

European green deal: Experience of food safety for Ukraine



Oleh V. Skydan ^{1,*}, Vitalii Ye. Dankevych ², Tetiana P. Fedoniuk ³, Yevhen M. Dankevych ⁴, Maryna I. Yaremova ⁵

¹Department of Innovative Entrepreneurship and Investment Activities, Polissia National University, Zhytomyr, Ukraine

²Department of International Economic Relations and European Integration, Polissia National University, Zhytomyr, Ukraine

³Educational and Scientific Department of Ecology and Environment Protection, Polissia National University, Zhytomyr, Ukraine

⁴Department of Environmental Safety and Environmental Economics, Polissia National University, Zhytomyr, Ukraine

⁵Department of Economics and Entrepreneurship, Polissia National University, Zhytomyr, Ukraine

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ABSTRACT

The systematization of European experience in the formation of food safety through research and analysis of European regulations and strategies. The key principles of the European Green Deal on food safety were analyzed, namely the implementation of the principle of sustainability of food systems and policies for adaptation to climate change. The levels of food safety of Ukraine and Poland were compared according to the main components: food availability, access to food, food safety conditions. According to the results of a sociological study, the level of food safety of Ukraine in terms of the introduction of the land market was assessed. A portrait of a landowner was formed, and the presence of a land plot affects the state of food supply. Based on the analysis of the main provisions of the European Green Deal and food safety policy (on the example of Poland), the areas of increasing the level of food safety in Ukraine were identified: completion of land reform and lifting the moratorium on the sale of agricultural land; ensuring the production of value-added products; adaptation to climate change, development, and implementation of a national program for rural development.

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1. Introduction

An important prerequisite for Ukraine's integration into the European space is the study of the best experience of institutional support for the functioning of economic, environmental, and social spheres. Currently, the EU countries have developed and implemented a large number of legal documents and long-term development strategies aimed at preserving the network of existing rural settlements, greening nature, developing rural infrastructure, and adapting to current global challenges, including food. One such legal act is the European Green Deal. The agreement is a roadmap for actions that will transform the EU into an efficient, sustainable, and competitive economy, boosting the bioeconomy, ensuring food safety, improving human health and quality of life, and transforming climate and environmental challenges into opportunities in all

areas and policies. The European Green Deal is implemented in the following areas: Clean energy (increasing the role of alternative energy sources); sustainable industry (ensuring more sustainable and environmentally friendly production cycles); sustainable mobility (promoting the development of environmentally friendly transport); biodiversity (ensuring the protection of ecosystems); climate action (transformation of the EU into a climate-neutral region); "from field to table" (ensuring the sustainability of food systems and food safety). Given the European integration vector of development and the available agricultural potential, the implementation of the EU experience in the field of food safety policy is relevant for Ukraine. The country's food safety presupposes the state's ability to meet the population's food needs at a level not lower than scientifically sound norms. It is ensured by the availability of appropriate resources, the potential of domestic production. The country's food safety 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. The key role in ensuring food safety belongs to the agricultural sector of the economy (Haysom and Tawodzera, 2018; Ma et al., 2020).

* Corresponding Author.

Email Address: skydan6375-2@national-university.info (O. V. Skydan)

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Corresponding author's ORCID profile:

<https://orcid.org/0000-0003-4673-9620>

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The role of the agricultural sector is extremely important for Ukraine, as it employs 20% of the working population (3.25 million people), it produces 39% of exports, forms 19% of GDP. 9% of the world and 20% of European chernozem reserves are concentrated in Ukraine. According to the 2019 marketing year, Ukraine is one of the world's leading producers and exporters of sunflower oil, corn, wheat, rapeseed. This allows talking not only about the existing potential for ensuring internal food safety but also about the significant impact on world food markets. At the same time, according to the global food index, Ukraine ranks only 76th in the world. In the context of increasing the level of food safety, it is important for Ukraine to implement the principle of forming the sustainability of food systems and "green" agricultural policy and adaptation to climate change, which is provided for in the European Green Deal. The purpose of the article: based on the assessment of the state of development of agricultural production in Ukraine in the conditions of opening the land market and research of European approaches to food safety, to identify the main problems and justify the prospects of food safety in Ukraine. This goal is to systematize the experience of EU member states in the formation of food safety (through research and analysis of European regulations and strategies); assessment of the level of food safety of Ukraine in the conditions of introduction of the land market (as a result of sociological research); substantiation of the expediency of using the European experience in ensuring the sustainability of food systems and the need to adapt to climate change (when analyzing the main approaches to food safety in the European Green Deal).

