

THE WAR IN UKRAINE AND GLOBAL FOOD SECURITY: CURRENT CHALLENGES

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The article examines the issue of global food security. We have substantiated that due to the invasion of Russian troops into Ukraine, Russia may cause humanitarian food crises in some countries around the world. That is why Russia's war against Ukraine is also a war against the countries of the Middle East and North Africa, which are the main importers of food from Ukraine. We have substantiated that given the current situation, namely Russia's war against Ukraine, a deficit in production and exports is inevitable. The war threatens the sowing campaign. We have established that the most dependent on Ukrainian food imports are Egypt, Yemen, Indonesia, Bangladesh, Ethiopia, Lebanon, Libya, Pakistan and Iraq.

Problem statement and its relation to important scientific or practical tasks. The country's food security presupposes the state's ability to meet the population's food needs at a level not lower than scientifically sound standards. It is ensured by the availability of appropriate resources, the potential of domestic production. The country's food security is a prerequisite for the formation of favorable demographic dynamics, preservation of the nation's gene pool, ensuring sustainable development, integration of the country into the world economic space.

Food security is closely linked to international trends in all areas of scientific support of agro-industrial production. In today's world, the leading organizations in the field of quality and safety of agricultural products, as well as animal and human health, are: the Organization for Agriculture and Food (FAO), the International Office of Epizootics (OIE) and the World Health Organization. WHO, which developed and implemented the strategy "One Health" (One Health), as well as the Global Health (Global health security agenda). Their main task is to preserve human health, including through animal health, ie the quality and safety of agricultural products, from producer to consumer on a "field to table" basis, which is a key component of

food security and consumer protection (Consumer protection) in the modern world [5-6].

For Ukraine, the problem of food security became especially acute in the twentieth century, during which the people of our country experienced several revolutions, wars, famine in the 30s and 40s, food queues in the 80s, radioactive contamination of large parts of the country due to Chernobyl accidents, lack of adequate nutrition in most of the population due to poverty in the 90s of last century [2-3]. Today, it is also acute in connection with the war.

At the macro level, food security is ensured by state and intergovernmental actors, ie international organizations, the government and the legislature.

The subjects of the regional level are local state administrations and local self-government bodies. At the micro and nano levels, the socio-demographic groups and households are the actors that determine food security [7].

The activities of actors at all levels must be coordinated and interdependent, as food security at every level depends on the actors, the challenges they face and the ways in which they are addressed. Control over the process of ensuring food security is exercised by the State Department of Food, established within the Ministry of Agrarian Policy of Ukraine on the basis of the Food Industry Committee.

The expansion of the world commodity market or globalization is raising awareness of food security issues at the international level, which is characterized by a balance between world production and world consumption.

Analysis of recent researches and publications, which have initiated problem solution, the author relies on. There is currently a considerable body of research on food security. At the same time, the current situation in Ukraine, namely Russia's military aggression, is rather difficult to predict. The global impact on food security can be extremely negative. These issues need to be studied in depth.

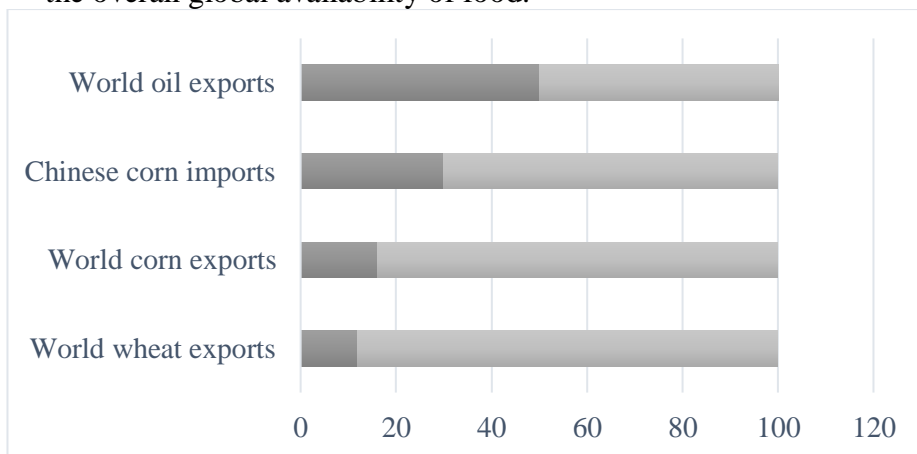
Identification of previously unresolved matters of the generic problem the article deals with. This publication outlines the possible consequences of restricting Ukrainian food exports due to the war in Ukraine. These consequences will be global.

