

# The Impact of the Russian-Ukrainian War on EU Food Security

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## ABSTRACT

The challenges and dangers posed by the Russian Federation's full-scale invasion of Ukraine have provoked major international issues. Among them, food security in the countries of the European Union has become particularly acute. The aim of the study is to identify the theoretical and applied aspects of the impact of the Russian-Ukrainian war on food security in the European Union. The methodological basis of the research consists of general scientific and special methods of economic analysis, in particular: observation and system analysis; historical-logical; statistical analysis and comparison; functional-system approach; analysis and synthesis; cluster analysis; generalization and systematization; graphic. According to the results of the study, it has been established that ensuring food security in the European Union includes unhindered access to food, ensuring quality, environmental friendliness and safety of goods. The Russian-Ukrainian war has been proven to have a major impact on food security in the European Union, as evidenced by the significant decline in the Global Food Security Index. It is revealed that highly developed countries, in particular: Austria (GFSI: 73–82), Ireland (GFSI: 78–84), Belgium (GFSI: 74–81), The Netherlands (GFSI: 78–82), Finland (GFSI: 75–85), France (GFSI: 75–80), Germany (GFSI: 77–82) and Denmark (GFSI: 75–81) are able to ensure a higher level of food security than countries with lower socio-economic development: Bulgaria (GFSI: 66-71), Romania (GFSI: 67-74), Hungary (GFSI: 69-73) and Slovakia (GFSI: 67-69). The main directions of strengthening food security in the European Union countries have been proposed: strengthening financial support to the agro-industrial complex of EU member states, ensuring the stable functioning of the EU food market, providing financial support to Ukraine for the recovery of the agro-industrial complex.

## HIGHLIGHTS

- The challenges and dangers posed by the Russian Federation's full-scale invasion of Ukraine have provoked major international issues.
- The Russian-Ukrainian war has been proven to have a major impact on food security in the European Union, as evidenced by the significant decline in the Global Food Security Index.

**Keywords:** Food security, Global Food Security Index, foodstuff, food insecurity, threat of famine, global food system

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The Russian Federation's military aggression against Ukraine, which has escalated into a full-scale Russian-Ukrainian war, has created significant crises for global food supplies, resulting in increased existing challenges and threats to the European Union's food security. In the current context of sustained financial, economic and socio-political instability, the destabilising processes created by climate change and the impact of the COVID-19 pandemic have further intensified and have a destructive impact on food security parameters, which requires an appropriate international response and a deliberate policy of stabilising the agro-industrial sector. Given that Ukraine and Russia are the world's largest exporters of agricultural products, the threat of a global food crisis is looming and must be solved by joint efforts of not only the countries involved in the conflict but also the entire international community through increased international transparency and a coordinated policy of production and trade in food commodities. It is obvious that global food production is marginally sufficient to meet the needs of the population, but the uneven and unstable supply of food to different regions is an acute problem. As a consequence, there is a risk of sharp price increases due to rising demand and the reshaping of key supply chains. Therefore, certain trends actualise the need for a more in-depth study of food security and the impact of the Russian-Ukrainian war on its provision.

## Literature Review

The problem of food security has been in the focus of attention for a long time and is considered at different levels of socio-economic relations: national, regional and international, as it is a prerequisite for sustainable development of the country and ensuring the socio-economic stability of the state. The significant challenges and dangers posed by the destabilization of food markets in the European Union due to the war of the Russian Federation against Ukraine have led to the need to transform global food systems, since, according to Canfield *et al.* (2021), multilateral institutions for food security governance on both the European continent and the world have undergone destructive changes due to disruptions in supply chains, contract terms and timing. Therefore, food security is seen by Berg *et al.* (2022) as an urgent social, economic

and political issue. They are convinced that the Russian-Ukrainian war has only exacerbated them, as food insecurity and the threat of global famine against the challenges of the COVID-19 pandemic intensified during the 2020-2021 period.

Similarly, Perekh *et al.* (2021) are convinced that the COVID-19 pandemic has shaken existing scenarios of global famine and food security internationally, and that Russia's war with Ukraine has only deepened them. Yet scientists argue that increased food insecurity is due to lack of physical and economic access to food and healthy lifestyles. Rising unemployment, combined with disruptions in food production and supply, reduce the ability to meet the basic food needs of the population.

