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Logistical potential for ensuring the resilience of the economic system of Ukraine in the face of global challenges

Maryana Melnyk,

Dr.Sci. (Econ.), Prof., Head of the Department of spatial development,

IRR NASU, Ukraine

mar.melnyk@gmail.com

Iryna Leshchukh, Ph.D. (Econ.), Senior Researcher,

Department of spatial development,

IRR NASU, Ukraine

ira_leschukh@ukr.net

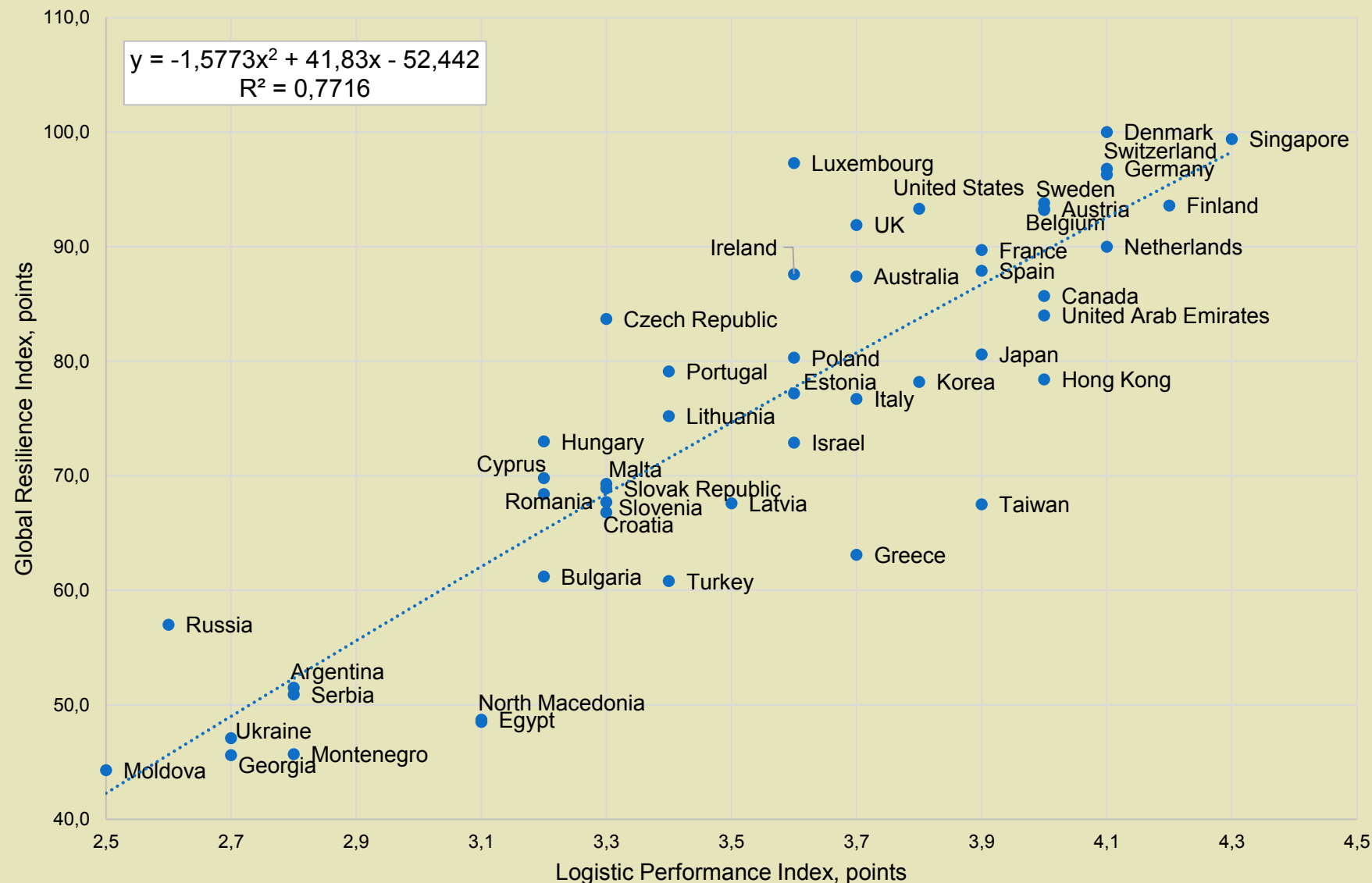
Resilience of the economic system of Ukraine in conditions of global challenges

Resilience as the ability of the economic system to recover and reorient after the impact of external global shocks and challenges due to internal adaptive drivers, i.e. mechanisms built into the system that accumulate impulses for protection, renewal and structural transformations, namely consolidating (attracting) at the appropriate stage various assets (institutional, material, financial, informational, labor), changing the economic situation in the country.

Country's resilience is determined by its ability to respond to external challenges and continue to function despite losses and damage.

The logistical factor is one of the main factors in ensuring the resilience of the economic system of Ukraine in the face of global challenges. Ukrainian business is integrated in both internal and external value added chains, entire industries operate that produce most of their products for consumers in other countries, such as metallurgy and agriculture.

Logistics potential is an important factor in ensuring the resilience of countries' economic systems (2022)