Research question: "Can the EU's experience in ensuring the persistence of food systems and adapting to climate change in the context of food safety be used in Ukraine?"

Research hypothesis. By implementing the provisions of the European Green Deal, namely ensuring the sustainability of food systems and climate action, it is possible to improve the food safety of the population of Ukraine. In the process of research, by analyzing the state of food safety in Ukraine in the opening of the land market and the study of European approaches to food safety, as well as using techniques of economic and mathematical modeling, it is planned to confirm or refute this hypothesis.

2. Literature review

A significant number of domestic and foreign authors in their scientific works focus on the issue of food safety in the country. A number of foreign publications emphasize the necessity to complete land reform, as it is a necessary component of shaping the country's food safety (Vranken and Swinnen 2006) and improving the welfare of the rural population (Hou et al., 2017; Kozlovskiy et al., 2018; Shevchenko et al., 2020). It is argued that land

relations policy and its evolution should be aimed at creating favorable conditions for agribusiness (Deininger and Binswanger, 1999; Bulanda-Jansen, 2019) and securing land ownership (Mishchuk et al., 2020). It is noted that it is important to use the experience of EU member states that have developed and are actively implementing a sustainable food safety policy (Pronko et al., 2020). Domestic scientists are also focusing on the necessity to find opportunities to increase food production, using the available resource potential. Researchers study the state of food safety (Antamoshkina and Rogachev, 2020; Smachylo et al., 2020) and develop methodological approaches to assessing the country's food safety (Mohammadi and Yavari, 2015; Bovsh and Komarnits'kyy, 2018; Yadav and Congalton, 2018; Nesengani and Yusuf, 2020; Plotnikova et al., 2020). A number of publications offer approaches to areas of food safety (Ecker, 2018; Ma et al., 2020; Pruntseva et al., 2021). It should be noted that there are also a number of regulations governing the methodology for determining the main indicators of food safety, approving sets of food, non-food products, and sets of services for major social and demographic groups.

In the economic literature, there are different approaches to the interpretation and the very concept of "food safety." FAO provides a generally accepted definition of food safety: Food safety is a concept that is used to systematically summarise how and why malnutrition occurs and what can be done to eliminate and prevent it. At the heart of this is a moral ideology that can be linked to the realization of an international goal—food as a human right. In a broad sense, food safety is the state of the economy, and in a narrower sense—the guaranteed ability of the state to meet the needs of the population in the face of each citizen with food in the required volume, range, and quality at a level that ensures health and intellectual development, based on self-sufficiency principle of providing basic products and their economic and physical availability, regardless of the influence of internal and external factors. In terms of its economic content, food safety covers three main components of its achievement: The physical availability of food, i.e. the availability of food throughout the country for any need and in the required range; economic affordability of food, which level of income of the population allows buying food, regardless of social status and place of residence; food safety, which is seen as an opportunity to prevent the production, sale, and consumption of substandard food products that are harmful to public health (Panukhnyk et al., 2019; Voronych, 2019).

At the meso-level, the calculation of food safety takes into account the economic potential, conditions, and specialization of agricultural production, namely the favorable natural and climatic conditions for agriculture and land supply, ecology, the purchasing power of all groups in the region. The micro-level of food safety is an opportunity to meet one's own needs for productive

activities. At the same time, based primarily on the social function of an individual, it is advisable to consider this level of food safety in relation to a particular community, i.e. at the household level. Indicators for assessing the national food safety of the country are as follows: gross national output of agricultural products, raw materials, and food products; inflation rate in the country; personal income growth rate; the level of income differentiation of the country's population; compliance with restrictions on the presence of harmful substances in products; the level of dependence of the country's food supply and resource provision of the agricultural sector on imported supplies; the size of strategic and operational food stocks in accordance with regulatory needs.

