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**The Impact of the Russia-Ukraine War on Global Transport Networks and
the Role of Georgia**

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The Covid pandemic was the cause of the most extensive setback to the global transport industry and supply chains in recent decades, resulting in fundamental changes. This was reflected in an increase in consumer prices, delays in transportation, delays in the supply of components and semi-finished products to enterprises, worsening of the general socio-economic situation, and more. Over the past few months, the above-mentioned has taken a turn for the better, and the world has slowly begun to return to normal. However, Russia's military aggression in Ukraine has put supply chains and the global transportation network under new strain, greatly damaging the countries and companies involved, and re-surfacing problems that were relevant during the pandemic, among them canceled or delayed flights, higher fuel prices, price inflation of primary consumption products - consequential results which are increasing and, unfortunately, will have long-term negative effects.

The Covid-19 pandemic has shown the world the importance of shorter, more flexible and efficient supply chains, and the Russian war in Ukraine demonstrated the need to have reliable and stable trading partners. Against the background of Moscow's impulsive actions, it is difficult to plan any form of long-term cooperation with Russia. In addition, the world's high dependence on Russia for various basic consumer products makes diversification efforts a highly challenging task. Logistic disruptions have affected almost every country and industry, from food security to high-tech manufacturing. It is interesting to see what caused the disruption of supply chains, what specific consequences the transportation industry is facing, and what regional transit opportunities are emerging for Georgia in the new geopolitical reality.

Key Factors in the Supply Chain Disfunction

Russia's aggression in Ukraine was followed by reciprocal decisions from the West, reflected in six different sanctions packages that covered almost all sectors and industries of critical importance to Russia. These restrictions also affected transportation and shipping services. The European Union banned the delivery of aircraft and its spare parts to Russia, ceased scheduled technical maintenance services and insurance of aircraft, and closed its airspace to Russian airlines and privately owned Russian aircraft. In response, Russia has banned countries that have imposed sanctions against Moscow from flying over its airspace. In addition, Europe banned Russian ships from entering its ports, which, along with the air restrictions, dealt a major blow to global transport networks and supply chains. Without a doubt, the Western sanctions, along with those of Russia, significantly harm Europe, and yet these actions are justified by the greatest political and economic rationality.

In addition to natural gas and crude oil, Russia is one of the main exporters of industrial metals, steel, nickel, aluminum and basic consumer products. Russia and Ukraine together account for 29% of the world's wheat and grain exports.¹ 20% of the global wheat trade comes from Russia. Ukraine is the

¹ Roelofsen Volker, How to mitigate the impact of the Russia-Ukraine war on the global supply chain, (supplychain247, 2022)

<https://www.supplychain247.com/article/how-to-mitigate-the-impact-of-the-russia-ukraine-war-on-your-supply-chain>

largest producer of sunflower oil in the world, with a 40% share of the market.² In addition, Ukraine supplies 9% of the world's wheat market and 16% of the corn market. Ukraine also produces barley and rye, on which much of Europe is dependent. In addition to Europe, Ukrainian grain is also exported to many countries in the Middle East and Africa. Consequently, export restrictions on essential products have led to price increases and the questioning of food security in various regions of the world.

More than 70% of Ukraine's exports are carried out by sea. The Port of Odessa is the largest among the ports of Ukraine, and it is from there that the main export of grain is carried out. Since the start of the war, shipping companies have tried to avoid the Black Sea and the Sea of Azov, where Russian military activities and constant attacks on Ukrainian ports have paralyzed commercial shipping.³ Due to the fact that transport companies have had to change routes, demand has increased significantly at many European ports, most of which were not ready to work an increased load. As such, this process dramatically increased shipping-delivery time. In addition, further challenges arose with regards to lack of naval personnel across the ports.

According to the International Chamber of Shipping, supply chain disruptions are set to be worsened by a shortfall in shipping crew due to the war. Ukrainian and Russian seafarers make up about 15% of the global shipping workforce.⁴ Severe crew shortages, wage delays and the closure of Ukrainian ports have put a strain on supply chains.

Along with sea shipments, air transportation has also been disrupted. The Ukrainian airspace, closed for security purposes, and the Russian airspace, affected by the sanctions, have both significantly limited air capacity, which, in turn, increases the rates of shipping by air. In fact, Ukraine was one of the main players in the air cargo industry, and at this point, its planes remain completely withdrawn from the market.

Along with technical delays, another hindering factor for global shipping is the increase in prices for energy resources.⁵ Due to the fact that logistics and transport is one of the main energy-demanding sectors, the increase in oil and gas prices will inevitably affect supply chains around the world, which, in turn, will lead to higher prices for transported products and, consequently, to an increase in prices for the end user.

