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The domino effect of the war in Ukraine: the way global food industry has been affected by the armed conflict

Robert Claudiu HELLVIG¹

Constantin Adrian BLANARU²

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Abstract: The war in Ukraine has not only impacted the lives of millions of people, but also has sent shockwaves through the global food industry. Ukraine, a key player in the global food market, has seen its agricultural sector severely disrupted by the conflict. The repercussions of this deregulation have been felt worldwide, leading to increased price uncertainty, food shortages and concerns about long-term food security. In this article, we analyze what kind of impact the armed conflict in Ukraine had and continues to have on the food industry, and approach potential solutions to mitigate these effects. Ukraine is the world's largest exporter of sunflower oil. At the same time, Russia ranks first in the world in wheat exports, with Ukraine being the fifth largest wheat exporter and fourth largest corn exporter in the world. The two countries involved in the military conflict are two of the biggest players in the energy, food and fertiliser markets. Russia is also the world's largest exporter of wheat and the world's second largest exporter of sunflower oil. Russia is also the world's largest exporter of fertilisers in general, ranking second in the world in exports of nitrogen fertilisers and third in exports of potash fertilisers.

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¹ Valahia University of Targoviste

² Independent Researcher

THE IMPORTANCE OF UKRAINE AND RUSSIA IN THE WORLD FOOD MARKET

Ukraine is often called "the granary of Europe" due to its fertile soil and vast agricultural potential. The country is a major exporter of wheat, maize, sunflower oil and barley, therefore recognized as a crucial player in global food supply chains. Before the war, Ukraine used to supply nearly 12% of world wheat exports and 16% of world maize exports. However, the ongoing conflict has significantly disrupted the nation's agricultural sector, with widespread consequences.

According to an assessment by the UN Conference on Trade and Development (UNCTAD) in early 2022, Russia and Ukraine together account for more than 50% of the world's exports of sunflower oil and seeds, about a quarter of the trade in wheat and barley and almost a sixth of the trade in maize and canola. The two countries involved in the military conflict in Ukraine are important suppliers to countries in Africa, the Middle East and Asia. At the same time, much of South and Central America, West Africa and Europe - including Ukraine - is heavily dependent on fertiliser imports from Russia and Belarus (Benton et al., 2022).

Fertile lands and favorable climate

Ukraine's fertile black soil, known as chernozem, is among the most productive in the world, and covers about two-thirds of the country's surface. This rich soil, linked to a temperate climate, has created an ideal environment for agriculture. Ukraine's diverse agricultural landscape allows for the cultivation of a wide range of crops, including cereals, oilseeds, vegetables and fruits.

The main agricultural exports

Ukraine's agricultural exports play a crucial role in the world food market, the main staples of the country being:

- **Wheat:** Being one of the world's largest wheat exporters, Ukraine is responsible for a significant portion of the global wheat supply. High-quality wheat from this country is intended for both human consumption and animal feed, which makes Ukraine a vital player in international food security.
- **Maize:** Ukraine is one of the main exporters of maize used mainly as animal feed and, to a lesser extent, for human consumption and biofuel production. With its vast production of maize, Ukraine contributes to ensuring a stable supply of this basic product.
- **Sunflower oil:** Ukraine is the world's largest producer and exporter of sunflower oil. Sunflower oil is used for cooking and as an ingredient in

various food products, therefore making it an essential component of the global food supply chain.

- **Barley:** As a major exporter of barley, Ukraine contributes to the global supply of this versatile grain, which is used in animal feed, beer and food production.

Strategic geographic location

Ukraine's strategic position at the intersection of Europe, Asia and the Middle East renders it an attractive partner for international trade. The country's extensive transport infrastructure, including Black Sea ports, facilitate the efficient export of agricultural products to key markets such as the European Union, the Middle East and North Africa.

CHALLENGES AND DIRECTIONS TO FOLLOW. IMPACT MITIGATION AND ENSURING FUTURE RESILIENCE

Despite its significant potential, the Ukrainian agricultural sector faces numerous challenges, including old farming practices, insufficient investments and issues related to land reform. The management of the war impact in Ukraine on prices and food availability requires both short-term and long-term measures. In order to maintain and strengthen its role in the world food market, Ukraine must approach these challenges by:

- **Agricultural practices modernization:** Adopting advanced agricultural technologies can help Ukrainian farmers to increase their crop yields and efficiency, therefore ensuring the nation's competitiveness in the global market.
- **Humanitarian and financial aid:** Providing aid to Ukraine's agricultural sector can help to rebuild infrastructure, restore production capacity and mitigate the conflict impact on global food markets.
- **Diversification of food supply sources:** By diversifying import sources, countries can reduce their dependence on a single supplier and mitigate the supply disruption risk.
- **Investments in agricultural research and development:** Investments in agricultural research and development can lead to innovations that increase crop yields and resilience, helping to protect global food security against future crises. Attracting both domestic and foreign investments in the agricultural sector can provide the capital needed for modernization and growth.
- **Strengthening international cooperation:** Strengthening cooperation between countries and international organizations can help facilitate the

exchange of resources, knowledge and best practices, supporting a more resilient and secure global food system.