In order to prevent the negative consequences of increased food insecurity and the threat of famine, among which some scholars, in particular Fang *et al.* (2021), identify impaired health functions and the spread of certain social diseases, it is necessary to strengthen the mechanism of state regulation of food security and provide continuous material support to socially vulnerable groups of the population. Given the uncertainty in the resolution of the armed conflict on the territory of Ukraine, it is advisable to envisage the emergence of the problem of population migration from the territory where battles are taking place to the countries of the European Union. In such circumstances, the growth of refugee and migrant populations risks overburdening the European Union's labor and food markets alike. In addition, Forman (2020) sees increased migration processes as a reason for deepening food insecurity in certain regions and destructive changes in the global food security system. In this context, Pohorielova (2022) emphasizes that threats to the European Union's food security exist and that their prevention and minimisation depends on an effective food capacity-building system.

Moreover, Shcheglova & Pishvanova (2022) have argued that food security depends on a country's ability to create the right conditions to protect its people and their ability to obtain organic and wholesome food in sufficient quantities to lead healthy lifestyles.

The European Union's food security issue is certainly significant, as the Russian-Ukrainian war

has triggered an unprecedented global food crisis, which, according to Kyrychenko A. (2022), threatens access to basic products. The available reserves and capacities will not meet the food needs of the 440 million population that were covered by exports of grains, vegetable oils and other products from Ukraine.

The State of Food Security and Nutrition in the World 2021 confirms that the risks and threats to global food security are increasing, as the declared goals of overcoming hunger by 2030 due to the challenges of the COVID-19 pandemic have already become impossible to achieve in 2021. Food insecurity has become critical on the European continent. This hypothesis is developed by Viviani & Ray (2022), who investigated that the current critical situation of deteriorating food security parameters in the European Union was further deepened by the war in Ukraine, due to the unresolved conflict between two major agricultural producers. Meanwhile, empirical estimates made by the researchers predict that 13 million people will be undernourished in 2022 and 19 million in 2023. It should be noted that the countries of the European Union have a higher level of food security, while the main crisis phenomena are more prevalent in Africa, Latin America and the Caribbean.

In this context, Savary *et al.* (2022) see food security as a complex economic phenomenon, encompassing the need to provide access to food and to protect interests in relation to food pricing, market access, food production and marketing. Meanwhile, Fahu (2021) defines food security as the basic and inalienable human right to have access to sufficient food and states that the concept of food security is based on four components: (1) access to food production; (2) availability of food; (3) the use of safe, nutritious and healthy foods; (4) stability and regular availability of food. Zhyvko *et al.* (2019) note the need to assess the level of food security and consider that systematic monitoring of indicators and parameters of food security is crucial for its improvement. Junaidi *et al.* (2022) consider that food security is achieved when the needs of all actors in the food market are met and are convinced that the conceptual framework for food security is based on achieving food availability parity, equitable distribution and consumption.

Another equally significant problem identified by Hammond & Gadanakis (2022) is the supply of fertilizers and minerals to the agricultural sector in the European Union, a specific share of which was sourced from Ukraine and Russia.

In view of the considerable theoretical and applied work on the impact of the Russian-Ukrainian war on food security in the European Union, it can be stated that the current state of food security is threateningly volatile and requires balanced measures to minimize the impact and prevent the risks and threats posed by the war in Ukraine.

### **Aims of the Study**

The aim of the study is to address the impact of the Russian-Ukrainian war on food security in the European Union in a theoretical and applied way.

## **MATERIALS AND METHODS**

The methodological basis of the article consists of general scientific and special methods of economic analysis. Observation and system analysis are used to substantiate the essence of food security in the EU, while historical and logical analysis is used to identify scientific approaches to the study of food security problems in the European Union countries. Statistical analysis and comparison are used to clarify the current state and main food security trends in the EU. The aim of the functional-systems approach is to identify the impact of the Russian-Ukrainian war on food security in the EU. Analysis and synthesis aim to find ways to improve food security in the EU, while k-means cluster analysis aims to group the countries of the European Union according to the Global Food Security Index indicator. Synthesis and systematization helped in formulating hypotheses and drawing conclusions on the results of the study; the graphical method helped in visualizing the results of the study.

