



**2024**

**CSCMP European Conference & European Research Seminar  
UNLEASHING RESILIENT, SUSTAINABLE SUPPLY CHAINS**

# **CHANGING LOGISTICS ROUTES FOR UKRAINE, POLAND AND EU after Two Years of War**

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# GEOPOLITICS BECOMES THE MAJOR CHALLENGE FOR SUPPLY CHAINS

## KEY LOGISTICS CHALLENGES in 2021-2024



### COVID-2019

We observed lack of containers to transport goods from Asia to USA and Europe as due to the lockdowns many containers were left in western countries' ports.

### BLOCKAGE OF SUEZ CANAL (EVER GIVEN ACCIDENT)

In March 2021 ship "Ever Given" blocked Suez canal for 6.5 days. It caused delivery delays because of congestion affected 400 ships. Total damage to global economy is estimated at €2.0-2.5 bln.

### THE WAR IN UKRAINE

In the beginning of the war Russian military forces blocked shipping in Black Sea. As a result, 100 ships could not leave Ukrainian seaports. Ukraine could not export 120 mln tons of goods by sea, as before the war annually.

### RED SEA CRISIS

Houthi attacks on container vessels in the Red Sea disrupted navigation through Suez canal, which traditionally accounts for 10-15% of world trade and 30% of the global container traffic. Ships have to reroute around Africa's Cape of Good Hope.

### ISRAEL-HAMAS WAR

Israel-Hamas war severely affected the operations of major ports in the region, such as Ashdod and Haifa in Israel, and Rafah and Gaza in the Palestinian territories. The threat of disruption to shipping in the wider region is likely to rise.

### PANAMA CANAL DROUGHT

Drought, driven by a combination of El Niño and climate change, has disrupted shipping through the Panama Canal. The number of vessels has been slashed from an average of 36 to 24. Each ship is also carrying less cargo now because of weight restrictions.

### POTENTIAL CHINA-TAIWAN CRISIS

The Taiwan Strait is a key shipping route, with almost half of the global container fleet and 88% of the world's largest ships by tonnage passing through it.

# SUPPLY CHAIN CHALLENGES CREATE ADDITIONAL PROBLEMS FOR COMPANIES

## INCREASING LOGISTICS COSTS AND LEAD TIMES

Due to Red Sea crisis many shipping firms are now diverting vessels to the route around southern Africa, passing the Cape of Good Hope. This can add 10-15 days to a journey and increase fuel costs by 40%.

In Ukraine freight costs via “sea corridor” in January 2024 was twice higher than the pre-war freight costs.

## PRODUCTION STOP

About 70% of all of Europe’s car parts are shipped through the Red Sea from Asia. The disruption in this route has meant that carmakers including Volvo and Tesla suspending some production lines because of a lack of parts.

## SHORTAGE OF MATERIALS

At the beginning of the pandemic, car companies canceled orders for chips, but as production ramped up again toward the end of 2020, there was no semiconductor supply available. This was compounded by increased demand from automakers and producers of consumer electronics that require chips.

## CONSTANT NEED FOR NEW MAIN SUPPLIERS

In 2021 Ukraine supplied 34% of slabs imports in the EU. In 2022 these supplies stopped because Russian military forces occupied two large steel plants exporting slabs. So, European steel plants were forced to search for new suppliers of slabs.



# COMPANIES HAVE TO REBUILD SUPPLY CHAINS DUE TO NEW REGULATIVE CONSTRAINTS



- Mutual import taxes
- Barriers to investment
- Limits on sales of semi-conductors to China etc.

**RESULT:** Chinese companies are falling out of Western supply chains.



- Bans on imports of some products
- Restrictions on supplies of high-tech products to Russia
- Ban on entry of russian ships into European ports etc.

**RESULT:** European companies have to fully rebuild their supply chains.



- Additional fee for carbon intensive imports in the EU and potentially – in other countries (UK, USA, Australia etc.)

**RESULT:** Suppliers of products with the highest carbon emissions will be squeezed out of the European market.



- Anti-dumping duties
- Countervailing duties
- Safeguard measures, incl. quotas

**RESULT:** Volume of global trade will decrease due to restricted imports from some countries.

# EU SANCTIONS REBUILD SUPPLY CHAINS OF CRUDE OIL & OIL PRODUCTS GLOBALLY



## CRUDE OIL

- Ban on the seaborne imports of crude oil from Russia in the EU (5.12.2022)
- Ban on pipeline oil import from Russia in Poland and Germany (23.06.2023)

- The EU has granted an exemption for Russian crude oil imported through the southern branch of the Druzhba pipeline to Hungary, Slovakia, and the Czech Republic. So, such supplies continue.
- China and India became the main consumers of Russian crude oil: from 5 December 2022 until the end of April 2024 they have bought 48% and 35% of Russia's crude oil exports respectively.
- The US replaced Russia as Europe's number one oil supplier. Also, the EU increased oil imports from Saudi Arabia, Norway, Brazil, Iraq, Angola.



## OIL PRODUCTS

- Ban on imports of Russian oil products in the EU (5.02.2023)

- India became major supplier of oil products to the EU. In 2023 the European Union's imports of refined oil products from India increased by 115% y-o-y. In 2023, 20 out of the 27 EU countries imported refined oil products from India.
- Turkiye became the largest buyer of Russian oil products: this country has purchased 24% of Russia's oil product exports from February 2023 till April 2024. Other major consumers are China (12%) and Brazil (10%).



## SHIPMENT

- Ban on access to EU ports for any tankers that assist in violating the EU embargo on the import of Russian oil and petroleum products (23.06.2023)

- Russian entities have purchased aging ships from Western companies to create "shadow" fleet. Such ships can turn off their navigation systems to hide arrival at Russian ports and conduct ship-to-ship transfers off the EU coast.
- Maintenance and expansion of the shadow fleet enables Russia to bypass the oil price cap. According estimations of Centre for Research on Energy and Clean Air, in April 2024, 240 out of 411 ships exporting Russian oil and oil products were "shadow" vessels.

# THE EU NEEDS TO DIVERSIFY SOURCES OF COAL AND GAS SUPPLIES



COAL

- Ban on imports of Russian coal and other solid fossil fuels in the EU (8.04.2022)

- USA became the most important coal supplier to the EU (27% of imports in the EU). The second largest supplier to Europe is Australia, accounting for 23.2% of the EU's imports in 2023.
- China has purchased 45% of all Russia's coal exports from 5 December 2022 until the end of April 2024. They are followed by India (17%) and South Korea (10%).