- Land reform implementation: Efficient land reform can create a fairer and more efficient market, promoting increased agricultural productivity and competitiveness (Berkhout et al., 2022).

Impact on food prices and availability

The war in Ukraine has led to a drastic drop in agricultural production, while farmers are struggling with damaged infrastructure, insecurity and a lack of resources. This drop in production has created a multiplier effect on world food markets, leading to significant price increases for staples such as wheat, maize and sunflower oil.

Therefore, consumers around the world felt an increase in food prices, putting additional pressure on households already dealing with inflation and economic uncertainty. In addition, countries dependent on food imports from Ukraine have been forced to seek alternative sources, further disrupting global food supply chains and exacerbating shortages.

The chain effects on world food security

The disruption of Ukraine's agricultural exports has not only affected countries relying directly on these imports, but has also had a domino effect on international markets.

As countries seek alternative sources for essential agricultural products, the demand for these products increases, leading to further price increases and shortages. This increased competition for scarce resources has the potential to exacerbate existing concerns regarding food security, particularly in regions already facing issues such as poverty, conflicts and climate changes.

Food security concerns

The armed conflict has raised serious concerns about long-term food security, particularly in regions heavily relying on Ukrainian agricultural exports. In addition to immediate price increases and supply disruptions, there are fears that prolonged instability in Ukraine could hinder the recovery and development of agriculture, leading to persistent food shortages and increased vulnerability to price shocks.

Direct impact on the agricultural sector in Ukraine

The conflict in Ukraine has had a strong impact on the country's agricultural sector, damaging farmland, infrastructure and transport networks. This led to a sharp drop in the production and export

of vital staples such as wheat, maize and sunflower oil. Reduced production affects not only the availability of these products on global markets, but also threatens the food security of Ukraine population. Displaced farmers, disrupted supply chains and lack of resources to rebuild the agricultural sector contribute to increasing food security concerns in Ukraine.

Much of Ukraine's arable land lies in the conflict zones, which have seen considerable damage due to military actions, including bombings, artillery fire, and the mining of fields. The destruction of infrastructure such as irrigation systems, storage facilities, and transportation networks has further hindered agricultural activities.

The ongoing conflict and the uncertainty it brings have disrupted farming activities, from sowing to harvesting. Many farmers have been forced to abandon their land due to the danger, while others struggle to carry out their work amid frequent interruptions and the threat of violence.

The disruption of agricultural production in Ukraine has had severe implications for food security, both domestically and internationally. Domestically, food prices have skyrocketed due to decreased production and increased logistical costs, pushing many families into food insecurity. Internationally, the drop in Ukrainian grain exports, upon which many countries rely, has contributed to global food price increases and food insecurity in regions dependent on these imports.

The war has caused significant labor shortages in the agricultural sector. Many working-age men and women have been enlisted, displaced, or have fled the conflict zones, leaving farms understaffed. This has further slowed down agricultural production.

The conflict has also led to significant environmental damage. The use of heavy machinery and weapons has led to soil degradation, while the abandonment of land has resulted in changes to local ecosystems. Additionally, the destruction of infrastructure has increased pollution, affecting both land and water resources.

The war has deterred both domestic and foreign investment in Ukrainian agriculture. This lack of investment, coupled with the instability of the sector, has led to technological stagnation. The adoption of modern farming techniques and machinery, which are crucial for improving yields and efficiency, has been slowed.

The psychological impact on those who remain on the land should not be underestimated. Farmers face not only the stress of conflict but also the uncertainty of whether they can plant or harvest their crops,

whether their products can be sold, and whether they can make a living from their land.

CONCLUSIONS

In conclusion, the war in Ukraine has had a significant impact on global food prices and availability, demonstrating the fragility of our interconnected food systems. As conflict continues, it is essential that governments, businesses and individuals should work together to address the challenges it poses.

Ukraine's role as a major player in the world food market stands proof for its fertile land, favorable climate and strategic location. As the world faces increasing food security challenges, Ukraine's contributions to the global food supply are more important than ever. By approaching the agricultural challenges and continuing to invest in the agricultural sector, Ukraine can ensure the maintenance of its status of food industry leader and key partner in ensuring global food security.

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