4.2. TRANSPORTATION AND LOGISTICS

4.2.1. Current situation and sector role

BACKGROUND

Ukraine is connected to 5 European countries - Poland, Slovakia, Hungary, Romania, Bulgaria and Moldova on the western and southern borders. It has access to the Black Sea through its deep-water ports and its Danube River ports facilitate river transport connections with European countries. Ukraine also has ports in the Sea of Azov (which are currently temporarily occupied). Ukraine's rail network (TOP-3 in Europe) is integrated with the networks of Poland, Romania, Slovakia, Hungary and Moldova.

Ukrainian transport infrastructure, largely established during the Soviet Union era, was designed to meet the goals of that time. Today, Ukraine has an extensive network of state-controlled transportation infrastructure, including roads and railways. Additionally, ports and airports are in the process of being privatised, leased, or managed through public-private partnerships (PPPs). However, years of underinvestment and a lack of strategic planning have hindered the industry's growth and compromised its capability to serve the business sector effectively.

SECTOR IMPORTANCE

The transportation sector is the economic backbone, with its various modes either complementing each other or competing to some extent in terms of ways of cargo delivery.

Prior to the full-scale Russian invasion, maritime transport was pivotal for exports in terms of volume. Additionally, an increase in recent operations of inland waterways, creates expectation that they will play a more significant role in the long term. Rail transport, which serves as the primary means of transporting export cargo to ports overland, has seen its importance surge during the war, ensuring continued export-import operations with the EU. Road transportation complements rail by providing essential connectivity to remote areas and last-mile delivery services.

Although air passenger transportation, which showed significant growth in the pre-COVID period, is crucial to ensure economic growth, boost international trade, and help in attracting foreign investment in the post-war development.

CURRENT STATE

Transport and logistics ensure the country's trade operations. Since the start of the war, Ukrainian GDP dropped by roughly 28.8% in 2022 due to significant destruction of infrastructure and disruption of logistics. The table 1 shows comparison of transport sector indicators in the pre-war period and changes caused by the full-scale Russian invasion:

Table 1: Comparison of transport sector indicators

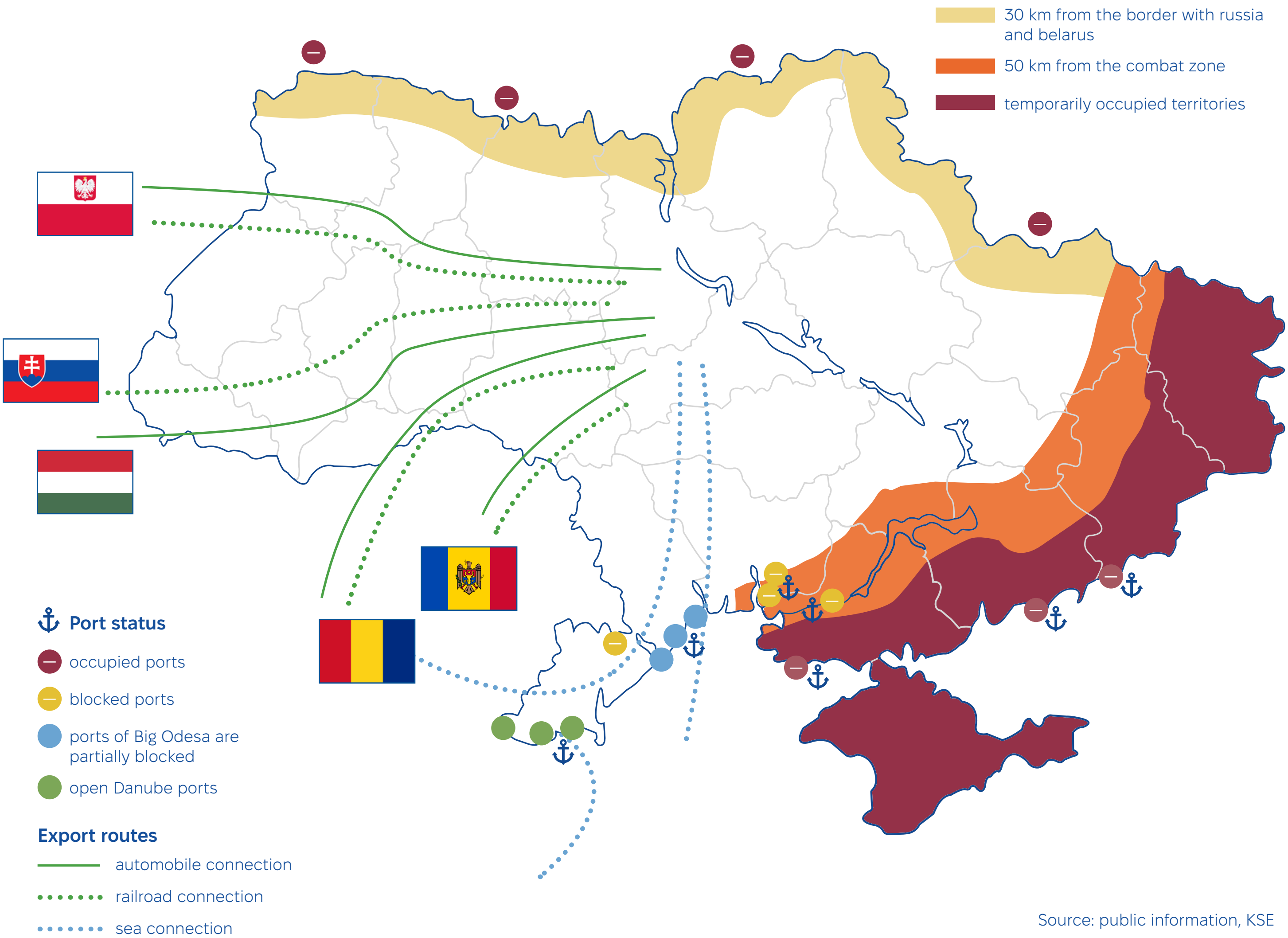
Metric	Units	2021	2022	2023
Share in GDP[1]	%	5.4	4.3	4.3
Export value[2]	USD billion	68.2	44.8	36.2
Volume of freight traffic, of which[3]:	million t	621.3	317.5	327.9
- Rail transport[4]	million t	314.3	150.6	148.4
- Seaports	million t	153.3	51.2	62
- Road transportation[5]	million t	224	175	n/a
Cargo turnover[6]	billion tkm	289.6	166.7	163.4

