FINANCIAL AND CREDIT ACTIVITY:

problems of theory and practice

№ 4 (45), 2022

ISSN: 2306-4994 (print)

ISSN: 2310-8770 (online)

ТОВАРИСТВО З ОБМЕЖЕНОЮ ВІДПОВІДАЛЬНІСТЮ
«ФІНТЕХАЛЬЯНС»

ФІНАНСОВО-КРЕДИТНА ДІЯЛЬНІСТЬ: ПРОБЛЕМИ ТЕОРІЇ ТА ПРАКТИКИ

ЗБІРНИК НАУКОВИХ ПРАЦЬ

FINANCIAL AND CREDIT ACTIVITY: PROBLEMS OF THEORY AND PRACTICE

PUBLICATION OF SCIENTIFIC PAPERS

№ 4 (45), 2022

КИЇВ 2022

ISSN: 2306-4994 (print) ISSN: 2310-8770 (online)

ЗМІСТ

ISSN: 2306-4994 (print) ISSN: 2310-8770 (online)

МОДЕЛІ ТА ТЕХНОЛОГІЇ ОБРОБКИ ФІНАНСОВОЇ ІНФОРМАЦІЇ
THE MODELS AND PROCESS TECHNOLOGY OF THE FINANCIAL INFORMATION

ЕКОНОМІКО-ТЕОРЕТИЧНІ АСПЕКТИ РОЗВИТКУ ФІНАНСОВО-КРЕДИТНИХ СИСТЕМ
ECONOMIC-THEORETICAL ASPECT OF FINANCIAL CREDIT SYSTEM'S DEVELOPMENT

ISSN: 2306-4994 (print) ISSN: 2310-8770 (online)

СОЦІАЛЬНО-ГУМАНІТАРНИЙ КОНТЕКСТ ТРАНСФОРМАЦІЙНИХ ФІНАНСОВО-ЕКОНОМІЧНИХ ПРОЦЕСІВ
THE SOCIAL-HUMANITARIAN CONTEXT OF TRANSFORMATIONAL FINANCE-ECONOMICAL PROCESSE

ISSN: 2306-4994 (print) ISSN: 2310-8770 (online)

DOI: 10.55643/fcaptp.4.45.2022.3782

AGRICULTURAL PRODUCTION IN UKRAINE: ECOLOGICAL CHALLENGES AND IMPACT ON THE QUALITY OF LIFE

Vasyl Petrychenko
Doctor of Agricultural Sciences, Professor, Academician of the NAAS, Institute of Feed Research and Agriculture of Podillya of NAAS, Vinnytsia, Ukraine;
ORCID: 0000-0001-5171-4298

Oleksandr Petrychenko
Doctor of Economic Sciences, Associate Professor, Institute of Feed Research and Agriculture of Podillya of NAAS, Vinnytsia, Ukraine;
e-mail: petruchenko_o_a@ukr.net
ORCID: 0000-0002-1662-2563
(Corresponding author)

Lydia Fedoryshyna
Ph.D. in Historical Studies, Associate Professor, Vinnytsia National Agrarian University, Vinnytsia, Ukraine;
ORCID: 0000-0003-1577-6699

Olga Kravchuk
Ph.D. in Economics, Senior Research, Institute of Feed Research and Agriculture of Podillya of NAAS, Vinnytsia, Ukraine;
ORCID: 0000-0002-0224-1305

Oleksij Korniichuk
Ph.D. in Economics, Senior Research, Institute of Feed Research and Agriculture of Podillya of NAAS, Vinnytsia, Ukraine;
ORCID: 0000-0002-3357-7784

Vitalii Nitsenko
Doctor of Economic Sciences, Professor, Ivano-Frankivsk National Technical Oil and Gas University, Ivano-Frankivsk, Ukraine;
ORCID: 0000-0002-2185-0341

Received: 08/06/2022
Accepted: 26/07/2022
Published: 31/08/2022

© Copyright
2022 by the author(s)

This is an Open Access article distributed under the terms of the Creative Commons CC-BY 4.0

ABSTRACT

The main ecological challenges of agricultural production of Ukraine in conditions of European integration are considered. The relevance of the chosen topic is justified by the high agricultural potential of Ukraine, which has common values and common interests with the European economic space. This is confirmed by the benchmarking analysis of the security and efficiency of land use in Ukraine among the EU-28 countries. It is known that the life quality of the society depends on the health of the environment, and the intensification level of the agricultural production and processing sector. Studies have shown that Ukraine lags behind the EU countries both in terms of living standards and social development. Therefore, the issue of forming a program to protect the soil resources of Ukraine from degradation and their effective use, with respect to social needs and environmental risks, is an important problem for the European countries as a single ecological system. The authors identify areas for agricultural production intensification in Ukraine, taking into account the requirements for quality and safety of the products. The need for the legal framework harmonization to regulate agricultural production and ensure sustainable development of ecosystems on the principles of a green economy is substantiated.