According to world experience, a country retains its independence if the share of imports to domestic consumption fluctuates within 20-25%. At the same time, there are objective limitations due to the fact that independence can be achieved only in those types of food, for the production of which there are acceptable natural and climatic conditions.

3. Materials and methods

The methodological basis of the study was the general economic principles of systematic study of the level of food safety of the country in terms of the introduction of the land market. The definition of the main problems of research and ways to solve them is based on a comprehensive approach to the study of scientific achievements of domestic and foreign scientists, the study of aspects of land relations, regulations, and bills on food safety. To assess the state of food safety and food safety levels, it is proposed to use the following indicators:

1. Indicator of the general physical availability of food, which is calculated by Eq. 1.

$$k_i = \frac{\sum_{i=1}^n x_i}{n} \quad (1)$$

where k is the indicator of the total physical availability of food; x_i is the indicator of physical availability of food by i -product; n is the number of groups of basic foods that determine the physiological rate of consumption.

2. The coefficient of food dependence, calculated by Eq. 2.

$$C_{fd} = I/D_e \quad (2)$$

where C_{fd} is the coefficient of food dependence; I is the volume of imports of these products; D_e is the volume of the country's demand for this product.

In the course of the research, a monographic method was used to assess food safety on the example of EU member states. In order to study European approaches to the formation of food stocks, the provisions of the European Green Deal on

the principles of food safety, namely the implementation of the principle "From field to table"—the formation of sustainability of food systems.

In order to study the state of food safety in Ukraine in more detail, a sociological survey was conducted, 1381 respondents were interviewed, including 1325 respondents from the Zhytomyr region, 1171 of whom are landowners. The studied sample of the surveyed residents of the Zhytomyr region is representative on two grounds. First, taking into account the population of the region (1217936 people) the confidence coefficient of the study is 97% with a confidence interval of $\pm 3\%$. Secondly, the total number of landowners in the Zhytomyr region is 1023000 people and in the survey of 1171 landowners, the confidence probability is 95% with a confidence interval of $\pm 3\%$. In addition, the survey followed the structure of the distribution of respondents within the districts and took into account the gender distribution of the population (46% of men and 54% of women). 89% of respondents live in rural settlements, 11%—in cities; 88% of respondents own one or more plots of land.

To describe a portrait of the landowner, economic and mathematical modeling was conducted and the main factors influencing the desire to cultivate their own land in order to provide the household with food were outlined.

4. Results and discussion

In the European Economic Area, the provisions on the necessity to reform agricultural policy in line with current global challenges are reflected in the European Green Deal. In the context of this study, the authors are most interested in two principles of the agreement, namely the introduction of the principle of sustainability of food systems and adaptation to climate change. The agreement provides great prospects and opportunities for the economy in the context of improving the efficiency of available land, increasing the productivity of enterprises, achieving a balanced value-added economy, improving the position of farmers in the value chain, and adapting to modern global challenges. The main provisions of the European Green Deal in the context of food safety are presented in [Table 1](#).

Modern climate change also has a significant impact on the level of food safety. According to the FAO, in recent decades the boundaries of Ukraine's natural and climatic zones have shifted by 100-150 km to the north. Droughts in Ukraine are becoming more frequent and intense ([FAO, 2019](#)). Climate change causes changes in the structure of production, technology, and even the structure of food consumption. Due to the increase in the average annual temperature, uneven distribution of precipitation, and some negative consequences, the action of other abnormal weather phenomena, the risk of traditional agricultural production increases. Climate change is a new reality.

Table 1: The main provisions of the European Green Deal in the context of food safety

