

# Ships, Trains, and Trucks

## *Unlocking Ukraine's Vital Trade Potential*

By Romina Bandura, Ilya Timtchenko, and Benjamin Robb

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**T**ransport and logistics infrastructure serves as a country's main trade arteries, facilitating the flow of people, goods, and services. Without this vital infrastructure, a country's economic potential is stifled. In the case of Ukraine, Russia's full-scale invasion in February 2022 had devastating effects on its economy, including its ability to trade. Due to constant and indiscriminate Russian missile attacks, Ukraine suffered massive destruction of its transport and logistics infrastructure, with air cargo totally suspended and port activity severely interrupted. As a result, Ukraine has to be creative in finding new trade corridors to support business operations and enable the flow of humanitarian and military aid. To that effect, this white paper analyzes how the country has been adapting its trade routes and related infrastructure in wartime and provides recommendations to sustain trade and economic activity now and in the future.

### *Current Trade Challenges*

Ukraine is facing numerous challenges to its trade-related infrastructure. Even before the full-scale invasion, the quality of **Ukraine's infrastructure** was low due to the decades-long absence of critical investments. The 2022 invasion has added more complexities to this situation. First, Russian air strikes have destroyed and damaged transport and logistics infrastructure including key ports, roads, and grain silos, rendering these assets unusable or in need of repair and rebuilding. Second, shipping through the Black Sea, a main artery for trade for agricultural products, has partially rebounded but remains susceptible to attacks. Moreover, finding alternative routes for grain shipments via train and roads through Ukraine's western borders has led to disruptions with neighboring countries and additional time and transportation costs. Third, given the unpredictability of Russian attacks and the duration of the war, insurance for physical assets, such as vessels and silos, and business operations is expensive or lacking altogether. Lastly, all these transportation modes are labor intensive. Personnel shortages abound across sectors as many Ukrainians have left the country or have been mobilized for the army. Transportation is not immune to these trends.

## Seaports and Waterways

Ukraine's seaports have been crucial modes for exporting agricultural commodities and metals. Before the full-scale invasion, Ukraine's top five ports in the Black Sea cities of Pivdennyi, Mykolayiv, Chornomorsk, Odesa, and Mariupol—were responsible for over **90 percent** of Ukraine's seaport freight turnover. Moreover, 98 percent of grain exports flowed through the Black Sea ports, with Mykolayiv seaport playing an imperative role. Companies such as U.S. **Bunge**, Ukrainian **Nibulon**, and Chinese **COFCO** all had major investments there.

With the start of Russia's full-scale invasion, commerce through the Black Sea was significantly interrupted. Grain exports via the Black Sea were subject to constant Russian attacks (the heaviest period being February to July of 2022), including aerial (missile and drone) attacks on **port infrastructure** and sea mines destroying cargo ships. Due to the invasion, Ukraine fully lost control of the port of Mariupol in May 2022 after Russia brutally invaded it on February 24, 2022. Of the other four important ports, Mykolayiv became inoperative due to Russia's full-scale invasion, while the ports of Chornomorsk, Pivdennyi, and Odesa have operated at partial capacity since February 2022.

To help ease the flow of goods to and from Ukraine, in May 2022, the **European Commission** launched the Solidarity Lanes action plan. The EU-Ukraine **Solidarity Lanes** provide logistics alternatives to Ukraine's seaports, including rail, road, and inland waterways (Figure 1). A total of **€2 billion** (around \$2.2 billion) has been mobilized to meet this demand. According to the European Council, as of July 2023, almost **33 million** metric tons of grain (and other foodstuffs) had been exported via the Black Sea Grain Initiative, which is **about half** of what it exported prior to the full-scale invasion. At the same time Ukraine imported essential goods such as fuel, and military and humanitarian aid was allowed to flow.