Keywords: green economy, agricultural production, land use benchmarking, index of social progress, intensification, organic farming

JEL Classification: R14, D18, P2, B40, G39, M40

INTRODUCTION

For Ukraine, which has favorable climatic conditions and significant resource potential, land resources and genetic diversity are important components of national wealth. Efficient use of land and climate resources will allow Ukraine to form competitive agricultural production on the principles of the green economy. This is facilitated by the convenient geographical location of Ukraine, its temperate climate, fertile soils, economical level of intensification of technological processes in agriculture, and ecological focus on sustainable development of ecosystems.

Given the diversity and transformation of land resources, it is important to create a level playing field for all participants in agricultural production: large agricultural holdings, medium and small businesses, family farms, and multinational companies present in the market. The legislative framework in the field of sustainable development of ecosystems and production of quality and safe agricultural products needs to be developed and improved.

LITERATURE REVIEW

It is already known that 60% of the world's ecosystems have been degraded, carbon emissions have risen to 40%, there is a significant shortage of water, about 1 billion people are starving, and others are suffering from malnutrition and related diseases. It is noted that one in four people in developing countries lives below the poverty line, and about 2 billion people live on less than USD 2 a day [1, 2].

DOI: 10.55643/fcaptp.4.45.2022.3782

We believe that in the context of climate change and environmental challenges, implementation of the concept of sustainable development of ecosystems and the introduction of low-carbon technologies should become one of the leading areas of agricultural policy in each country. This important issue of the state policy requires a systematic combination of various components, among which a special place is occupied by environmental protection, agricultural land included [3].

One of the problems of the quality condition of agricultural lands is an ecological imbalance, violation of land use structure, lack of practice of ecologically sustainable agricultural landscape formation and protection, as well as shortages in maintaining ecological safety of soils and increasing their fertility.

These urgent problems are being successfully solved by the scientists and practitioners of various fields, including land law [4-6], soil science [7-9], biological [10-12], environmental [13-18], and economic ones [19-22].

In the scientific literature, it is quite reasonably argued that structural and environmental imbalance of land funds significantly reduces the efficiency of land use and protection [23]. An important direction that ensures sustainable development of ecosystems is the optimization of the structure of agricultural lands with an account of environmental factors [24, 25].

AIMS AND OBJECTIVES

The purpose of the article is to identify the impact of intensification of agricultural production on the manifestation of environmental problems, socio-economic development of Ukraine, quality of life in the context of sustainable development of ecosystems, and European integration processes.

METHODS

In the analysis of the current state and environmental and economic problems of agricultural production in Ukraine and EU countries, the statistical and economic method was used, in particular its methods - graphic, comparison, etc. Benchmarking was used to establish the causes and forms of the negative impact of environmental problems on the agricultural sector of the economy. With the help of methods of analysis and synthesis, the factors of ecologically safe development of agricultural production in the conditions of intensification are generalized.

The information base of the study was the work of foreign and domestic scientists on various aspects of environmentally friendly development of agricultural production; normative legal acts of land use of Ukraine; statistics of the State Statistics Service of Ukraine (SSSU) and European statistics (ES); materials The Food and Agriculture Organization (FAO), United Nations Economic Commission for Europe (UNECE), The Social Progress Imperative (SPI) and others; own observations and research.

RESULTS

The world's land resources continue to decline due to a range of causes: wind and water erosion, urbanization, and environmental pollution. According to FAO estimates, additional 120 million hectares of land will be cultivated by 2050, but at the same time, about 50 million hectares will be withdrawn from agriculture by reason of degradation [26]. Over the last 50 years, owing to the lack of scientifically substantiated use of soils, about 25% of lands have been degraded [27]. Therefore, in the countries with developed agricultural production, the average supply of cultivated land per capita decreased from 0.21 to 0.16 ha [28].