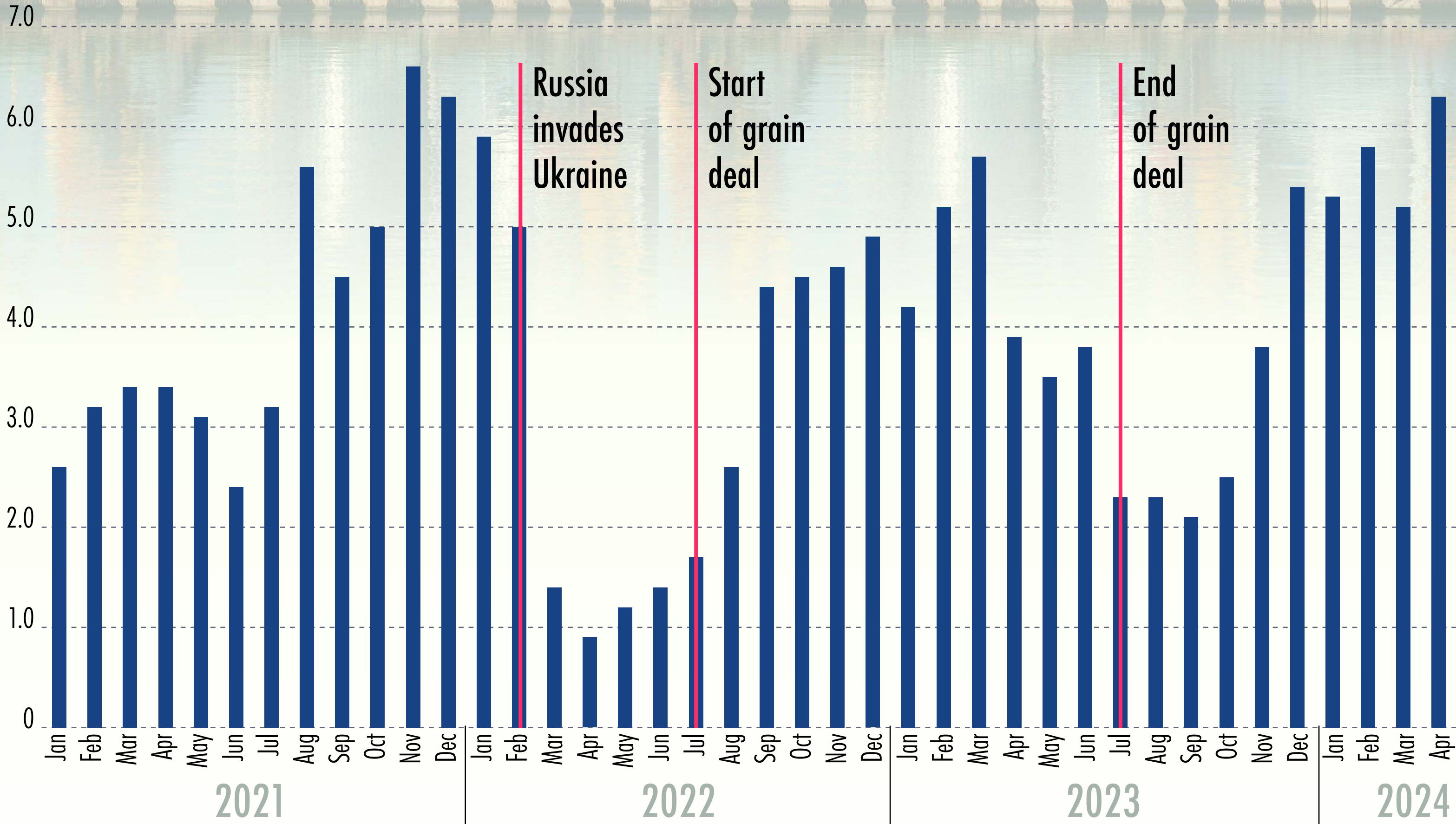
GAS

- Ban on imports of Russian LPG in the EU (18.12.2023)
- Regulation allowing to temporarily stop Russian and Belarusian gas exporters from bidding for capacity on the infrastructure needed to deliver piped gas and LNG into the EU (11.04.2023)
- Adoption of EU Gas Storage Regulation EU/2022/1032 (29.06.2022)

- No sanctions are imposed on Russian LNG and pipeline gas shipments to the EU. Russian LNG continues to flow into the EU, mostly through ports in Spain, Belgium and France.
- In 2023 natural gas pipeline supplies to the EU was 28.3 bln m3 (31.0% of total pipeline exports from Russia). EU remains the largest consumer of Russian pipeline gas, however, supplies to the EU decreased by 55.6% y-o-y.
- Gazprom has instead increased gas sales to China, whose pipeline gas imports from Russia rose to 22.7 bln m3 in 2023, nearly 1.5 times more than in 2022.
- In 2023, 13% of the EU's LNG imports by volume were from Russia. This amounted to 17.25 bln m3, excluding transshipments to non-EU Member States. In 2023, the United States was the largest LNG supplier to the EU, representing almost 50% of total LNG imports in 2023.
- The EU's LNG import capacity grew by 40 bln m3 in 2023 and an additional 30 bln m3 is expected to become operational in 2024.
- New EU regulation set target for filling gas storage facilities – 90% by 1 November 2023 and years following.

# RUSSIA-UKRAINE WAR DISRUPTED AGRICULTURAL SUPPLY CHAINS

Ukrainian exports of wheat, barley and corn, mln tons



- Before the war, 90% of Ukrainian grain and other agricultural exports were handled in Ukrainian Black Sea ports.
- At the beginning of the war, the Russian navy blocked Ukrainian ports. As a result, average monthly grain exports decreased by more than 80% compared to pre-war months.
- Russia, on the contrary, increased its agricultural exports. In marketing year 2022/2023 Russia exported 53 mln tons of wheat (x1.5 compared to previous marketing year).
- Russia is also accused of having stolen nearly 6 mln tons of Ukrainian wheat and sold it as Russian product.

# UKRAINE MANAGED TO FIND SOLUTIONS TO CONTINUE GRAIN EXPORT DESPITE THE WAR



Source: United Nations

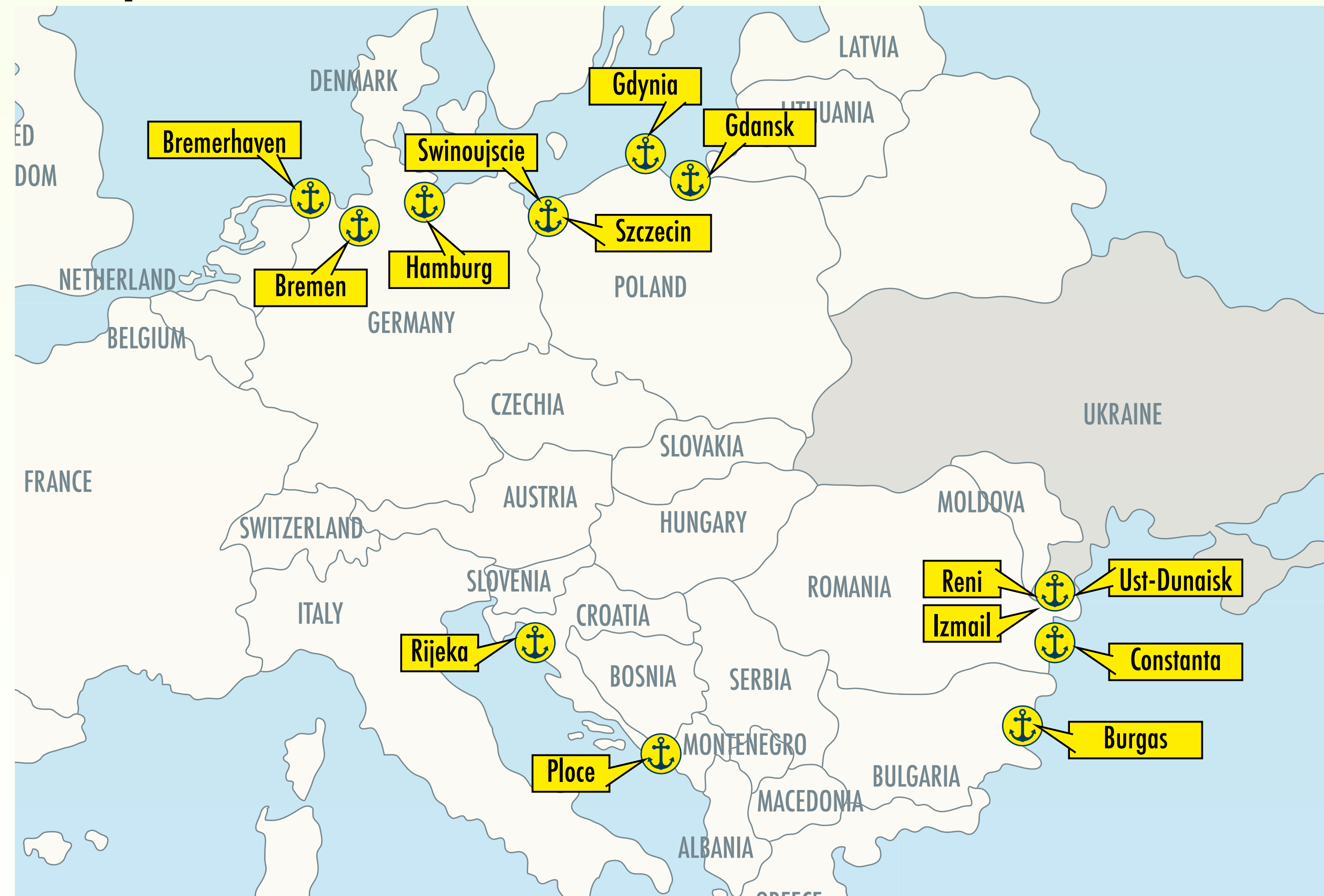
BBC

- To support Ukrainian economy the Commission launched the Solidarity Lanes Action Plan to establish alternative logistics routes via rail, road and inland waterways in May 2022. Under the EU's «solidarity lanes» scheme, Ukraine sends grain by land and barge to ports on the River Danube, or to the Romanian port of Constanta.
- Between May 2022 and April 2024, the Solidarity Lanes allowed Ukraine to export around 136 mln tones of goods, including 70 mln tones of grain, oilseeds, and related products.
- In July 2022, Ukraine signed so called “grain agreement” with UN and Turkiye. Russia signed a mirror agreement with the UN and Turkiye. This action allowed unblocking the export of grain and other food products from three Ukrainian ports: Odessa, Chornomorsk, Pivdennyi.
- In July 2023, Russia exited “grain agreement”. In August 2023, Ukraine announced temporary route for civilian vessels moving from Ukrainian Black Sea seaports. New “temporary export corridor” hugs the western coastline passing through the territorial waters of Romania and Bulgaria.