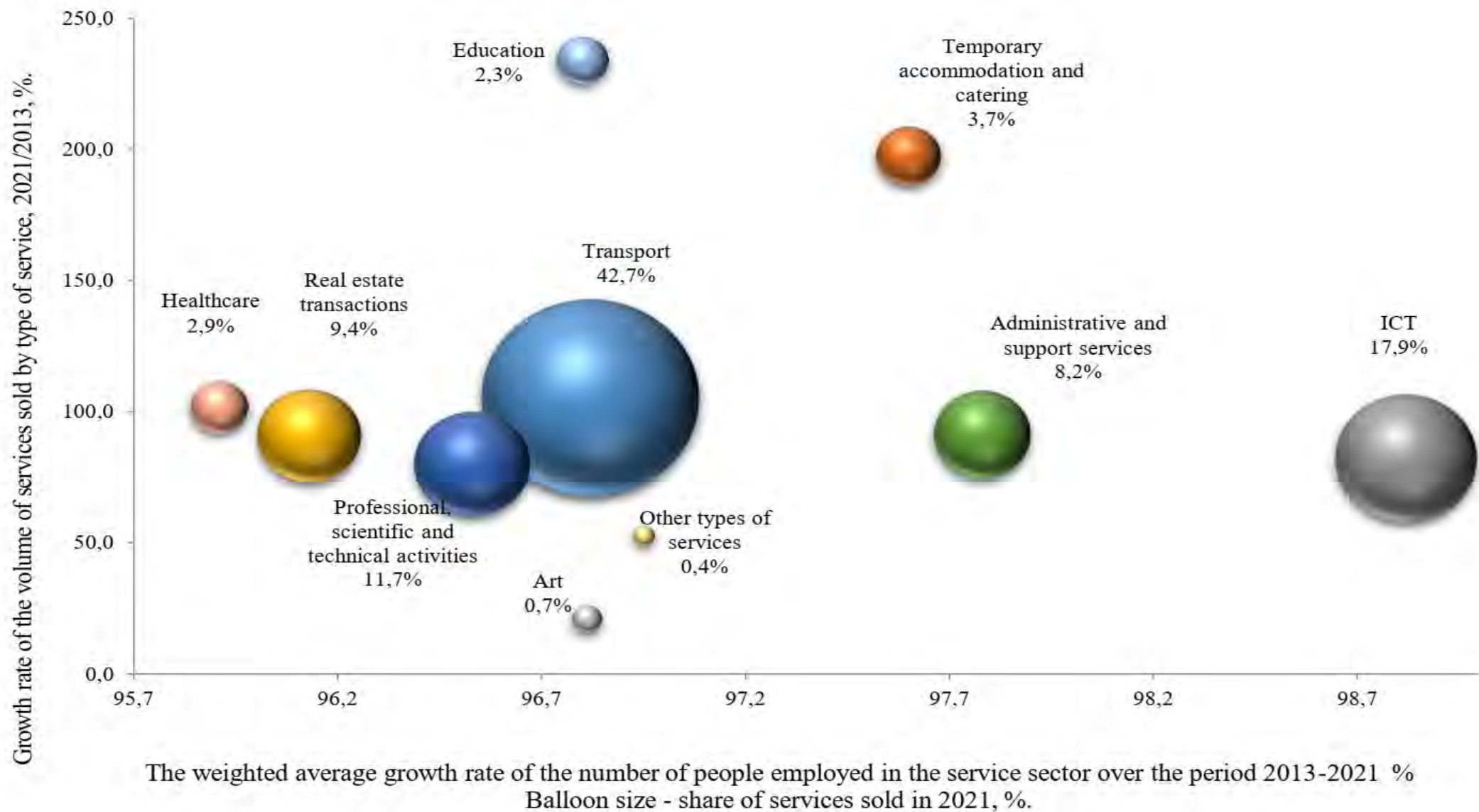


A comparative analysis of the influence of the logistics potential of the country on the resilience of its socio-economic system (studied on the basis of the Logistic Performance Index and the Global Resilience Index) indicates a close relationship between the specified parameters - $\langle R' \rangle^2 = 0.77$ points.

The most significant influence on the resilience of the socio-economic system of countries was exerted by:

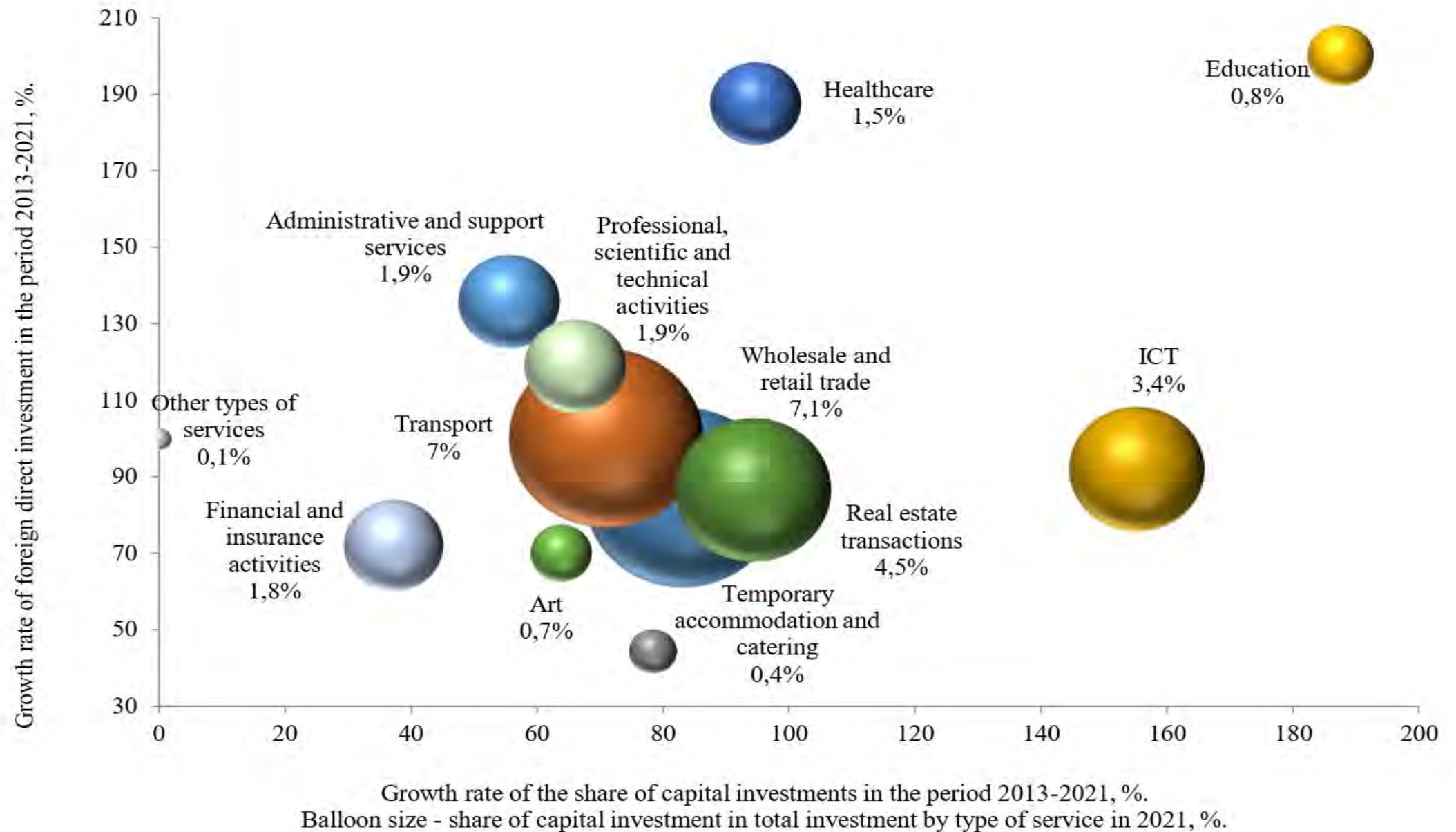
- ❑ the quality of logistics services (for example, transport operators, customs brokers) in the country;
- ❑ the efficiency of the registration process (speed, simplicity and predictability of formalities) by border control bodies , including customs;
- ❑ quality of trade and transport infrastructure (for example, ports, railways, roads, information technology).

The potential of the transport and logistics services sector in Ukraine plays an important role in ensuring the resilience of the economic system of Ukraine



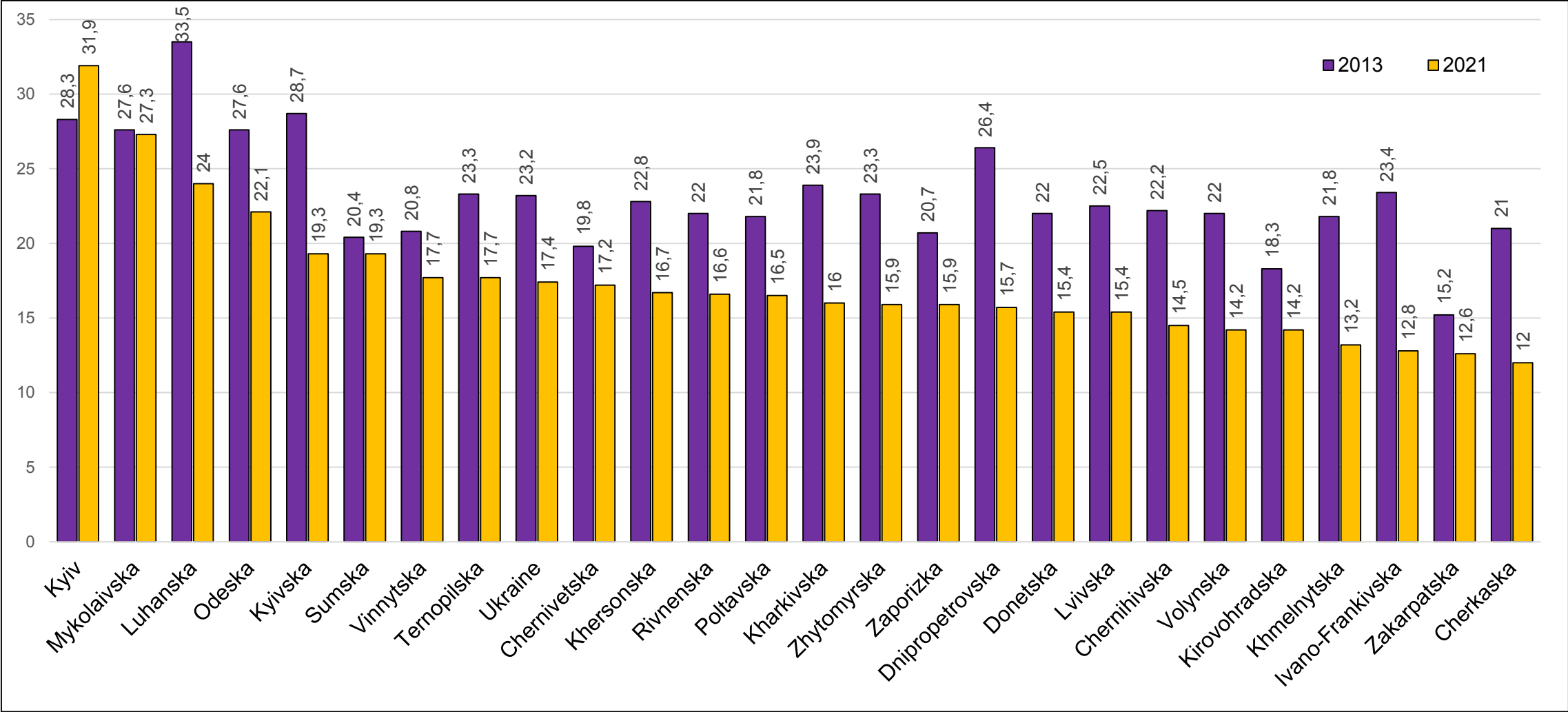
Changes in the role of certain types of services in the Ukrainian economy in 2013-2021