| Principles | Substantive provisions |
|--|---|
| "From field to table" – ensuring the sustainability of food systems and "green" EU agricultural policy | <p>In many parts of the world, providing food for a fast-growing population remains a challenge under modern production models. Land use in many countries, for a number of reasons (incomplete land reforms, slow mechanism for attracting innovation, low level of rural development) is inefficient. Food production still pollutes the air, water and soil, causes biodiversity loss and climate change, and consumes too many natural resources, while a significant portion of food is wasted. The above problems need to be addressed in order to produce safe, nutritious and high quality products to meet existing demand.</p> <p>Currently, standards have been developed for the use of sustainable practices, such as precision farming, organic production, agroecology, agroforestry. Shifting the focus to greening production, measures such as eco-schemes should reward farmers for improving environmental and climate performance, including improved nutrient management to improve water quality and reduce emissions. Significant efforts should also be made to protect the environment and preserve biodiversity.</p> <p>Agricultural policy should be aimed at reducing the use of chemical pesticides, fertilizers and antibiotics. It is needed to determine measures, including legislation, necessary to implement these reductions through dialogue with stakeholders. Areas under organic farming will also need to be increased. It is necessary to develop innovative ways to protect crops from pests and diseases, taking into account the potential role of new innovative methods to improve the stability of the food system, while ensuring their safety.</p> <p>It is necessary to legislate the mechanism of adaptation to climate change and to outline this course in the relevant legal documents and development strategies. It should be noted that modernization and transformation of the economy in order to minimize climate fluctuations is already underway. Between 1990 and 2018, EU countries have already reduced their greenhouse gas emissions by 23%, while their economies have grown by 61%.</p> |
| "Climate action" – the transformation of the EU into a climate-neutral region | <p>To ensure further reductions in greenhouse gas emissions, by June 2021, the European Commission will review and propose to review, where necessary, all relevant EU climate policy instruments, including in the agricultural sector. This will include the Emissions Trading Scheme, including the possible extension of European emissions trading to new sectors and regulations on land use and forestry.</p> <p>Climate reform will help ensure efficient carbon pricing throughout the economy. This will contribute to changes in consumer and business behavior, promote sustainable public and private investment. The different pricing tools must complement each other and jointly provide a coherent policy framework. It is also important to ensure that taxation is consistent with climate goals.</p> |

Farmers point out that the level of precipitation in Ukraine is decreasing, which affects soil erosion and causes serious economic losses. Therefore, the transition to a circular economy is in Ukraine's interests if it wants enough food and water, to have clean air. In January 2020, the Government of Ukraine established an interagency group to coordinate the effects of climate change under the European Green Deal. The issue of food safety and the need to adapt to climate change will become more urgent every year. Accordingly, Ukraine needs to create all the conditions for the land potential to be used more efficiently to ensure the food safety of the state and increase exports. It should be noted that in Ukraine for a long time the key factor in ensuring food safety was land resources. Of the 60 million hectares of the territory of the state, more than 70% are agricultural lands. According to various estimates, Ukraine has the potential to feed more than 600 million people. However, the productivity of land use lags behind. Thus, according to the World Bank, in Ukraine, the level of labor productivity in the economy is 5 times lower than in the EU. This has a significant impact on the food safety index.

To measure food safety at the state level, the Global Food Safety Index is used, which examines the main problems of food availability and quality in 113 countries. The index is a dynamic quantitative and qualitative model of benchmarking, built on 34 unique indicators that measure the driving forces of food safety in both developing and developed countries. This index assesses the economic development of the country and its resources, the ability to adapt to natural and other risks. In the

global food safety index, Ukraine ranks 76th out of 113 countries. The index is formed on the basis of the analysis of strong and weak indicators of food safety formation. In order to analyze in more detail the factors that led to the low global food safety index of Ukraine, the authors compared domestic indicators of food safety with European ones. Among Eastern European countries, Ukraine and Poland are similar in terms of climate, population, and agricultural employment. In terms of food safety in 2019, Poland took 24th place among 113 countries, and Ukraine–76th place in the ranking. Comparison of the levels of food safety of Ukraine and Poland by the main components: the availability of food, access to food, and food safety conditions are presented in [Tables 2-4](#).

Table 2: Assessment of the level of food safety of Ukraine and Poland in terms of food availability (FAO, 2019)

| Indicator | Period | Ukraine | Poland |
|--|-----------|---------|--------|
| Average adequacy of calorie supply from food (average for 3 years),% | 2016-2018 | 119.00 | 138.00 |

According to the FAO methodology, a full-fledged food safety system covers the following components: Reliable food supply based on national agricultural production; the system of protection of domestic producers from import dependence both in food and resource provision; physical and economic availability of the required quantity, range, and quality of food for different categories of the population. It should be noted that Ukraine is currently trying to implement European standards for food quality in its territories. After all, safe food

has already become a problem in all countries of the world.

