

The War in Ukraine and Implications for Global Food Security

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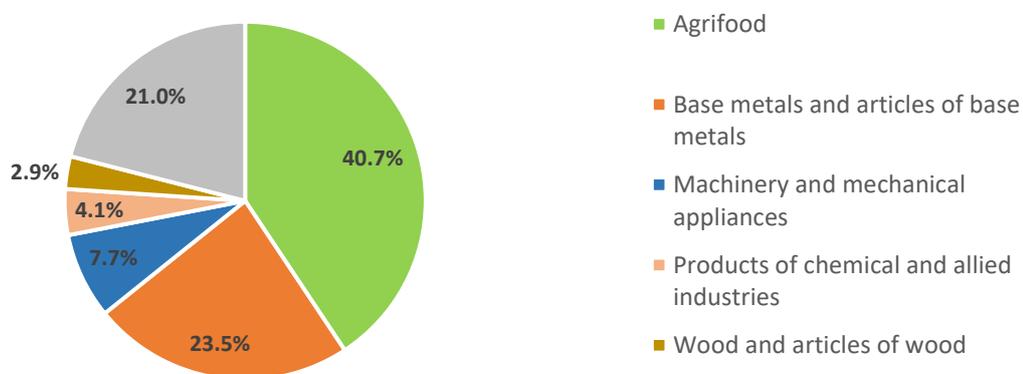
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Introduction

On February 24, 2022, the Russian Federation has started a full-scale invasion of Ukraine. It is a major escalation of the Russo-Ukrainian war, ongoing since 2014. The recent invasion has resulted in a large refugee crisis and terrible harm to Ukrainian economy. Missile attacks and artillery shells damage Ukraine's manufacturing and transport infrastructure, the sea blockade halts international trade. The World Bank expects Ukraine's economy to shrink by 45.1% in 2022. The projections also mention a massive decline of Ukraine's exports by 80% in the same year.¹

The scope of military actions significantly affects the agriculture and food industry, one of the Ukraine's economic engines. In 2020, the sector provided 19% of country's GDP.² The agriculture and food exports, which constitute 40.7% of total Ukrainian exports (see Chart 1), proved Ukraine as a 'breadbasket of Europe'. Ukraine was the largest exporter of sunflower oil (39.5% in 2020 world exports), the fourth largest exporter of corn (13.2%) , and fifth largest exporter of wheat (8%). However, the war has threatened the crop areas and halted maritime logistics.

Chart 1. Structure of Ukraine's exports in 2021, by value (%)



Source: State Statistical Service of Ukraine

International governments and organizations raise concerns over an alarming food crisis, as Ukraine is a major food supplier to large markets in Asia, Africa, and Europe. According to the FAO Food Price Index, international food prices has already reached the highest level since 1990.³ The World Bank urges that rising prices may damage net importers of food, which are predominantly poor countries. The Russian Federation,

¹ See <https://openknowledge.worldbank.org/bitstream/handle/10986/37268/9781464818660.pdf>.

² Based on the information of the input-output table in consumer prices, http://www.ukrstat.gov.ua/operativ/operativ2021/vvp/kvartal_new/tvv_cs/vitr_vip_cs20xl_UE.xlsx.

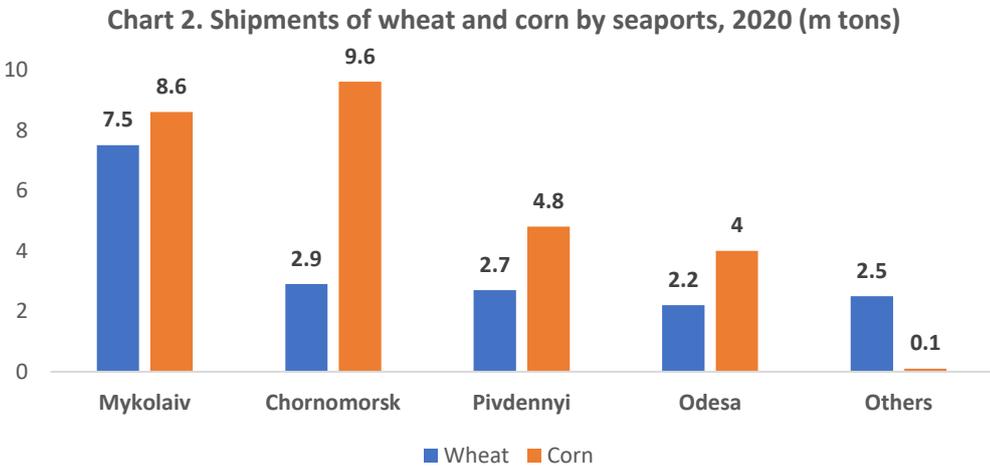
³ See <https://www.fao.org/worldfoodsituation/foodpricesindex/en/>.

which escalated the war, is also among the most important producers and net exporters of agriculture commodities in the world. The war between such big food suppliers increases vulnerability of the markets.