In the structure of land resources there observed quite significant disparities, the increase of which can threaten the environment, human surrounding medium, and efficiency of economic activity. It is known that optimization of the agricultural land structure will restore the balance between natural areas, including those having an increased technogenic load.

The solution to the problem of optimizing the composition and structure of the land fund should be considered through the concept of entropy, where the agricultural landscape acts as a self-organized system that depends on chaos and order. It is believed that arable land is destabilizing, and hayfields, pastures, and forests – stabilizing factors for the agricultural landscape. Analysis shows that in Ukraine the share of agricultural land exceeds the average data for the European countries by 20-25% (Table 1).

Table 1. The structure of land resources utilization, %. *(Source: calculated by the authors [27, 29])*

	Germany	France	Poland	Romania	Ukraine
Agricultural lands	32.2	28.9	33.0	32.1	57.8
Forests	31.6	30.1	35.5	32.5	17.6
Meadows and pastures	21.8	26.7	22.5	27.0	13.0
Water	1.8	1.4	1.7	1.5	4.0
Built-in areas and infrastructure	12.0	12.6	6.7	5.3	5.9
Marsh	0.6	0.3	0.6	1.6	1.6

The soil scientists' research results allowed us to draw a conclusion about the need for 9-12 million hectares of arable land retirement and an increase in the area of pastures and hayfields to 8.5-10.5 million hectares. At the same time, the amount of plowed land in Ukraine will decrease to 35-40%, the total level of afforestation will increase to 20%, and field protection one – to 4% [30]. These changes will create a foundation for the introduction of self-renewable agriculture in Ukraine. Similar suggestions were made by other researchers [31, 32].

However, forestries and green lands in Ukraine make up only 30.6% against 50-55% in the European Union [27]. Agricultural lands are considered to be ecologically balanced when the share of hayfields, pastures, and forests makes up 50% [33].

Thus, the main factors of ecological imbalance in the structure of the land fund of Ukraine are excessive plows and fragmentation, violation of the unified system of agricultural landscapes during land transformation, and some others. All the factors influencing the quality of agricultural land require special attention. Let us consider the land use efficiency by countries (Table 2).

Table 2. The efficiency of land resources utilization, 2020. *(Source: calculated by the authors [27, 29, 34])*

Countries of Europe	Population, mln people	Area of arable land		Production of grain			
		mln ha	per capita, ha	total, mln t	per ha of grain crops, t	per ha of arable land, t	per capita, t
Germany	82.5	11.8	0.14	45.9	7.31	3.89	0.56
France	66.9	18.6	0.28	67.7	7.24	3.64	1.01
Poland	37.9	10.8	0.28	31.6	4.27	2.93	0.83
Ukraine	42.0	32.5	0.77	61.9	4.25	1.90	1.47

The area of arable land in Ukraine is 2-3 times larger than that of Germany, France, and Poland [27]. Ukraine ranks 2nd behind France among the studied countries in terms of grain production. At the same time, Ukraine has the highest concentration of arable land and gross grain production per capita at the lowest level of grain yield [29]. Thus, the problem of improving the efficiency of land use should include an increase in agricultural production and the preservation of the environment.

Efficient use of land resources in agricultural production reflects the relationship between people in the implementation of technological processes related to agricultural production. Yet, it is necessary to ensure restoration of the soil fertility, increase of the productive potential of land resources, and the level of their eco-friendly use [35, 36].

Excessive soil exploitation, and nonrational deforestation in conditions of climate change is the reason for the increased land degradation. 70% of arid areas around the world suffer from degradation to one degree or another [34]. It is well known that land degradation and desertification have long become global problems and are among the greatest environmental challenges to the sustainable development of society, causing serious food and socio-economic problems, including hunger and forced migration [37].

Ukraine has a low percentage of environmental tax revenues in the structure of GDP – 0.07% against 6-10% in the EU countries (Fig. 1).