Figure 1: EU Solidarity Lanes



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In addition, in July 2022, Russia, Ukraine, Turkey, and the United Nations **brokered** the **Black Sea Grain Initiative**. This provided partial safety for Ukraine's grain exports via the Black Sea ports of Odesa, Chornomorsk, and Pivdennyi for a year. Since August 2022, the initiative has enabled **32 million metric tons** of Ukrainian grain and foodstuffs to be shipped across the globe. Furthermore, the initiative helped Ukraine export over **36 million metric tons** of nonagricultural goods such as iron, steel, ores, and wood. However, Russia suspended the deal in July 2023 and consequently resumed heavy attacks on Ukraine's port infrastructure.

After Russia fully compromised the Solidarity Lanes through the Black Sea, Ukraine launched its own **alternative** Black Sea corridor in **August 2023**. Established with the help of its Western partners, the **corridor** between Ukrainian ports and the **Bosporus Strait** has proved **successful**. Ships are now traveling on the western coast of the **Black Sea** through Romanian and Bulgarian territorial waters. Ukraine has also been exporting grain through the ports of Reni and Izmail, both on the Danube River. This new corridor allows Ukraine to **continue exporting** wheat, corn, sunflower oil, and barley to the Middle East, Asia, and Africa. Since Russia's refusal to continue the Black Sea Grain Initiative, Ukraine claims it has exported, as of December 2023, approximately **seven million metric tons** of cargo through its seaports, five million of which were Ukrainian agricultural products. According to recent reports, Ukraine is on track to export all its grain from the **2023 harvest**. Nevertheless, there are still major risks as Russia continues to attack commercial ships and infrastructure and as mines float in the Black Sea waters.

Moreover, due to Russia's full-scale invasion, Ukraine is using more road and rail infrastructure to trade. Before the full-scale invasion, nonmarine modes of **transportation** were responsible for over 40 percent of Ukraine's trade turnover and seaports for about 60 percent. According to author interviews with Ukrainian infrastructure and transportation experts, for most of 2023, the picture almost flipped, where rail and roads accounted for about three-fourths of Ukraine's total trade volume and seaports accounted for about one-fourth. This situation changed dramatically after Ukraine reopened its ports in the fourth quarter of 2023. According to the experts, today, the balance between seaport and non-seaport trade turnover is about 50-50.

## *Roads*

Another important mode of transportation for Ukraine is the road network. However, the 170,000-kilometer **road network** Ukraine inherited from the Soviet era was in poor condition and needed much updating. With Ukraine's pro-Western trajectory after 2014, the government took road repair more seriously, allocating **substantial sums** from the state budget. Ukraine's roads began to be brought back to life as Ukraine repaired **up to 10 percent** of the roads between 2016 and 2019. Moreover, in 2019, Ukrainian president Volodymyr Zelensky announced the **Big Construction** initiative aimed at building or repairing roads and other important infrastructure. As a result, more than **14,000 kilometers** of roads were constructed or repaired in the first two years of the project (but still not enough to cover the immense needs). This initiative then ran into problems, including lack of transparency in the bidding processes and severe corruption allegations in the state-run road agency Ukravtodor.

Before the full-scale invasion, Ukraine's roads were mainly transporting higher value-added products such as finished goods (**both for imports and exports**), in addition to some commodities. The war has considerably changed trade dynamics as Ukraine's roads had to absorb part of the commodities

transported via seaports, mainly metals and **grain**. Ukraine can now export some of the grain using road and rail cargo routes via Poland, Slovakia, Hungary, Romania, and Moldova, albeit with limited capacities and in some cases with political tensions.

In response to Russia's full-scale invasion, the European Union allowed tariff-free food imports from Ukraine, but that created problems for neighboring countries. In April 2023, Poland **closed its border** to Ukrainian grain as Polish farmers protested that their grain became **less competitive**. Slovakia and Hungary took similar action **earlier that month**. The EU farmers gained partial victory by making the European Commission impose restrictions against imports of Ukrainian grain (wheat, maize, rapeseed, sunflower seed) to Hungary, Poland, Romania, Slovakia, and Bulgaria. Initially, the ban was to last until June 5, 2023, but then it was **extended** until September 15, 2023, after which it became obsolete. However, in response to lifting the ban, Poland, Hungary, and Slovakia said they would impose unilateral import bans.