Key wartime challenges for Ukraine

In 2021, Ukraine harvested 106 m tons of cereals, legumes, and oilseeds. It was the highest on record harvest that included 40 m tons of corn, 32.4 m tons of wheat, 10 m tons of barley, 16.3 tons sunflower seeds, 3.4 m soybeans, and 2.9 m tons rapeseed. In the same year, Ukraine also maintained vast crop areas, with highest on record 6.5 m ha of sunflowers.⁴ Nevertheless, the Russian invasion has changed the projections for the year of 2022. The military operations touched territories in the northern, eastern, and southern regions of Ukraine. According to the recent estimations by the Association of Miners of Ukraine, at least 13.6% of Ukrainian territory requires demining.⁵ Territories of the Kherson, Zaporizhia, Kharkiv, Donetsk, Luhansk regions, and the Autonomous Republic of Crimea are fully or partially occupied. In southern and eastern regions there are heavy fights against the Russian troops.

The Ministry of Agriculture Policy informed that only 70% of farmlands will be used for crops in 2022, according to the pessimistic prognosis. However, demining in Chernihiv and Sumy regions, where Russian troops were forced out, could increase the figure to 80%. At the same time, Ukraine needs 40% of crop areas for domestic consumption, but the rest for exports.⁶ The harvest of cereals and oilseed is projected to drop almost twice, down to 63 m tons, according to the Ukrainian Grain Association.⁷ At the same time, at least 20 percent of Ukraine’s winter crops may not be harvested because of the war.⁸



Source: data from Ukrainian Shipping Magazine⁹

⁴ See <https://latifundist.com/spetsproekt/956-rekordnij-2021--bilshe-100-mln-t-vrozhayu-mozhemo-zvikati-do-sotki-chi-tse-vinyatok>.
⁵ See <https://www.facebook.com/Ukrainiansappers/posts/1755364541338730>.
⁶ See <https://www.ukrinform.net/rubric-economy/3457065-agrarian-policy-ministry-2m-hectares-already-sown-with-crops-in-ukraine.html> and <https://www.ukrinform.ua/rubric-economy/3454015-cogoric-v-ukraini-planuut-zasiati-70-posivnih-plos.html>.
⁷ See <https://uga.ua/en/news/ukraine-to-produce-63-mln-tonnes-of-grains-and-oilseeds-in-2022/>.
⁸ See <https://www.fao.org/newsroom/detail/fao-food-price-index-posts-significant-leap-in-march/en>.
⁹ For more see <https://en.usm.media/the-complete-analysis-ukrainian-grain-exports-in-numbers-and-names/>.

Military operations of the Russian Federation closed Ukraine's access to the Azov Sea and Black Sea, which had been the main gates to the international food market. The city of Mariupol, the biggest Ukraine's seaport at the Azov city, has been completely destroyed under the siege by the Russian forces. Russian occupation of the Kherson region has blocked the logistics along the Dnipro River, which has been actively used for grain transportation to the seashore recently. The Mykolaiv, Odesa, Pivdennyi, and Chornomorsk seaports, which processed more than 90% of grain cargos, are under Ukrainian control, but shuttered from the Black Sea by the Russian blockade.

Ukrainian agriculture companies seek to find new trade routes to deliver food commodities to the market. Railroads are used to bring grain and other products to the EU seaports, but their cargo capacity is not sufficient. According to the estimations of the market participants, railroads can transport only 0.6-0.8 m tons a month to the western border of Ukraine.¹⁰ Besides, there are technical issues because of different railway track gauge in Ukraine and the European Union. Additional reloading terminals are required at the border. Moreover, European seaports are not ready to process the high quantity of Ukrainian food commodities. As a result, Ukraine is not able to quickly deliver the rest of its 2021 harvest, including 10 m tons of corn and 6.7 m tons of sunflower products.¹¹ With low transportation capacity, Ukraine will need a few years to export the available commodities. This would also mean significant obstacles to exports of the 2022 harvest if the sea blockade is not over.