Table 3: Assessment of the level of food safety of Ukraine and Poland, in terms of access to food, in accordance with FAO indicators (FAO, 2019)

| Indicator | Period | Ukraine | Poland |
|---|-----------|---------|--------|
| Average adequacy of calorie supply from food (average),% | 2016-2018 | 119.00 | 138.00 |
| Prevalence of malnutrition among the population (average),% | 2016-2018 | 3.50 | <2.5 |
| Number of undernourished people (average), mln. | 2016-2018 | 1.50 | - |
| Prevalence of food unsafety in severe form among the general population (average indicator),% | 2016-2018 | 1.80 | 0.70 |
| The number of people living in food unsafety in severe condition | 2016-2018 | 0.80 | 0.30 |

According to the Food Security Index, the strengths of domestic food safety are resource provision, security, cost of food, tariffs on imports of agricultural products. Problems of food safety are

corruption, existing food standards, and low government spending on agricultural research and development.

Table 4: Assessment of the level of food safety of Ukraine and Poland by the indicator of food safety conditions, according to FAO indicators (FAO, 2019)

| Indicator | Period | Ukraine | Poland |
|--|--------|---------|--------|
| Percentage of population using safe drinking water,% | 2017 | 92,00 | 99,20 |
| Percentage of the population using safe sanitary and hygienic services,% | 2017 | 68,50 | 93,30 |

Comparisons of food safety indicators of Ukraine and Poland show the best results of the latter. The completion of land reform and significant progress in the development of agriculture in Poland have allowed it not only to increase food safety but also to take a step forward towards achieving the goals of sustainable development aimed at overcoming all forms of hunger and malnutrition. The share of the Polish population suffering from food shortages is less than 2.5%, while in Ukraine the same figure exceeds 3% (1.5 million people). It should be noted that the opening of European markets led to lower prices for Polish agricultural products, and the loss of income was offset by subsidies and additional money that farmers could receive through the Polish Rural Development Program. Stabilization of prices for agricultural products also took place through the use of EU Common Agricultural Policy instruments (Golodnikov et al., 2013; Tolmachev et al., 2020).

In order to further study the state of food safety in Ukraine and identify problematic issues, a sociological study “Assessment of the level of food safety of the country in the introduction of the land market.” The focus of this study is on the question: whether landowners can provide themselves with food using their own land and how the situation with food supply will change in the context of the introduction of market circulation of agricultural land (Fig. 1).

The results of a survey of 1325 respondents indicated that 24% of respondents receive more than 60% of the food they consume from their own land plots. Another 24% of respondents receive 30-60% of such products from their plots, and 19% of landowners provide themselves with food by 10-30% (Fig. 2).

The economic-mathematical modeling carried out on the basis of the received data of sociological research allowed to form a portrait of a landowner and to estimate what influences his desire to independently cultivate the land plot and to provide

himself with foodstuff (Table 5). Thus, most respondents cultivate only part of the available agricultural land, the rest is leased. They hand over the surplus of grown products to processing enterprises. The grown products are sold on the regional market, and part of the grown products is given to relatives.

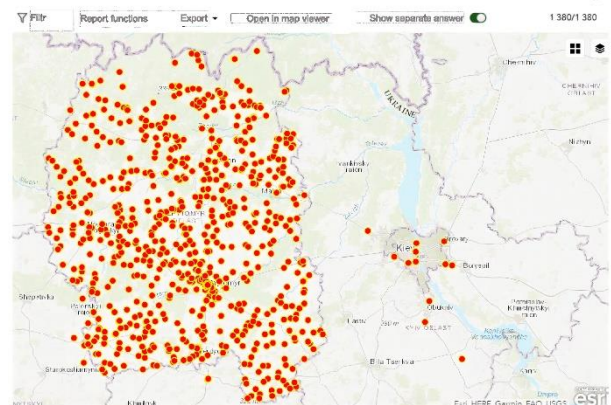


Fig. 1: Sample of respondents to the sociological survey “Assessment of the level of food safety of the country in terms of land market introduction”

