
Financial Support for the Development of Rail Freight Transportation in Conditions of Martial Law

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Abstract. This article explores the critical aspects of financial support for the development of Ukraine's railway freight transportation sector under the challenging conditions of martial law. The text under scrutiny here demonstrates the impact of military aggression on national transport infrastructure, and the transformation of logistics systems. The study identifies the key obstacles to the efficient operation of rail transport. These include the physical deterioration of rolling stock, destruction of railway lines and facilities, gauge incompatibility with EU railway standards, and notable administrative and customs bottlenecks at border crossings. The necessity of immediate modernisation of transport infrastructure, improvement of border terminals, and harmonisation of transport policies with European partners is underscored. Moreover, the study explores the constraints imposed by domestic financing, the significance of securing international aid and investment, and the function of public-private partnerships in the revitalisation of the sector. The authors propose a comprehensive set of financial and institutional measures intended to restore and enhance the performance of railway freight transport. These include the creation of special-purpose infrastructure funds, the application of targeted financing mechanisms, and harmonisation with the National Transport Strategy of Ukraine until 2030. The strategic importance of railway transport for the resilience of the national economy, export capacity, and Ukraine's future integration into the European transport and logistics system is substantiated. It is imperative to emphasise the necessity of adapting Ukraine's transport policy to EU standards, whilst concomitantly developing transparent funding mechanisms. The findings of the article may serve as a basis for decision-making at both the governmental and institutional levels amid reconstruction and sustainable recovery. The article concludes that a systematic approach to financial reform and investment attraction is essential for the long-term sustainability and modernisation of Ukraine's railway freight system amid war and post-war recovery.

Keywords: railway transportation, logistics, financial support, infrastructure, martial law, export, modernisation, transport strategy, public-private partnership.

JEL Classification: H54, L92, O18, R42

1 Introduction

Rail freight transport is a fundamental component of logistics processes, ensuring the effective functioning of supply chains for material and technical resources. Within modern logistics systems, multimodal transport is actively used to deliver material flows from producers to end consumers. This mechanism is crucial for ensuring

the economic stability of the state, particularly in the context of the war in Ukraine, which has significantly altered the structure and organisation of transport and logistics.

In response to the challenges posed by wartime conditions, the national logistics system demonstrated its capacity for adaptation, a capacity that has continued to manifest in the context

of martial law. The railway infrastructure is undergoing a progressive recovery and integration into the European and global transport and logistics systems. In the context of structural changes, the initiative in the transportation market has been seized by rail transport, which currently ensures the stability of cargo flows. Notably, the volume of railway transportation achieved pre-war levels, with 75 million tons of cargo being transported from January to April 2025, of which approximately 50% were destined for export. This observation underscores the dynamic nature of transformations in the field of transport logistics in Ukraine.

Railway transport maintains its dominant position in terms of cargo turnover, attributable to its efficacy in the transportation of large and heavy cargo over considerable distances. On average, the transportation of one ton of cargo exceeds 500 kilometres. Concurrently, the incessant destruction of infrastructure due to warfare engenders substantial financial expenditures for its reconstruction. Furthermore, the necessity for the urgent renewal of traction rolling stock due to wear and tear requires the allocation of substantial investment resources. In the absence of adequate financing, there is a risk of further degradation of the infrastructure, which can cause failures and accidents in the transport system.

In order to ensure the effective restoration of transport infrastructure in the short term, it is necessary to establish reasonable criteria for prioritising financing and implementing restoration measures. These measures may include new construction, reconstruction, capital and current repairs. In circumstances where resources are limited, priority funding should be allocated to the restoration of infrastructure elements that are critical to ensuring mobility and safety of transportation.

A strategic objective of railway transport enterprises is to integrate into the national and international market of transport and logistics services. This necessitates substantial investments in modernisation, intellectualisation, and technical and technological transformation of the industry, in accordance with the requirements of global economic development.

The purpose of the present article is to provide a substantiated overview of current approaches to financial support for the development of railway freight transportation in wartime.

2 Analysis of Recent Research and Publications

In the course of conducting a thorough analysis of the extant scientific research dedicated to the issues pertinent to railway freight transportation,

it is imperative to acknowledge the substantial contributions made by Ukrainian scientists, most notably Barash Yu., Dykan V., Zaitsev Ye., Kulayev Yu., Lukynsky V., Sadykov O., Sukhina Yu., Tokmakova I., Charkina T., Zadoya V., Kompaniyets V., Koren M., Obruch G., and others. The primary focus of their research is a thorough examination of the status of railway transport infrastructure and the potential for enhancing logistics processes. Concomitantly, contemporary realities necessitate a re-evaluation of scientific methodologies employed in the provision of financial support to the railway industry. In light of the current challenges, particularly those caused by ongoing warfare, in-depth research into mechanisms for attracting financial resources to support and develop transport in Ukraine is required. This necessitates taking into account not only economic indicators, but also the broader context, primarily the geopolitical factors that significantly affect the investment climate and the state's financial capabilities. In such conditions, it is crucial to develop new conceptual approaches to financing the transport sector, particularly railway transport, while considering current risks, limitations, and potential growth opportunities.