# DUE TO THE WAR UKRAINIAN IRON & STEEL SECTOR HAD TO CHANGE EXPORT ROUTES

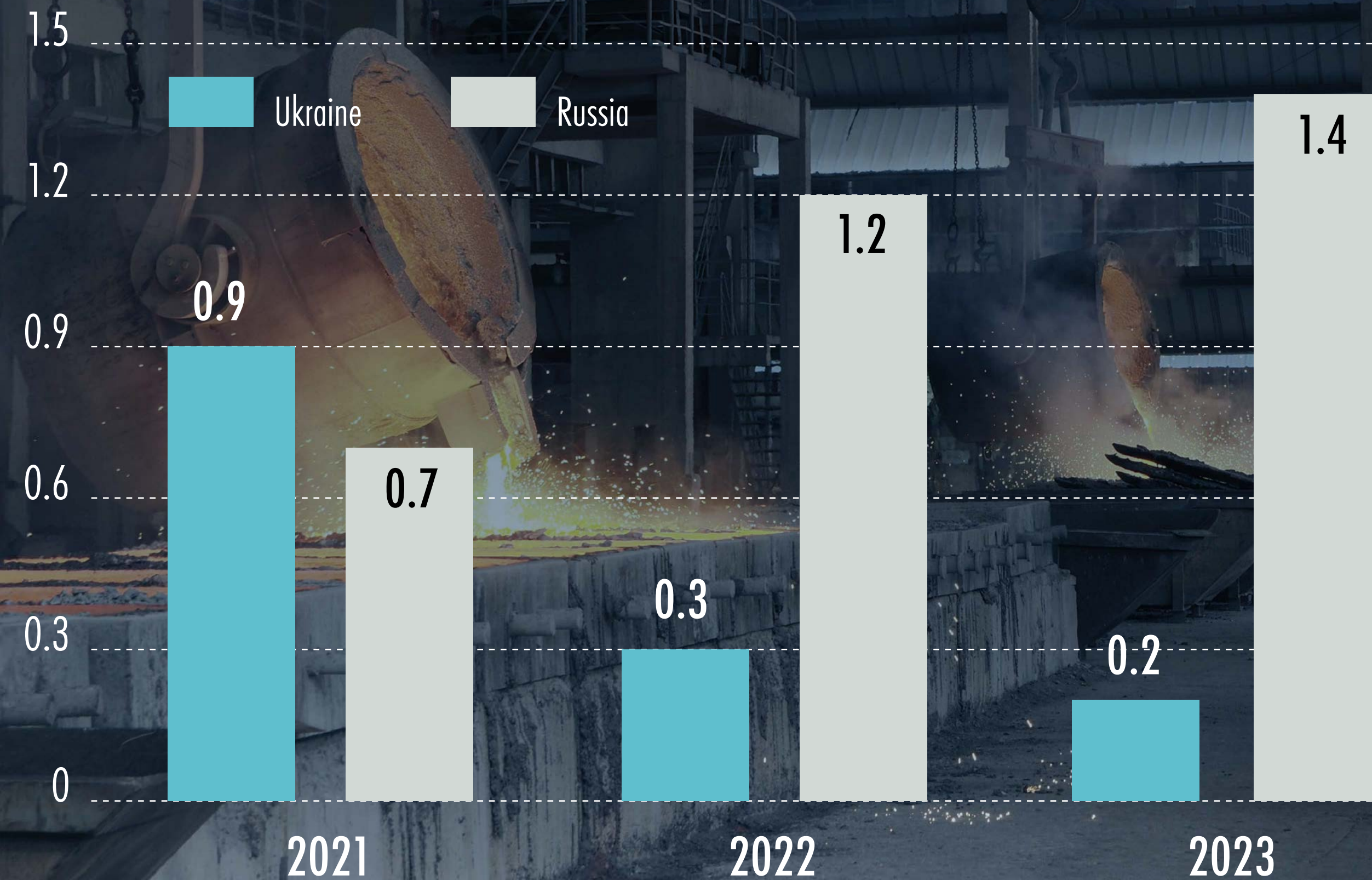
## Main seaports used by Ukrainian iron & steel companies in 2022



- Before the war iron & steel sector exported more than 60% of products through seaports (45 mln tons). Almost all pig iron was exported from Ukraine by sea transport.
- During the war Ukrainian exporters had to redirect cargo flows to EU seaports, in particularly in Romania (Constanta), Bulgaria (Burgas), Poland (Gdynia, Gdansk, Szczecin, Swinoujscie), Croatia (Rijeka, Ploce), Germany (Hamburg, Bremerhaven, Bremen). As a result, average distance to dispatch port for Ukrainian exporters increased 5 times and shipping costs to port of destination raised 3-4 times in average.
- During the war Danube ports were forced to partially reorient their work to coastal navigation for offshore transshipment in the port of Constanta (Romania). In 2022 Izmail became the main route for exports of iron & steel products from Ukraine.

# UKRAINIAN STEEL INDUSTRY STABILIZED SUPPLIES AFTER INITIAL WAR SHOCK

EU imports of pig iron by source, mln tons



Data source: Eurostat

- “Temporary export corridor” launched in August 2023 allowed export of iron & steel products from Ukrainian sea ports: Odesa, Chornomorsk and Pivdenni.
- In natural terms, during the first quarter of 2024, monthly iron ore exports from Ukraine approached pre-war levels. Ukrainian companies managed to resume iron ore supplies to China.
- Russian companies which do not have logistics problems doubled exports of pig iron to the EU compared to the pre-war level.
- Ukraine managed to increase exports of iron ore to the EU (+3.7% y-o-y in 2023), while Russia is losing this market.

# FREE NAVIGATION THROUGH THE UKRAINIAN BLACK SEA PORTS IS THE BASIS FOR ECONOMY STABILITY IN THE EU



European logistics infrastructure can not handle all Ukrainian exports due to several reasons:

- EU seaports are relatively small. They do not have free capacities for Ukrainian cargo, that is why railcars stay in queue at Ukraine-EU borders.
- EU and Ukrainian railway systems have different gauges. In the Ukrainian railway system, the gauge is wider than in Europe - 1520 mm vs 1435 mm.
- European railway carriers have deficit of railcars & locomotives.
- There are not enough reloading capacities at the border crossings.
- Capacity of certain rail sections of European railways is limited which create obstacles for shipments.

# EU RAILWAYS ARE LOSING COMPETITION TO TRUCK TRANSPORT IN TERMS OF COST, FLEXIBILITY, AND REACH

## Key problems of railways in the EU

### FRAGMENTATION

Rail freight often encounters barriers at national borders due to differing technical standards and regulations. Different countries have different gauge, signalling and electrification systems. It makes running trains cross-border more complicated than running them within one country.

### LACK OF INVESTMENT

According to public research, in 1995-2018, European countries invested on average 66% more in expanding and refurbishing roads than in railways. Between 2018 and 2021, this gap narrowed to 34%.

Many European countries continue to close railway lines and stations. The length of the total European railway network decreased by 6.5% (15,650 km) between 1995 and 2020, in some countries such as France or Germany even by more than 10%.

### LACK OF INTEGRATION WITH OTHER TRANSPORT MODES

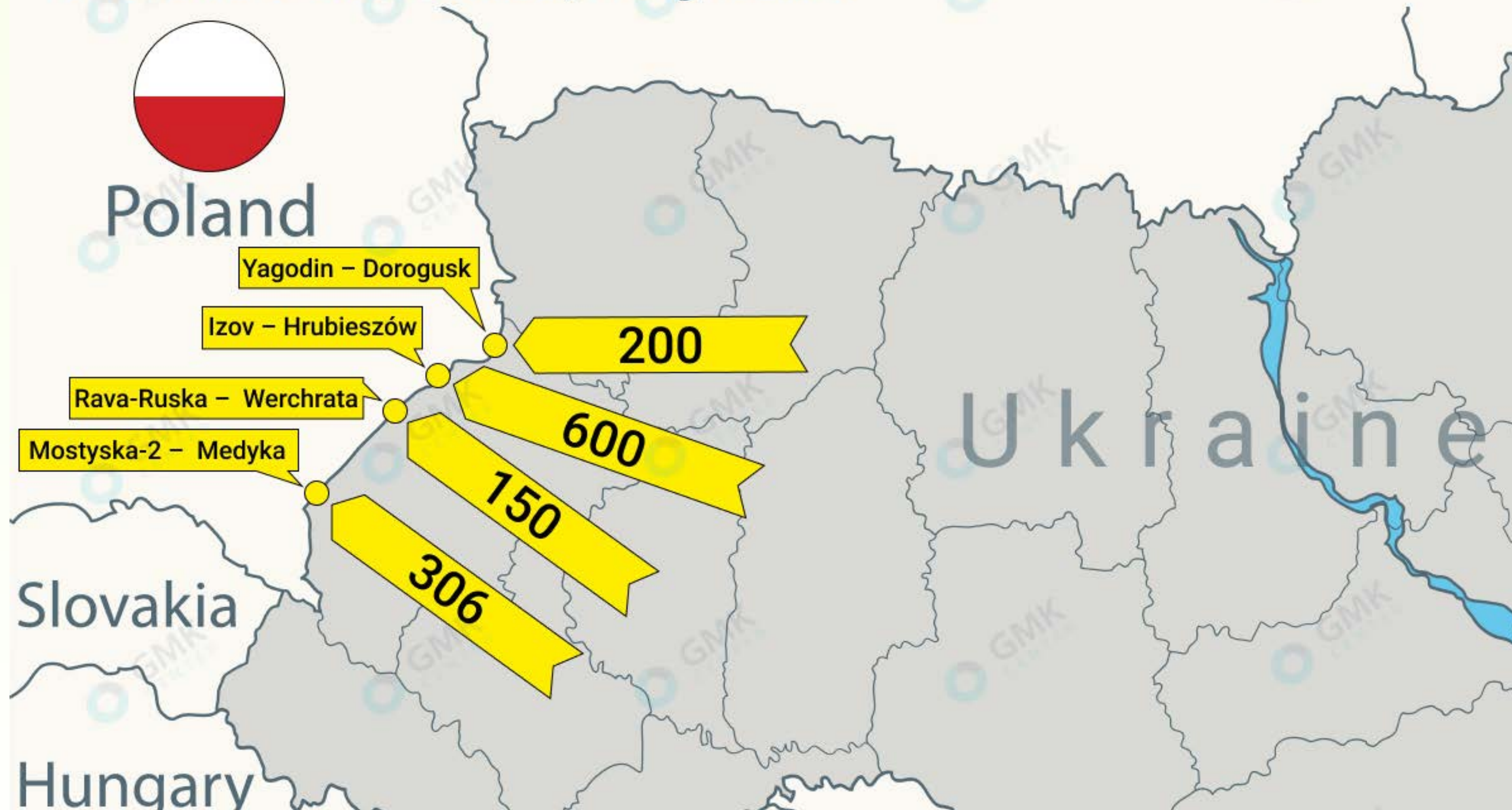
Often the first and last mile within the transport chain can not be performed by railways. Intermodal transport is 56% more expensive than road transport for shippers (European Commission data from 2017).