Dynamics and attractiveness of domestic and foreign investment by type of services in Ukraine



Instead, shadowing of the transport and logistics services sector acts as a disincentive and destructive indicator in the ensured resilience of the economic system of Ukraine

Coefficient of the shadow economy in the sector of transport and logistics services, % in gross added value



Risks of losing the logistical potential of ensuring the resilience of the economic system of Ukraine in the conditions of a long military confrontation

1. As a result of the war, there is a risk of blocking entire directions and branches of transport.

Today, the threat of air attacks «grounded» all Ukrainian air transport, and Russian warships in the Black Sea are blocking the operation of Ukrainian seaports. The occupation of part of the Kherson and Zaporizhzhia regions, as well as the destruction of the Kakhovskaya HPP stopped the movement of river transport through the Dnieper.

2. Destruction of transport infrastructure as a result of hostilities and missile attacks.

As of September 1, 2022

- ❑ 25 thousand kilometers of roads were destroyed and 315 bridges and overpasses were damaged
- ❑ 19 civil aviation airports were damaged or destroyed, runways were destroyed at 12 airports - US\$ 2.1 billion in damage was caused.
- ❑ The total amount of damaged railway track is up to 500 km, 111 railway stations and stations, direct losses on the railways are estimated at US\$ 4.3 billion
- ❑ Port infrastructure lost \$496 million. This is the infrastructure of sea ports and the objects of inland water transport destroyed as a result of the war.

Reorientation of export and import flows by types of transport

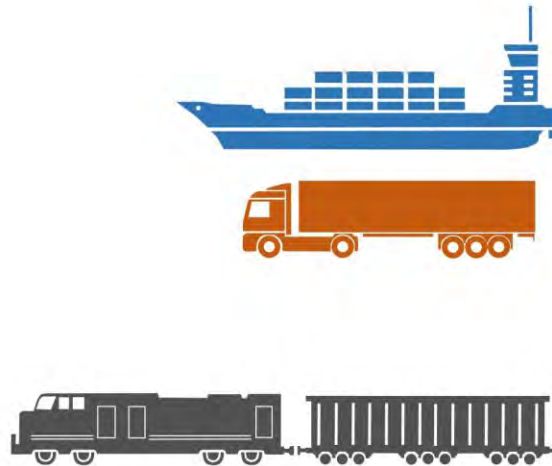
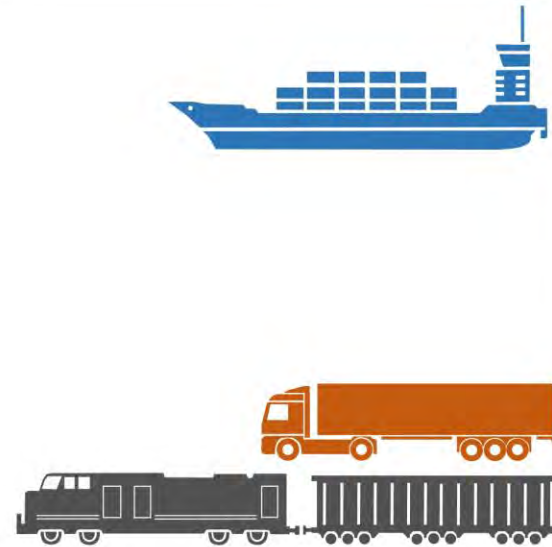
The export capabilities of Ukrainian enterprises form the basis of the resilience of the economic system of Ukraine.

The war and the blockade of sea ports not only affected the physical volumes of exports, but also the changes in the volume and structure of cargo transportation, especially by sea and rail transport.

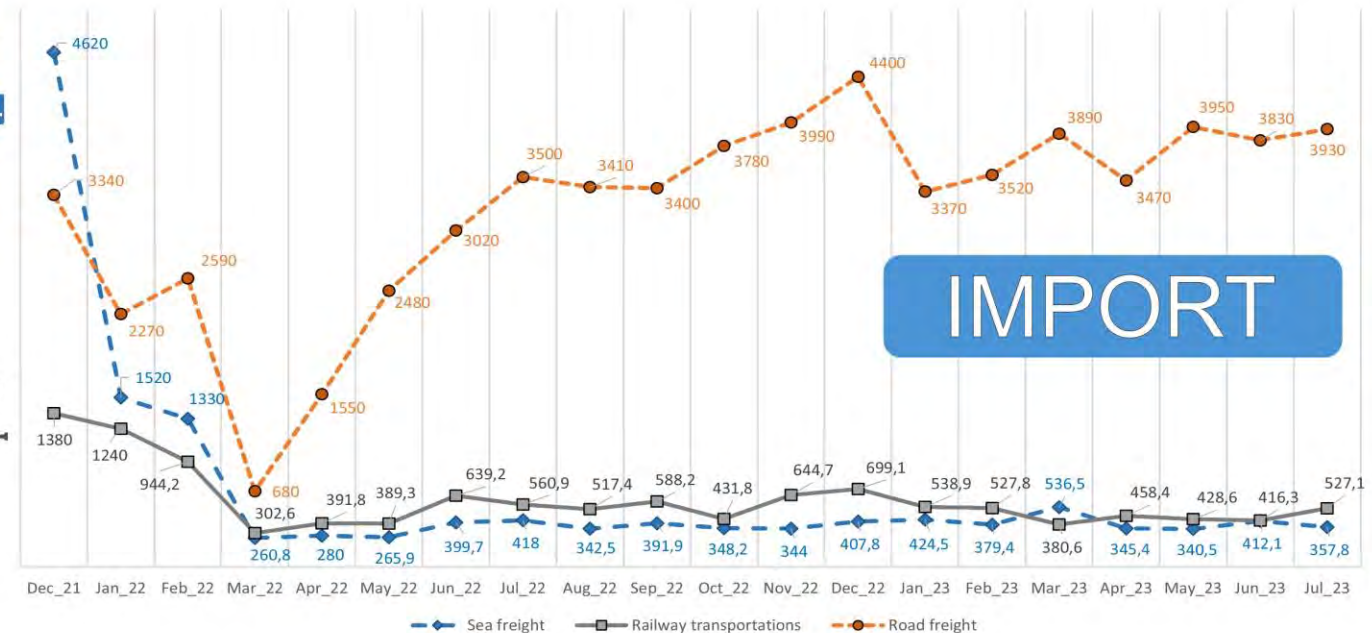
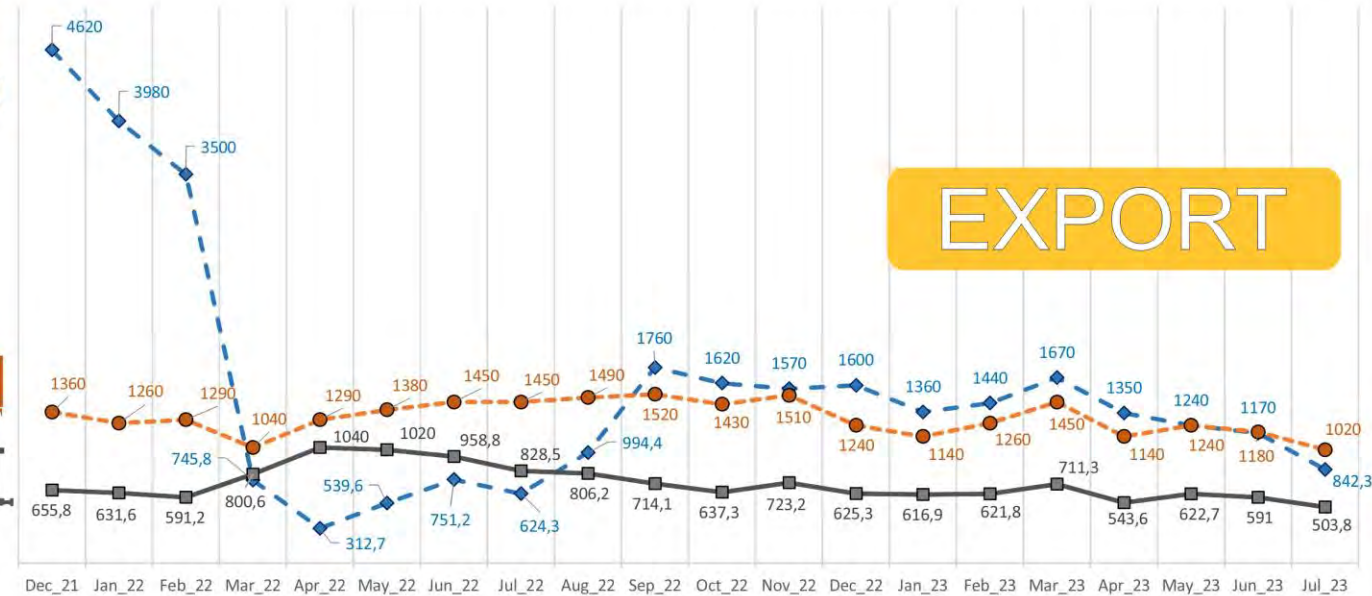
So, if in January 2022 80% of all exports were exported by sea transport, then in April 2022, this share fell to 13%. Railway transport took first place.