The study is based on academic papers by leading researchers in the field, reporting data from international organizations for 2019-2022, in particular The Global Food Security Report on The Global Food Security Index.

## **RESULTS**

The unfolding of the Russian Federation's full-scale war against Ukraine has triggered a number of new

challenges and risks to global food security, the level of which, under the impact of the COVID-19 pandemic, has declined significantly between 2020 and 2021.

The negative trends of the Russian-Ukrainian confrontation have significantly exacerbated the challenges of combating famine and reshaping the global food system. As a result, ensuring food security is a priority for state regulation of socio-economic interests, as it serves as the basis for sustainable development and stability of the country. However, due to geographic location, climatic conditions, geopolitical, economic and other factors, not every country in the world is able to provide an adequate level of food security. This leads to the need for international cooperation and balancing of the global food market, in which some countries are positioned as food producers and others as suppliers of raw materials.

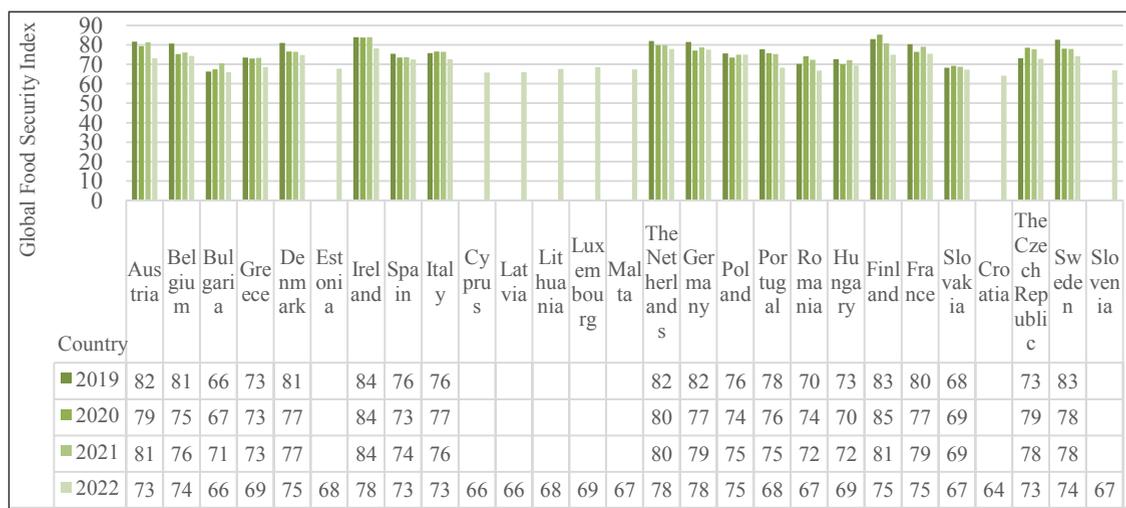
The international struggle for spheres of influence has intensified under conditions of instability and armed conflicts in different parts of the world have emerged at the present stage. One such destabilizing factor in the development of world economic relations is the Russian-Ukrainian war, which has exacerbated the negative processes in the international food market and significantly affected food security in the European Union.

A study of food security parameters in the European Union from 2019 to 2022 (Fig. 1) demonstrates

the presence of crisis phenomena, particularly exacerbated in the context of 2022. The Global Food Security Index, calculated by the Economist Intelligence Unit and supported by Corteva Agriscience, assesses economic and physical access to food, its quality, safety, environmental friendliness, sustainability and availability.

The analysis of the Global Food Security Index dynamics in the European Union in 2019-2022 reveals a mixed situation with regard to its value in the countries of the analyzed group. First of all, in a number of countries, in particular Estonia, Latvia, Lithuania, Luxembourg, Cyprus, Malta, Croatia and Slovenia, the index has not been calculated until 2022. As for the other countries, it is rather difficult to trace a stable trend. However, it can clearly be seen that in the context of 2022, the Global Food Security Index has declined significantly in all countries without exception, indicating a deepening food crisis and increasing challenges, problems and dangers stemming from the Russian-Ukrainian war.