[1] https://www.ukrstat.gov.ua
[2] https://customs.gov.ua
[3] https://www.ukrstat.gov.ua
[4] https://www.uz.gov.ua
[5] https://www.ukrstat.gov.ua
[6] https://www.ukrstat.gov.ua

WAR IMPACT ASSESSMENT (AS OF DECEMBER 31, 2023)

During the war, established logistic chains were disrupted, and sea transportation faced initial blockades. This disruption shifted the demand for transportation services among different modes. To offset the decline in deep-sea transportation, there has been a marked increase in cargo transshipment through the Danube River ports, resulting in the construction of 23 new terminals. Additionally, there has been a rise in land-based exports, highlighting the strong interdependence between transportation modes.

Figure 1: Transport network of Ukraine: main export routes



Source: public information, KSE

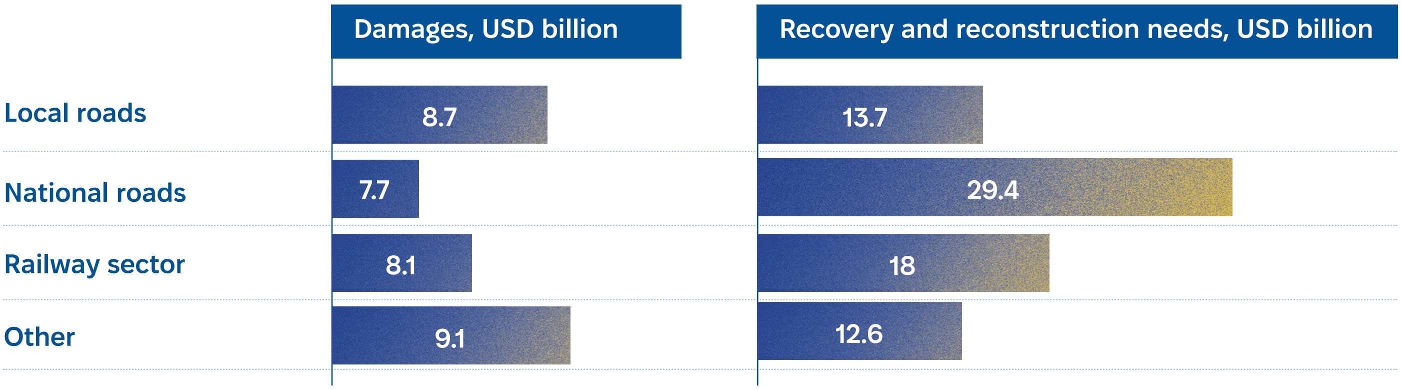
The increased reliance on land freight for exports has led to peak loads in rail and road transportation, exposing capacity bottlenecks at western border crossings. These include a limited number of exit points, rail gauge standards differing from those in the EU, and a need for intermodal transshipment terminals and warehouses.