The signing of an agreement with Turkey and the UN on the introduction of a maritime corridor in the Black Sea for the export of Ukrainian grain returned the primacy of sea transport already in September 2022.

However, already in May 2023, Russia continued to actively block the port «Pivdenny», which led to the loss of the primacy of the sea mode of transport in the structure of freight transportation.

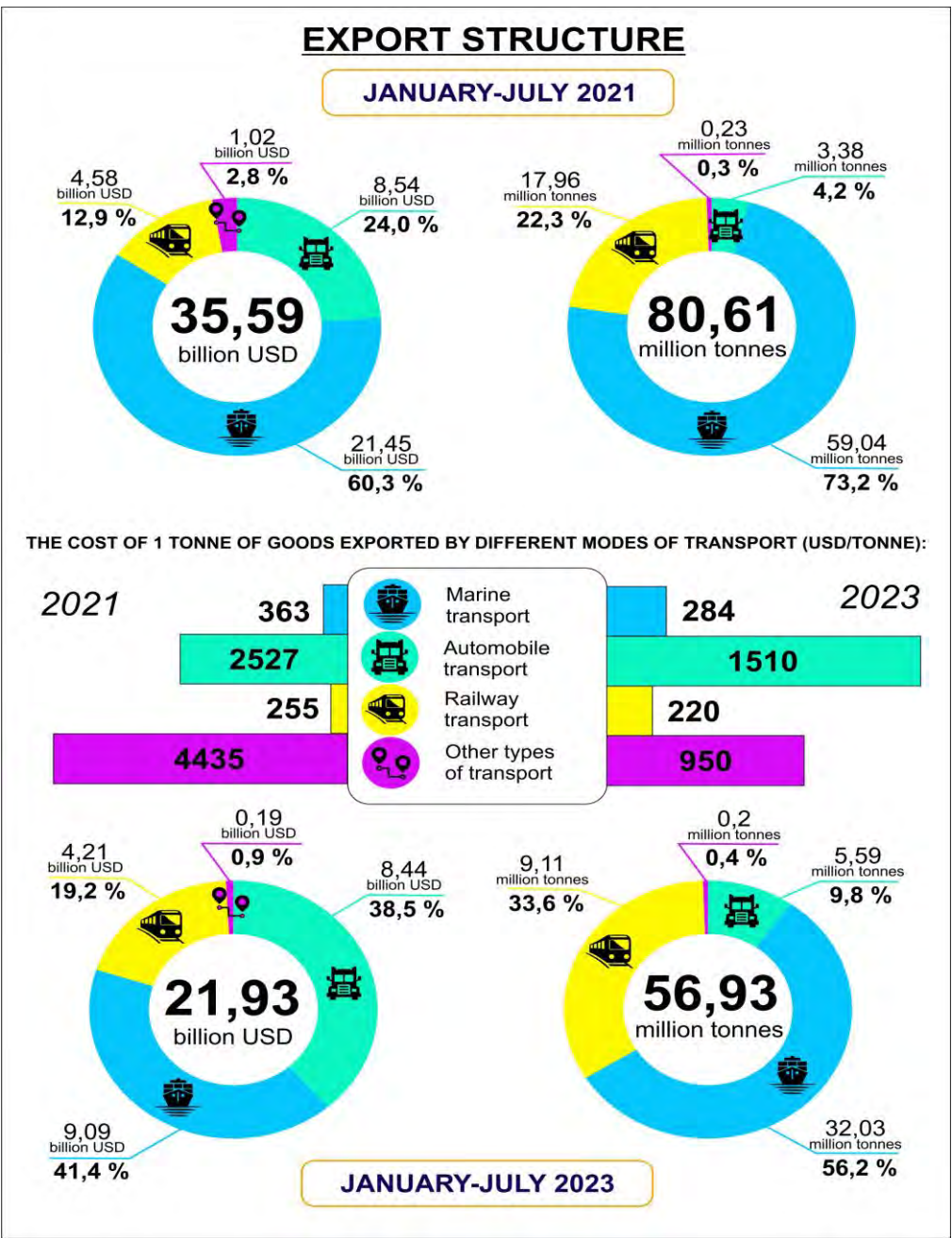


(mln USD)



The change in the structure of export of goods by means of transport in 2023 compared to pre-war 2021