The average age of a landowner who cultivates his own land is 60 years. Among them are about 5.5 million primary landowners. At the same time, given the state of infrastructure development and competition in the agricultural market, it is currently quite problematic to start an agricultural business using only their own land shares, provide themselves with food, and form commodity batches of products for sale. In the course of the research, it was revealed that a significant number of respondents have problems with the sale of grown products, a certain part of which in the absence of the opportunity to sell and under improper storage conditions spoils. In particular, 28% of respondents do not sell surplus products, 31% of respondents hand over surplus products to local markets, 18%—to regional markets,

and 17% hand over to processing companies. The study also showed certain regional features of food

safety.

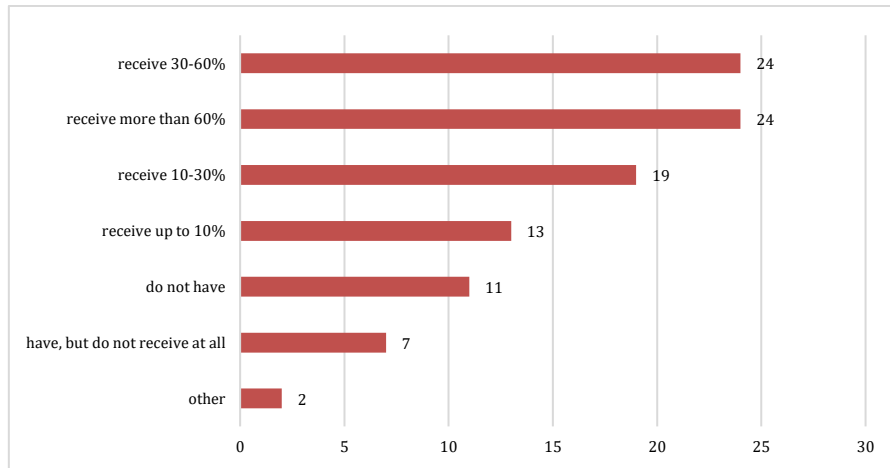


Fig. 2: The share of products for consumption that respondents receive by cultivating their own land (including livestock products)

Table 5: Portrait of a landowner who cultivates his own land, based on the data of a sociological survey

| Portrait of landowner | Estimate | Std. | Error | t | P-value |
|---|----------|----------|-------|----------|---------|
| Part of a land is leased to agricultural enterprises | 0.161651 | 0.041857 | 3.862 | 0.000118 | *** |
| Surpluses of grown products are handed over to processing enterprises | 0.258238 | 0.12127 | 2.129 | 0.033413 | * |
| His products are sold on the regional market | 0.833683 | 0.202 | 4.127 | 3.92E-05 | *** |
| A part of the grown products is given to relatives | 0.209983 | 0.071829 | 2.923 | 0.003525 | ** |

Thus, the residents of the districts closest to Zhytomyr sell a significant part of the surplus of grown products in the regional center. This is due to the developed logistics and the price of the products.

When it comes to buying food, most respondents (regardless of location) buy it in local stores. They have no other alternatives, given the logistical connection between villages and district centers. It is typical to go to the district center once a week and buy food. In areas with more developed infrastructure, the population has the opportunity to go more often to district centers or cities and buy food. Accordingly, residents of such areas have a wider choice of products at better prices.

Regarding the quality and safety of food (which is emphasized in the European Green Deal) it was found that 46% of respondents are partially satisfied with the quality of food, 39% are fully satisfied and 15%–dissatisfied (Fig. 3). The results of the survey showed that in areas with more developed infrastructure, located closer to cities, the population has the opportunity to buy food in a wider range and better quality. In remote and sparsely populated areas, there are problems with access to quality food.

The study showed that only 24% of the population of the Zhytomyr region fully meets their own food needs and does not save money on food. 48% of respondents are forced to replace some products with cheaper ones. Problems with food safety have been identified in less economically developed areas. Many people do not have a permanent high-paying job, and there are a small number of enterprises in the districts. All this is reflected in the purchasing power of the population.

The results of the study show that in the structure of household expenditures, the share of food

expenditures is quite significant. In particular, 19% of respondents spend more than 50% of their income on food; 50%–spend on food 30-50% of their own income. And only 26% of respondents spend 10-30% of their income on food.