Goal statement (task statement). The purpose of the publication is to outline the consequences of the war in Ukraine, namely global food change.

Presentation of research material with full justification of findings.

Even before the start of Russia's war against Ukraine, food prices had risen significantly. In January 2022, world prices for basic foodstuffs reached record levels. Military action on the territory of Ukraine will cause a significant increase in world food prices. Russia's aggression against Ukraine threatens food and humanitarian security in many countries around the world.

Ukraine is among the TOP-5 world food exporters, so in less than a month the whole world will feel the effects of the war in Ukraine. According to the US Department of Agriculture, Ukraine accounts for 16% of world corn exports (with 30% of corn imports to China coming from Ukraine), 12% of wheat exports, 50% of sunflower oil exports (Fig. 1). Interruptions in supplies from the Black Sea region will affect the overall global availability of food.



**Fig. 1. The role of Ukraine in the world food market
According to the US Department of Agriculture (USDA) (%)**

According to FAO experts, the main trend is for an overall and sustainable increase in food prices goods are formed under the influence of increasing food consumption, which is due to growth

population, the development of the world economy (world GDP has doubled since 2000), as well as sustainable economic growth and living standards in Asian countries.

Due to the invasion of Russian troops into Ukraine, Russia may cause humanitarian food crises in some countries. That is why Russia's war against Ukraine is also a war against the countries of the Middle East and North Africa, which are the main importers of food from Ukraine.

Even before the crisis, agricultural commodity supplies were tight and market prices were at (nominal) record levels.

Prices for most grains and oilseeds (figure 2) have risen sharply since the war began in late February. Russia and Ukraine together supply about 12% of global agricultural exports on a caloric basis, and over 30% of global wheat exports.



Fig. 2. Prices for most grains and oilseeds

According to the State Customs Service of Ukraine, in 2021 Ukraine exported agricultural food worth USD 27.9 billion. In 2021, the highest export volumes of different products were recorded in Ukraine - 20,071 thousand tons of wheat, 459 thousand tons of poultry, 76 thousand tons of frozen berries and other fruits, 38 thousand tons of pasta.

In 2021, Asia continued to strengthen its position as a major importer of domestic agricultural products, once again purchasing a record number of Ukrainian agricultural products. Last year, the value of domestic exports to the countries of this region increased to USD 13.7 billion. Supplies to Africa in 2021 also increased from USD 2.9 billion in 2020 to USD 3.7 billion (according to the State Customs Service of Ukraine).

According to research by the Kyiv School of Economics, Egypt, Yemen, Indonesia, Bangladesh, Ethiopia, Lebanon, Libya, Pakistan, and Iraq are countries that are the most dependent on Ukrainian food imports.

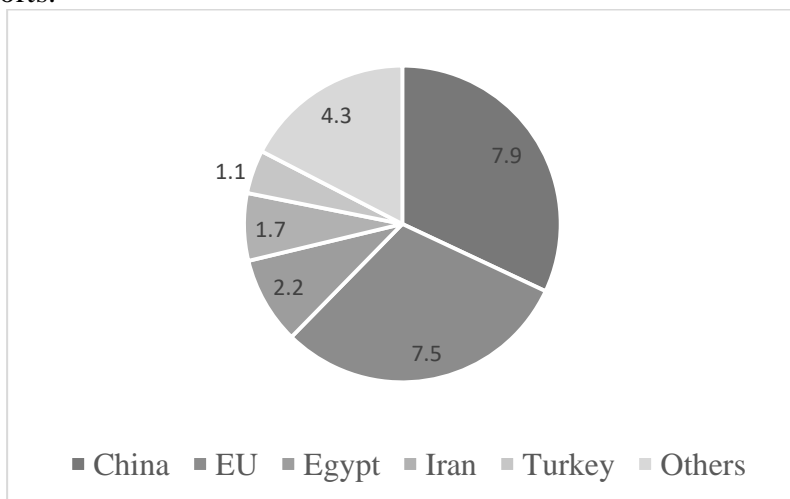


Fig. 3. Exports of corn from Ukraine in 2021 reached 24.7 million tons

Given the current situation, namely Russia's war against Ukraine, a deficit in production and exports is inevitable. The war is threatening the sowing campaign, which is expected to begin in the third decade of March (depending on weather conditions).