DOI: 10.55643/fcaptp.4.45.2022.3782

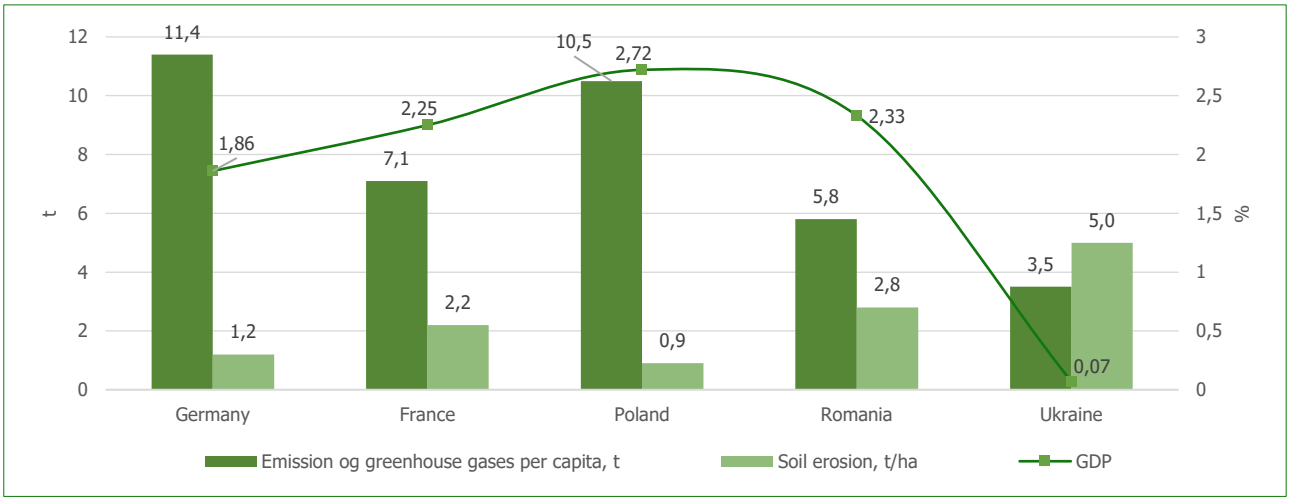

Figure 1. Land degradation indicators, 2020. *(Source: calculated by the authors [27, 29, 38])*

Land degradation and desertification also lead to biodiversity loss, deterioration or extinction of water bodies, especially small rivers, exacerbation of water delivery for the population and the industries, and, as a result, deterioration in the quality of life. Over the last quarter of the century, Ukraine has lost more than 10000 small rivers. In recent years, the problem of water supply in the regions has worsened. Environmentalists note that many riverbeds are only 70% full [29].

Biodiversity plays a significant role in the ecological balance and socio-economic development of the state. Occupying less than 6% of Europe's area, Ukraine owns 35% of its biodiversity. This is associated with the favorable geographical location of the country, the intersection of many migration routes and the presence of natural and climatic zones with different potential. In Europe, Ukraine is second only to France in terms of biodiversity abundance and thus is highly responsible for its preservation.

Unfortunately, Ukraine has the highest level of plows of its land resources (54%) and the lowest amount of investment – 1 thousand dollars per ha against 5.5 thousand in the EU. The agricultural land supply in Ukraine is 2 times higher than in the European Union. The price of 1 hectare of agricultural land is about 16% of the average price of the corresponding land in the EU. Grain exports in Ukraine are the highest among the EU countries and amount to 41.7 million tons (Table 3).

Table 3. Benchmarking of land utilization in Ukraine and the EU countries, 2020. *(Source: calculated by the authors [27, 29, 38])*

Indicators	EU countries	Ukraine
Land area, mln ha	437.4	60.4
Area of black soils, mln ha	18.0	28.0
Area of agricultural lands, mln ha	178.7	42.7
Area of arable lands, mln ha	115.7	32.5
Level of plowing up, %	26.5	53.8
Share of rented agricultural lands, %	53.0	97.0
Area of agricultural lands certified as organic, mln ha	5.3	0.4
Area of irrigated lands, mln ha	11.1	0.5
Cost of investments, thousand $/ha	5.5	1.0
Export of grain crops, mln t	38.5	41.7
Area of agricultural lands per citizen, ha/person	0.4	0.8
Cost of agricultural lands, thousand $/ha	7.2	1.2

In Ukraine, the problem of qualitative and quantitative malnutrition affects 60% of the population classified by the UN as poor, but there are still no effective solutions to the problem. In general, Ukraine has consistently produced enough food to meet domestic needs and maintain export growth and has a long-standing commitment to tackling the problem of

poverty and hunger in the context of accession to international agreements. But still, the food security of citizens is not ensured and is not included in the priority issues of government policy and international cooperation, and the tools to address it are practically not disclosed to the Ukrainian society. The level of per capita consumption of basic foodstuffs in comparison with the EU countries is strikingly different (Table 4).