### TIME CONSUMING PROCEDURE

Rail freight customers often experience long reaction times from freight railways when they want to organize their transport chain. Also waiting times at borders and handovers can be too long due to differences in national rules of EU Member States.

# POLISH RAILWAY BECAME GATE TO THE WORLD FOR UKRAINIAN EXPORTERS AFTER START OF THE WAR

Capacity of freight railway checkpoints on the border of Ukraine and Poland, freight cars per day



- In 2022, 16.9 mln tons of cargo were transported through railway border crossings between Ukraine and Poland. It is 36.7% more than in 2021.
- In January-April 2024, 7.43 mln tons of cargo were transported by rail to Poland, which is 28% more than in the same period in 2023.
- There are six railway border crossings between Ukraine and Poland, but only four are operational. They are utilized by 40-60%.

# SEVERAL OBSTACLES HINDER HIGH UTILIZATION OF CURRENT CAPACITIES OF RAILWAY BORDER CROSSINGS BETWEEN UKRAINE AND POLAND

## INFRASTRUCTURE ACCESS DISTRIBUTION IN POLAND

There are more than 10 Polish carriers working at Yagodyn – Dorokhusk and Mostyska-2 – Medyka checkpoints. The problem concerns prioritizing access to infrastructure to different Polish rail carriers.

## SHORTAGES OF ROLLING STOCK AND TRANSSHIPMENT CAPACITIES

Companies tell about deficit of grain trucks, fitting platforms, Eurorail locomotives for the transportation of additional Ukrainian cargo. Transshipment capacities at the border are not enough for Ukrainian export.

## BUREAUCRATIC PROCEDURES

Control procedures are duplicated since they are implemented by Polish and Ukrainian authorities. Procedure allowing Ukrainian wagons to run after rearranging the bogies is time consuming and leads to delays in shipment.

## LACK OF PLANNING

We observe absence of any advance scheduling for freight transportation through railway border crossings. Due to abovementioned reasons, it is not possible to predict speed of cargo movement.

# POLAND INTENDS TO INVEST IN RAILWAY & ROAD INFRASTRUCTURE DEVELOPMENT TO INCREASE TRADE FLOWS



## Major projects

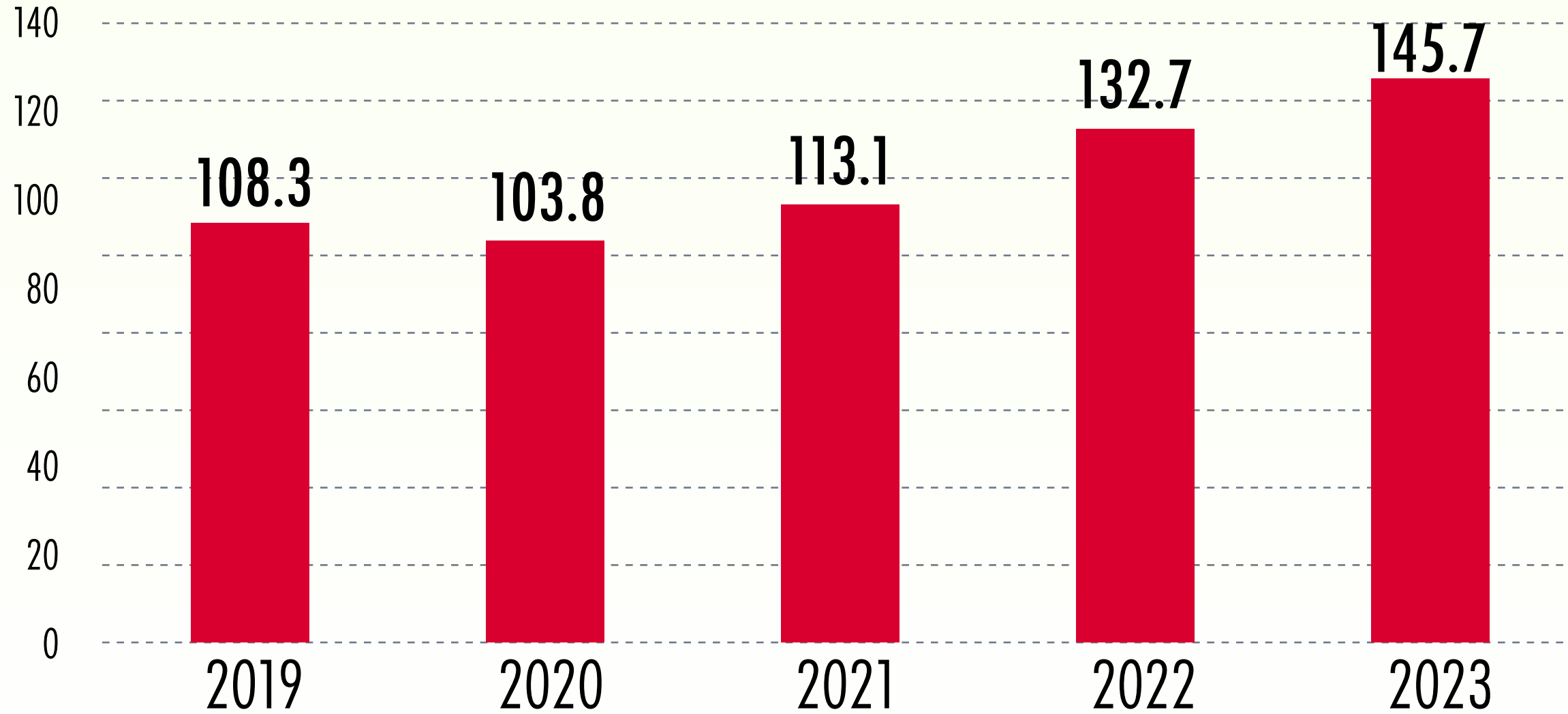
- The expansion of the border terminals for heavy trucks (Dorogusk – Yagodyn, Grebenne – Rava-Ruska, Korchova – Krakowiec) and the railway infrastructure in Przemyśl requires at least €500 million.
- Another €500 million should be spent on the modernization of railway border crossings between Poland and Ukraine, construction of terminals for trucks and development of infrastructure for managing freight traffic at the border.
- Poland also considers construction of Eurorail on the border areas and in the direction of the ports of the Baltic countries, which are currently underutilized.

# CAPACITIES OF POLISH SEAPORTS ARE FULLY UTILIZED, SO THERE IS NO ROOM FOR HANDLING ADDITIONAL UKRAINIAN EXPORTS

## Seaports in Poland



## Cargo transshipment in Polish ports, mln tons



- The seaports of Poland – Gdansk, Gdynia and Szczecin-Swinoujście – handled 145.72 million tons of cargo in 2023, up 9.8% compared to 2022 and 28.8% compared to 2021. The main reasons for increase is connected to rise in the handling of fuel cargo, in particular gas and coal. This is due to the abandonment of Russian energy resources and the transition to alternative markets.
- In 2023, the port of Gdansk handled 3.8 million tons of bulk cargo, including iron ore, which is 7.3% less than in the previous year, Gdynia – 8 thousand tons of iron ore (+33.3% y/y), Szczecin-Swinoujście – 1.13 million tons of iron ore (-46.1% y/y).
- Ukrainian exporters face the following problems when exporting through Polish ports: priority for own cargo; lack of port capacity for transshipment (loading/unloading) of Ukrainian exports; lack of warehouse space for the accumulation of shipping lots.