It is necessary to sow early spring crops, such as wheat, barley, oats, peas, canola, some vegetables very soon so as not to lose moisture in the soil. During this period, it is also necessary to fertilize winter cereals and industrial crops, in particular wheat, rye and rape.

At the same time, there are already significant concerns about sufficient fuel, fertilizers, plant protection products and seeds. Not to

mention the physical ability to start field work in a number of regions of Ukraine.

The critical situation may be with the sowing of corn for grain, soybeans and sunflowers (Ukraine is one of the leaders in world exports). The situation is more comforting only for wheat: more than 70% of it is winter wheat, and currently this crop only needs additional fertilization and protection.

In addition, the issue of providing agricultural machinery with fuel and lubricants is becoming very important.

Today, the whole country is united. Farmers and agricultural producers are actively helping the army and the population. At present, many agricultural workers are fighting side by side with the military, defending their homeland, and a significant number of territorial defenders are resisting the Russian invaders. Farmers are actively helping to seize enemy equipment and use it to protect their homeland.

The further situation with food security in Ukraine and the countries of the Middle East and North Africa, which are the main importers of food from Ukraine, depends significantly on the sowing campaign. Currently, the most difficult spring sowing in the history of independent Ukraine in the conditions of hostilities is beginning. Provision of resources in a significant part of farms is 30-50%. According to a survey of farmers conducted by Mind, the biggest problem is fuel. Next on the "problem rating" are fertilizers, seeds, plant protection products, spare parts for equipment.

Dates. The war is threatening the sowing campaign, which is expected to begin in the third decade of March (depending on weather conditions). It is necessary in a short time, so as not to lose moisture, sow early spring crops, such as wheat, barley, oats, peas, canola, some vegetables. During this period it is also necessary to fertilize winter cereals and industrial crops, including wheat, rye and rapeseed.

Human resources. A significant number of workers involved in agricultural work have now joined the armed forces and territorial defense.

Provision of fuels and lubricants. The issue of providing agricultural machinery with fuel and lubricants is becoming very important. Today, Ukraine cannot buy fuel from aggressor countries. Therefore, it is urgent to look for alternative suppliers

Logistics and port control. Ports are extremely important to us. First, the Ukrainian economy is highly dependent on international trade. Second, more than 60% of Ukrainian exports go through seaports. In turn, the Ukrainian economy is very open and integrated into world trade.

Mineral fertilizers and plant protection products. Russia's invasion into Ukraine could lead to long-term disruptions in global supplies of potash and nitrogen fertilizers to crops.

Territories of hostilities. The main areas for growing food crops in Ukraine directly border Russia and Belarus, and there has been fighting in recent days due to the aggression of Russia and Belarus. Accordingly, the sowing campaign in these areas is complicated or impossible.

State support and coordination. The Ministry of Agrarian Policy has launched a platform to help sow 2022 to identify the needs of farmers for a successful start and to help close those needs. The Ministry of Agrarian Policy has taken on additional functions to coordinate the distribution of everything needed to ensure the 2022 sowing campaign.

Ukraine will be able to feed itself. We have stocks for more than one year. We started a sowing campaign. According to Ukrinform, if the military situation does not worsen significantly, Ukraine will be able to harvest the main crops at 70% of the annual average. There is currently no shortage of basic food items.

Also very important is the fact that the largest investors have not left the agricultural sector of Ukraine. According to Forbes, the shares of the largest Ukrainian agricultural holdings did not decline significantly despite the war. Thus, the capitalization of the largest agricultural companies as of March 28 was as follows: Kernel (510 thousand hectares) \$ 623 million, MHP (370 thousand hectares) \$ 365 million, Astarta (220 thousand hectares) \$ 135 million. What will be important to them is the extent to which Ukrainian companies will be able to resume operations and exports in military conditions.