The Russian invasion disrupted supply chains of the agriculture sector. In 2021, 62% of the diesel fuel, the main fuel for combine harvesters, tractors, and trucks, was originated from Belarus and Russia. Another 20% was transported from Lithuania on land routes and other countries on maritime routes.¹² More than 10% was produced at the local Kremenchuk refinery, damaged by the Russian missile strikes. Besides, Russian attacks destroyed a number of oil depots around Ukraine. As of today, Ukraine and its agriculture sector rebuild fuel supply chains, but the European fuel prices are rising due to the war.

The most vulnerable markets

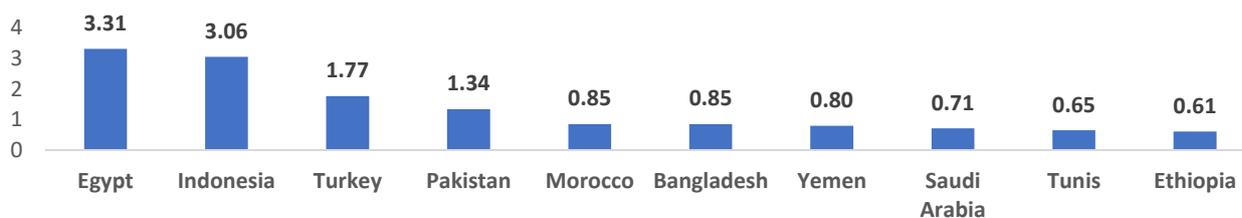
The agriculture and food sector has become the main bread maker of Ukraine's economy. In 2021, agriculture and food products made \$27.7 billion or 40.7% of Ukraine's exports of goods. However, the main volume of agrifood exports constituted of three main products, corn, wheat, and sunflower oil, which are basic for food production around the world. In 2021, Ukraine exported 20.1 million tons of wheat worth of \$5.1 billion. Asian and African countries were the main consumers of Ukrainian wheat, with 11.9 million tons and 7.6 million tons respectively. Top-10 importers of Ukrainian wheat are heavily dependent on international supplies. In particular, Ukraine sold 3.1 million tons of wheat to Egypt and 3.1 million tons to Indonesia, one the most populous countries in their regions.

¹⁰ See <https://biz.liga.net/ua/all/prodovolstvie/novosti/bez-portov-bolshoy-eksport-nevozmojen-po-sushe-urojay-budem-vyvozit-tri-goda-stavnitser>.

¹¹ See <https://elevatort.com/blog/read/761-eksport-cherez-suhoputni-shlyahi-do-yes-mojlivosti>.

¹² See <https://traktorist.ua/articles/rinok-palnogo-yak-i-de-agrariyam-kupiti-palne-do-posivnoyi-pid-chas-viyeni>.

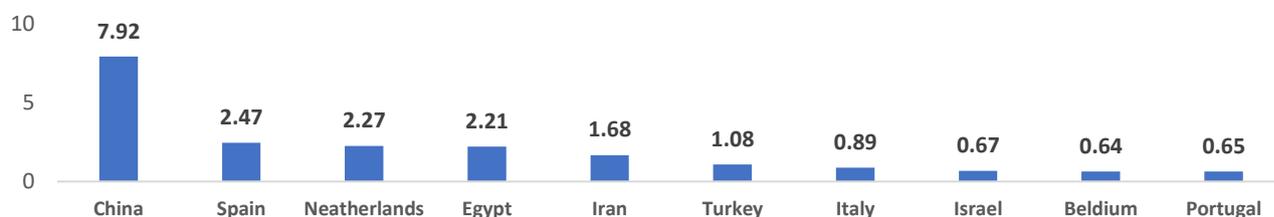
Chart 3. Top-10 consumers of Ukrainian wheat, 2021 (m tons)



Source: State Statistics Service of Ukraine

In 2021, corn exports made 24.5 million tons or worth of \$5.9 billion. Asia was also the main consumer of Ukrainian corns with 13.4 million tons, specifically China with 7.9 million tons. European countries were on the second place with 8.1 million tons. Ukraine delivered only 3.2 million tons of corn to African countries, but Egypt was again the main consumer in the region with 2.2 million tons.