² Hegarty Stephanie, How can Ukraine export its harvest to the world? (BBC, 2022) <https://www.bbc.com/news/world-europe-61583492>

³ Tan Weizhen, Russia's war in Ukraine could shake up global trade blocs. Here are the winners and losers, (CNBC, 2022) <https://www.cnbc.com/2022/06/03/winners-losers-as-russia-ukraine-war-disrupts-global-trade-blocs.html>

⁴ Tan Weizhen, How the Russia-Ukraine war is worsening shipping snarls and pushing up freight rates, (CNBC, 2022) <https://www.cnbc.com/2022/03/11/russia-ukraine-war-impact-on-shipping-ports-air-freight.html>

⁵ Kolaczowski Maciej, How does the War in Ukraine affect oil prices? (World Economic Forum, 2022) <https://www.weforum.org/agenda/2022/03/how-does-the-war-in-ukraine-affect-oil-prices/>

Ukraine is now trying to find alternative land transport routes to export available products at its disposal. ⁶ Although it is possible to gradually increase the load of such routes, such exports are significantly challenging and expensive compared to sea freight. Moreover, Russian missile strikes on the railway infrastructure in the territory of Ukraine could further complicate logistics operations.

Key Challenges According to Transportation Categories

In October 2021, the European Union and Ukraine signed an agreement on a common aviation area, although the process had begun in 2005. Its aim was to offer airlines and their customers new opportunities based on common standards of aviation safety, security and air traffic management.

Ukraine, as a member country of the EU's Eastern Partnership project, was actively involved in the projects of the European Union, which aimed to improve transport connectivity between Europe and the partner countries. The strategic transport infrastructure expansion plan was prepared by the European Commission together with the World Bank, in 2018, which was finally approved at the Eastern Partnership Summit in December 2021. ⁷

The above-mentioned confirms the fact that the European Union, together with Ukraine, had extensive plans for the development of transportation networks, but Russia's aggressive actions turned everything upside down. Although logistical obstacles created as a consequence of the war affected all types of transportation categories, the scale by which distinctive categories were affected varies.

Sea

More than 80% of global trade shipments are carried out by sea. The pandemic further highlighted the importance of maritime trade for the international economy. Demand generated during extended and mass shutdowns outstripped the capacity of supply chains. In addition to the fact that this process caused a delay in the delivery of goods to the consumer, it also increased shipping costs.

At the current stage, the increases in shipping costs are due to the complete paralysis of Ukrainian and Russian ports as a consequence of the war, increased demand, and rising fuel prices. Amid fears of new potential sanctions and restrictions, large amounts of cargo are moving from rail to sea. ⁸ Obviously, this puts increased pressure on shipping by sea and has, in many cases, led to shipping container shortages.

⁶ Tan Weizhen, Russia's war in Ukraine could shake up global trade blocs. Here are the winners and losers, (CNBC, 2022) <https://www.cnbc.com/2022/06/03/winners-losers-as-russia-ukraine-war-disrupts-global-trade-blocs.html>

⁷ Russia's war in Ukraine: Implications for EU transport, (European Parliament, 2022) [https://www.europarl.europa.eu/RegData/etudes/ATAG/2022/729307/EPRS_ATA\(2022\)729307_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/ATAG/2022/729307/EPRS_ATA(2022)729307_EN.pdf)

⁸ Patel Hector, Understanding the impact of the Russia - Ukraine war on global supply chains and measures to mitigate the risks, (The Times of India, 2022) <https://timesofindia.indiatimes.com/blogs/voices/understanding-the-impact-of-russia-ukraine-war-on-global-supply-chains-and-measures-to-mitigate-the-risks/>

According to the data for 2021, 34% of cargo entering the Black Sea basin was distributed between the ports of Ukraine, 27% in Russia, 20% in Romania, 10% in Georgia, and 9% in Bulgaria.⁹ The loading of the Russian and Ukrainian ports makes up almost 50% of the total distribution of the Black Sea ports. Thus, the paralysis of ports in these waters leads to significant disruptions in supply chains and increases the demand for cargo diversion to other states in this basin. All this goes beyond regional challenges and takes on a much larger scale.

Another problem in sea shipping is the lack of personnel. On the one hand, international maritime transport is missing the majority of crew - the Russian and Ukrainian sailors, and on the other hand, people working in this industry are unable to travel to the region and perform their duties due to flight cancellations or delays.