Undoubtedly, the countries involved in the conflict in the pre-war period were among the largest exporters of agro-industrial products, as evidenced by the volume of exports from Ukraine and Russia of certain types of agro-industrial products. Their shares in global export reach 60% (Fig. 2), in particular: export of sunflower oil cake 61% from Ukraine and 20% from Russia; wheat - 10% from Ukraine and 24% from Russia; corn - 15% from Ukraine and 2% from Russia; sunflower oil - 31%

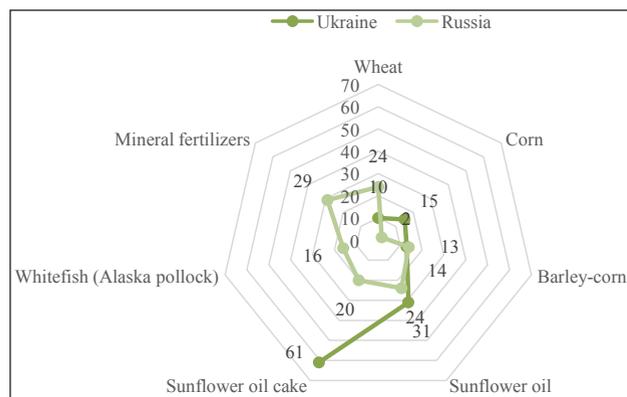


\* – The data for 2022 are as of 01.07.2022.

Calculated according to: Regional Report: Europe 2019; Global Food Security Index, 2019–2021; Global Food Security Q2 2022. Food Security Index

Fig. 1: Global Food Security Index dynamics in the European Union in 2019-2022\*

from Ukraine and 24% from Russia. It should be noted that the Russian-Ukrainian war inflicted the biggest losses on Ukraine because it was impossible to realize its raw material export potential, and manufacturing quality products in Ukraine and exporting them to the European Union became practically impossible. Under such conditions, Ukraine has lost its position as a guarantor of food security in many countries of the world.



Calculated according to: Caprile, 2022.

**Fig. 2:** Share of exports of selected agro-industrial products from Ukraine and Russia in world exports in 2021

It is evident that the Russian-Ukrainian war has caused significant problems in the implementation of export obligations both for Ukraine, where large areas have not been sown with agricultural products, another part has been destroyed as a result of active hostilities, and some products are blocked at ports, and for Russia, which has been subjected to sanctions from the international community and as a result agricultural products are not allowed to enter the territory of the European Union. However, one cannot limit oneself to significant problems at the level of the countries involved in the conflict, as all countries of the world, including those belonging to the European Union, are experiencing the consequences of the military confrontation. The most tangible for the European Union countries is their dependence on Ukraine in the global sunflower oil segment. According to Shcheglova & Pishvanova (2022) the share of sunflower oil exported from Ukraine has reached 47,2% in 2021-2022. It is impossible to substitute such production of Ukrainian origin in the short term, as the share of Ukraine in global production of sunflower oil is 30,6%. Ukraine's problems with sunflower oil exports have led to restrictions on its