A significant portion of civil aviation infrastructure has been damaged or destroyed, with airspaces closed to civilian traffic indefinitely. Airline operators have ceased operations and returned leased aircraft to lessors.

Ukraine is actively working to restore and develop its export and logistics capabilities, with an emphasis on integrating with the TEN-T and meeting EU transportation standards.

The transport and logistics sector's needs have been reassessed, revealing substantial potential for development and foreign direct investment (FDI), particularly in the recovery and modernization of assets damaged by military aggression. According to the RDNA 3 as of December 31, 2023, the total direct damage to infrastructure in transport was estimated at approximately USD 33.6 billion, while recovery and reconstruction needs (building back better) is USD 73.7 billion over 10 years. Apart from assets on the occupied territory, among the main damaged or destroyed assets are near 8,400 km of motorways, highways, and other national roads, bridges on the national and regional and village roads (over 140 and 150 bridges respectively), more than 50 km of railways and 83 railway bridges.

Figure 2: The assessment of direct damage and the recovery needs



- Motorways, highways, and other national roads;
- Bridges on the national road network and on the regional and village roads;
- Railway rolling stock and equipment;
- Ports and inland waterways infrastructure;
- Airports, public and private transport.

Source: RDNA 3

The war has had a considerable effect on the warehouse logistics market. The total available warehouse space has shrunk from 4 million square metres in 2020 to approximately 2.6 million square metres in 2023. The Kyiv region alone has seen a loss of over 0.45 million square metres. Warehouse operators in Eastern Ukraine have been compelled to either relocate their assets to the Western Ukraine or adopt cross-docking operations. Furthermore, some market participants have completely vacated their warehouse and storage facilities.

Land Freight – Rail Transport

- **Infrastructure:** UZ, wholly owned by the state, holds a natural monopoly over the majority of the railway transportation infrastructure, with 19,787 kilometres of railway network and 1,402 stations. The predominant railway track gauge is 1,520 mm, which is standard across former Soviet Union countries. Additionally, there are several tracks of 1,435 mm gauge (EU standard) that facilitate direct transshipment with the EU.

- **Transportation:** Rail transportation is operated by both state and private entities. The state controls passenger services, locomotives, and 51% of cargo capacities, where Ukrzaliznytsia, the state operator, provides the passenger transportation and locomotives using priority access to the infrastructure. Key private players in the market are Lemtrans, Ferrexpo, Kernel Trade, Metinvest-Shipping, and OTP Leasing.

- **Cargo:** In 2022, rail exports were the second highest in terms of volume, with 34 million tonnes (34% of total exports). In 2023, transshipped volumes decreased to 148.4 million tonnes, which is 53% lower than the 314.3 million tonnes in 2021. This significant drop is attributed to the disruption of (i) supplies to Black Sea ports and (ii) transit traffic on international corridors between Asia and Europe.

Figure 3: Volume of freight transportation by UZ, mln tons

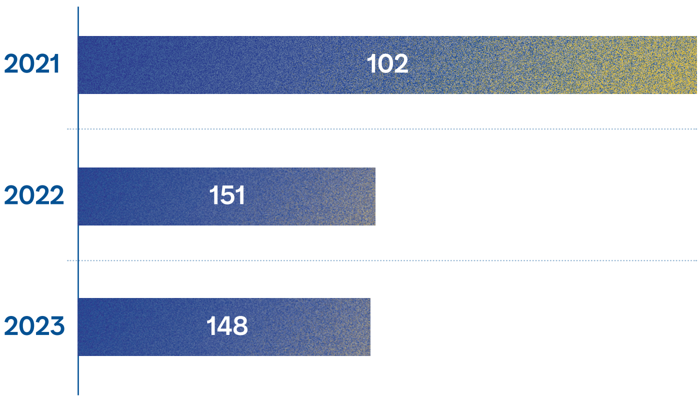
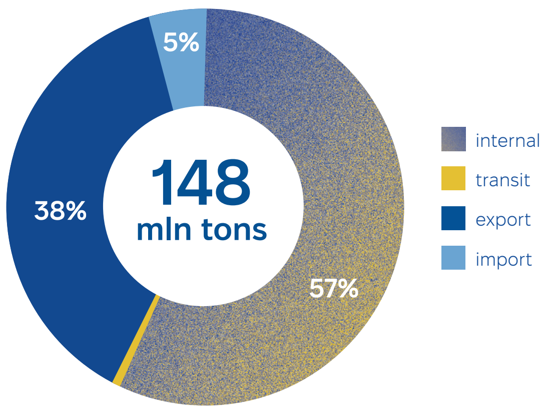