There was a similar problem during the pandemic. Due to the virus, ports and naval vessels experienced labor shortages. Ship personnel were unable to cross borders due to public health restrictions. In addition, as a consequence of the war, there were several cases where a bomb hit a commercial ship in the conflict area, which further increased safety concerns.¹⁰ In these war-torn regions, due to such lack of safety, there have also been cases when a crew has abandoned ship. All this has an extensive negative impact on the transport industry and supply chains.

In response to Western sanctions over its invasion of Ukraine, Russia blocked hundreds of ships exporting mainly Ukrainian grain through the Black Sea and Sea of Azov. As such, there is no doubt that Russia is using food as a weapon of war.

It is expected that the Ukrainian side will overcome the supply challenge by creating a land corridor through Poland to Baltic Sea ports, allowing Ukraine to export vital food reserves to the rest of the world, which is also extremely important to its economy.¹¹ In turn, Russia is taking advantage of the blockade it has imposed to steal Ukrainian grain and send it abroad from Crimea.

Air

About 3.3% of air traffic in Europe was suspended due to the closure of Ukrainian airspace. As of 2021, passenger flights between Russia and Europe accounted for 5.7% of the total traffic in Europe.¹² Given

⁹ Danelia Irakli, The Black-Sea container shipment market and the impact of the Russia – Ukraine conflict on container shipments in the region, (Forbes, 2022) <https://forbes.ge/en/shavi-zghvis-sakonteinero-bazari-daruseh-ukrainis-omis-gavlana-sakonteinero-gadazidvebze-regionshi/>

¹⁰ Malsin Jared, Turkish-owned ship hit by bomb off the coast of Odessa, (The Wall Street Journal, 2022) https://www.wsj.com/livecoverage/russia-ukraine-latest-news/card/turkish-owned-ship-hit-by-bomb-off-coast-of-odessa-sNvkBYqilNav8S5cDGaL?mod=article_inline&AID=11557093&PID=6415797&SID=bi%7C621e21cd17a7fe70236e45a3%7C16466043204224bzaw6hp&subid=Bu

¹¹ Shipping movement continues in the Black Sea despite Ukraine war, sanctions, (France24, 2022) <https://www.france24.com/en/europe/20220605-maritime-trade-continues-in-the-black-sea-despite-ukraine-war-sanctions>

¹² Russia's war in Ukraine: Implications for EU transport, (European Parliament, 2022) [https://www.europarl.europa.eu/RegData/etudes/ATAG/2022/729307/EPRS_ATA\(2022\)729307_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/ATAG/2022/729307/EPRS_ATA(2022)729307_EN.pdf)

the current circumstances, many flights have been canceled, and final and layover destinations have also been changed. These processes have had a mostly negative impact on Europe-Asia and Asia-North America directions. In addition, the price of fuel has increased. According to estimate calculations, an additional one-hour flight costs a civil airline between 3,600 and 15,000 Euros, depending on the size of the aircraft and fuel quality. This, in turn, makes some directions uneconomical and unpragmatic. In some cases, airplanes need to make intermediate stops to refuel if the distance to be covered is beyond the range of the aircraft's capabilities. In this way, airline operators evaluate which destinations are worth continuing offering flight destinations for.

In addition to civilian flights, air freight rates have also increased significantly, exceeding the pre-crisis level by 120% within three weeks of the start of the war. Sanctions and bans are expected to further reduce the volume of air shipments, especially between Europe and Asia, unless airlines in different parts of the world, such as the Middle East, become more actively involved in filling the mentioned shortfalls. Due to the fact that air freight is the fastest way to transport goods, the increased demand has subsequently led to an increase in prices. Rising air ticket prices may reduce demand for air travel. Air cargo capacity is down 10%, with rates jumping 2.5-3 times higher due to higher demand and a reduction in passenger plane belly cargo capacity.¹³

Land

In recent years, cooperation between Ukraine and the European Union has significantly increased in the field of trade, where ground transportation has acquired an important role. Railway lines in Ukraine are quite developed. Over the past ten years, Ukraine has spent approximately 740 million US dollars to improve its rail infrastructure, which has proven to be critically important during the war.