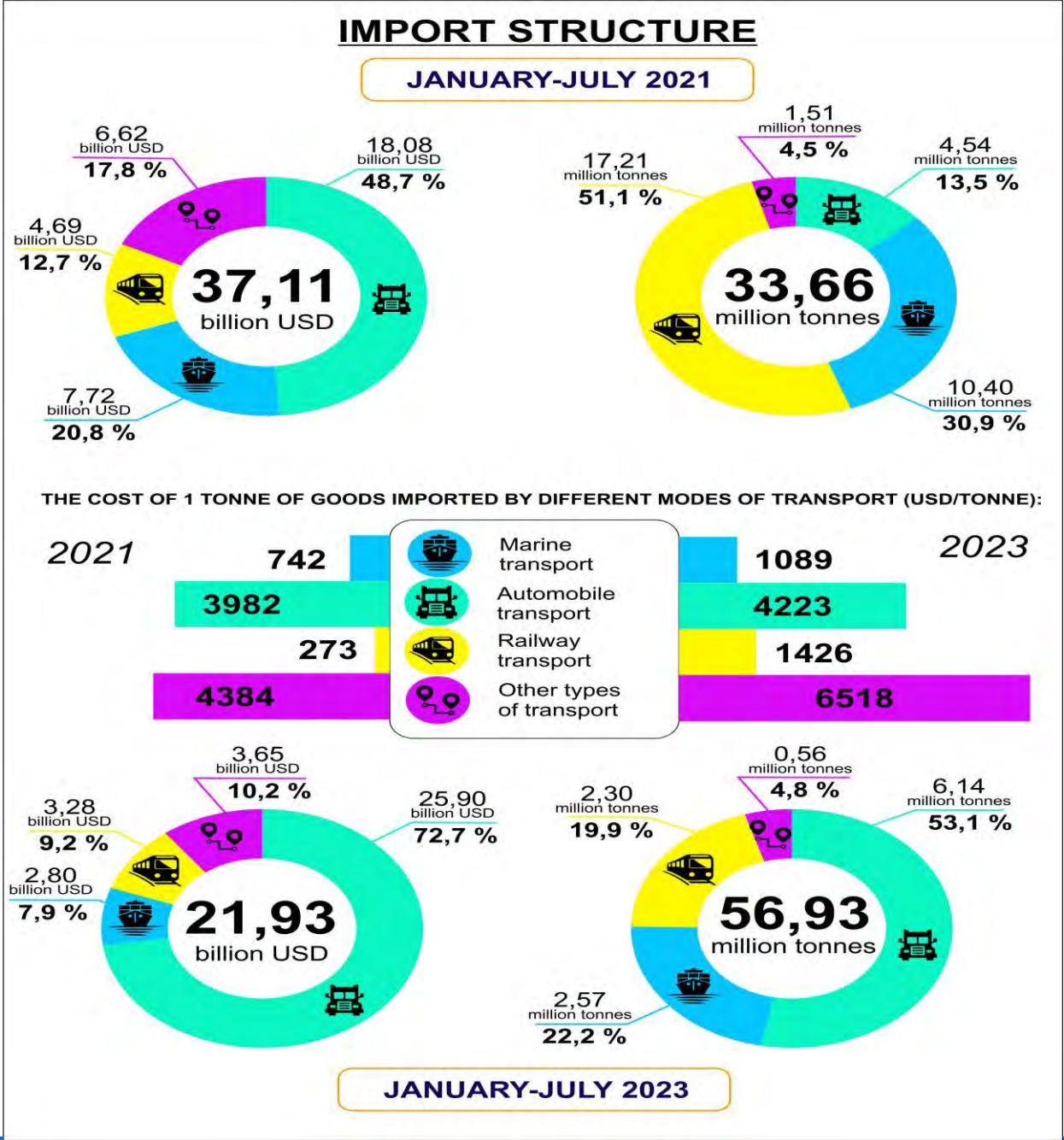
- more valuable goods are transported by road - 1 tonne of goods exported by road cost US\$1,510 in 2023 compared to US\$284 for sea and US\$220 for rail transport



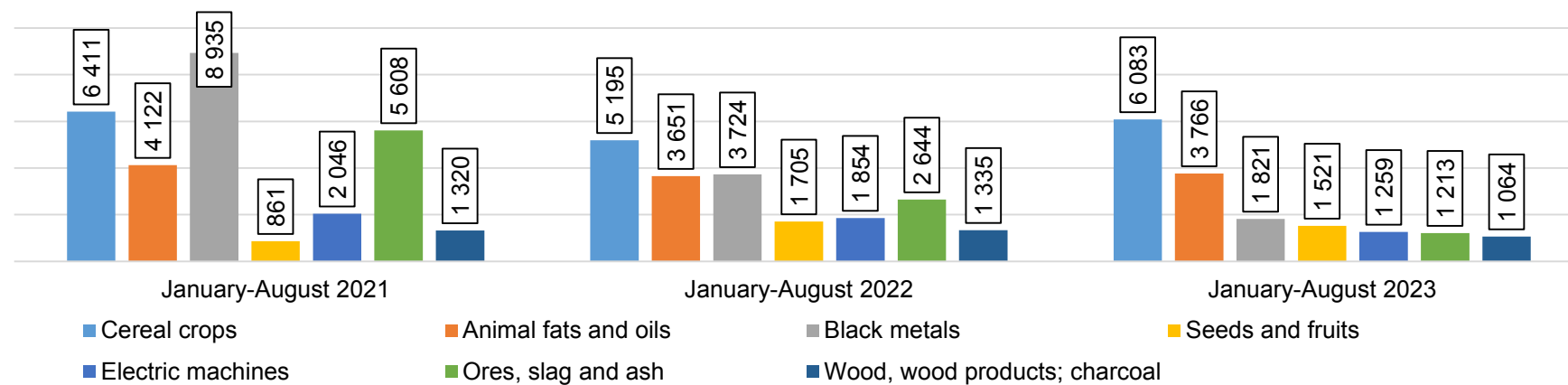
Changes in the structure of imports of goods by types of transport in 2023 compared to pre-war 2021

As for imports, the application of sanctions against Russian and Belarusian companies and goods brought to zero imports from these countries, which were mainly delivered by railways, which lost their positions in the structure of freight transport. Road transport took first place in terms of transportation volume.

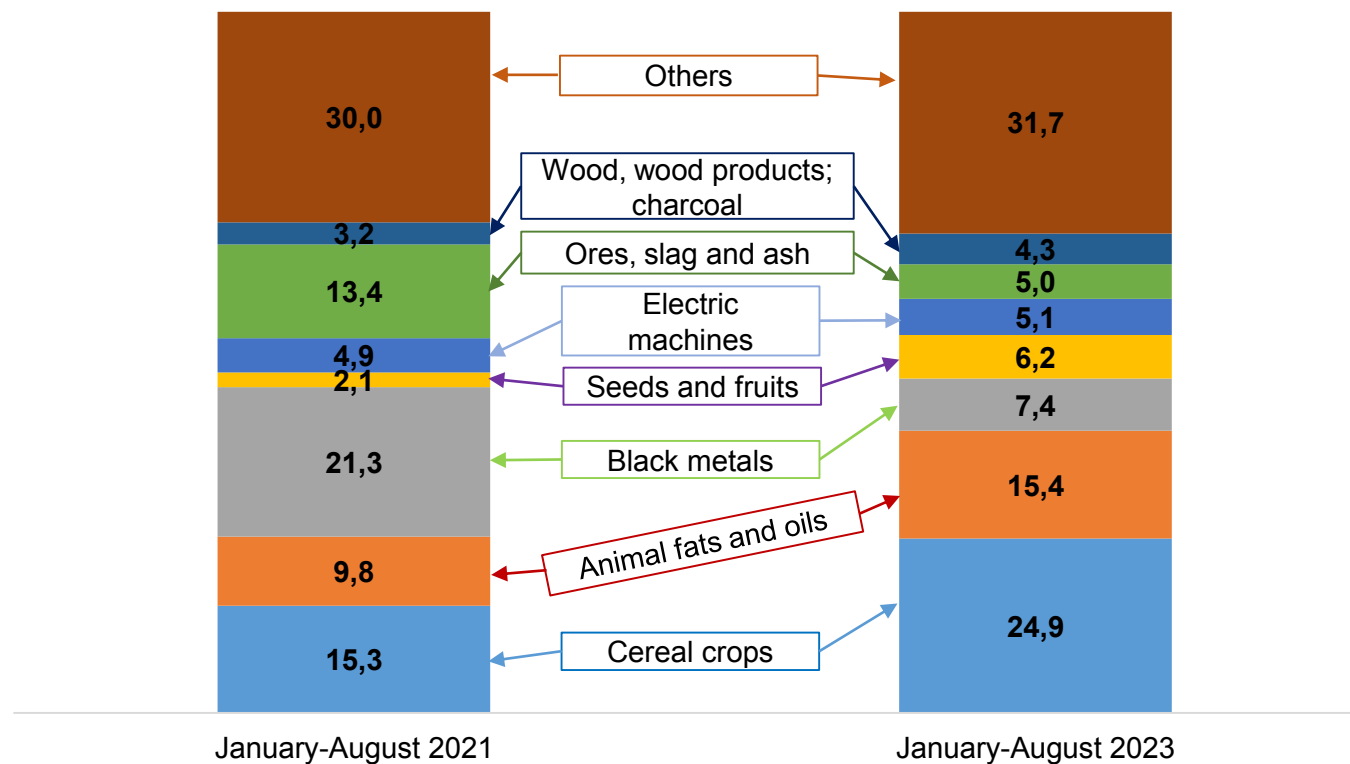
In January-July 2023, 53.1% of the total volume of cargo transportation was brought into the country by trucks, amounting to \$ 25.6 billion.