This shift in transportation has also generated discontent among truckers in neighboring countries. In November 2023, Polish truckers initiated a **boycott** of one of Poland's largest Ukraine border crossings, Medyka, in fear that an influx of Ukraine's truckers are creating unfair competition. Polish truckers have been demanding more support from their government, including reinstating of permits and limiting the number of licenses for Ukrainian truckers. Slovakia and Hungary joined the boycotting of their own border control points a few weeks later.

This caused thousands of trucks to be stranded for miles near the borders in freezing weather, costing Ukraine's government and the private sector a hefty sum. The total amount of trucks in queue at one point was **nearing 4,000**. Altogether, Poland blocked **four border crossings**: Korczowa-Krakovets, Hrebenne-Rava-Ruska, Dorohusk-Yahodyn, and Medyka.

An additional potential problem is that the stranded trucks could be carrying critical humanitarian aid for Ukrainians, considering that some of these border crossings are close to transit points for humanitarian and military aid to Ukraine.

Although the blockade affected a **diverse range** of businesses, Polish truckers are **damaging** Ukraine's wood, furniture, car parts, and vegetable oil exporters and a quarter of Ukraine's fuel supplies imports in particular. A Ukrainian trucker association estimated the blockage has already cost **€400 million** (\$436 million) in revenue for companies. The European Business Association estimates the total losses to be much lower—around **\$8.5 million**—based on poll results among its members.

In January 2024, Polish truckers reached an **agreement** with the government under certain conditions. Polish farmers also stopped a protest at Medyka after they negotiated a deal with the Polish government. Poland and Ukraine also said that they were close to an **agreement** on agricultural imports on March 28. However, this does not mean Ukraine will be immune to similar boycotts in the future, which presents an ongoing major risk for Ukrainian trade capacity as road transportation has become increasingly important for Ukraine. Traditionally, even before the full-scale invasion, Ukraine's border checkpoints leading to the European Union were congested and depleted. In addition, there is still **ongoing corruption** at Ukraine's customs, though authorities have been attempting to **crack down** on high-level officials. These fundamental challenges need to be addressed in addition to future boycotts and protests.

## Rail

Along with its seaports and roads, Ukraine has a strong rail infrastructure to transport goods and people—one of the biggest and most resilient in the world. According to Transparency International, before the full-scale invasion, Ukraine’s railway system—controlled by Ukrzaliznytsia (UZ), the country’s state-run rail monopoly and **largest employer**—was responsible for **60-75 percent** of the country’s total cargo turnover, which included all of Ukraine’s major commodities: construction materials, grain, and steel.

Due to the war, almost 6,300 kilometers of track were destroyed. Along with increases in fuel costs and constant rebuilding due to Russian air strikes, the government of Ukraine decided to increase rail tariffs by **70 percent** in June 2022 to make the company economically sustainable. This allowed the monopoly to achieve a financial surplus. In 2022, UZ had a deficit of **11 billion** hryvnias (\$290 million) as the company had to transport humanitarian aid and evacuate 3.7 million Ukrainians **for free**. In 2023, the situation dramatically changed, and UZ predicted it would reach **7 billion** hryvnias (\$190 million) in net profit.

In November 2023, UZ transported **14 million metric tons** of cargo, a 34 percent increase year over year. About half of this was transported domestically, and the rest was exported (of which 2.4 million was grain). Goods **transported via rail** today include many of the same transported before the full-scale invasion: construction materials, iron and manganese ore, and coal. What has changed are the volumes and pressure on the railway system. During war, these volumes can **vary dramatically**, and there is little consistency with figures (for example, grain transportation will strongly depend on whether Ukraine has the ability to export grain via the Black Sea). Furthermore, cargo routes have changed since the full-scale invasion: whereas before 2022, most of the railway cargo transportation was for **domestic trade purposes**, the full-scale invasion pushed the railways to fill in the export void for commodities.