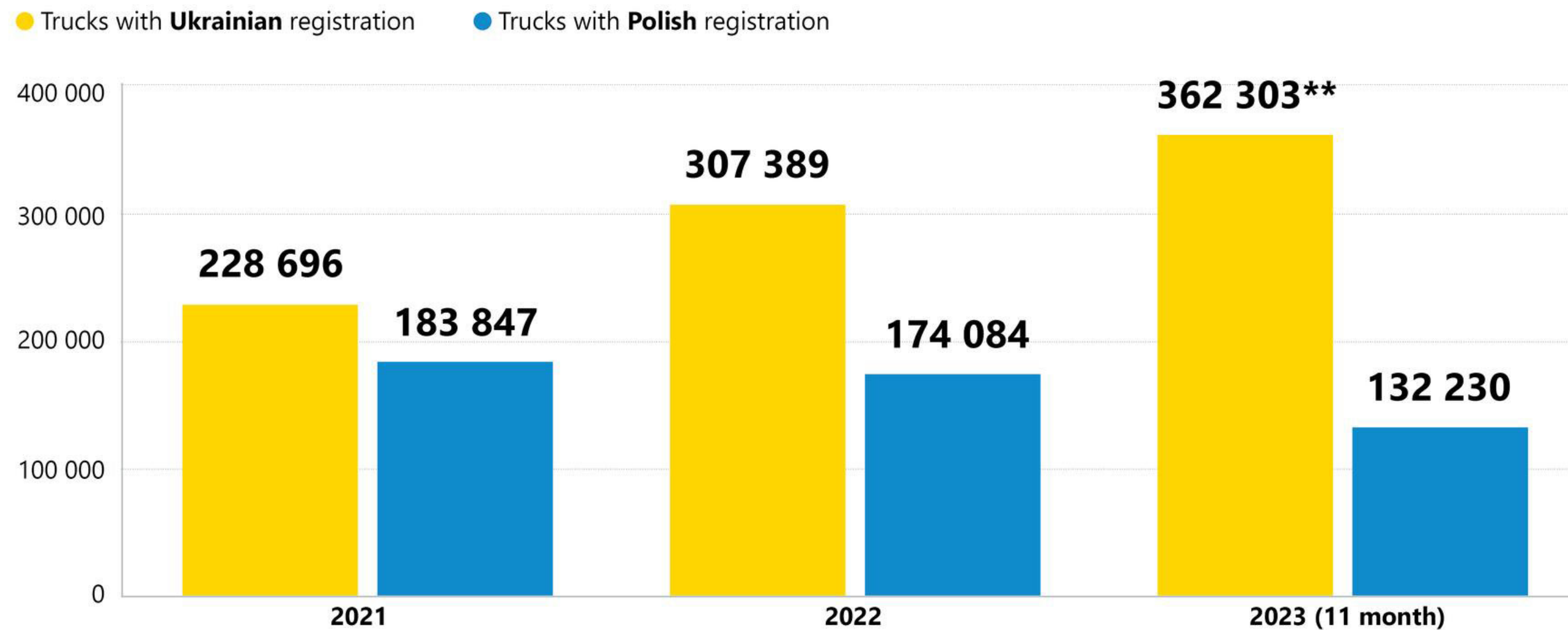
# POLISH PORTS ARE ALSO QUITE ACTIVE IN IMPLEMENTING INVESTMENT PROJECTS

## Ports of Poland: investment in 2022-2023



# CAR BORDER CROSSINGS WITH POLAND ALLOWED UKRAINE TO SATISFY HUMANITARIAN AND MILITARY NEEDS

## NUMBER OF BORDER CROSSINGS\* IN TERMS OF BILATERAL TRAFFIC BETWEEN UKRAINE AND POLAND



\*Data from the State Customs Service of Ukraine on the number of crossings

\*\* 68 thousand crossings were for fuel (18% of the total); 15 thousand crossings were for humanitarian and military cargo, 279 thousand crossings were for commercial traffic

decentralization.gov.ua



- Since the beginning of the war Ukrainian trucks increased number of border crossings by 34% y-o-y in 2022 and 20% in 2023. Transportations of fuel, humanitarian and military cargo take up about 20% of total traffic.
- Poland is a transit point for delivery to most countries in northern and western Europe. For export, next checkpoints are mainly used: Yagodin – Dorogusk, Rava-Ruska – Hrebenne, Krakivets – Korchova, Sheghini – Medyka.

# IMPACT OF POLITICAL GAMES & INSTABILITY: THE BLOCKADE OF THE POLISH BORDER INTERRUPTED SUPPLY CHAINS AND LED TO LOSSES

## INCREASING LOGISTIC COSTS AND PRICES

Trucking tariffs for delivery of steel finished products from Europe have increased 3-4 times. This increase in logistics costs added 10-15% on average to the price of imported steel.

## RISING LEAD TIMES

Trucks on average stood at the border for 12-14 days. It became not possible to deliver products from EU in 2-3 days.

- On November 6, 2023, Polish carriers began blocking truck traffic near the three largest checkpoints on the border with Ukraine: «Korchova - Krakivets», «Hrebenne - Rava-Ruska», «Dorogusk - Yagodin». Among the main demands is the return of the practice of permits for Ukrainian carriers, canceled by the agreement with the European Union until June 30, 2024. The blockade in various forms continued until the end of April 2024.
- In addition to direct financial losses, Ukrainian companies reported the negative impact of strikes on current and future contracts, damage to business reputation, threats to food supply, price increases and reduced competitiveness, increased warehouse costs and overloading of warehouses.



# UKRAINIAN COMPANIES ADAPTED TO WAR CONDITIONS

## WAR CHALLENGES

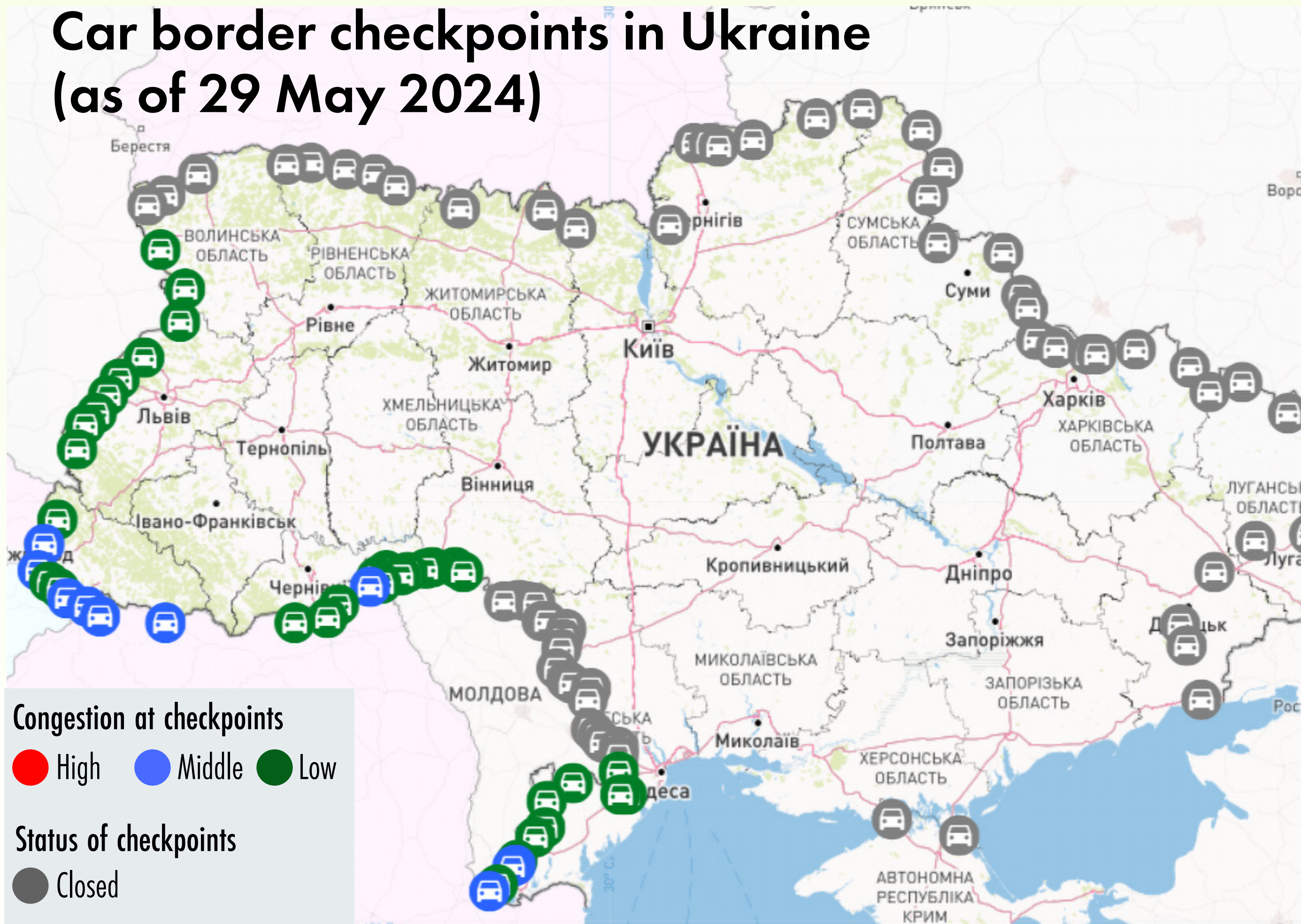
- Blockade of Ukrainian seaports
- Shortage of freight transport, including trucks and railcars
- Shortage of car drivers
- Fuel deficit
- Queues at border crossings with the EU
- Overstocked warehouses
- Increased lead times
- Increased logistic costs (x 3-5 times)
- Supply chain disruptions
- Energy supply disruptions