Soon after the beginning of the Russian military aggression, the railway became the most important logistics channel of the country. At this stage, its main function is to transport weapons and ammunition supplied to Ukraine from Western partners, to evacuate or transport people to various destinations, and to export domestically produced goods such as grain, coal, steel, and chemical products. The country also has an extensive network of highways, although many of them are in poor condition and are not necessarily suitable for transporting heavy materials.¹⁴

Due to its strategic importance, the railway became a target of the Russian army, with Moscow launching a series of attacks directly on the Ukrainian railway network. According to experts, the railway of Ukraine was quite strongly protected even before the Russian invasion and, militarily, the rail network has proven extremely valuable for supplying Western weapons and also in helping

¹³ Nguyen Viet, Li Xinnan, Russia-Ukraine's war impact on global logistics, (Rabobank, 2022) <https://research.rabobank.com/far/en/sectors/fa-supply-chains/russia-ukraine-war-impact-on-global-logistics.html>

¹⁴ Latschan Thomas, Ukraine: Will the railroad be what decides the war? (DW, 2022) <https://www.dw.com/en/ukraine-will-the-railroad-be-what-decides-the-war/a-61714831>

refugees escape the Russian airstrikes.¹⁵ The Ukrainian railway network has a number of branches, and when a particular section is bombed, alternative routes can quickly be found. In addition, a number of instances have been observed in which damaged railway lines were repaired in just a few hours.¹⁶ Thus, after Russia began the blockade of the Black Sea and the Sea of Azov, the railway became a symbol of Ukrainian resistance.

As a result of Western sanctions, the European Union has banned road transport operators from Russia and Belarus from entering the European Union, including via transit routes. This decision is aimed at limiting the capacity of the Russian manufacturing industries, as well as hindering trade capacity by blocking land routes.¹⁷ Due to the fact that Ukraine plays a major role in global food security, the European Union has a legitimate interest in continuing cooperation with Kyiv in the direction of strengthening both its rail and road connections.

During the Russia-Ukraine war, shipping companies found it difficult to move goods between China and Europe. The negative impact of the war in Ukraine also spread to China's foreign trade. The China-Europe railway has seen a sharp drop in the volume of outgoing cargo since the beginning of the war in Ukraine. For reference, approximately 4% of China-Europe rail cargo passed through Russia and 2% through Ukraine.¹⁸ The China-Europe railway has been hit hard by the war, as parts of tracks pass through high-risk areas in Russia, Belarus, and Ukraine. General uncertainty, the ongoing war, and continuous Western sanctions make the challenging situation even more severe.¹⁹

The Role of the Georgian Corridor in the New Geopolitical Reality

Due to its geopolitical location, the current situation has created new transit opportunities for Georgia. In particular, the country has a chance to attract cargo moving from Asia to Europe, which was transported through Russia until now. Quantitative indicators confirm that the demand for the Georgian corridor has increased significantly since the war. In January-April 2022, Georgia transported a total of 12.8 million tons of cargo, which is 200 thousand tons more than the corresponding period in 2021.

¹⁵ Surk Barbara, Why is Russia attacking Ukraine's railway system? (AP News, 2022)

<https://apnews.com/article/russia-ukraine-europe-migration-4129b6c37dff07ec63ebdbb05ef37a2>

¹⁶ Latschan Thomas, Ukraine: Will the railroad be what decides the war? (DW, 2022)

<https://www.dw.com/en/ukraine-will-the-railroad-be-what-decides-the-war/a-61714831>

¹⁷ EU sanctions against Russia explained, (European Council, 2022)

<https://www.consilium.europa.eu/en/policies/sanctions/restrictive-measures-against-russia-over-ukraine/sanctions-against-russia-explained/>

¹⁸ Nguyen Viet, Li Xinnan, Russia-Ukraine's war impact on global logistics, (Rabobank, 2022)

<https://research.rabobank.com/far/en/sectors/fa-supply-chains/russia-ukraine-war-impact-on-global-logistics.html>

¹⁹ Ong Edwin, Russia-Ukraine war impacting China – Europe rail transportation and trade, (ThinkChina, 2022)

<https://www.thinkchina.sg/russia-ukraine-war-impacting-china-europe-rail-transportation-and-trade>

In January-April of this year, 8.1 million tons of cargo passed through Georgia by land, and the number of trucks exceeded 82,000, which is 22% more than the corresponding period last year. The cargo transported accounted for 68% of the total capacity. The demand at border checkpoints is 3-4 times higher than their capacity. In the first four months of 2022, the state budget received more than 23 million GEL in this way, which is 16.8% more than in the same period of the previous year.

It is also significant that the Georgian side increased the road usage tax from 200 to 350 GEL.²⁰ Along with the roads, the capacity of the railway has also increased, carrying a total of 4.1 million tons of cargo. Petroleum products take first place in the transported cargo, followed by various chemicals, fertilizers and ores. In total, in the first three months of 2022, the Georgian Railways received 141 million GEL income, of which 23.5 million GEL is pure profit.²¹

In addition to land traffic, the cargo turnover of ports has also increased. According to the data of the Ministry of Economy, from January to April 2022, the ports of Georgia processed a total of 4 million tons of cargo, which is 0.5 million tons more than in the same period of the previous year. The number of containers also increased. Where, last year, Poti and Batumi terminals handled 128,000 container units, this year the number reached 137,000.²² In total, 31.2% of cargo turnover in the corridor of Georgia comes from its ports.

