



PMC RC stands firmly with Ukraine, supports its sovereignty and territorial integrity, and condemns Russia's unprovoked and unjustified military aggression against Ukraine. We continue to maintain our long-standing commitment to support Ukraine's democratic and economic progress.

Ukraine, having had the largest coastline on the Black Sea before the annexation of Crimea, has long stood out in the region for its developed maritime industry. Though a large share of Ukraine's external trade is still conveyed by sea, other Black Sea countries' maritime infrastructure and trade have also become more developed over time, casting doubt on Ukraine's regional leadership. In fact, the Ukrainian Minister of Infrastructure stated at the Committee on Transport and Tourism (TRAN) meeting in May 2022, at which time all port operations had ground to a halt in Ukraine due to the war, that 70% of Ukrainian exports were normally carried by sea, underlining the dominant role of maritime trade for Ukraine in its dealings with external trade partners. Though the Black Sea 're-opened' for Ukrainian vessels carrying grain, foodstuffs, and edible oils after August 1 following the 'grain deal', the partial resumption of maritime exports from the country has so far failed to satisfy the world demand for such commodities from Ukraine where the harvest keeps piling up. Meanwhile, the substantial disruption of Ukrainian ports has exacerbated post-pandemic supply chain issues, aggravated the looming international food crisis, and further fueled inflation worldwide.

To portray the effects of the halting of operations at Ukrainian ports on both domestic and international markets, it is essential to analyze the significance of Ukraine's maritime industry and its role in the country's external trade, the Black Sea, and beyond. Though, as mentioned above, 70% of Ukrainian exports are ordinarily carried by sea, maritime trade accounts for an even larger proportion of total exports for key Ukrainian commodities. For instance, before the war broke out, 90% of agricultural products and a large share of critical exports (metals) and imports (coal) went through Ukrainian ports.

Ukraine's Exports in 2021				
Product	Value of exports (Billion)	Rank in global exporters	Share of global exports	Top Markets
Iron Ore	\$6.9	#5	3.1%	EU, China, Japan
Sunflower Oil	\$6.4	#1	46%	India, EU, China
Corn	\$5.9	#4	12%	China, EU, Egypt
Wheat	\$5.1	#5	9%	Egypt, Indonesia, Turkey
Barley	\$1.3	#3	17%	China, Turkey, KSA

Source: FAS.USDA, GMK, and Trade Data Monitor LLC

Furthermore, the commodities that are heavily dependent on maritime trade account for most of Ukraine's external trade. In particular, according to the National Bank of Ukraine, agricultural products and ferrous and nonferrous metals amounted to 69% of its total exports in 2021.

Although iron ore exports accounted for the highest value (US\$6.9 billion), sunflower oil had a greater share of global exports (46%), making Ukraine the world's leading exporter of this commodity. In addition, Ukraine is also in the world's top five exporters of barley, corn, and wheat, with shares of global exports of 17%, 12%, and 9% respectively.

Moreover, the disruption of exports for the given commodities has been a challenge not only for Ukraine but also for the rest of the world as much of Europe, Asia, and Africa were previously rampant importers of products from Ukraine. Furthermore, before the war, one-third of exported agricultural products were destined for Europe, China, and Africa.

There are 18 seaports in Ukraine on the coasts of the Black and Azov Seas, which handle Ukraine's maritime exports. Collectively, the ports amount to a berthing space of 38 kilometers. Moreover, the five ports of Odesa, Pivdennyi, Mariupol, Chornomorsk, and Berdyansk are usually marked out as key ports for Ukraine's external trade. Indeed, 60% of all goods turnover is handled by the three ports of Odesa, Pivdennyi, and Chornomorsk.

Furthermore, the ports differ from one to another in not only activity, but also in specialization, size, infrastructure, and capacity. The graph on the right indicates key ports' specializations, including commodities like metal, grain, foodstuffs, coal, and sugar. In terms of tons of cargo handled annually, Odesa is the leading Ukrainian port with 43 million.

Meanwhile, before the war, the port of Mariupol handled the most vessels among Ukrainian ports with 2 500 per year, with Berdyansk handling the lowest number of vessels and volume of cargo of these the five main Ukrainian ports. It is also essential to mention that out of the 18 seaports, four have been occupied since 2014. These ports amount to 10% of total port turnover in Ukraine.