Table 4. Level of the per person basic food products consumption, 2020 (kg/year). *(Source: calculated by the authors [28, 29, 39-42])*

Countries of Europe	Products						
	Milk	Meat	Vegetables and potatoes	Fruits	Fish	Bread	Sugar
Germany	258.7	86	93	88	13	111	48
France	241.3	87	97	114	33	127	35.2
Poland	205.4	76	108	60	11	153	44
Ukraine	201.9	53.8	164	56.5	12.4	96.6	27.8
Rational consumption rate in Ukraine	380	80	161	90	20	101	38

The level of poverty in rural areas, which traditionally depends more on the use and protection of land and other natural resources, is 2-11% higher over the past 10 years than the national average, which leads to overexploitation of natural resources, their further depletion, and degradation.

The issue of non-compliance with the requirements of modern agricultural technologies remains important. In particular, modern Ukrainian agribusinesses often disrupt crop rotation: only the most profitable crops – sunflower, rapeseed, cereals – are cultivated, which catastrophically deplete the soil resources of Ukraine. Thus, over the past 5 years, agricultural enterprises have increased sunflower oil production by 27% and Ukraine has become the world's largest exporter (49.6% in 2020). Currently, the sunflower sown area makes up about 32.5 million hectares, which is unacceptable in terms of maintaining soil fertility. Intensification of agricultural production should be accompanied by environmental measures. Thus, the urgency of the transition of the industry to the principles of the green economy is obvious.

The promising direction of using the principles of the green economy is organic agricultural production as an alternative model of management, the outcome of which lies in reducing the anthropogenic burden on the environment and natural resources. Developed economies are increasingly concerned about the health of their population. Organic production is rapidly spreading in the EU as a holistic system of management and production of food and other products, combining best practices that take into account environmental protection, biodiversity, application of high standards of animal welfare, and production methods that meet quality and safety requirements for products made from the substances and raw materials of natural origin. The trend of healthy eating is becoming more and more popular, as evidenced by the organic farming development (Table 5).

Table 5. The spread of organic farming in Europe, 2020. *(Source: calculated by the authors [8, 43])*

Country	Total organic land, thousand ha	Among them, %			Capacity of the internal market for organic products	
		Agricultural crops	Permanent crops	Permanent grassland	Number of agricultural producers	Million EUR
Germany	1291	44.2	1.7	54.1	34136	11970
France	2241	56.0	7.5	36.5	36691	11295
Poland	507	74.0	6.3	19.7	18655	314
Romania	395	65.2	5.6	29.2	9647	40
Ukraine	468	80.5	1.3	11.8	470	36

Over the past five years, the total area of organic agricultural land in Ukraine has increased by 1.5 times, and exports of organic products in 2019 in value exceeded 179 million euros. According to experts, the pace of development of organic production in Ukraine is 5.5 times higher than in Europe and 4.9 times higher than in the world [44]. Institutional weakness of the relevant public authorities leads to virtually complete lack of control over compliance with environmental legislation

DOI: 10.55643/fcaptp.4.45.2022.3782

in agricultural production as to the introduction of chemicals, crop rotation, waste disposal, etc. Thus, the EU's influence in the form of environmental requirements should become a decisive argument for agricultural production.

It is known that the health of a nation is inextricably linked with the quality of life. Society cannot be healthy with only a good healthcare system. Our well-being is primarily affected by environmental factors, the quality and safety of food, drinking water, air and even political situations in the country. In modern economic conditions, social factors have become a priority in determining the quality of life of the population (Table 6).

Table 6. Assessment of the Social Progress Index in Europe, 2020. *(Source: calculated by the authors [45])*

Countries of Europe	Germany	France	Poland	Romania	Ukraine
Rank (149 Countries)	11	18	31	45	63
Health and Wellness, %	83.48	88.75	74.28	64.14	57.24
Environmental Quality, %	85.65	90.21	80.90	83.77	61.06
Nutrition and Basic Medical Care, %	98.92	98.47	97.26	95.57	93.44
Water and Sanitation, %	99.56	99.49	98.05	92.81	86.77

A comparative analysis of the data shows that Ukraine lags behind in all social parameters of life quality. The most impressive among them are low health (56%), environmental quality (93%), water and sanitation (90%). Among all the studied countries, Ukraine takes up the 64th position in the ranking of social progress index [46].

According to the latest data, Ukraine is recognized as the poorest in terms of income of the population. Demographic trends can be considered catastrophic, given that every year hundreds of thousands of our working-age citizens are forced to leave the country. In Ukraine, the main indicators of life quality are the lowest among the considered European countries (Table 7).