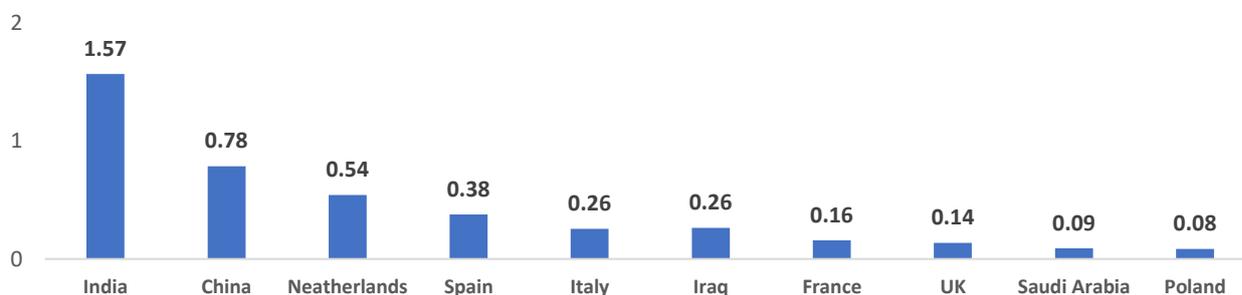
Chart 4. Top-10 consumers of Ukrainian corn, 2021 (m tons)



Source: State Statistics Service of Ukraine

The Ukraine's exports of sunflower oil made \$6.4 billion or 5.1 million tons in 2021. Asian countries were the main consumers of Ukrainian sunflower oils with 3.2 million tons. India and China were the largest importers with 1.6 million tons and 0.8 m tons respectively. At the same time, 1.7 million tons of sunflower oil was sold to the European countries.

Chart 5. Top-10 consumers of Ukrainian sunflower oil, 2021 (m tons)

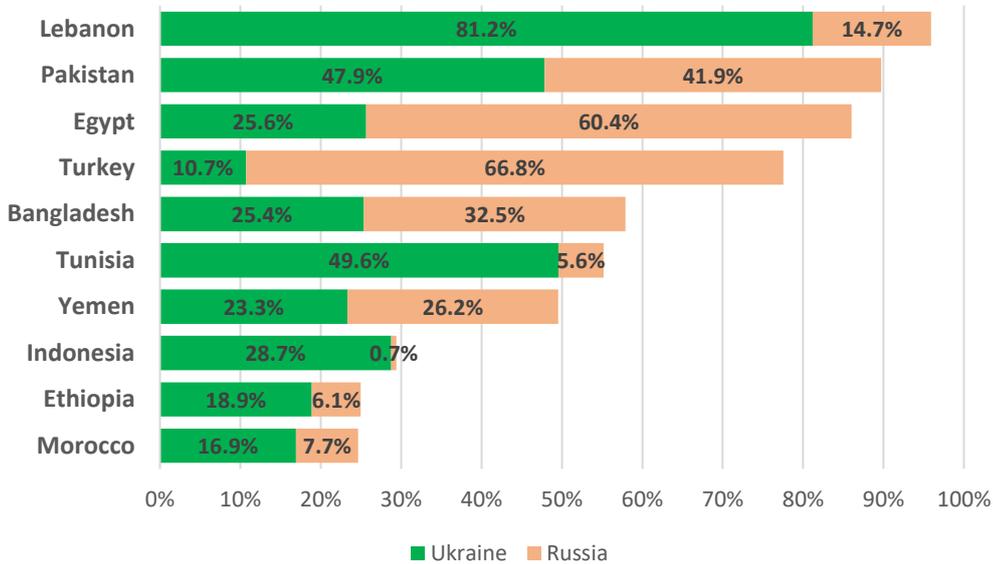


Source: State Statistics Service of Ukraine

The analysis of Ukraine's trade statistics demonstrates that Ukraine supplied enormous quantities of wheat, corn, and sunflower to African, Asian, and European markets. Wheat which is a main ingredient of many basic dishes is regularly imported from Ukraine to African and Asian countries, including poor and overpopulated. In particular, Ukraine had 81.2% share in Lebanon's imports and 49.6% in Tunisia's imports of wheat in 2020.

Shortages of Ukrainian supplies might cause food crisis in vulnerable poor economies. The situation seems to be more complicated as very often net importers of wheat have large supplies from Russia, which agriculture sector will be hit by the outcomes of the Russian military aggression (see Chart 6).