Furthermore, recent international studies have emphasised the importance of resilient transport systems during armed conflicts and humanitarian crises. However, the specific financial mechanisms tailored to support the railway sector in wartime conditions remain underexplored, particularly in the Ukrainian context. This discrepancy underscores the necessity for targeted research endeavours to explore the integration of fiscal instruments, risk management methodologies, and international donor assistance, with a view to ensuring the sustainability of rail freight operations in the face of prevailing disruptions.

3 The Current State and Challenges of Railway Freight Transportation in Wartime Conditions

Following the commencement of the Russian Federation's full-scale armed aggression against Ukraine in 2022, the state's transport infrastructure, particularly its railway segment, has been subjected to considerable strain and confronted with significant challenges. Railway transportation remains a critical element in ensuring the continuity of the state's economic activity. However, this sector faces significant difficulties, including large-scale destruction of infrastructure facilities, restrictions on logistics routes, and financial complications.

According to the 2022 results, the volume of freight transported by rail decreased by 52.1%

compared to 2021, amounting to 150 million tonnes. The largest drop was recorded in March 2022, when transportation volumes fell by over 56.7%. This was a direct consequence of intense fighting and deliberate attacks on civilian transport infrastructure, including railway lines and stations (Center for Transport Strategies, 2024).

In 2023, the situation remained tense, with transportation volumes amounting to 148.4 million tons, indicating a slight decrease compared to the previous year. Concurrently, positive dynamics were observed in the fourth quarter of 2023, attributable to the partial restoration of logistics routes following the unblocking of ports, which contributed to the growth of export transportation volumes.

In 2024, the railway industry demonstrated indications of stabilisation and recovery. The total volume of freight transportation increased to 174.9 million tons, representing a 17.9% increase compared to the previous year. The primary factor contributing to this growth was export transportation, which exhibited a 51.2% increase, reaching 84.7 million tons. Consequently, the proportion of the export component in the overall transportation structure increased to 48%, while in 2023 it was 38%.

A substantial increase in the transportation of grain cargo was observed (50.2%, reaching 34.1 million tons), as well as iron and manganese ore (1.7 times, reaching 33 million tons). Concurrently, the transportation of mineral construction materials experienced a substantial increase, reaching 4.3 million tons, which is almost 2.4 times the previous volume.

Notwithstanding the positive dynamics, the railway infrastructure of Ukraine continues to be in a critical condition and requires significant renovation. The incessant destruction engendered by hostilities gives rise to exorbitant expenditures for repair and restoration endeavours. Moreover, the physical deterioration of traction rolling stock necessitates immediate capital investments in modernisation. In the event of further delay in financing, there is a risk of infrastructure degradation, which may result in technical malfunctions and disruption of transportation stability. In the short term, it is advisable to introduce a system of clear

criteria for prioritising financing for restoration measures intended to ensure mobility and safety. In the strategic dimension, the primary task is the integration of the Ukrainian railway network into the European and global transport and logistics space. This necessitates large-scale intellectual modernisation and technical and technological transformation of the railway industry in accordance with the modern requirements of world economic development.

A primary factor contributing to the decline in rail freight transport volume is the constrained capacity of transport infrastructure within European Union countries. This infrastructure proved inadequately prepared to manage the substantial surge in freight traffic from Ukraine. A particular burden falls on border crossings, whose infrastructure facilities have limited technical and logistical capabilities to ensure the effective movement of goods.

It is imperative to emphasise the significance of the incompatibility of the width of railway tracks between Ukraine and the EU countries, as this technical barrier is of paramount importance. The necessity for goods to be transshipped at junction stations is a consequence of this incompatibility. The process is complicated by a number of factors. Firstly, there is a lack of specialised transshipment terminals. Secondly, there is a shortage of trolleys for repositioning wagons. Thirdly, the technical parameters of the European infrastructure are limited, particularly with regard to weight standards and the lack of rolling stock (grain wagons, locomotives). In addition to technical aspects, administrative and bureaucratic restrictions have a significant impact on the reduction in transportation efficiency. This includes duplication of control procedures, delays in customs and phytosanitary control, as well as lengthy processes of coordinating the movement of Ukrainian wagons after technical adaptations. The absence of adequate coordination between national administrations and railway operators in Ukraine and EU member states, notably Poland, serves to exacerbate the situation (Center for Transport Strategies, 2024; Borovyk T.V. & Danylenko V.I., 2022).