Figure 4: Structure of UZ freight transportation in 2023, %



Source:public information, KSE

[7] https://documents.worldbank.org

Land Freight – Road Transport

- **Infrastructure:** Ukraine's road network comprises 52.0 thousand kilometres of state roads and 117.2 thousand kilometres of local roads, managed and maintained by central or local authorities. The State Agency for Restoration and Infrastructure Development of Ukraine (Recovery Agency) is the primary executive body responsible for the maintenance and development of national roads. In 2019, a new program was launched with plans to construct over 40 new public highways, overhaul more than 130 roads, and repair over 200 public roads. Prior to the war, over 14 thousand kilometres of roads had been built or refurbished. However, during the war, funds allocated for this program have been redirected to support military needs. The warehouse segment is predominantly operated by private companies. Before the conflict, the segment encompassed about 3 million square metres, with the Kyiv region representing over 54% of the total capacity. Notable warehouse projects currently underway include the M10 Lviv Industrial Park, Mostysky Dry Port Industrial Park, and Vinnytsia Industrial Park.

- **Transportation:** The road transportation services market is highly diversified and dominated by private companies. Major private players include Nova Poshta Logistics, FM Logistic, Kuehne+Nagel, Ekol Logistics, and Raben Ukraine.

- **Cargo:** In 2022, road-based exports ranked third with 12 million tonnes (12% of total exports). The volume transshipped reached 175 million tonnes, which is 21% lower than the 2021 figure.

Figure 5: Volume of export and import cargo transportation, mln tons

Source: State Customs Service of Ukraine, KSE

Water Freight

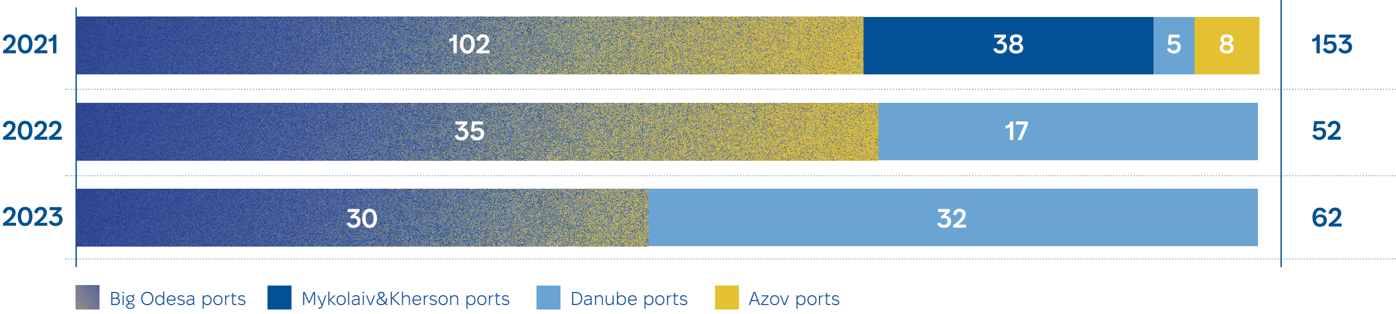
- **Infrastructure:** In 2021, the five largest seaports in the Odessa and Mykolaiv regions represented approximately 80% of Ukraine's total port capacity, among 18 ports. The country also has 16 river ports and terminals, which are currently underutilised due to the conflict. The river transportation infrastructure includes 2,241 kilometres of inland waterways. As of early 2024, Ukraine has lost access to 9 of its 18 seaports; 5 have been occupied since 2014 and an additional 4 since 2022. There are 9 operational seaports remaining: the Great Odessa cluster (three ports) operates under a temporary «corridor» mode with limited capacity, the Mykolaiv cluster (three ports) is blocked, and the Danube River cluster continues to transship cargoes to the EU via inland waterways. There has been a recent shift towards privatising operations at public ports, while strategic infrastructure remains state-owned and managed by the Ukrainian Sea Port Authority. The Ukrainian Sea Port Authority oversees 143 berths (totaling 40 kilometres), approach channels, water areas, protective structures, lighthouses, internal railways and roads, utilities, security, and coordinates port area development. Terminal ownership can be private, leased, or under public-private partnerships (PPP). As of 2021, berth ownership was 39% private and 61% public.