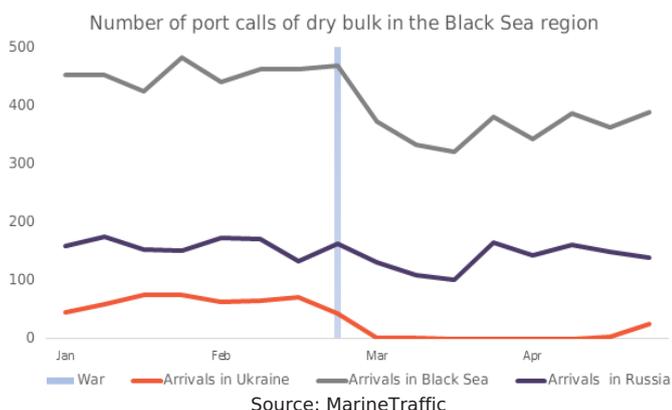
Port specializations and approximate number of Vessels and tons of cargo ports handle annually			
Port	Port specialization	Vessels	Tons of cargo
Odesa	Metal, grain, sugar, woods, food stuff, coal, chemicals	1 200	43 000 000
Pivdennyi	Liquid, chemicals, construction materials, coal	-	35 800 000
Mariupol	Grain, metal, coal, construction materials, oil, food	2 500	17 000 000
Chornomorsk	Grain, light vehicles, equipment,	750	14 000 000
Berdyansk	Light vehicles, fruits, sugar, metal	470	3 000 000

Source: Shipnext & DLCA

It is worth mentioning that, alongside seaports, river ports also play an important role in Ukraine's maritime industry. There are 10 river ports on navigable rivers including the Dnipro, Dunai, Southern Bug and Dniester. Of these rivers, the Dnipro is the key internal waterway running through the middle of Ukraine, connecting to essential seaports. Though there are several challenges and limitations in terms of vessel sizes for inland navigation, it is still widely used to complement sea navigation. Moreover, it is also essential to highlight that most of the Ukrainian river ports are privately owned. Conversely, all of the Ukrainian seaports are state owned following a legislative change in 2013 uniting all seaports under one state company, the Ukrainian Sea Ports Authority.

As maritime trade is an essential part of Ukraine's external trade, Russia's attacks on Ukrainian seaports and inland water transport infrastructure may have been unjustified but were not surprising. According to the 'Audit of War Damage' conducted by the National Council for the Recovery of Ukraine from the War, the total damage caused by Russian attacks on water transport infrastructure amounted to approximately US\$471 million. It is also worth noting that Russia has inflicted only moderate damage on the ports and has not destroyed their whole infrastructure as it has been using them to export stolen grain and ferrous metals from Ukraine. Specifically, Russia has exported stolen metal products worth US\$200 million and grain worth hundreds of millions of USD. Ultimately, even with only moderate damage, the overall losses of water transportation are estimated at US\$2.7 billion.⁸

Furthermore, since 2014, Russia has had control of Ukraine's Crimean ports, resulting in a 10% decrease in Ukraine's port capacity for grain cargo transshipment.⁹ Moreover, the more recent and ongoing war has led to Ukraine losing control over the ports of Mariupol, Berdyansk, Skadovsk, and Kherson. Furthermore, until the 'grain deal' of August 1, operations at the majority of its ports had only been halted. Only the three ports of Reni, Izmail, and Ust-Dunaisk were still functioning until that point. As for inland waterways, only the ports on the Danube River were working, increasing their turnover fourfold. However, after the 'grain deal' was concluded, Ukrainian ports resumed functioning partially and started serving vessels again to export grain, fertilizers, and foodstuffs through a humanitarian corridor in the Black Sea. According to the UN, 9.5 million metric tons of foodstuffs were exported courtesy of the deal in the period of August-October. Though the ports have started to partially function again under the supervision of international teams of officials, the ISPS¹⁰ security level has remained at the highest level - 3.



The war's effect on vessels' activity in the Black Sea is clearly displayed in the number of port calls of dry bulk¹¹ in the region in January-April 2022. The number of port calls made in Ukraine started decreasing a week before the war started, as precautions were increasingly being taken. Throughout the two months immediately after the outbreak of war, there was not a single arrival at a port in Ukraine, but the situation improved slightly in late April.