The potential capacity for transporting goods by rail for export is shown in Table 1.

Table 1 Potential capacity for transporting goods by rail for export

Indicator	In general	Grain cargoes
Daily capacity	220 thousand tons (3422 wagons)	47,5 thousand tons (731 wagons)
Monthly capacity	6,6 million tons (102 660 wagons)	1.4 million tons (21,930 wagons)
Utilisation	It is not used to its full extent	It is not used to its full extent

Source: compiled by the authors on the basis of (Borovyk T.V. & Danylenko V.I., 2022; Center for Transport Strategies, 2024)

To increase the efficiency of rail freight transport under martial law and integration into the European logistics space, it is advisable to implement a number of strategic measures, including:

1. Modernisation of border infrastructure (expansion of border crossing capacity, construction of new transshipment terminals, increase in the number of wagon transshipment points).

2. Technical unification and standardisation (development of technologies that facilitate track gauge changes, introduction of adaptive carriages that can run on both types of tracks).

3. Digitalisation of customs and phytosanitary control procedures (introduction of electronic document management and pre-registration of goods).

4. Interagency coordination and integration of management decisions (creation of bilateral or multilateral coordination platforms for the rapid resolution of logistical problems at the interface of transport systems).

5. Investments in rolling stock (renewal of the fleet of carriages and locomotives, in particular by attracting funds from international financial institutions).

The implementation of these measures will not only reduce logistical barriers, but also significantly increase the stability and efficiency of railway transport as a key link in the system of foreign economic relations of Ukraine in the conditions of martial law and post-war recovery.

The above challenges confirm the urgent need for systemic solutions that go beyond short-term recovery measures. In order to address the structural vulnerabilities of Ukraine's railway freight system, it is crucial to establish strategic priorities that include infrastructure modernisation, technical adaptation to European standards and the creation of reliable financial instruments. These components are vital for stabilising current operations and building long-term resilience, as well as ensuring Ukraine's integration into the broader European transport network.

4 Strategic Priorities and Financial Instruments for the Recovery and Development of Railway Infrastructure

According to the Programme for the Development of Railway Stations and Crossings Bordering EU Countries and Moldova for 2022–2025, the number of border crossings with Poland is set to increase by three: Khyriv – Starzhava – State Border, Rava-Ruska – Hrebennie, and Khyriv – Nyzhankovychi – State Border. Two railway sections on the border with Poland have already been restored: State Border – Starzhava –

Khyriv – Nyzhankovychi – State Border (line 102), and Khyriv – Sambir (Husky Company, 2023).

The warfares have had a considerable impact on the logistical capabilities of Ukraine, resulting in a marked decline in the volume of freight transportation on both domestic and foreign markets. Notwithstanding the prevailing unfavourable circumstances, railway transport continues to represent a strategically pivotal element within the national transport infrastructure, thereby ensuring the seamless operation of cargo flows, even in the midst of active hostilities.

According to official data from JSC Ukrainian Railways, the technical potential of the railway network of Ukraine allows for the transportation of up to 500 million tons of cargo annually. In the period preceding the war, the annual transportation volumes amounted to approximately 315 million tons. This finding suggests the presence of a substantial infrastructure reserve for increasing cargo transportation, conditional upon the stabilisation of the security situation and adequate financing of modernisation processes.

A significant structural impediment to the efficiency of railway transport in Ukraine is the scarcity and physical deterioration of rolling stock. This factor has been identified as a significant complicating element in the provision of stable freight traffic and the operational maintenance of logistics routes. As demonstrated by analytical data from Global Market Insights, the global freight transport rental market is demonstrating a steady growth trend, and according to forecasts, may reach 90 billion USD by 2026. Concurrently, military operations in Ukraine have engendered further complications for the national logistics market, particularly with regard to the vehicle rental segment. It is anticipated that following the cessation of hostilities, there will be a gradual stabilisation of the economic situation, which in turn is expected to contribute to an increase in demand for logistics services and an expansion of transport potential. In this context, a critical strategic direction is the gradual integration of the Ukrainian railway infrastructure into the European transport system. In particular, Ukraine has initiated the implementation of a large-scale infrastructure project to build European-standard railway tracks with a width of 1435 mm (GMK Center, 2023). This initiative could potentially be supported by the European Union through the Connecting Europe Facility programme, which provides funding for infrastructure modernisation and border crossing development (BIZAGRO, 2023). Private operators who own part of the freight car fleet play a significant role in supporting the functioning of the railway sector. Thanks to their

active participation over the past three years, the number of cars in technically sound condition has increased by almost 13%. These cars currently account for around 46% of the total fleet of vehicles used for freight transportation. Notwithstanding the positive dynamics, JSC Ukrainian Railways continues to be the largest operator in this segment. Frequent changes in management and coordination mechanisms between the state operator and private entities have been demonstrated to affect the overall level of efficiency of the transport system. These changes also create additional challenges for the formation of a coordinated logistics policy at the national level.