However, the rail sector needs reform and much work to attract international companies that could compete with their rolling stock. To **reform** and liberalize Ukraine’s railway system, the monopoly should become more transparent, **unbundle** into at least three separate businesses—infrastructure, passenger, and cargo—and **uproot corruption**, archaic regulation, and inefficient management. Furthermore, Ukraine’s railway infrastructure must meet the requirements of EU directives. Ukraine’s railways should integrate in unison with the **Trans-European Transport Network (TEN-T)**, meaning it will have to solve its **gauge issue**: Western Europe uses 1,435-millimeter gauge, whereas post-Soviet countries tend to use 1,540-millimeter gauge. Importantly, in coordination with the reform agenda, **multilaterals** will be valuable partners in providing significant financing to modernize and fix UZ.

## Air

Before the 2022 invasion, Ukraine had bustling **airport traffic**, with Kyiv’s Boryspil International Airport having the highest activity by far, followed by the Lviv Danylo Halytskyi International Airport, Kyiv International Airport-Zhuliany, Odesa International Airport, and Kharkiv International Airport. Ukraine’s airport infrastructure was up and coming since 2014, when Ukraine signed an **association agreement** with the European Union and has been making it **easier** for airline businesses—including from the United States—to operate within the country ever since. Ukraine’s airports were mainly active with passenger traffic as well as parcel transportation. Today its commercial air activity is completely on pause, and some have been severely damaged. Until the country’s skies are protected, air travel will not



operate throughout the country for civilian transportation, and there is limited opportunity for some airports to be active in delivering cargo.

### *Short-Term and Longer-Term Solutions*

Considering the war is likely to continue, Ukraine's trade corridors in the short run need to be fully utilized and protected from Russian attacks. In the long term, Ukraine needs to rethink its existing trade corridors and reconfigure its transport and logistics infrastructure toward the EU market.

As such, the European Union has heavily supported Ukraine's adoption and implementation of the TEN-T proposal, which would incorporate roads, inland waterways, and railways to allow more Ukrainian grain and products to be exported. There has already been **€110 billion** (around \$119 billion) worth of investments completed along the TEN-T, including the interconnectivity of maritime, aviation, and land infrastructure. Many new standards are being optimized for more efficient rail (track speed requirements of 100 kilometers per hour for freight and 160 kilometers per hour for passenger rail), sea (alternative vessel fuels and adequate mooring/resting areas), air (new airports), and road transit (safe and interconnected roads to infrastructure), aiming to decrease shipping time and ensure lower carbon emissions. This initiative **could** create 840,000 jobs and increase EU gross domestic product by 2.4 percentage points. Of the nine TEN-T transportation corridors, four are planned to fully connect with Ukraine by 2030: the North Sea-Baltic corridor, the Baltic Sea-Black Sea-Aegean Sea corridor, the Baltic-Adriatic corridor, and the Rhine-Danube corridor.

### **SHORT-TERM SOLUTIONS**

#### *Seaports*

If Ukraine wants to ramp up its seaport usage, it ultimately needs to deal with Russia's continuous military threats. In this regard, stronger military protection of the region and active demining of both land and waterways are key measures to improve the security of seaports. Ukraine's seaports could be propped up by long-range missiles and air defense that will deter Russia's fleet farther away from Ukraine's coast. Plenty of evidence shows this has been effective in the past. Furthermore, Ukraine's inland waterways should be protected and cleared from mines.

Another tool that can enable more trade via Ukraine's seaports is war risk insurance. Currently, risk management company Marsh McLennan, in collaboration with Lloyd's of London and the Ukrainian government, created a war insurance facility called **Unity**, which is meant to provide affordable insurance for grain export from Ukraine's Black Sea ports. Unity will insure up to \$50 million in hull and separate protection and indemnity war risk insurance, which is not a large amount in overall terms for the industry. This is where international financial institutions and development finance institutions could **step in** to provide additional insurance support. The European Bank for Reconstruction and Development (EBRD) is working on such a **scheme**, but it is still not operational.