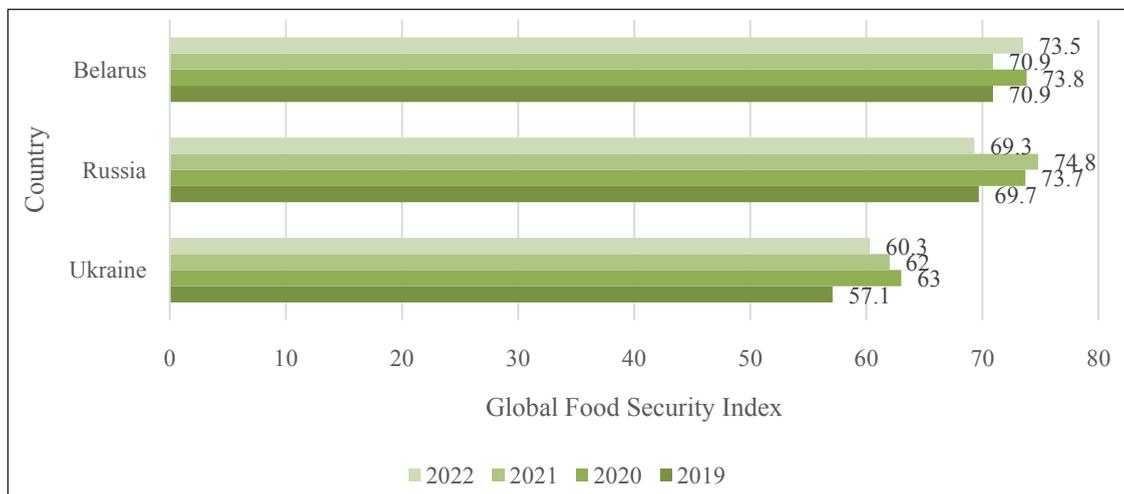
sales in European Union countries such as Germany, Belgium, Spain and Greece.

The Russian Federation has lost access to the global food market as a result of global sanctions and there is no way to provide the European Union with this product. As a consequence, sunflower oil prices have increased from USD 1,700 to USD 2,250. As a consequence, sunflower oil prices have increased from USD 1,700 to USD 2,250 per tonne. As a consequence, the sunflower oil prices have increased from USD 1700 to USD 2250 per ton. Similar situation is observed in grain export-import operations, in particular, the price of wheat and corn on the food market of the European Union has increased to USD 150 per ton. The situation is similar for grain exports and imports.

Obviously, it is impossible to ensure the resumption of Ukrainian agro-industrial exports in the planned volumes, and a return to the volumes of previous years is possible only if the hostilities cease completely, the ports are unblocked and the protection and safety of civilian shipping is ensured.

Moreover, if the status and trends of the Global Food Security Index in Ukraine, Russia and Belarus over the same period (Fig. 3) are analysed, one can observe a significant decrease in the level of food security in Ukraine from 63 in 2020 to 60.3 in 2022 and in Russia from 73.4 in 2020 to 69.3 in 2022. However, the food security situation in Belarus, which is an unspoken partner of Russia in the war with Ukraine, has only improved, while the Global Food Security Index value has increased to 73.5. Such trends can be attributed to Belarus' rich agrarian potential and the absence of significant destabilising factors in the development of the agro-industrial complex associated with military actions destabilising the positions of Ukraine and Russia.