Table 7. Assessment of key indicators of life quality in European countries, 2020. *(Source: calculated by the authors [34, 45, 47])*

Countries of Europe	Expected duration of life, years	Mortality from chronic diseases, per 100 thousand people	Poverty risk, %
EU countries	81	122.1	17.3
Germany	81.8	238.30	16.5
France	83.1	202.78	13.6
Poland	79.3	346.32	17.3
Romania	76.5	425.55	26.3
Ukraine	72.5	621.26	27.3

According to the Worldometer, Ukrainians live an average of 72 years, compared to 76 in Romania and 83 in France. Ukraine has the highest mortality rate of 183 people per 100 thousand people and a poverty rate of 27% [48]. Of all the parameters, Ukraine can be proud only of its level of education. But without a satisfactory level of income and other conditions for quality living standards, we risk becoming a country that trains qualified personnel to work abroad. Our scientists in masse leave Ukraine for the USA and the European countries, many of which have significantly facilitated the employment of medical and other Ukrainian professionals, which still contributes to the outflow of educated people from Ukraine.

It should be noted that the environmental interests of the population of different countries and regions have their own specific meanings. They are not limited to the desire to ensure an ecologically safe living environment but also include environmental and economic aspects of the regional entities' development related to the use and preservation of resource potential of the territory, energy, etc.

In Ukraine, the share of agricultural production in the structure of GDP is more than 10%, and GVA – 12% of its total. This figure is the highest among European countries (Fig. 2).

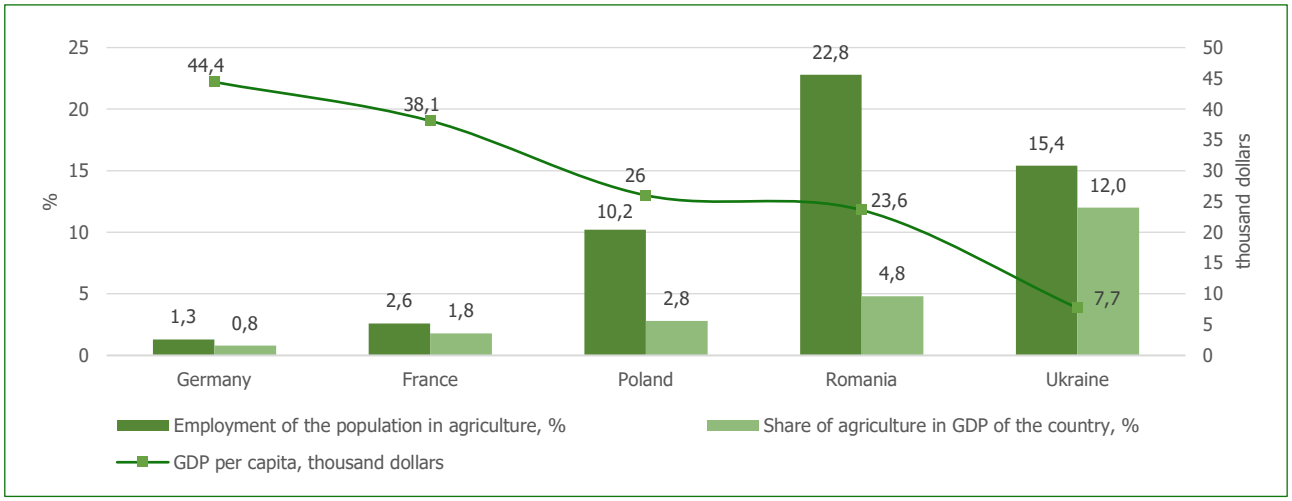

Figure 2. The place of agriculture in the economy, %. *(Source: calculated by the authors [46])*

Analysis shows that in France and Germany the share of employment in the agricultural sector makes up only 1-5%, which provides up to 3% of the countries' GDP, while in Ukraine, which employs more than 15% of its active population in agriculture, the sector accounts for 12% of GDP. Among the studied countries, Ukraine has the lowest level of the per capita GDP – 7.7 thousand dollars against 44.4 thousand in Germany [46].