Chart 6. Dependence on wheat imports from Ukraine and Russia among top-10 importers from Ukraine, 2020 (by quantity)

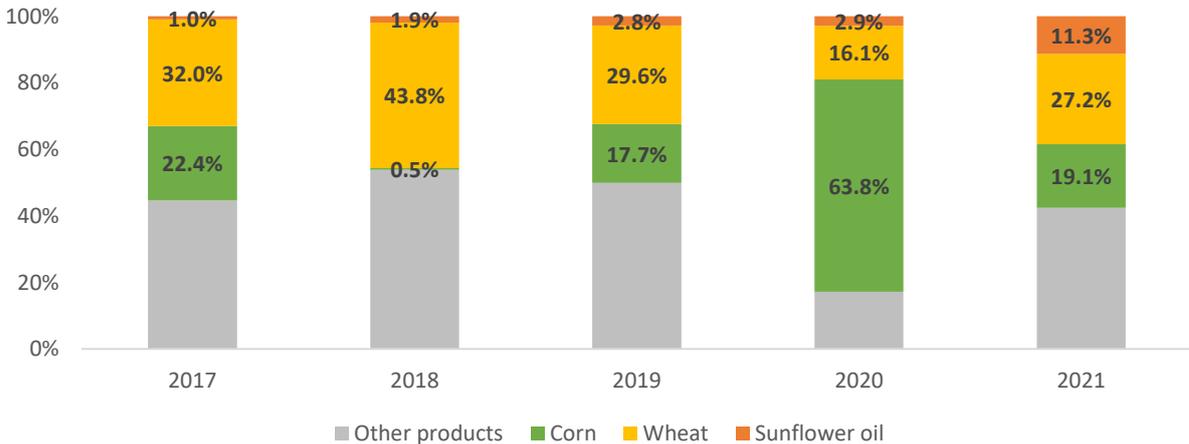


Source: Own calculations based on Trademap.org.

Implications for the Republic of Korea

As of 2021, Ukraine was only the 75th largest trade partner of the Republic of Korea by imports. The total value of Ukrainian goods sold to the Republic of Korea made only \$309 m or less than 0.1% of total imports (\$627 in 2020). At the same time, agriculture and food imports were worth of \$191 and constituted 62% of total imports from Ukraine. This figure was also high in the previous years when reached 84.7% in 2020 and 53.6% in 2019.

Chart 7. Structure of imports from Ukraine to the Republic of Korea, 2017-2021 (by price)



Source: Own calculations based on Trademap.org and Korea Customs and Trade Development Institute (KCTDI)

The Republic of Korea is a large food importer, as foreign supplies make circa 70% of its food consumption.¹³ For examples, in 2020 the Republic of Korea consumed 5.8% of world corn imports and 2% of wheat imports. At the same time, wheat and corn are two traditional products of food imports from Ukraine. In 2021, Ukraine was the sixth largest supplier of wheat, worth of \$84 m or 6.2% of Korean wheat imports value. The role of wheat imports from Ukraine has annually decreased since 2017 when its share was 18.1%. In 2021, Ukraine was also the eighth largest supplier of corn, but its share was only 1.8% (\$59 m). The share was 16.9% in 2020 and 3.4% in 2019. At the same time, Ukraine has become the largest supplier of sunflower oils to the South Korea with 51.3% share in 2021 (16.9% in 2017). However, sunflower oil market in the South Korea is minor in comparison with more than \$5 b Ukraine's exports of the product.

The statistical data demonstrate that Ukraine has become an important supplier of selected food commodities to the Korean market. However, Korean grain imports are diversified to overcome implications of the war in Ukraine, yet grain shipments will be under impact of rising prices. Only the sunflower oil market raises concerns due to high market share of Ukraine.

Conclusion

Escalation of Russian military aggression against Ukraine in February 2022 may result in food crisis around the world. Ukraine is a large supplier of agriculture commodities to European, Asian, and African markets. It ranks high in exports of wheat, corn, and sunflower oil which are basic for food production. Nevertheless, the war has damaged the supply chains of Ukrainian agriculture producers, decreased the areas available for sowing season, shuttered Ukraine from the maritime routes. Moreover, further negative, or positive developments will be dependent on the track of the war. Transportation problems and decline of future harvests may lead to food crisis in poor and highly populated countries in Africa and Asia that are net importers of agriculture commodities both from Ukraine and Russia.

¹³ Review of food markets of the South Korea and Japa, <https://export.gov.ua/industry/review/56>.

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