TOP-7
goods by the volume of exports
from Ukraine to the countries of
the world, \$ million

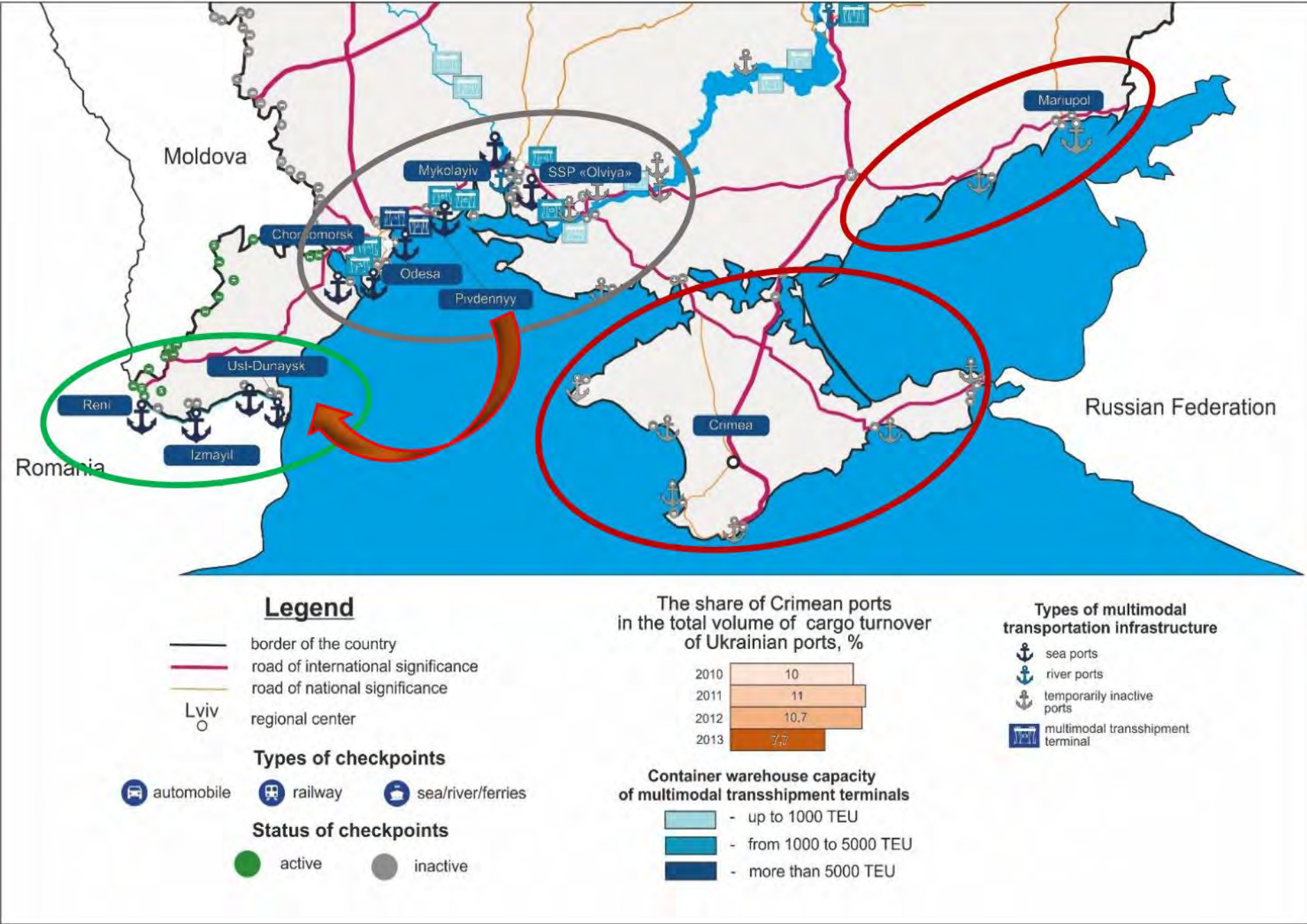


Change in the structure of
export of goods in
January-August 2023
(the war lasts 1.5 years),
compared to
January-August 2021
(the pre-war period)



Factors ensuring the resilience of the economic system of Ukraine

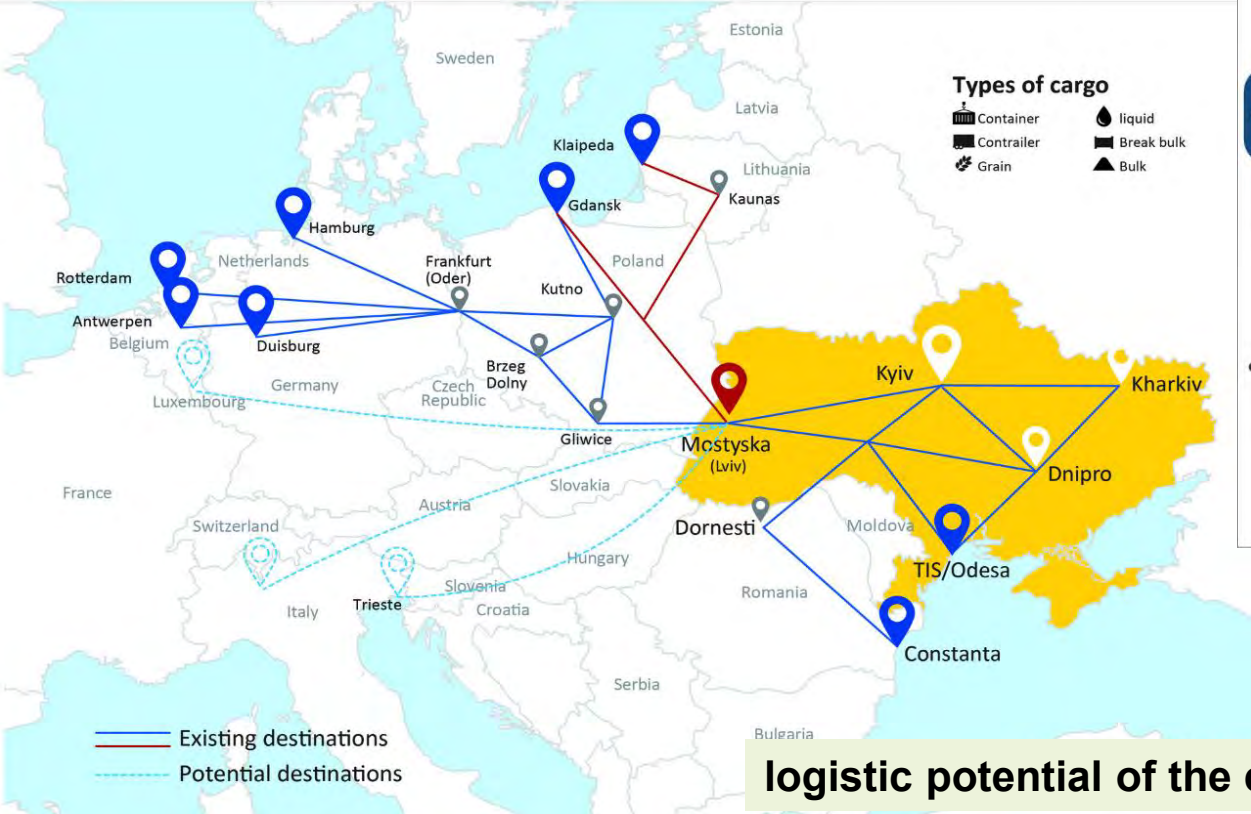
- ❑ **The flexibility of the logistics potential (infrastructure)** is, first of all, the ability to overcome the risks caused by war - the transport and logistics system must be able to withstand possible destruction, due to the rapid repair of damage, the construction of alternative routes, that is, be able to quickly reorient the directions of cargo flows.
- ❑ For example, during the outbreak of war, the seaports of Great Odesa, Mykolaiv, and Kherson were blocked. And the ports of the Sea of Azov are still occupied. However, the potential of the transport and logistics system allowed businesses to quickly reorient the direction of cargo flows to the Danube ports, which are located significantly further from the front line.
- ❑ The Danube ports (before the war were one of the smallest seaports in the country in terms of the volume of cargo transferred) in the conditions of a full-scale war in 2022 handled three times more cargo than in the pre-war year 2021