It should be noted that Ukraine has entered the XXI century with extremely low efficiency of available resources, which creates significant obstacles to international integration processes but most importantly – causes growing direct and indirect pressure on nature and society. False principles of the inexhaustibility of natural resources, refusal to take into account their real value, neglect of the global character of emerging problems, and unwillingness to assess long-term consequences have led to the point when the resource intensity of the final product in Ukraine is much higher than in developed EU countries. All this indicates an insufficient level of implementation of modern scientific and technical achievements in the country, which threatens not only environmental but also social security. At present, Ukraine makes use only of the factors of classical competitiveness (based on cheap labor and use of available production assets), although it has all the prerequisites for social development based on other priorities, among which the environmental efficiency of the economy should play a key role. The prospect for the future of land resources seems discouraging. At the current rate of soil degradation (erosion, flooding, climate change, etc.), critical values of fertility can be achieved in the coming decades.

Climate change, manifested in increasing the number, intensity, and duration of natural disasters, deteriorating environmental situation and, consequently, public health through intensive use of environmentally unsound technologies, gradual depletion of non-renewable natural resources, and further energy price rise in conditions of high energy intensity of the economy are the challenges, which Ukraine currently faces. They require immediate solutions through the country's rapid transition to the principles of the green economy.

Studies show that the transfer of innovations in self-renewable agriculture allows a rational use of natural resources in both environmental and economic components and an achievement of effective and long-term growth. Therefore, the transition to a green economy can be seen as a roadmap for sustainable economic development.

In this regard, Ukraine should use the world experience of successful implementation of green technologies that promote environmentally sustainable management of natural resources and land use, conservation of biodiversity, and adaptation to climate change. On the other hand, the current pace of intensification of agricultural production and strengthening of the competitive basis for natural resources will become a motivation for sustainable economic development and its integration into the EU.

A very promising area of the green economy in Ukraine is the introduction of green bonds as a tool to attract investment in energy efficiency projects. In 2014, the International Capital Markets Association (ICTA), together with other stakeholders, developed and from then onwards periodically updates the principles of green bonds which are generally recognized for the green economy.

ICTA outlined a list of "green" international projects, including renewable energy sources, effective prevention, and control of pollution, environmentally sustainable management of the living natural resources and land use, biodiversity conserva-

DOI: 10.55643/fcaptp.4.45.2022.3782

tion, adaptation to climate change, environmentally adapted and environmentally friendly production technologies, processing and waste-free use of raw materials that meet the requirements of national and international standards and certifications, such as CBS (Climate Bonds Standard).

Transition to sustainable development with the use of green bonds requires active state intervention, creation of the program for state regulation, and positive for the development of environmentally friendly industries and infrastructure. According to the International Finance Company, the launch of the green bond market will allow Ukraine to attract $ 73 billion by 2030 [49].

With the proper targeted use, "green" investments will help to expand funding for the projects in the field of agricultural production, and increase the competitiveness of agricultural products from Ukraine and its further European integration.

CONCLUSIONS

The main directions for intensification of agricultural production in Ukraine, with an account of the quality and safety requirements for products, include:

- the development of a national program for soil resources protection from degradation and their effective use, taking into account social needs and environmental risks;
- harmonization of national regulations on protection and use of land resources with the EU Directives, namely, considering approval and implementation of the standards for the optimal ratio of agricultural land;
- sustainable development of ecosystems on the principles of green economy, which should ensure environmental protection, while creating conditions for the development of modern and competitive agricultural production;
- launch of the "green" bonds market in the agricultural sector of Ukraine in order to accumulate funds and use them for the ecologically sustainable development of production projects and to provide the population with environmentally friendly food products.