## REACTIONS OF UKRAINIAN COMPANIES

- Redirection of cargo to ports of other countries
- Diversification of supply routes
- Increasing utilization of Danube ports
- Increased use of road transport
- Restructuring of fuel supply systems
- Attracting drivers from neighboring countries
- Use of alternative energy sources
- Using every small possibility to ship cargo in any possible way
- Constant monitoring of new possibilities on cargo market

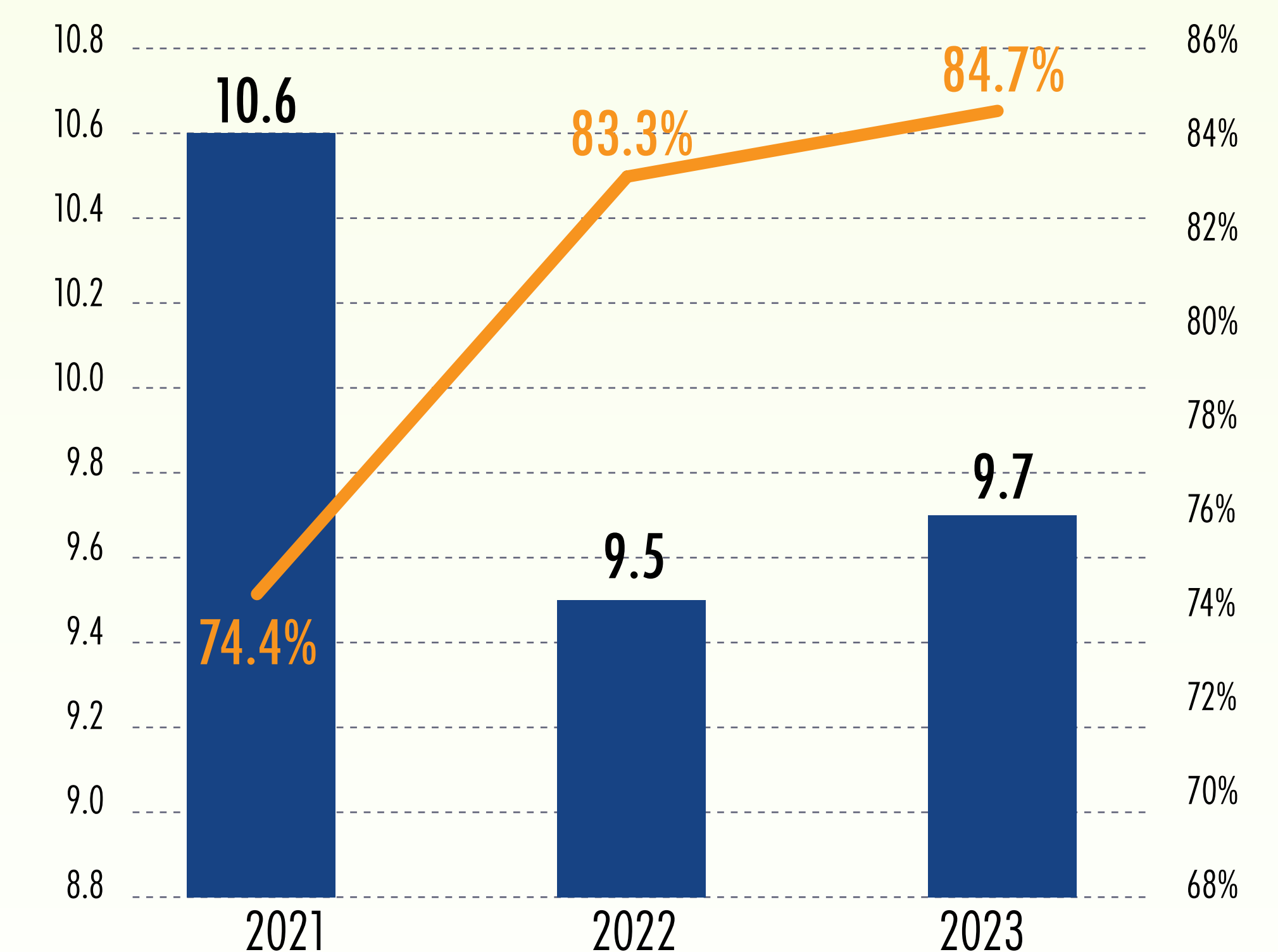
# LOGISTICS FLOWS CHANGED IN THE EU AND UKRAINE AS SHARE OF CARS IN DELIVERIES INCREASED

## Car border checkpoints in Ukraine (as of 29 May 2024)



Data source: State Border Service of Ukraine

## Passage through border crossings of Ukraine



■ Number of cars/trucks passed through the customs border of Ukraine, mln (left scale)  
 — Share of cars in total number of vehicles and other means of transport passed through the customs border of Ukraine

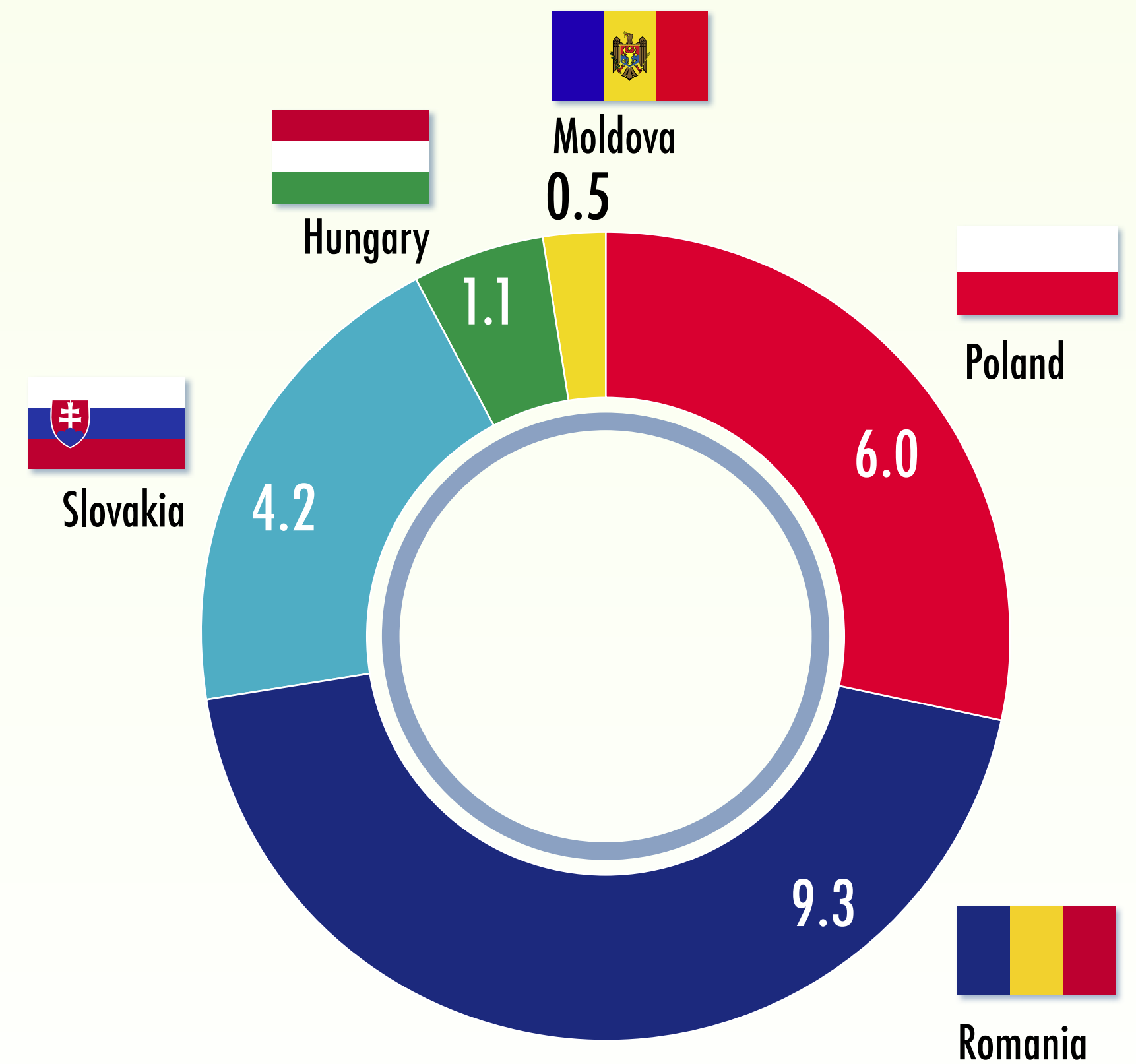
Data source: State Customs Service of Ukraine