- **Transportation:** Services are provided by nearly 90 stevedoring companies, with 78% privately owned and 22% state-owned. Key private players include TIS, Transbulkterminal (Kernel), Brooklin Kyiv Port, M.V.Cargo, and Risoil terminal

- **Cargo:** In 2022, sea freight was the leading export mode with 53.8 million tonnes (54% of total exports). In 2023, the transshipped volume reached 62 million tonnes, which is 60% less than the 153.3 million tonnes in 2021.

[8] https://www.ukrstat.gov.ua

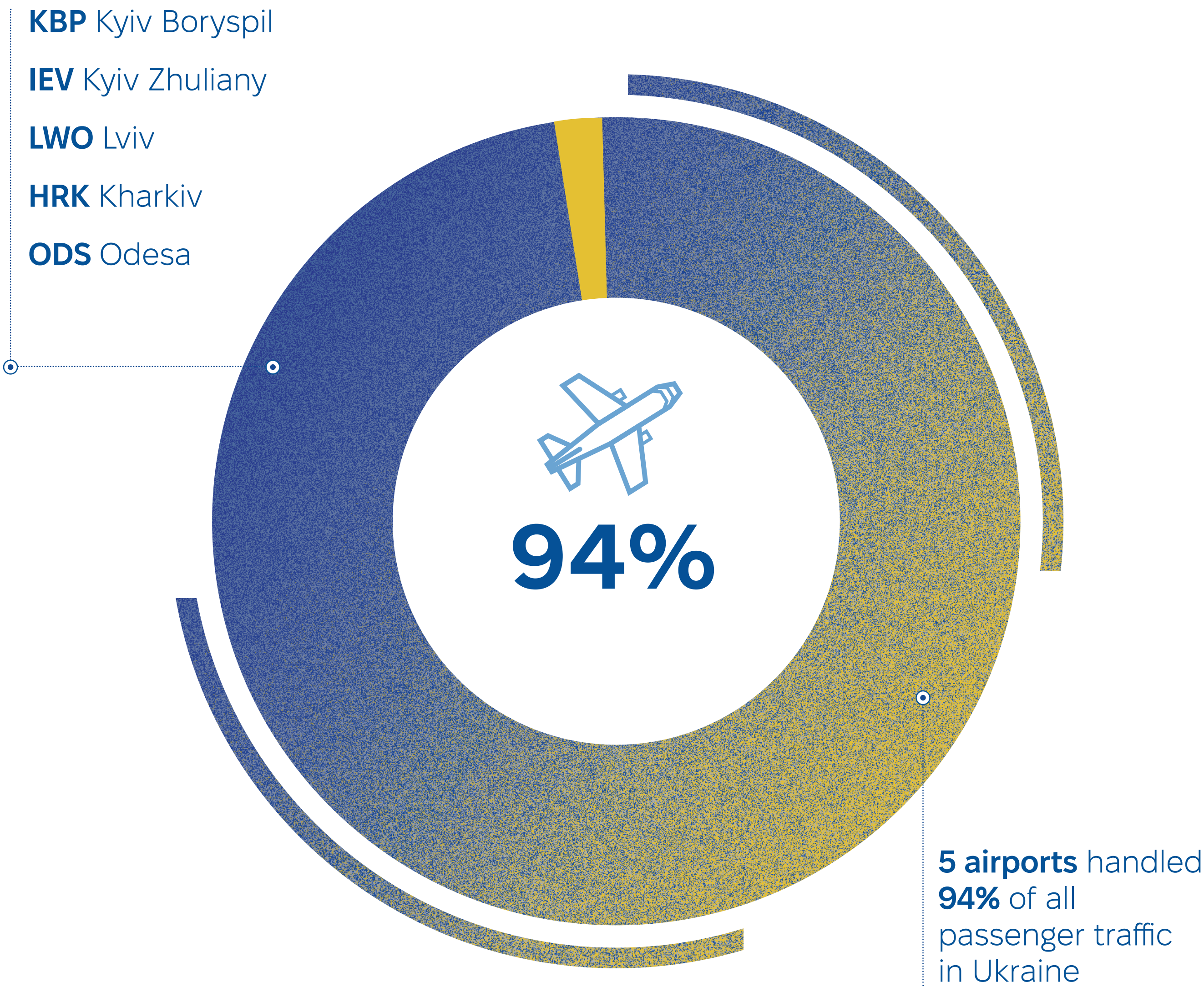
Figure 6: Structure of cargo handling by port, mln tons