At the same time, the question arises whether Ukraine will be able to export products and provide food to more than 400 million people from around the world (Fig. 4). According to the Ministry of Economy, due to the war waged by Russia in Ukraine, exports of Ukrainian goods in March fell by half, imports - more than three times.

Russia is deliberately undermining our country's economy by blocking domestic exports. According to Ukrinform, the Russian Navy is currently blocking more than 90 civilian ships in the Black Sea region, designed to transport grain and other food. At the same time, about 30% of world wheat exports usually fall on the Black Sea region, as well as 20% of corn and 75% of sunflower oil. In addition, the occupiers are attacking agricultural infrastructure to prevent us from rebuilding our capabilities in the future.

Currently, Ukraine has three ways to export - the Danube ports, railways and highways. Danube ports account for about 30% of exports, rail - about 70%. Currently, up to 30,000 tons of domestic grain products are shipped by rail daily. The main problem of logistics on the railway is the lack of cars and locomotives. The press service of the Government of Ukraine notes that the European Commission intends to create special trade routes between Poland and Ukraine, which will facilitate the transportation of agricultural products.

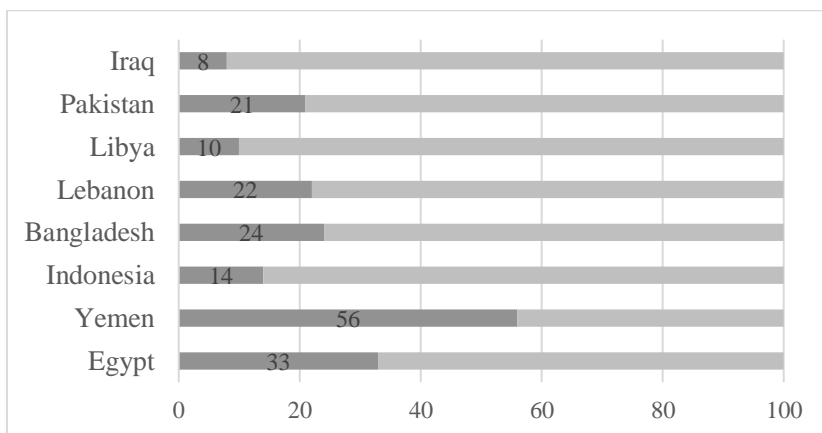


Fig. 4. Proportion of population experiencing acute food shortages (%)

A much worse food situation is expected in the Middle East and North Africa, which are the main importers of food from Ukraine (Fig. 2). Rising world food prices as a result of the war in Ukraine could lead to famine and riots in poor countries. Food and energy are the two most important groups of goods in the consumer baskets of the poor around the world. There is a danger of a repeat of the food riots that

took place in the previous period of soaring prices in the late 2000. (Fig. 5).

According to the FAO, world food and feed prices could rise by 8-20% as a result of Russia's war against Ukraine. According to Bloomberg, wheat futures will average \$ 11 or more per bushel by the end of the year, and corn futures will be about \$ 7.75 per bushel or higher. This is 30% more than at the end of 2021 (Fig. 6).

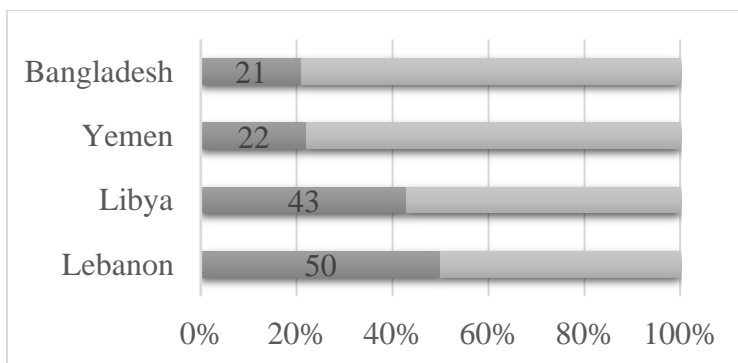


Fig. 5. Dependence of countries on Ukrainian wheat According to the Financial Times (FT) (%)

Rising global wheat prices hit a 10-year high at \$523 per ton on March 7 (Figure 6). This is a serious problem for the Egyptian government's budget and a potential threat to consumer purchasing power. Global wheat markets have been tight since mid-2021, predating the war; then the invasion triggered a surge in wheat futures contracts exceeding 50%.