# POLAND AND ROMANIA REMAIN IMPORTANT TRANSIT DESTINATIONS FOR UKRAINIAN EXPORTS



The map of railway border crossings with European countries

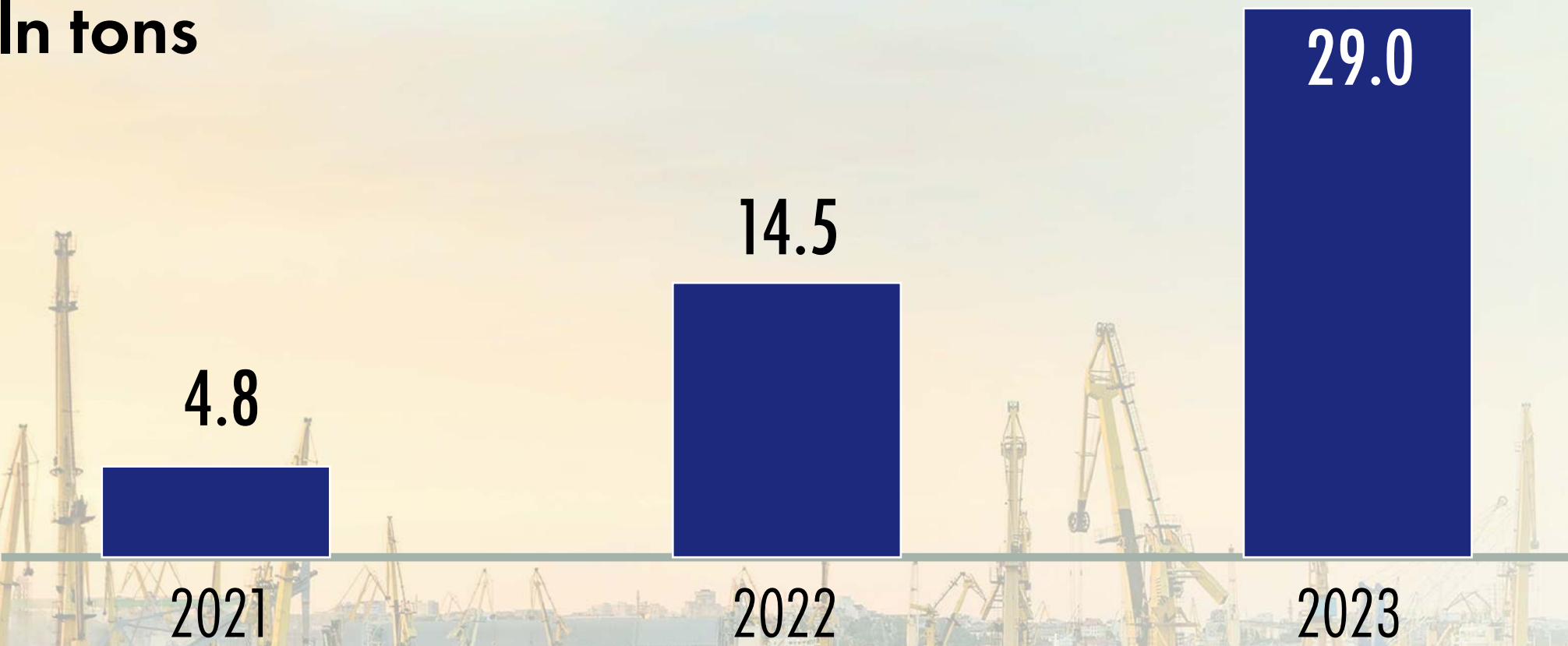
Cargo shipment through railway border crossings in 5m 2024, mln tons



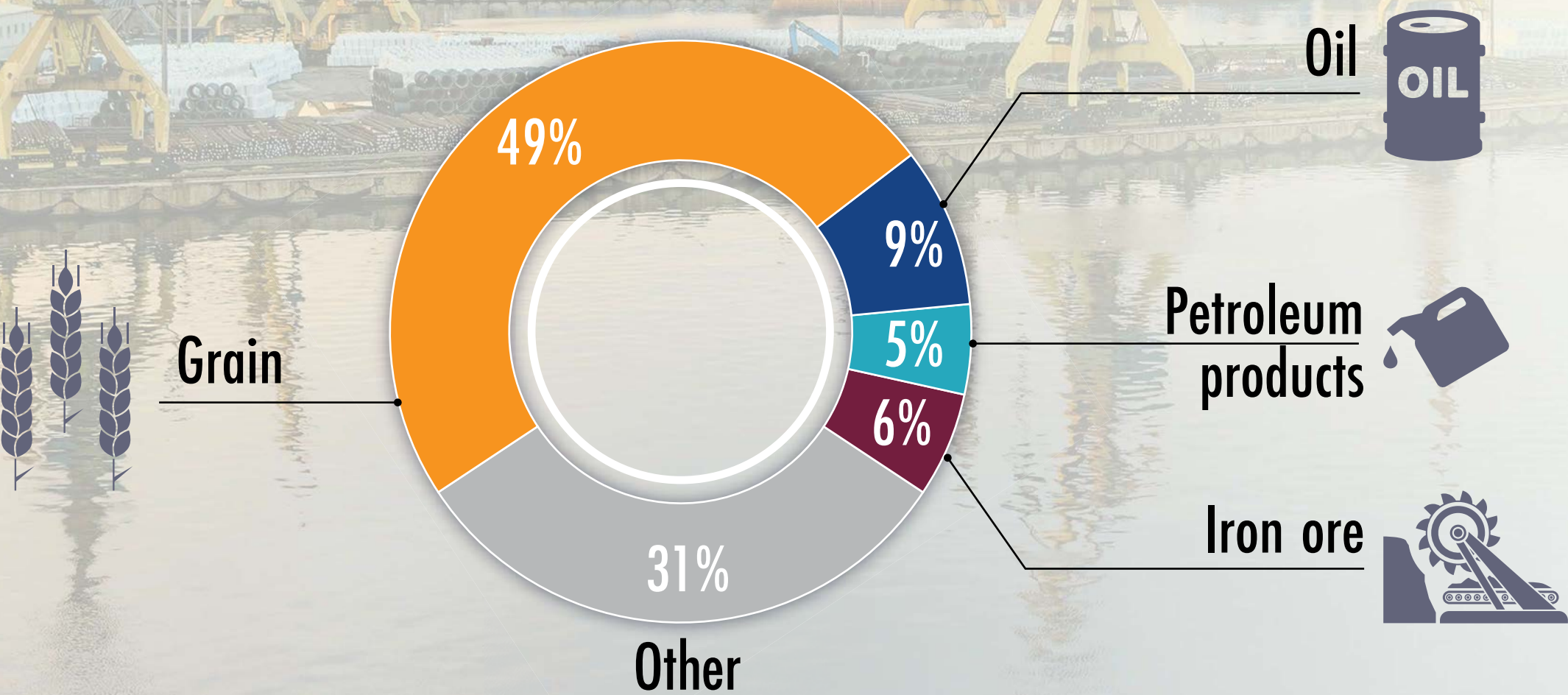
Data source: UZ

# DANUBE SEAPORTS OF UKRAINE RAPIDLY INCREASED TRANSSHIPMENT TO SUPPORT EXPORT

Cargo transshipment at Danube ports of Ukraine, mln tons



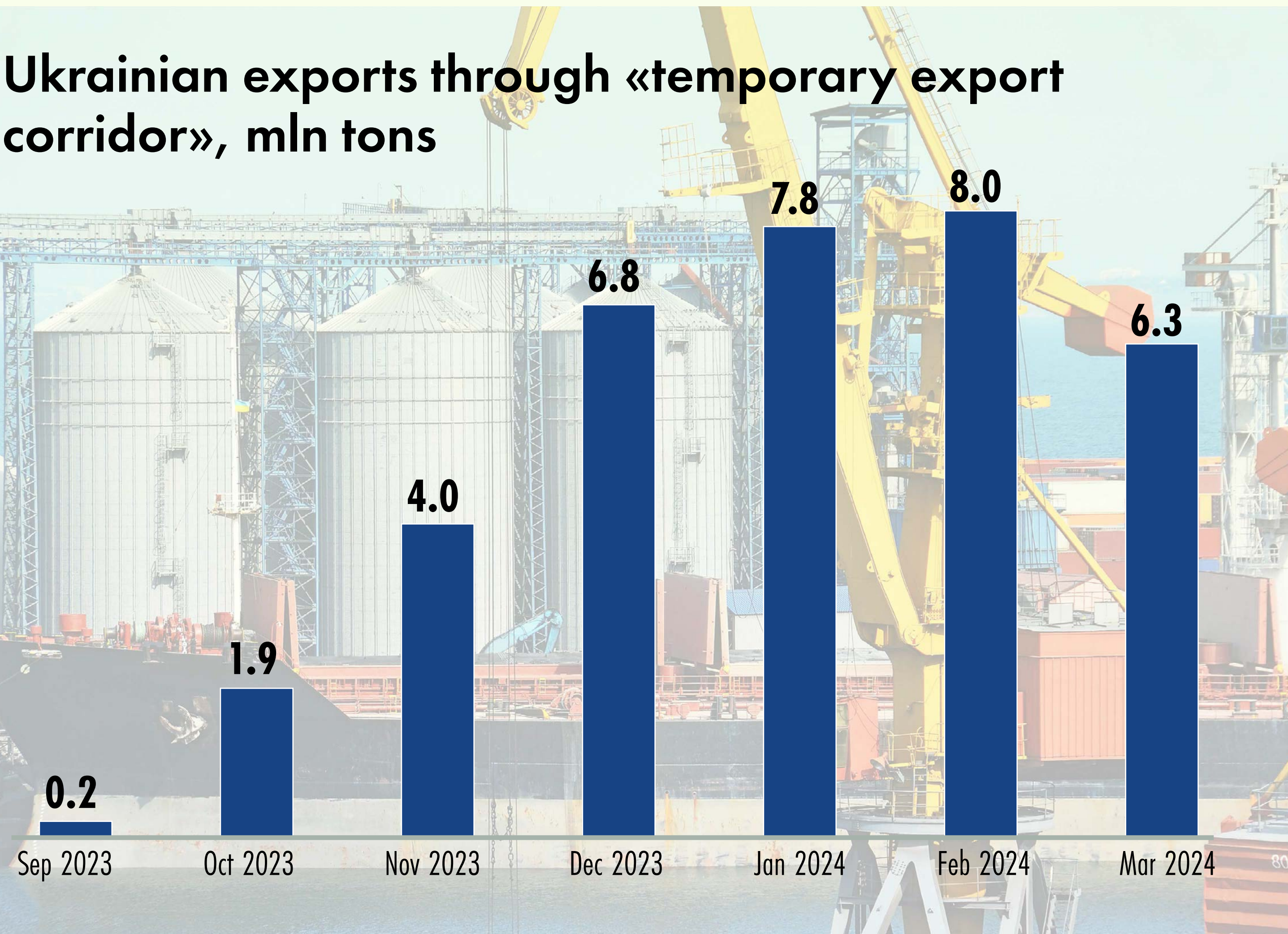
Cargo transshipped at Danube ports of Ukraine in 2023