Source: public information, KSE

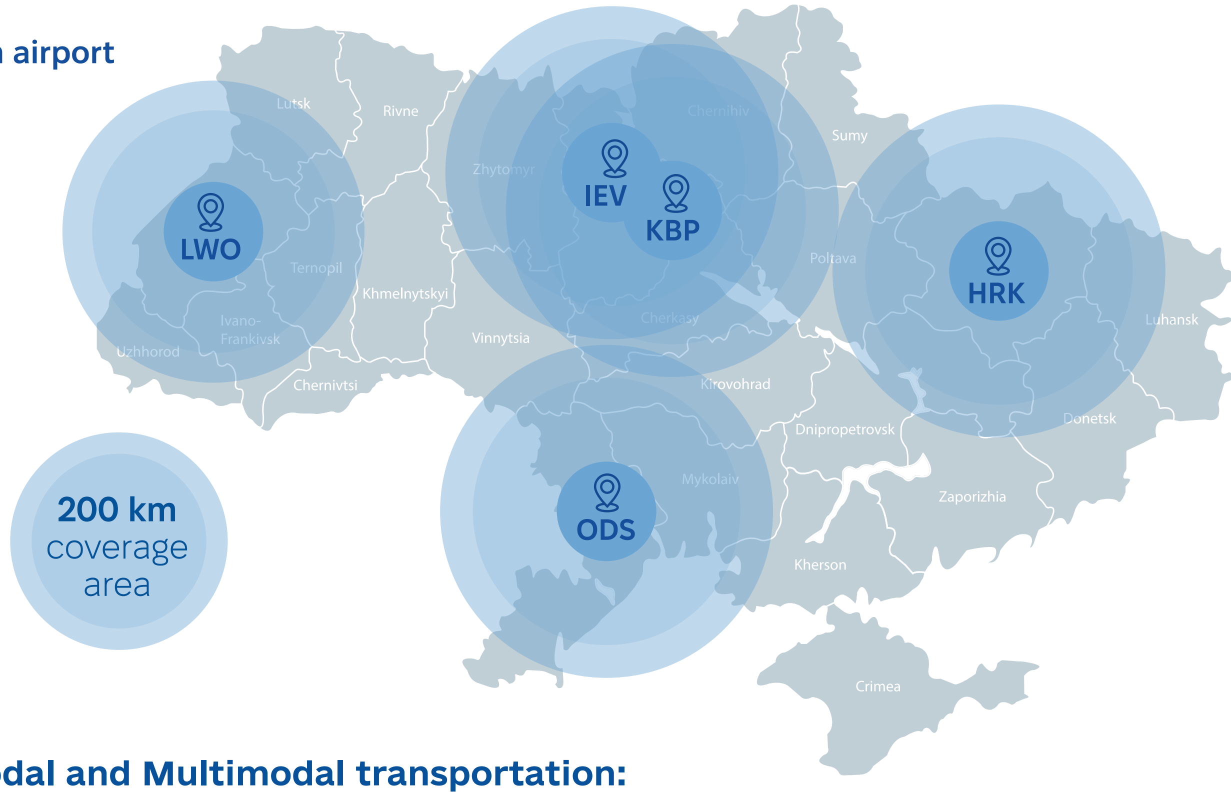
Air Freight

- **Infrastructure:** Ukraine possesses 20 airports and airfields capable of providing commercial flights. All runways are publicly owned, either by central or local authorities. Airport terminals are managed by both state and private operators, with a 74% state to 26% private ownership ratio as of 2021. The state-owned entity Ukraeroruch is responsible for air navigation services.
- **Transportation:** In 2021, approximately 94% of passenger transport and nearly all cargo transport were concentrated in two publicly controlled airports (Boryspil, Lviv) and three privately operated airports (Kyiv-Zhuliany, Odesa, Kharkiv). Air transportation services are provided by private operators. The key players in terms of flight numbers during the pre-COVID period include Ukraine International Airlines (UIA), Turkish Airlines, Wizz Air, Belavia, LOT, SkyUP, Windrose, and Ryanair. Industry is currently blocked due to hostilities.