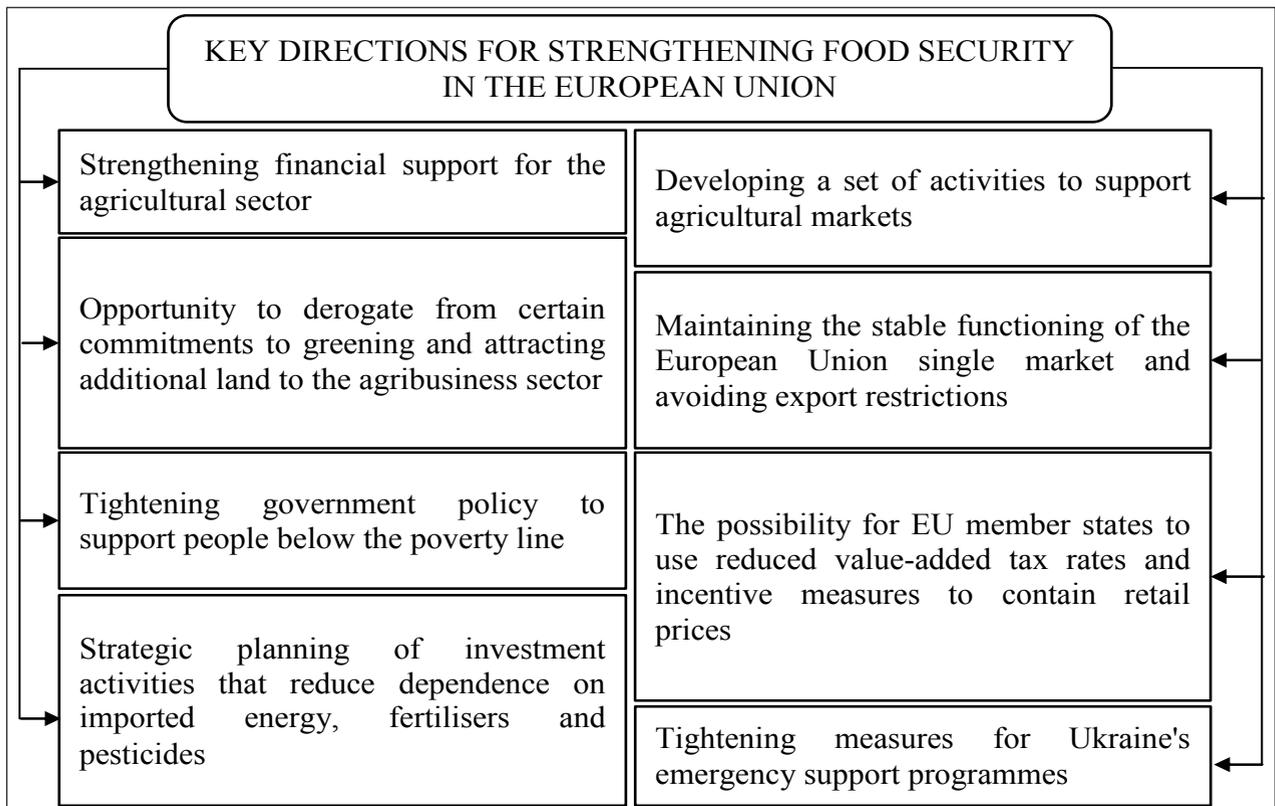
Given that Ukraine was the second largest supplier of grain to the European Union in the pre-war period, exporting around 14% of total European Union grain imports, the humanitarian crisis created by Russia in Ukraine in 2022 did not allow the available agricultural potential to be fully realized and the cropping area to be used as intended. Due to limited fuel supplies, harvesting and the subsequent sowing campaign have undergone significant disruption. More importantly, with the largest areas of fertile chernozems, a favorable



\* – The data for 2022 are as of 01.07.2022.

Calculated according to: Regional Report: Europe 2019; Global Food Security Index, 2019–2021; Global Food Security Q2 2022. Food Security Index.

**Fig. 3:** Global Food Security Index dynamics in Ukraine, Russia and Belarus in 2019-2022



Author's development.

**Fig. 4:** Key directions for strengthening food security in the European Union

geographical location and free access to world food markets, as well as a sufficiently developed port infrastructure that allows the use of the Black Sea for product deliveries, Ukraine presents a significant obstacle to Russia establishing a monopoly on the

world grain market, which reinforces the aggression of the occupying country and justifies its desire to establish control over territories in the east and south of the country.

The mentioned problems actualize the necessity of more in-depth applied research of the state of food security in the European Union and identification of common features of its provision in the countries of the analyzed group. The grouping will be carried out using k-means cluster analysis, and the results will be systematized in Table 1.

Based on the grouping of the European Union countries according to the Global Food Security Index for 2019-2022, three groups of countries with similar food security parameters have been identified. The first group includes Austria, Ireland, Belgium, the Netherlands, Finland, France, Germany and Denmark, which has the highest level of food security in the European Union and the needs of the population are fully met.

The second group comprises the Czech Republic, Greece, Italy, Poland, Portugal, Spain and Sweden, which are positioned mediocly on the Global Food Security Index and have little dependence on commodity-supplying countries. In particular, Spain, influenced by the Russian-Ukrainian war, has had a problem with the supply of sunflower oil.

The third group includes countries such as Bulgaria, Romania, Hungary and Slovakia, which are characterized as transitional economies that have undergone transformational change and have relatively low food security indicators.

In view of these trends, the ways to ensure food security in the European Union are of significant importance. It is for this reason that Fig. 4 summarizes the main areas of food security strengthening.