From the point of view of transit, the share of air transportation is relatively modest, although some progress can be observed in this direction as well. According to the data of the Civil Aviation Agency of Georgia, in the first quarter of 2022, the airports of Georgia served more than 700 thousand passengers, which is 565% more compared to the same period last year, and the recovery compared to the year before the pandemic (2019) is 69%. The volume of cargo transported by air in the first three months of 2022 amounted to 4.5 million tons. Compared to last year, air cargo turnover has increased by 3%. In the first quarter of 2022, the use of the country's airspace increased by 53% compared to the previous year, and decreased by 33% compared to the pre-pandemic year (2019).²³

In order to serve the increased cargo flow through Georgia and strengthen its regional positions, it is critically important that the country implements strategic infrastructure projects. The steps taken today are key determinants of long-term geopolitical significance and stable economic growth. Against the backdrop of the war, interest in the country is growing, especially from the Central Asian states. For example, Kazakhstan is ready to transport two million tons of oil and oil products through Georgia in 2022-2023.

²⁰ Ordinance of the Government of Georgia, (Legislative Herald of Georgia, 2022) https://matsne.gov.ge/ka/document/view/5487605?publication=0&fbclid=IwAR0wWL9_weeP662V3tVwEOcAF0e_hPSpzpeB2HoGd5V0OfIEO5JcbjrR7xj4

²¹ Management discussion and analysis for the three months ended 31 March 2022, (Georgian Railway, 2022) https://www.railway.ge/app/uploads/2022/06/mda_q1_2022-2.pdf

²² Economic Review of Transport, (Ministry of Economy and Sustainable Development of Georgia, 2022) <http://www.economy.ge/?page=ecoreview&s=26>

²³ Quarterly review, (Georgian Civil Aviation Agency, 2022) <https://gcaa.ge/2022/04/12/15/2022-წლის-პირველი-სამი-თვის-მონაცემებით-მგზავრთნაკადი-565-ით-ხოლო-საკაერო-გზით-გადაზიდული-ტვირთის-მოცულობა-3-ით-არის-გაზრდილი/>

In addition, there is a possibility that part of the Chinese container cargo which used to move through the Volga-Don Canal, will move to Georgia. The largest part of cargo transported from China to Europe passes through Russia, and only 2% of this cargo comes through Georgia. The current circumstances also show the possibility of increasing the flow of pipelines passing through Georgia. As such, it is necessary for the country's infrastructure to meet the new reality prepared, and to constantly strive to improve. A further increase in load of the corridor passing through Georgia will also lead to the development of other areas. Therefore, it is extremely important to use these opportunities correctly.

Conclusion

Well-functioning transport networks are a fundamental factor in international trade, the disruption of which leads to a number of direct and indirect complications. This includes both the deterioration of macroeconomic parameters and worsening of the general socio-economic situation, as well as disruptions in various manufacturing and service industries. According to the International Monetary Fund, worldwide transportation costs are among the most important determinants of inflation. According to IMF calculations, a doubling of the shipping rate can lead to a 0.7% increase in inflation, although, in 2022, this indicator may rise to 1.5%.²⁴ The contribution to changes in inflation due to fluctuations in international shipping prices is similar in magnitude to price increases due to global oil and food shocks. In this regard, the countries that are largely dependent on imports are experiencing the greatest pressure, as are countries that are highly integrated in the global supply chains.

Despite the global challenges, Russia is likely to be the most affected by the scale of the economic downturn. This is due on the one hand to the Western sanctions, and on the other to its practically complete exclusion from international transport networks. The world is already feeling the severe consequences of Moscow's aggression in Ukraine, manifested in the disruption of international trade and supply chains. Diversification of suppliers and the quest for alternative transportation routes is becoming extremely important. The strategic role of various countries in the region is also increasing, bringing as it does additional financial benefits and strengthened positions. In this regard, Georgia is presented with unique opportunities, the strategic use of which is extremely important for the long-term development of the country.

²⁴ Carriere-Swallow Yan, Deb Pragyana, Furceri Davide, Jimenez Daniel, D.Ostry Jonathan, How soaring shipping costs raise prices around the world, (IMF, 2022) <https://blogs.imf.org/2022/03/28/how-soaring-shipping-costs-raise-prices-around-the-world/>