Source: public information, KSE

Figure 7: Ukrainian airport network



Intermodal and Multimodal transportation:

- **Infrastructure:** Intermodal terminals in Ukraine are operated by both private entities and the state-owned company UZ. In November 2021, Ukraine passed the «Law on Multimodal Transportation,» establishing the legal framework for the multimodal transportation sector.
- **Transportation:** UZ offers intermodal transportation services that combine container train and combined transport train operations. Private companies function as multimodal/container hub operators and container fleet owners. Leading players in this segment include Liski (a subsidiary of UZ) and private companies such as Laude, Levada-Cargo, and TIS. These entities control 90% of the container platform fleet and managed about 70% of all shipments in 2022.
- **Cargo:** From 2018 to 2021, container traffic consistently grew by 22%, 20%, 11%, and 14% annually, culminating in a total of 279.8 thousand TEU transported in 2021. Following Russia's full-scale invasion in 2022, container traffic saw a 46% decline. However, in 2023, there was a significant rebound of 34%, reaching 201.3 thousand TEU, driven by the need to diversify grain and general cargo transshipment. Of this volume, 62% was exported, while imports and domestic transportation accounted for 19%. In 2022, the commodities transported in containers included ferrous metals (27%), grain (18%), oilseeds and cakes (14%), chemical products, foodstuffs, and vegetable oil. Of the total volume, only 32% was transported using UZ's platforms. UZ's strategic goal for 2031 is to boost container traffic to 1 million TEUs annually.

4.2.2. Overview and outlook of key reforms

Transport and logistics are key to export-oriented development. Ukraine is moving towards the implementation of the EU's Ukraine Facility program[9], under which the transport sector development will stimulate broad economic growth. Thus, it is necessary to modernise logistics systems, integrate with the EU's transport space (TEN-T network), bring the railway sector in line with EU standards, and improve port services. To achieve this, following priority goals are set:

- Restoration and development of transport infrastructure based on the long-term strategy and addressing recovery needs.
- Modernization of routes for export to the EU to develop Ukraine's export potential.
- Liberalisation in the railway transportation sector to provide a competitive rail transportation market.
- Improved shipping and port services, ensuring safety of navigation, security of ships and ports and efficiency of service provision.

This will result in the modernization of Ukraine's transportation sector and closer integration with both the European Union and the global economy.

[9] https://www.ukrainefacility.me.gov.ua

Reform 1. (Q4 2024)	Comprehensive planning of the transport sector (including recovery).	**A potential impact of the reform:** The new transport strategy shall provide a framework for an efficient, safe, sustainable transport system which will enable a swift reconstruction and post-war economic recovery and development, including war-affected territories and the country's export and logistics potential.
Reform 2. (Q4 2024)	Development of Ukraine's export logistics potential	**A potential impact of the reform:** This strategy is of utmost importance for the coordination of different investments available for the BCPs and shall ensure Ukraine, EU Member States and the Republic of Moldova enhanced transport connections in a well-coordinated manner.
Reform 3. (Q4 2027)	Liberalisation in the railway transport sector	**A potential impact of the reform:** Creation of a competitive rail market as per the essential requirements of European Union legislation will ensure improvements in the quality and effectiveness of passenger and cargo rail services and foster the integration of Ukraine's rail network and markets with the EU.
Reform 4. (Q1 2027)	Improved shipping and port services	**A potential impact of the reform:** Ensuring further development of the state safety navigation system, improved qualification level of Ukrainian seafarers, the proper level of security for vessels and ports, enhanced efficiency improvements in Ukraine's performance of its obligations under international treaties in the field of merchant shipping to ensure safety of life at sea, increasing the efficiency of service provision in seaports of Ukraine. Improved shipping and port services along with a more environmentally friendly mode of transport is expected to contribute positively to the mitigation of climate changes, to the extent possible in a context of war or post-war recovery and reconstruction.

4.2.3. Tendencies and trends

Main regional and global trends influencing the development of Ukraine's logistics sector:

1 **Ukraine integration with the European Transport Network:** Ukraine is actively working to integrate with the European transport network, while the ongoing war with Russia has led to the loss of logistical connections with post-Soviet countries. This shift necessitates a realignment of Ukraine's transportation strategies and partnerships.

2 **Disruption of West-East Logistic Routes in Ukraine:** The conflict has also disrupted traditional West-East logistic routes (Europe-Asia), prompting Ukraine to explore the potential development of North-South routes as alternatives. This redirection aims to maintain and enhance connectivity between Europe and other regions.