Countries that are well-off and have never had food problems will face higher prices. Since the beginning of the war, wheat, which was not cheap at \$ 300 a tonne, has risen in price on world markets by 50% to \$ 450 a tonne. And these are only the first results and the reaction of the market to the cessation of supplies from Ukraine. If the domestic agricultural sector loses a certain part of production when the harvest comes, then we will see even higher prices in the world. The consequences of the war in Ukraine will be felt by every consumer in many countries, as it will affect any things that are produced. World food prices rose 13% in March 2022. This is the biggest leap in 60

years. What has risen in price: vegetable oils - 23%; cereals - 17%; sugar - 7%; meat - 5% [1].

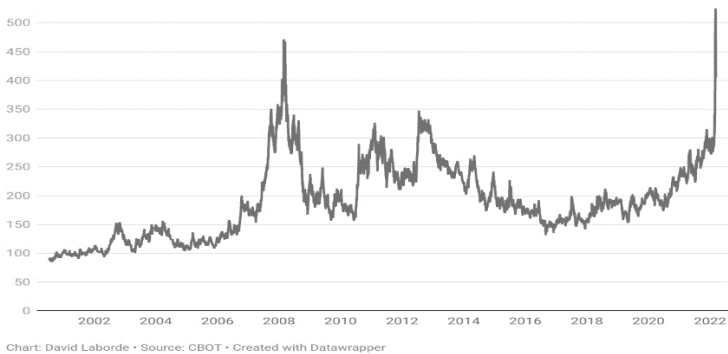


Fig. 6. Rising wheat prices in the world

Russia's hostilities on the territory of Ukraine will have an extremely negative impact on the functioning of food systems; In particular, the following consequences are expected:

- ✓ violation of integrated supply chains of agricultural and food products (from primary production to sales to consumers), as well as activities to create added value in the agro-industrial complex related to the production, processing, distribution, consumption and disposal of food;

- ✓ disruption of the sowing campaign, which is particularly threatening given the high world prices for gas and, consequently, mineral fertilizers. Active hostilities are currently taking place in those regions where most of the wheat is grown - Kharkiv, Odessa, Zaporizhia. Collectively, this will reduce grain yields, harvests and exports;

- ✓ complicated export of Ukrainian products to foreign markets due to the blockade of Ukrainian ports by Russia (60% of Ukraine's agricultural products are exported by sea), which will negatively affect primarily countries that depend on food imports.

The consequences will pose serious threats to global food security: further increase in world food prices (according to the FAO forecast of 11.03.2022, due to the war in Ukraine, world prices for

food and feed may increase by 20%); global inflation spike, which will primarily affect countries with underdeveloped economies in the Middle East and North Africa.

In the current context of global challenges, the main principles that determine the procedure for formulating public policy in the field of food security should be:

- 1) quality and safety, physical and economic availability of basic food products for the population in the quantity and range necessary to ensure a healthy diet;
- 2) balance and mutual recognition of national, regional and local interests and responsibilities in matters of production, management of stocks and supply of food, quality and safety of basic foodstuffs;
- 3) economic justification of national needs related to food security, adequacy and stability of food supplies;
- 4) social partnership and civic solidarity in the management of agriculture and food systems, environmental protection and sustainable use of natural resources;
- 5) timeliness and relevance of food security measures to real and potential threats;
- 6) harmonization of national standards in the system of international food security in the context of globalization and economic integration;
- 7) transparency of food security policy.

The current situation in Ukraine confirms the relevance of these principles.

Conclusions. The globalization of economic relations leads to a constant increase in the degree of influence of economic factors the international food market in the course of events in the Ukrainian segment. Openness of the domestic market with on the one hand, and the emergence of additional opportunities for food exports at higher than in the middle countries prices, increase competition, increase food prices, reduce their quality. Analysis of the dynamics of world food prices provides grounds to argue that there is a steady trend towards their overall growth. Periods of declining food prices traditionally coincide with economic crises and slowing economic development.