**Table 1:** Grouping of European Union countries according to the Global Food Security Index 2019-2022

Global Food Security Index							
2019		2020		2021		2022	
Country	Cluster number	Country	Cluster number	Country	Cluster number	Country	Cluster number
Austria		Austria		Austria		Austria	
Belgium		Ireland	1	Ireland		Belgium	
Denmark		The Netherlands		The Netherlands	1	Denmark	
Ireland		Finland		Germany		Ireland	
The Netherlands	1	Belgium		Finland	Finland		Spain
Germany		Greece	France	France		Italy	
Finland		Denmark	Belgium	Belgium		The Netherlands	1
France		Spain	Denmark	Denmark		Germany	
Sweden		Italy	Italy	Italy		Poland	
Greece		Germany	Poland	Poland	2	Finland	
Spain		Poland	Portugal	Portugal			France
Italy	2	Portugal	Romania	The Czech Republic		The Czech Republic	
Poland		France	France	Sweden		Sweden	
Portugal		The Czech Republic	Bulgaria	Bulgaria		Greece	
Hungary		Sweden	Greece	Greece		Estonia	
The Czech Republic		Sweden	Spain		Lithuania		
Bulgaria		Bulgaria	Romania		Luxembourg	2	
Romania		Hungary	Hungary		Malta		
Slovakia		Slovakia	Slovakia		Portugal		
						Hungary	
					3	Slovakia	
	3					Bulgaria	
						Cyprus	
						Latvia	3
						Romania	
						Croatia	
						Slovenia	

\* – The data for 2022 are as of 01.07.2022.

Calculated according to: Regional Report: Europe 2019; Global Food Security Index, 2019–2021; Global Food Security Q2 2022. Food Security Index

As the research shows, the problem of food security in the European Union has become particularly acute under the impact of the Russian-Ukrainian war and requires a comprehensive study. The need to maintain a partnership with Ukraine as one of the largest suppliers of raw materials to the European Union is of the utmost importance. To this aim, considerable efforts should be coordinated towards an early resolution of the armed conflict and the post-war restoration of its agricultural capacity and agricultural resource potential.

## DISCUSSION

The unprovoked Russian-Ukrainian war has created significant disruptive changes in the global food security system that have spread to the countries of the European Union and entailed destabilizing factors in the development of the agro-industrial complex. A study of the impact of the Russian-Ukrainian war on food security in the European Union has revealed that some countries have a significant dependence on the countries involved in the armed conflict, in particular for the supply of grain crops, sunflower oil and mineral fertilizers. In addition, it has been established that among the countries of the European Union, three groups, characterized by common features and problematic aspects of food security, are distinguished in terms of food security. In this context, the main problems of the impact of the Russian-Ukrainian war on the food security of the European Union are highlighted, namely:

- ♦ the disruption of established agribusiness trade arrangements regionally and internationally due to long-standing disruptive changes in supply chains;
- ♦ growing trends in global food shortages, particularly in crops and sunflower oil;
- ♦ sharp rises in food and energy prices, the production of which involves the use of crop products and fertilizers;
- ♦ decrease in land productivity due to disruptions in agricultural practices and as a result of active battlefield operations;
- ♦ the blockade of seaports and limited access to the Black Sea, which disrupts agricultural exports;

- ♦ increasing trends in global food inflation and agricultural shortages;
- ♦ increased competition in European Union food markets and the replacement of Ukraine's place in them by competitor countries, including the United States.

Solving these problems will strengthen the European Union's food security and ensure that the population's needs for high-quality, affordable and vital products are met.

## CONCLUSION

Thus, the research of theoretical and applied aspects of identifying the impact of the Russian-Ukrainian war on the food security of the European Union allows us to state that the countries with a higher level of socio-economic development are able to provide higher food security indicators than those that have passed the path of transformational restructuring. It has been established that Russia's war against Ukraine has triggered a global food crisis, as evidenced by the sharp decline in food security across the European Union in 2022. Negative trends in the inability of the countries participating in the armed conflict to fully use the available agro-industrial resource potential threaten to deepen the destructive phenomena in the European food market in the strategic perspective. The suggested directions for strengthening food security in the European Union countries envisage consolidation of the international community's efforts to strengthen financial support for each country's agro-industrial complex, ensure the stable functioning of the single European food market, and assist Ukraine in restoring its agricultural production.

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