#### *Roads and Rail*

For roads and railways, there is a need to expedite border crossings. The business communities in both Ukraine and Poland have provided a list of ways to improve **border control inspections** by removing red tape and providing more transparency. Moreover, **joint road checkpoints** could be expanded to ease the flow of trucks. The Ukrainian government is already partially engaging in

**checkpoint expansion:** just recently U.S.-based company **DAI Global** signed a contract with Miyamoto International to modernize crossing points on Ukraine's border.

Another barrier for both transportation companies is the licensing requirements for international postal carriers. Currently, not all private sector players are allowed to receive licenses for international mail processing centers (IMPCs). The only holders of IMPCs in Ukraine are state-owned Ukrposhta and Ukrainian-Canadian company Rosan (part of the **Meest Group**), which curtails competition. Resolving this matter would expedite the processing and delivery of packages to and from Ukraine. In addition, Ukraine will have to fully adapt its environmental and licensing regulations for cargo transportation vehicles in line with those of the European Union.

### *Air*

Regarding air transport, Ukraine could boost its cargo if its western airports (for example, Lviv and Uzhhorod) are more secure and if air cargo carriers are allowed to operate. This will increase Ukraine's trade turnover capacity, though air transport cannot fully substitute Ukraine's road freight because it is a more expensive means of transportation.

Ukraine and the European Union could negotiate air cargo transportation by reopening the Lviv airport as an initial hub, followed by other airports in western Ukraine, which are only minutes away from EU airspace. Such air travel could be accompanied by a commercial air defense dome or a negotiation similar to the Black Sea grain corridor but only for air cargo transportation. Furthermore, if private sector players were allowed to receive licenses for IMPCs, these companies could transport goods via the skies, alleviating some of the cargo burden from the roads and diversifying the means of transportation.

## **LONG-TERM SOLUTIONS**

Along with these short-term measures, Ukraine could envision new and expanded logistics routes to serve trade activity along the EU border. In this regard, EU membership will be a major incentive to improve the transport and logistics network and align regulations and standards to the EU market. To increase trade with the European Union, Ukraine will need to construct new roads, widen existing ones, modernize the railway system, and increase the capacity of the border checkpoints. In the long run, Ukraine will have to prioritize EU accession requirements related to infrastructure, such as TEN-T-related policies and its overall transport policy. However, Ukraine's progress in this realm so far has been **limited**.

On road infrastructure, there is still plenty of work to be done to modernize the current system and build new infrastructure. Private capital and Western companies will play a vital role in the reconstruction of Ukraine's roads. According to a **study** by the International Finance Corporation and the World Bank, public-private partnerships (PPPs) had the potential to attract approximately \$2 billion in road investments from the private sector between 2021 and 2023. Ukraine could also build more roads that lead toward borders with **Moldova and Romania**. However, highway construction in Ukraine inherited a reputation as one of the most corrupt sectors in transportation. To address this issue, Ukraine has been implementing **reforms** since 2014 and needs to continue on this path. The Ukrainian government now requires that each company that has won a tender must hire an engineer from the **International Federation of Consulting Engineers**, which provides more professionalism, transparency, efficiency, and accountability to management. Furthermore, the country's public e-procurement system (ProZorro) has made the bidding procedure for government contracts more transparent. Ukraine has also decentralized its state roads agency, Ukravtodor.

The port infrastructure requires upgrading as well, including dredging and construction of docking sites. Ukraine's Odesa port infrastructure has ample potential to develop further, as it is connected to the Dnipro River, which has also been majorly underutilized for cargo transportation during the past decades. If Ukraine advances its river infrastructure, it will put less pressure on roads (which are more expensive for the government to maintain) and expand the overall trade capacity. Furthermore, Ukraine has the advantage of having access to the largest EU river, the Danube, which stretches to the largest EU economy—Germany.