Though the initial shock was significant, arrivals surpassed the pre-war level in a month in Russia. Meanwhile, the number of port calls in the Black Sea two weeks after the war decreased by 136, while the same decrease for Ukraine and Russia combined was 29% lower (97). Hence, the war negatively affected the maritime industry of not only the countries engaged but for the whole Black Sea region.

On the other hand, traffic increased at some ports like Constanta (Romania) and Varna (Bulgaria), as Ukrainian exports were redirected to them. In particular, Constanta processed 800,000 tons of iron ore and about 1.5 million tons of Ukrainian grain after February 24. In addition, the war has also increased the demand for the Trans-Caspian International Transport Route since international companies and countries have tried to bypass Russia when connecting from China to Europe.¹²

As Ukraine plays a crucial part in international trade, countries from all over the world have sought alternatives to Ukrainian products, thus increasing demand for transportation infrastructure and services. Furthermore, imported products are usually sourced from a great distance, increasing vessel demand and the cost of transportation.¹³

The Ukrainian authorities have already developed a national recovery plan, comprising some aspects expected to be implemented in the near future. For instance, its plan to optimize the port tax systems and to incentivize private investments in strategic ports could increase private sector mobilization and motivation to invest.

Moreover, the war has once again demonstrated the importance of diversification, as developing its inland waterway navigation could solve some of the strategic problems facing Ukraine. For instance, if this is improved, exports of agricultural products would no longer depend only on Black Sea maritime trade, which would increase confidence in Ukraine among its external trade partners. Similarly, developing seaports on the western part of Ukraine's Black Sea coast such as the port of Izmail would represent crucial forward step for Ukraine.

Recovery Plan - Logistics ¹⁴
Fair optimisation of the port tax system
Regulation of possible compensation for the investment made by economic operators in strategic port infrastructure facilities
Creating the Danube-Black Sea deep-water navigation channel
Development of export of agricultural products by river
Development of the marine terminal infrastructure of Izmail Sea port
Analysis of post-war condition of the coastal port infrastructure, and analysis of the international law on environmental and technogenic safety of Ukrainian sea ports and port operators

Source: Government of Ukraine

To sum up, Russia's war in Ukraine has stifled the latter's maritime industry. It has disrupted 15 of Ukraine's 18 seaports as well as its inland water navigation facilities. As the maritime industry usually plays a crucial part in Ukraine's external trade, the above-mentioned disruptions have hampered the country's exports markedly. Furthermore, prior to the war, Ukraine shipped 90% of its agricultural commodities from its Black Sea ports, making the country exceptionally vulnerable to maritime trade disruptions. Alongside problems in maritime trade, losses with respect to port infrastructure have been tremendous, putting the very future of the industry at risk.

Disruptions in Ukraine's maritime trade have exacerbated already-struggling international trade and logistics (courtesy of the pandemic), increasing demand for global vessels and the cost of shipping (shipping prices have been increasing since 2020, however the war has aggravated costs and reversed the temporary decline).¹⁵ Although the 'grain deal' led to a partial resumption of activities for most of Ukraine's ports to avoid a global food crisis, Russia's instability and unpredictability leaves some concerns for the future reliability of this deal (the initiative was extended for another four months on November 17th after the uncertainties from the Russian side).¹⁶ To this end, the war has highlighted the importance of Ukraine's external trade and maritime industry in international trade and food security.

1 Source: https://multimedia.europarl.europa.eu/en/webstreaming/tran-committee-meeting_20220517-1000-COMMITTEE-TRAN

2 'Grain deal' is a procedure that guaranteed the safety of ships carrying Ukrainian grain, fertilizer and other food stuff through a humanitarian corridor in the Black Sea. Under the deal, all vessels coming to and from Ukraine's ports were inspected and monitored by international teams made up of officials from Russia, Ukraine, Turkey and the UN. Sources: <https://www.wilhelmsen.com/port-services/ships-agency/campaigns/ukraine-russia/ukraine-russia-port-situation-map/>; <https://edition.cnn.com/2022/10/31/europe/ukraine-russia-grain-deal-world-hunger-intl/index.html>