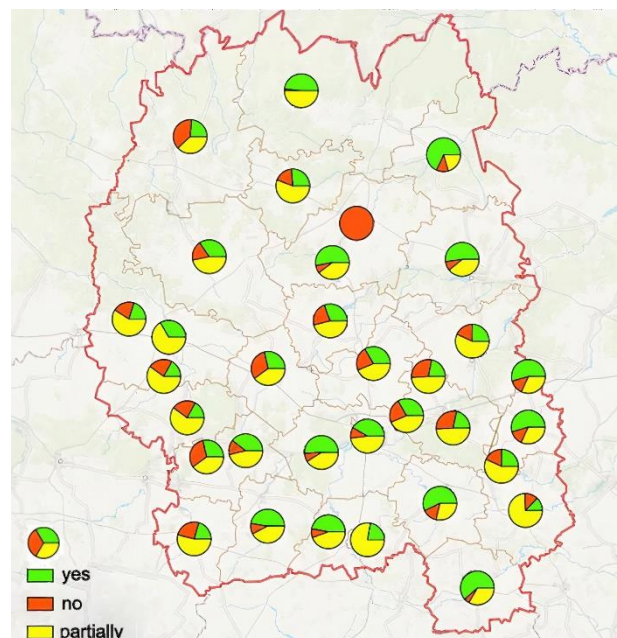


Fig. 3: Assessment of the level of satisfaction with the quality of food purchased by respondents

As a result of a sociological survey, it was found that most families in the Zhytomyr region lease their own land shares (66%). Part of the land is used independently by the owners (10%), and 14% of respondents use part of the land independently, part is leased. The Forest-Steppe zone has the best lands, so they are most in-demand among tenants (Fig. 4).

Most arable land in the Forest area has low natural soil fertility, which discourages tenants from involving them in cultivation. As a result, in some districts of the Zhytomyr region, land shares were found that remain uncultivated, which is also due to radiation contamination of agricultural land. Analyzing the responses of landowners regarding plans for further land use, it was found that in areas with lower socioeconomic development and, consequently, low material security, a significant proportion of landowners intend to sell them (26%). A similar situation is observed near cities, where people do not see prospects in their own agricultural activities. The share of those wishing to start their own agricultural business with the use of land shares is quite small, which is due to the lack of start-up capital, high competition, and unsatisfactory state of infrastructure.

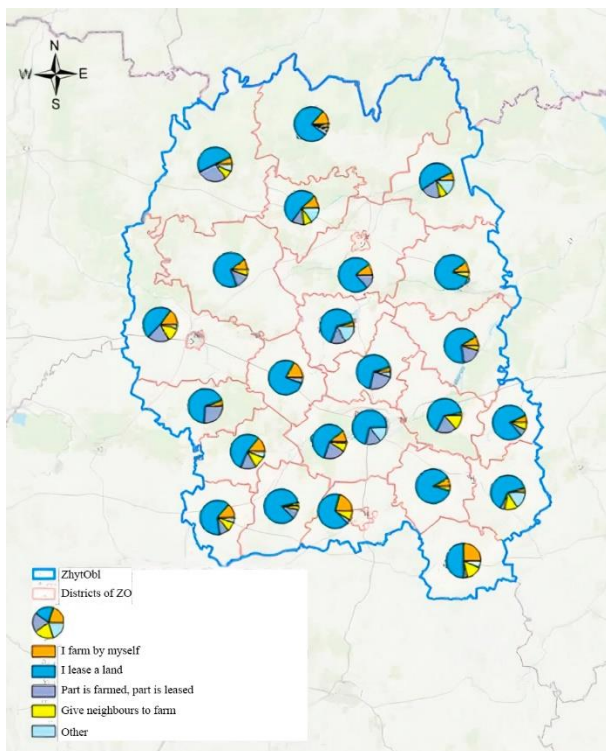


Fig. 4: Status of use of land shares by respondents

Those who want to start their own business are mostly concentrated in the Forest-Steppe zone of the Zhytomyr Region. The moratorium on the sale of agricultural land has a negative impact on the development of agribusiness. According to the World Bank's Special Report, lifting the moratorium on the sale of agricultural land in Ukraine could boost economic growth by 0.5-1.5%/year over the next 5 years. Legislation is also needed to ensure the transparency and efficiency of the land market, prevent its monopolization and fraud, establish a system to monitor compliance with this law, and provide effective and sustainable access to finance for small farms with limited access to credit. The moratorium hinders investment, which in turn limits the ability of farmers to grow high value-added products and move to more labor-intensive goods.

