), and the Works of the Commission on Transport Geography (Radchenko et al., 2022, p. 13).
10. IMD World Competitiveness Yearbook (WCY) is an annual report on the competitiveness of countries, comparing the performance of 64 countries based on over 330 characteristics that describe the competitiveness of the economy (IMD World Competitiveness Centre. Retrieved from: http:// www.imd.org, 30.01.2025). This decline can be attributed to the loss of access to seaports in Mariupol and Berdiansk, as well as the closure of ports in Mykolaiv and Kherson for security reasons. Consequently, Ukraine's ports were only able to handle 24.4% of the cargo mass compared to 2021 (Sędzimir, 2022).
11. According to the most recent data published as of December 31, 2024, this amount has increased to $77.5 billion (World Bank. Retrieved from: https://documents1.worldbank.org, 13.03.2025).

12. A specific coordination mechanism, termed the International Transport Forum - Ukraine Common Interest Group, has been established within the OECD to oversee the coordination of international support for the reconstruction of transport infrastructure in Ukraine (the International Transport Forum, Retrieved from: www.itf-oecd.org, 08.04.2025).