In this regard, Romania has become a critical player in exporting Ukrainian grain in the past year, though more investments in Romanian port infrastructure may be necessary if it is to accommodate further increases in the coming months and years. The European Union and the United States have already sent a **delegation** to visit Izmail, as the port is key to ferrying cargo down the Danube River into Romania, which then transports the grain to Constanta for its journey into the Mediterranean Sea. In addition, maritime insurance needs to be more readily available, along with infrastructure investments in grain storage capacity in Romanian and Moldovan silos, to accommodate the increased fertilizer and grain surpluses inevitable in an unpredictable war.

At the same time, countries bordering Ukraine's western regions will have to expand their road and rail capacities as well. Land corridors that allow for trucking are still beneficial to exports, and there is a sense of urgency to widen and expand current roads that traverse out toward Moldova and Romania. With support from the **European Investment Bank** and **EBRD**, Moldova is also improving its railway network to ease Ukrainian grain shipments through Moldovan roads.

Currently, the freight throughput capacity of rail border crossing points between Ukraine and the European Union is **low**. This can be resolved by increasing administrative staff (e.g., customs, border police), modernizing equipment, and expanding infrastructure. The European Union has already contributed to the development of Ukraine's cross-border railway infrastructure via the **Connecting Europe Facility**. Furthermore, Ukraine needs to have **easier access** to main EU distribution points such as in the Adriatic and Baltic Seas and at Danube ports.

In parallel to border issues, Ukraine's rail system requires deep reforms to create a more competitive rail cargo transportation market that corresponds to EU standards. Currently, this is difficult considering the centralized nature of management during war where rail transportation of humanitarian goods and citizens is important for the country's functioning. However, this does not mean Ukraine cannot start reforming UZ in the meantime. For example, Ukraine could create an independent railways regulator responsible for tariffs and overall regulation of the monopoly. Furthermore, UZ's activities should eventually be unbundled, since currently, it has a monopoly both within rail infrastructure and within the cargo transit. The latter could be operated by private sector locomotives and transit companies, which would significantly modernize and expand the fleet. Allowing Western companies to enter would also make Ukraine less dependent on Soviet infrastructure and fleet.

Ukraine's current rail fleet is a remnant of the Soviet Union. Considering the increase of wear and tear on the rail fleet since Russia's full-scale invasion, Ukraine has not been able to keep up with the maintenance. More than 70,000 (or **70 percent**) of UZ's wagons have expired their service life, a quarter of which are in critical condition. Western companies specializing in the mechanical



management of rail systems could play a significant role in modernizing Ukraine's rail. In addition, a key problem is that the European Union and Ukraine use **different gauges** and wagon types, which limits the number of wagons Ukraine can use. A short-term solution could be the construction of multimodal cargo terminals located close to EU borders to convert Ukrainian rail gauge to EU gauge. Such locations can also be industrial and manufacturing hubs.

Ukraine's long-term reforms should prioritize the independence of industry regulators to ensure the market is fair and competitive. This will significantly strengthen Ukraine's image in front of investors. As discussed, PPPs will be an important tool in attracting private investment in infrastructure. Ukraine's lawmakers have been working on **reforming** Ukraine's PPP legislation to make partnerships more transparent and create a more competitive business environment. This tool can be applied toward highway development, as done in many other countries.

## *Conclusion*

Ukraine's ability to trade will remain restricted as long as the Russian military threats remain high. Of the numerous challenges Ukraine faces with trade corridors, one of the primary priorities is to find solutions to protect Ukrainian ports from Russian missile strikes. Second, railways and roads need to be upgraded. Although imperfect substitutes for the existing port infrastructure, railway and road infrastructure must be modernized to complement seaport trade.

Ukraine's vision for its economy and its future drivers will also help define the nature of its transportation network. Will the economy produce and export at higher levels than those before the full-scale invasion? Will Ukraine add more value to its raw materials and export finished goods, or will it continue to be primarily a commodity exporter? Ultimately, Ukraine's infrastructure modernization will be intimately linked to the country's EU accession path. ■

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