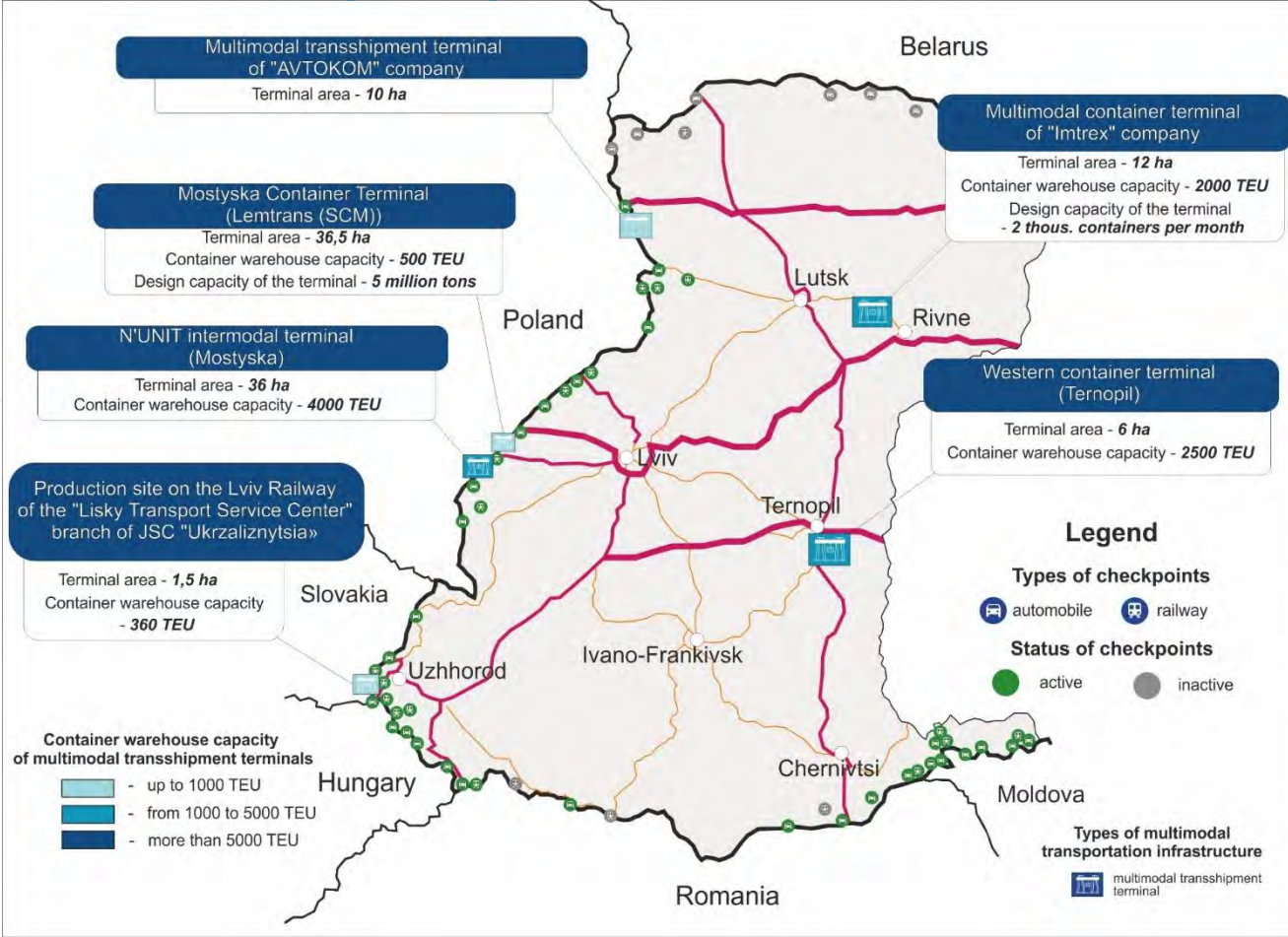
Factors ensuring the resilience of the economic system of Ukraine

Multimodality

- ❑ The war in Ukraine only increased the urgency of developing multimodal transportation and, accordingly, multimodal infrastructure.
- ❑ Already today, the growth of the logistic potential of the multimodal terminals of Western Ukraine can be traced. Expediency and timeliness is also determined by the construction of new multimodal terminals in wartime conditions. For example - container terminal «Mostyska».



Infrastructure of container transportation in Ukraine, as of the beginning of 2023