3 **Shift from Cost-Effective to Resilient Logistic Models:** Ukraine is moving away from purely cost-effective logistic models towards more resilient ones. This involves diversifying supply chains to mitigate risks and enhance reliability in the face of disruptions, ensuring a more secure flow of goods and services.

4 **Development of Electric and Automated Transport:** Ukraine is focusing on the development of electric and automated transport solutions, moving away from fossil fuels in the transportation sector. This transition supports sustainability goals and aligns with global environmental trends, aiming to reduce emissions and improve energy efficiency in logistics.

4.2.3. Successful private sector investments during wartime

M-10 Lviv Industrial Park

- **Warehousing facilities** in the Lviv region is planned to be developed in 6 stages. Located next to M10 international highway, 60 km from the Polish border, covers 23.5 hectares.
- **1st stage was** commissioned in February 2024.
- **Funding:** Project is actively developed by Dragon Capital. Total investments – USD 70 million, while EBRD will invest up to 35% (USD 24.5 million). In September 2023, MIGA, the World Bank's International Investment Guarantee Agency, provided a 10-year guarantee for a USD 9.2 million, that covers the risks of physical destruction due to enemy shelling and/or loss of control over it.

Mostytska dry port container terminal

- **Terminal is located** in Lviv Region near border crossing point with Poland (Shehyni — Medyka). Total area – over 36 hectares, designed for handling containers (up to 100 k TEU), grain, general and bulk cargoes. Terminal uses developed network of railway tracks of 1435 and 1520 mm and operates own locomotives fleet.
- **The terminal was** commissioned in 2022. In 2023 it handled over 72,400 TEU and 286,000 tons of other cargoes.
- **Funding:** Terminal is a partnership project of Lemtrans and Rail Trans Investment with total investments near USD 15 million.

Transshipment complex on the border with Poland - MOST Logistic Terminal

- **Project is designed** as a grain transshipment complex and container yards. The grain complex is to have a throughput capacity of more than 400 thousand tons per year and should be completed by the end of 2024. The container complex is planned to be built within the same timeframe.
- **The first phase of the project** was commissioned in 2022 (an automated unit for direct transshipment of grain between wide and narrow-gauge railcars).
- **Funding:** Complex is managed by private company Agrosem. Total investments – EUR 13.7 million, while EBRD has invested EUR 9.6 million, EUR 1.5 million – investment grant from the US, EUR 2.6 million – own funds of Agrosem.

Nibulon port terminal in Izmail

- **Since the outbreak** of the war 23 new port terminals were opened on the Danube, including Nibulon's port terminal in Izmail with a transshipment capacity of 300 thousand tons of grain cargo per month.
- **Terminal was commissioned** in 2022. As of April 2024, the terminal handled almost 3.1 million tons of grain.
- **Funding:** USD 15.5 million (equity funding).

Two-sided Risoil pier in the port of Chornomorsk

- **A 342-metre-long** double-sided pier able to handle different types of cargo simultaneously on both sides and capable of handling vessels with a draft of up to 15 metres.
- **Pier had been under** construction since 2021, and was successfully launched by Risoil Group in 2023.
- **Funding:** Total investments – UAH 1.5 billion (publicly announced USD 40 million), that included cost of unique technological equipment for oil and grain transshipment.

4.2.5. Prospects and potential for the sector

Considering principles for build back better, sustainability and resilience and strategic planning future investment plans can be divided into 3 blocks:

Recovery of damaged infrastructure	Development of new routes to EU	Resolving pre-war existed needs
Land freight:	Land freight:	Land freight:
• Rail tracks, turnouts and supporting stations • Railway rolling stock • Roads, bridges and bridge crossings	• Upgrade of main roads (priority - TEN-T network) • Construction and modernisation of road border crossing points • Construction of 1,435 rail to the EU border	• Renewal and modernization of the railway stations (esp. near seaports) • Electrification of railway infrastructure • Reconstruction and modernization of roads and bridges (Kyiv Ring Road, Lviv Ring Road, etc)
Water freight:	Intermodal and Multimodal transportation:	Water freight:
• Sea and river berths, warehouses, terminals' assets and water fleet	• Construction of new logistics centres and multimodal hubs (agri. storages and terminals)	• Sea ports concessions (Chornomorsk, Izmail, Pivdennyi, etc.)
		Air freight:
		• Local airports concessions and airfield infrastructure modernization • Boryspil airport reconstruction and development