The primary issues and their respective resolutions concerning the provision of financial assistance for the advancement of rail freight transport in wartime contexts are outlined in Table 2.

The National Transport Strategy of Ukraine, which was adopted and approved for the period until 2030, defines the key directions of state policy in the field of financing the development of the railway industry. A fundamental principle of the strategy under discussion is the "user pays" approach, as well as the introduction of a targeted financing mechanism, which creates conditions for the formation of a stable system of investment support for transport infrastructure.

The strategy also emphasises the importance of attracting private capital to the development of the transport industry, provided that the economic feasibility of investments is ensured. In this context, the introduction of transparent state financing mechanisms based on clear criteria of priority, economic efficiency and openness of public procurement procedures is envisaged. The emphasis is placed on the necessity of public access to information on budget financing plans and reporting on actual costs.

In circumstances of protracted macroeconomic turbulence, a pivotal element of the strategy for incentivising investments in railway transport is tax policy. The analysis of the functioning of the tax system in the field of railway transport (Sobolev O.

& Laptev V., 2020; Kravchenko I., 2021) indicates the need to eliminate tax disparities, eliminate unjustified subsidies, and ensure conditions for fair competition between all modes of transport. Furthermore, the necessity of adapting market mechanisms to environmental requirements and the principles of sustainable development is emphasised.

In summary, the development of a sustainable financial framework for Ukraine's rail freight transport sector requires a balanced combination of public funding, private investment, and international assistance. The strategic priorities outlined – namely, the modernisation of infrastructure, the alignment of standards with those of the EU, and the enhancement of cross-border coordination – must be supported by clear financial instruments and transparent governance mechanisms. It is imperative for Ukraine to implement a comprehensive and forward-looking financial strategy to ensure the long-term functionality and competitiveness of its railway logistics, both in wartime and peacetime contexts.

5 Conclusions

Railway transport remains a pivotal component of Ukraine's logistics infrastructure, particularly in the context of martial law. Notwithstanding considerable losses and challenges, the infrastructure evinces a high level of adaptability and the capacity for gradual recovery. The dynamics of freight transportation in 2024-2025 serve to confirm the stabilisation of the industry, as well as its strategic importance for the national economy.

However, the full utilisation of transportation potential, particularly in terms of export, is constrained by several factors. These include wear and tear of rolling stock, infrastructure destruction, and gauge incompatibility with EU systems. Administrative and bureaucratic barriers also play a role. The limited throughput capacity of border crossings represents a significant obstacle to trade.

In order to ensure the sustainable development of railway transport, a set of systemic measures must be implemented:

- the modernisation and technical renewal of infrastructure;

Table 2 Financial support for rail transport

Problems	Decision
Significant reduction in public funding	Creation of a specialized state fund for the restoration and development of railway transport
Destruction of infrastructure due to hostilities	Activation of international financial assistance (EBRD, EIB, World Bank)
Rolling stock wear and tear	Introduction of public-private partnership for rolling stock renewal

Source compiled by the authors on the basis of (Sobolev O. & Laptev V., 2020; Kravchenko I., 202; GMK Center, 2023)

- expanding throughput capacity in the western direction;
- digitalisation of logistics and control procedures;
- strengthening intergovernmental coordination with EU countries;
- actively attracting investment through public-private partnerships.

In order to provide financial support for the development of the railway industry, updated approaches are required, including the creation of specialised funds, the activation of international financing, and a transparent investment policy. It is also crucial to implement the provisions of the National Transport Strategy until 2030, as this will create the prerequisites for Ukraine's integration into the European logistics space.

Consequently, the modernisation of railway transport should be prioritised in state policy in

the context of post-war recovery. This would not only enhance logistical efficiency but also ensure economic stability and competitiveness for Ukraine in the global market.

The findings of this study contribute to a more profound understanding of how financial instruments and strategic planning can support the resilience of national logistics systems under extreme conditions. By analysing the Ukrainian railway sector through the lens of wartime challenges, the article offers valuable insights for policymakers, infrastructure managers and international donors engaged in post-conflict reconstruction. Further research may contribute to the development of enhanced models of financial risk-sharing, the efficiency of public-private partnerships, and cross-border co-operation frameworks. These are considered to be necessary for the sustainable development of transport infrastructure in fragile contexts.

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