In our opinion, the list of main factors that determine the overall increase in food prices include: growth of food consumption against the background of population growth and overall socio-economic

progress; situational trends in the world economy; deteriorating climatic conditions and unfavorable forecasts for agricultural production.

Ukraine is quite integrated into the processes of world trade and economy, is a country with an open economy, which confirms the country's dependence on counterparty countries. Also, if we assess the potential of Ukraine, in the long run the country may become a center of European trade, which contributes to the resource potential, geographical location and development opportunities. However, the events of the last two months have made significant changes in the food security of both Ukraine and the world. According to the annual Global Hunger Index, before the war with Ukraine, 47 countries, mostly in Africa and Asia, suffered severely from malnutrition and hunger. In the absence of food supplies from Ukraine, this list could grow to 60 countries.

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The 6th International Conference

INNOVATIONS AND CREATIVITY

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ACKNOWLEDGEMENT

Conference was organised with the financial support of the project “Promotion of research, innovation and international cooperation in science at Liepāja University”, Project No. 1.1.1.5/18/I/018.

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TABLE OF CONTENT

LEVERAGING THE YOLO FRAMEWORK TOWARDS DETECTING
OBJECTS IN STYLIZED IMAGES

Tasweer Ahmad, Mar Canet Sola, Hanna Jemmer, Maximilian Schich 5

*COMPARISON OF SOFTWARE TESTING TOPICS WITH THE ISTQB®
FOUNDATION LEVEL SYLLABUS IN LATVIAN UNIVERSITIES*

Madara Freimane, Guntis Arnicans..... 6

MUSEUMS AND ART IN THE DIGITAL AGE

Simona Grigaliūnienė, Nora Kelpšaitė 8

EXPERT EVALUATIONS AND ANALYSIS OF RESULTS: PROBLEMS
OF OBJECTIVITY AND COMPETENCE, AND THE TRUTH OF
RANKING

Sharif Guseynov, Zahir Veliyev, Anita Jansone, Jekaterina Aleksejeva
..... 10

COMPETITIVENESS OF THE SHARED ECONOMY MODEL FOR
SUSTAINABLE MANAGEMENT OF LOGISTICS SYSTEMS

Keisha Laraine Ingram..... 14

THE WAR IN UKRAINE AND GLOBAL FOOD SECURITY: CURRENT
CHALLENGES

**Keisha Laraine Ingram, Vitalii Dankevych, Andrii Dankevych, Vitalii
Nitsenko** 15

CHALLENGES AND EXPERIENCE IN ORGANIZING MATHEMATICS
COMPETITIONS REMOTELY

Dace Kūma..... 16

THE IMPACT OF THE COMMERCIAL BANKS FINANCING POLICY ON
ECONOMIC ACTIVITY

Angelė Lileikienė, Simona Grigaliūnienė..... 17

IMPROVED APPLICABILITY IN AN AUTOMATED E-MATERIAL
FORMATTING TOOL PROTOTYPE 3.0

Kristīne Mackare, Mārtiņš Šneiders, Anita Jansone..... 19

MODELLING OF E-LEARNING INFORMATION ARCHITECTURE
BASED ON MENTAL LEXICON

Radka Nacheva, Anita Jansone 20

HUMAN IN DATA

Jana Petrenko 21

AUTOMATIC GRADING OPPORTUNITIES OF LABORATORY EXERCISES IN PHYSICS USING DIFFERENT TOOLS Valdis Priedols, Anita Jansone	22
THE CONCEPTUAL INFORMATION SYSTEM MODEL FOR TESTING IMAGE SEGMENTS DATA ANALYSIS Jelena Turlisova, Anita Jansone	23
DIFFUSION OF DIGITAL INNOVATION IN MUSEUM EDUCATION: THE EFFECT OF PANDEMIC AND CHARACTERISTICS OF IMPLEMENTERS Elina Vikmane	24
ON BOUNDARY CONDITION REGULATION METHODS IN NUMERICAL FLOW SIMULATION USING LATTICE BOLTZMANN METHOD Uldis Žaimis	25
CIRCULAR CITY ADAPTATION BY CO-ACTIVITY COMPANY CASE Kaj Lindedahl, Pia-Tuulia Laine.....	26