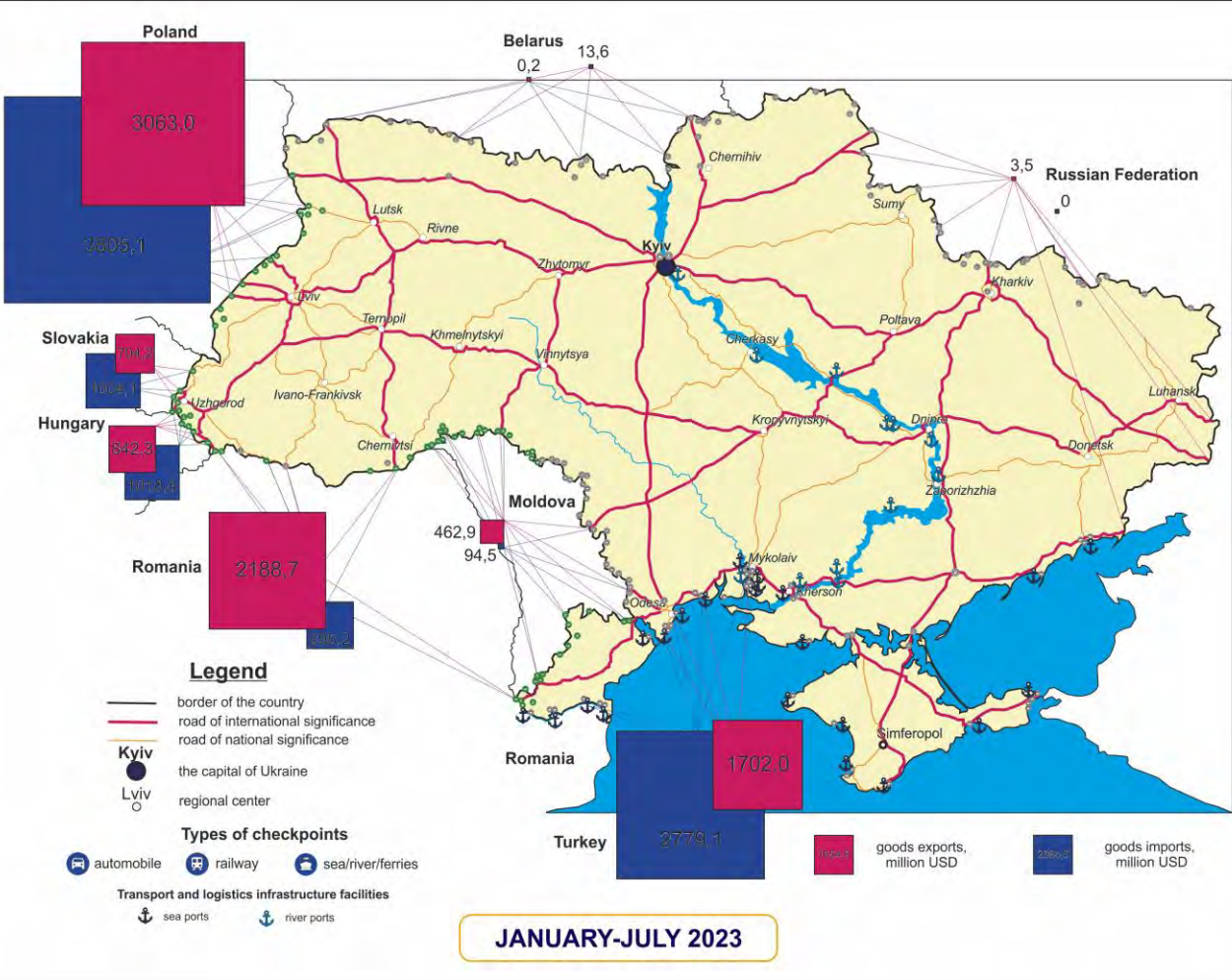
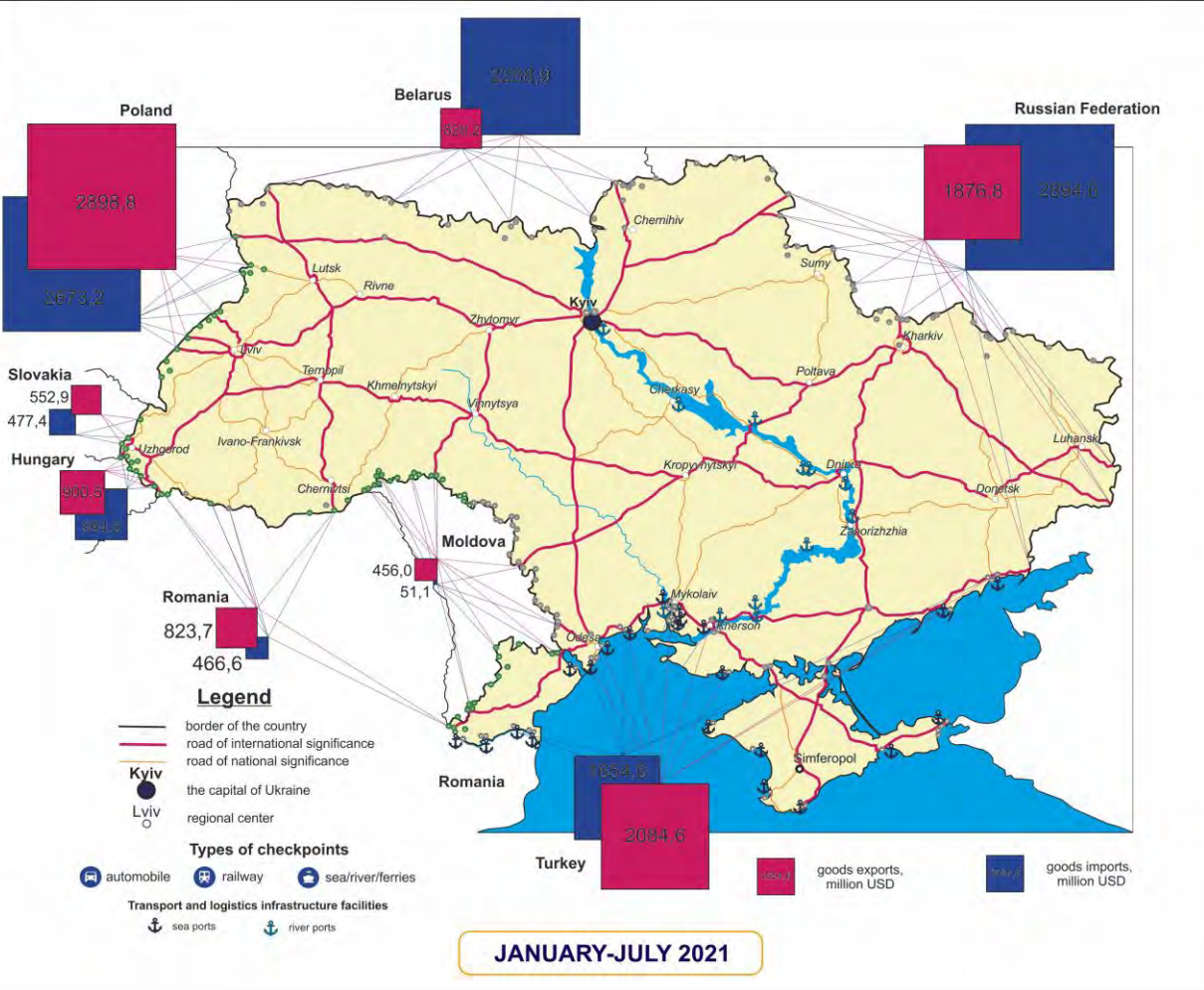
logistic potential of the container terminal «Mostyska»

Factors ensuring the resilience of the economic system of Ukraine

Transformation of the transport and logistics system

Priority directions for the transformation of the transport and logistics system of Ukraine, taking into account changes in export-import flows in war conditions:

- restoration of the destroyed railway infrastructure should take into account possible changes in the location of large industrial enterprises and sources of cargo flows;
- restoration of the carrying capacity and cargo capacity of sea ports (today their work is blocked) due to the attraction of investments (for demining, dredging, clearing, repair and modernization of port infrastructure).
- reorientation of the development of the transport network to support the development of western routes - the development of the capacity of logistics centers within the border crossing points with EU countries, taking into account the requirements of interoperability and effective use of the railway infrastructure of the 1435 mm and 1520 mm tracks.



Change in export-import flows in the conditions of war

RECOMMENDATIONS

In the short term, it is necessary to:

- Agree with EU countries on the allocation of additional rolling stock for the transportation of goods to/from Ukraine;
- Increase the throughput of transport networks and transshipment terminals;
- Optimize customs operations and other checks with neighboring countries – Poland, Hungary, Romania, Slovakia and Moldova;
- Provide additional capacity for storing goods at the border;
- Increase the capacity of export corridors;
- Create conditions for the use of digital technologies in transport;
- Solve the problem of war risk insurance for cargo and passenger transportation.

In the medium-term perspective, it is necessary to:

- Develop alternative routes to the main transport corridors in case of their stoppage, special attention should be paid to the search for «bottlenecks»;
- Electrify the main railway corridors, introduce high-speed passenger and freight transportation through them;
- Build multimodal terminals in the west and the south of the country for easy transition between different modes of transport;
- Restore the capacity of Ukraine's seaports, invest in their demining, dredging, clearing, repair and modernization of port infrastructure;
- Increase the capacity of Ukraine's river ports;
- Increase the capacity of the transport network in the direction countries of Europe;
- Create conditions of fair competition in the transport market, for example, carry out the reform of «Ukrzaliznytsia», allow private locomotive traction on the railway network;
- Build railway tracks with European track width (1435 mm) to the largest cities of Ukraine;
- Apply EU standards when rebuilding and modernizing its infrastructure (access to passenger infrastructure for people with special needs and other low-mobility groups, requirements for environmental protection and sanitary safety during demolition of rubble and restoration of buildings and engineering structures, use of alternative energy sources, etc.).