A significant proportion of respondents (29%) believe that the introduction of the land market will promote more active development of both farms and large agricultural formations. One-third of respondents are convinced that the introduction of the land market will help attract investment in rural areas and establish product processing (33%). Sociological research has shown that with the opening of the land market, investment in the processing of agricultural products is expected, primarily in the forest-steppe zone of the Zhytomyr region, where better land and more developed infrastructure. It is these areas that are already attracting significant amounts of relevant investment.

At the same time, it should be noted that currently in rural areas there are a number of systemic problems that need to be addressed comprehensively. The introduction of the land market can only be one of the drivers that will contribute to further change. For landowners, the current issues are reducing the tax burden, the availability of bank loans, social infrastructure development, health care reform, anti-corruption, pension reform, education reform, decentralization (mechanisms for implementing a significant number of the above reforms are outlined in the European Green Deal). The majority of respondents (37%) believe that only the comprehensive implementation of these measures and reforms can contribute to the development of rural areas.

Given the current global challenges and identified problems of development of the domestic agricultural sector, the implementation of the positive experience of the EU in the context of rural development and food safety is especially important. After all, food safety plays a key role not only in terms of the efficient functioning of the agri-food sector, but also in view of the necessity to provide the entire population with food, and thus preserve its labor potential and improve the quality of human capital.

5. Conclusion

1. The analysis of the main provisions of the European Green Deal and food safety policy (on the example of Poland), allowed identifying the following areas of improving food safety of Ukraine: completion of land reform and lifting the moratorium on the sale of agricultural land; equalization of the proportions of economic development of rural areas located in different regions; approaching the pace of development and quality of life in rural areas and urban agglomerations, ensuring the competitiveness of the rural economy by increasing the efficiency of agriculture and stimulating the development of industries related to the agricultural sector, in particular, the operation of processing, light and food industries in rural areas.
2. The need for the above is due to the fact that currently according to the food safety index,

Ukraine ranks 76th among 113 countries. Available land resources are not key to food safety. The results of a sociological survey showed that only 24% of respondents receive more than 60% of the food they consume from their own land plots. Another 24% of respondents receive 30-60% of such products from their plots, and 19% of landowners provide themselves with food by 10-30%. In modern economic conditions, the mere presence of land does not mean that its owner can provide himself with food. Currently, technology, production scale, logistics, and many other factors come to the fore. Agricultural land remains an important but not the only factor in ensuring food safety, both at the level of the individual landowner and the state. In addition to the availability of appropriate land resources, it is important now to adapt to the existing challenges, to create conditions for the production of finished products in rural areas, to adapt to climate change.

3. Following the example of Poland and other EU countries, the Ukrainian government should develop its own national rural development program, which is also in line with the principles of the European Green Deal. Given the experience of the EU, its key positions should be the following: modernization of agriculture in order to increase the competitiveness of farmers; financial support for small and medium-sized farms to increase their production capacity; supporting the development of educational and medical institutions in rural areas by upgrading and developing infrastructure; ensuring climate resilience in agriculture. Adaptation to the standards of the European Green Deal will allow Ukraine not only to improve the state of the agricultural sector, increase food safety, but also to rise in the ranking of countries in the world by global food security index.

In addition to the above-mentioned benefits of complying with the European Green Deal, the European Commission's Communication on the Future of Food and Agriculture also addresses the global dimension of the European Green Deal, which will ensure the coordination of sustainable development actions to address food safety and poverty reduction. Adaptation of domestic agricultural legislation in accordance with the principles of the European Green Deal should take place in the development of a national food safety strategy defining short-, medium- and long-term prospects for agricultural production, bringing its nature closer to the norms and standards of the world food market.

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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