3 Source: <https://www.nytimes.com/2022/07/28/business/ukraine-grain-harvest-piles.html>

4 Source: https://ec.europa.eu/commission/presscorner/detail/en/ip_22_3002

5 Source: <https://bank.gov.ua/en/statistic/sector-external>

6 Formerly known as Yuzhnyi. Source: https://en.cfts.org.ua/news/government_renames_yuzhny_port#:~:text=The%20name%20change%20concerns%20the%20Ukrainian%20version%20of%20CFTS%20portal%20reports%20citing%20the%20Delo%20publication

7 Source: <https://dlca.logcluster.org/display/public/DLCA/2.1++Ukraine+Port+Assessment>

8 Source: https://uploads-ssl.webflow.com/621f88bd25f624758792dd8/62c48b51bd97677a3c4d7b1c_Audit%20of%20war%20damage.pdf

9 Source: <https://glavcom.ua/publications/124364-anejsija-krimu.-golovni-naslidki-dlja-ukrajini-doslidzhennja.html>

10 ISPS (International Ship and Port Facility Security Code) is an essential maritime regulation for the safety and security of ships, ports, cargo, and crew. ISPS includes 3 levels: SL1 is the level at which the minimum protective and security measures are in permanent effect; SL2 is the level at which, as a result of a heightened threat of a security incident, additional protective security measures are maintained for the duration of the threat; SL3 is the level at which, when a security incident is probable or imminent, further specific protective security measures are initiated and maintained for a limited period. (<https://www.themastermariner.com/stcw-a-i2/isps-code-security-levels/>)

11 A vessel call is a single visit to a terminal or port by a vessel.

12 Source: <https://www.adb.org/publications/unlocking-transport-connectivity-trans-caspian-corridor>

13 Source: <https://unctad.org/webflyer/maritime-trade-disrupted-war-ukraine-and-its-effects-mari-time-trade-logistics>

14 Source: <https://irecovery.gov.ua/en/project/program/logistics-de-bottleneck-and-integration-with-eu>

15 Source: <https://unctad.org/webflyer/maritime-trade-disrupted-war-ukraine-and-its-effects-mari-time-trade-logistics>

16 Source: <https://www.reuters.com/world/un-secretary-general-says-black-sea-grain-deal-extend-ed-2022-11-17/>



PUBLICATIONS presented on the website are prepared by PMC Research Center only for informational and/or marketing purposes. Nothing in the PUBLICATIONS constitute, or is meant to constitute, advice of any kind, and the reader is responsible for their interpretation of all content and acknowledges that any reliance thereupon shall be entirely at their risk. PMC Research Center cannot be held liable for any claims arising as a result of the reader's use of the materials.

The PUBLICATION is presented "as is" without any representations or warranties, expressed or implied.

Without prejudice to the general message of the first paragraph above, PMC Research Center does not guarantee that:

- o the PUBLICATION will be constantly available; or
- o the information contained in the PUBLICATION is complete, true, accurate, or non-misleading.

PMC Research Center reserves the right to modify the contents of PUBLICATIONS from time to time as it deems appropriate.

PMC Research Center absolves itself of any liability of violations of other parties' rights, or any damage incurred as a consequence of using and applying any of the contents of PMC Research Center's PUBLICATIONS. PMC Research Center will not be liable to the reader (whether under contract law, tort law, or otherwise) in relation to the contents of, use of, or other form of connection with, the PUBLICATION.

The reader accepts that, as a limited liability entity, PMC Research Center has an interest in limiting the personal liability of its officers and employees. The reader agrees that they will not bring any claim personally against PMC Research Center's officers or employees with respect to any losses suffered by the reader in connection with the PUBLICATION.

The reader agrees that the limitations of guarantees and liabilities set out in the PUBLICATION disclaimer protect PMC Research Center's researchers, officers, employees, agents, subsidiaries, successors, assignees, and sub-contractors as well as PMC Research Center itself.

If any provision of this disclaimer is, or is found to be, unenforceable under applicable law, that will not affect the enforceability of the other provisions of the PUBLICATION disclaimer.

Giorgi Khishtovani

Research Director

g.khishtovani@pmcginternational.com

Nika Kapanadze

Researcher

n.kapanadze@pmcginternational.com

Anastasia Chkhenkeli

Junior Researcher

a.chkhenkeli@pmcginternational.com

Shota Matcharashvili

Research Assistant

sh.matcharashvili@pmcginternational.com