- In 2018-2021 share of Danube ports in total Ukraine’s cargo shipment was 2.5-4.2%, or 4-6 million tons of cargo. These ports were used by a rather narrow list of shippers, when it was necessary to deliver goods to customers along the Danube.
- In 2023 Ukrainian ports of Danube handled 29 million tons of cargo. This is 2 times more than in the previous year and 6 times more than by 2021.
- During the war Danube ports were forced to partially reorient their work to coastal navigation for offshore transshipment in the port of Constanta (Romania).
- After the beginning of the war, Constanta became one of the main ports for Ukrainian exports. Ukrainian goods arrive in Constanta by road, rail and barge from the Ukrainian Danube ports of Reni and Izmail.
- In 2022 Constanta increased total transshipment by 11.9% y/y – to 75.5 million tons of cargo, and, in particular, iron ore by 46.9% y/y – to 7 million tons. In 2023 total Ukrainian cargo traffic in Constanta amounted to 25 million tons, including transit grain transshipment (more than 14 million tons).

# “TEMPORARY EXPORT CORRIDOR” BECAME MORE SUCCESSFUL THAN “GRAIN AGREEMENT”

## Ukrainian exports through «temporary export corridor», mln tons



- From August 2023 to March 2024 Ukraine exported 34 mln tons through “temporary export corridor”. During the year of the grain agreement (July 2022 – July 2023), Ukraine exported 33 million tons of agricultural products.
- Transportation costs have decreased. For example, transporting 30 thousand tons of grain from Odessa to Spain cost \$68 per ton at the time of launching new corridor. At the beginning of April 2024, it costs \$34 per ton.
- Insurance rates have also dropped. When the corridor began operating, rates reached 3-5% of the insured value of the ship. Now they are 0.8-1.0%.



# UKRAINE DEVELOPS INFRASTRUCTURE ON BORDER WITH POLAND CONSIDERING FUTURE INTEGRATION INTO THE EU

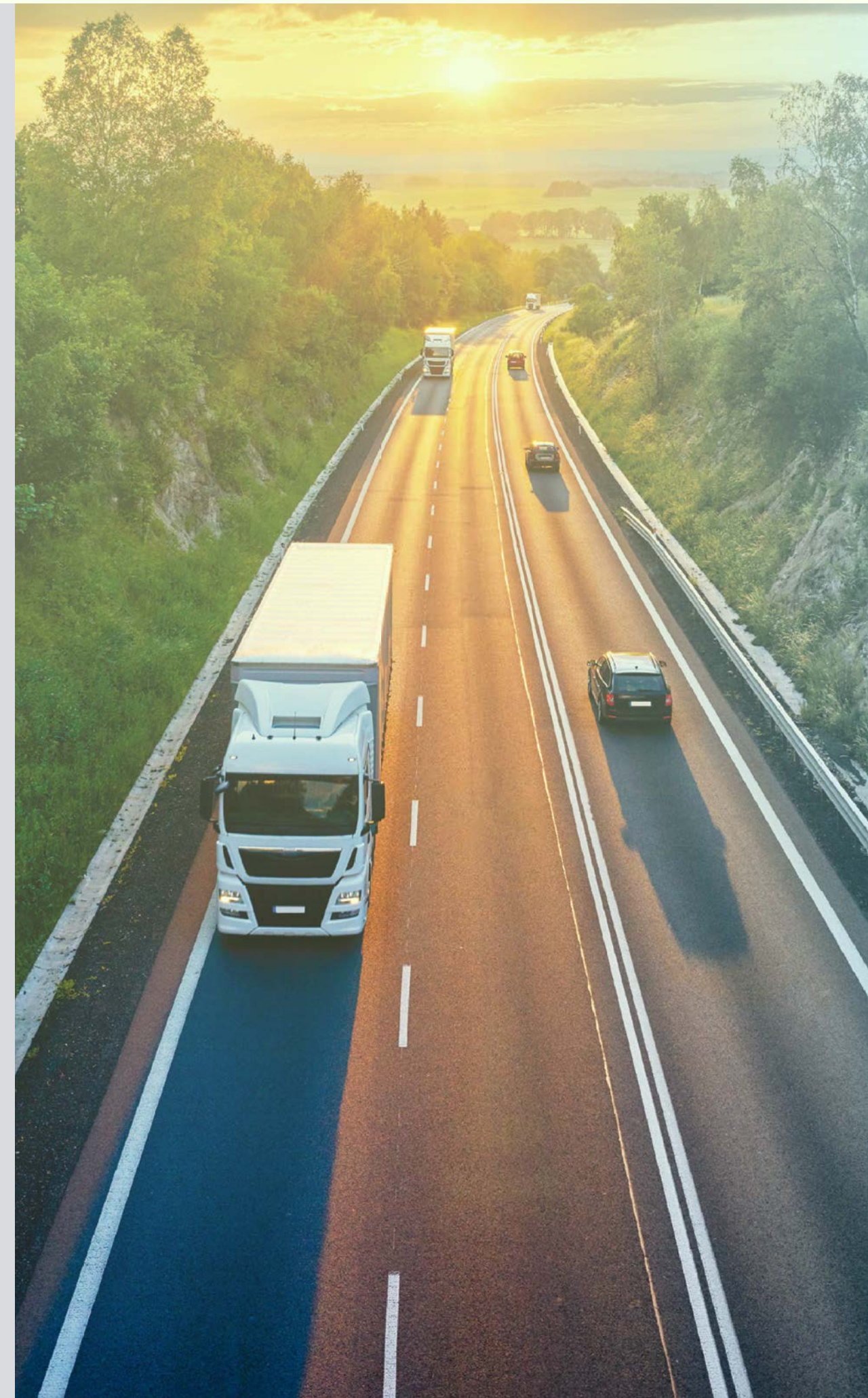


## Railway transport

- “Ukraine plans to increase the number of border crossings with Poland by three: Khyriv – Starzhava – State Border, Rava-Ruska – Grebenne, Khyriv – Nyzhankovichi – State Border. Ukrzaliznytsia has already repaired almost 70 km of tracks and renovated 10 bridges at appropriate sections.
- Ukrzaliznytsia entered Polish market registering local branch (Ukrainian Railways Cargo Poland). Ukrainian operators build terminals near Polish border, for example, Container Terminal Mostyska, to increase trade flows with Poland.

## Road transport

- Ukraine agreed to receive a €160 million soft loan from Poland to upgrade roads, checkpoints, and purchase scanners. In particular, the funds will be directed to the development of road infrastructure of five checkpoints on the Ukrainian-Polish border and the reconstruction of the checkpoints «Shegyny», «Krakowec» and «Rava-Ruska».
- A pilot project will be implemented on the Polish-Ukrainian border with the launch of single checkpoints (with joint control procedures).



# KEY TASKS OF UKRAINIAN SUPPLY CHAIN MANAGER TODAY

- 
- Remain in constant contact with multiple suppliers to ensure the best supply and transportation possibilities.
  - Plan and implement supply chain strategies, taking into account risks and possible disruptions.
  - Create reserve and safety stocks in case of regular supply interruptions.
  - Transfer part of the warehouse stocks of finished products and raw materials outside of Ukraine.
  - Use all available cargo and transportation insurance options.
  - Plan supply chain within the framework of transferring part of production (the last stage) outside the territory of Ukraine
  - Constantly have a “fire brigade” ready to solve supply problems
  - Structurally revise budgets for logistics costs in the total share of costs in the direction of a fundamental increase
  - Implement European standards and regulations to speed up procedures and integrate into the EU supply chain
  - Automate and mechanize processes (subject to investment) to solve problems of personnel shortages