REFERENCES

1. The World Bank (2021). The International Bank for Reconstruction and Development. URL: https://www.worldbank.org/en/who-we-are/ibrd.
2. United Nations Framework Convention on Climate Change (2020). Greenhouse gas inventory database (for greenhouse gas emissions). URL: https://di.unfccc.int/ghg_profile_annex1.
3. Abubakar, S.M. (2021). Climate change in rural Pakistan: evidence and experiences from a people-centered perspective. *Sustainability Science,* 16, 1999–2011. DOI: https://doi.org/10.1007/s11625-021-01036-4.
4. Hetman, A.P., Ihnatenko, I.V., Korniienko, V.M. et al. (2016). Problems of legal support of sustainable development of rural areas in Ukraine. Kharkiv, Pravo.
5. Petrychenko, V.F., Korniychuk, O.V., Voronetska, I.S. (2018) Biological farming in conditions of transformational changes in the agrarian production of Ukraine. *Agricultural Science and Practice,* 5(2), 3-12. DOI: https://doi.org/10.15407/agrisp5.02.003.
6. Dongmo Zangue, Y., Melot, R., Martin, F. (2022). Diversity of farmland management practices (FMP) and their nexus to environment: A review. *Journal of Environmental Management*, 302(Part B), 114059. DOI: https://doi.org/10.1016/j.jenvman.2021.114059.
7. Baliuk, S.A., Nosko, B.S., Skryl'nyk, Je.V. (2016). Modern problems of biological degradation of black earth and ways of preserving their fertility. *Bulletin of Agricultural Science,* 1, 11-17. DOI: https://doi.org/10.31073/agrovisnyk201601-02.
8. Gomiero, T. (2019). Soil and crop management to save food and enhance food security*. In: Saving Food. Academic Press, Production, Supply Chain, Food Waste and Food Consumption*. *Editor(s): Charis M. Galanakis*, 33-87. DOI: https://doi.org/10.1016/B978-0-12-815357-4.00002-X.
9. Xie, H., Zhang, Y., Wu, Z., Lv, T. (2020). A Bibliometric Analysis on Land Degradation: Current Status, Development, and Future Directions. *Land,* 9, 28. DOI: https://doi.org/10.3390/land9010028.
10. Drenovsky, R.E., Steenwerth, K.L., Jackson, L.E., Scow, K.M. (2010). Land use and climatic factors structure regional patterns in soil microbial communities. *Global Ecology and Biogeography,* 19(1), 27-39. DOI: https://doi.org/10.1111/j.1466-8238.2009.00486.

11. Robertson, G.P., Gross, K.L., Hamilton, S.K., Landis, D.A., Schmidt, T.M., Snapp, S.S., Swinton, S.M. (2014). Farming for Ecosystem Services: An Ecological Approach to Production Agriculture. *Bioscience,* 64(5), 404-415. DOI: https://doi.org/10.1093/biosci/biu037.

12. Dwivedi, S.L., Ortiz, R. (2019). Change in Production Practices: The Role of Agri-Food and Diversified Cropping Systems. *Encyclopedia of Food Security and Sustainability,* 1, 36-43. DOI: https://doi.org/10.1016/B978-0-08-100596-5.22378-0.

13. Kanianska, R. (2016). Landscape Ecology – The Influences of Land Use and Anthropogenic Impacts of Landscape Creation Agriculture and Its Impact on Land-Use. *In: Landscape Ecology - The Influences of Land Use and Anthropogenic Impacts of Landscape Creation*. *Edited by Amjad Almusaed*. DOI: https://doi.org/10.5772/63719.

14. Lemaire, G., de Faccio Carvalho, P.C., Kronberg, S.L., Recous, S. (ed.) (2018). Agroecosystem Diversity. Reconciling contemporary agriculture and environmental quality. Academic press, 453-464. DOI: https://doi.org/10.1016/C2016-0-00198-5.

15. Czyżewski, B., Matuszczak, A., Grzelak, A., Guth, M., Majchrzak, A. (2021). Environmentally sustainable value in agriculture revisited: How does Common Agricultural Policy contribute to eco-efciency? *Sustainability Science*, 16, 137–152. DOI: https://doi.org/10.1007/s11625-020-00834-6.

16. Chemerys, V., Kaplenko, H., Kulish, I., Maksym, V et al. (2021). Theoretical aspects of the concept of "quality of life" in the context of environmental safety. *Ukrainian Journal of Ecology*, 11(1), 196-201. DOI: https://doi.org/10.15421/2020_31.

17. Bamberger, M., Behrens, P., Scherer, L. (2021). Environmental impacts of the nutrition transition and potential hunger eradication in emerging countries. *Sustain Sci*. 16, 565–579. DOI: https://doi.org/10.1007/s11625-020-00887-7.

18. Zamula, I., Tanasiieva, M., Travin, V., Nitsenko, V., Balezentis, T., Streimikiene, D. (2020). Assessment of the Profitability of Environmental Activities in Forestry. *Sustainability*, 12(7), 2998. DOI: https://doi.org/10.3390/su12072998.

19. Fahey, T., Nolan, B., Whelan, C. (2003). Monitoring quality of life in Europe, European Foundation for the Improvement of Living and Working Conditions, Official Publications of the European Communities, Luxembourg. URL: https://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef02108en.pdf.

20. Babmindra, D.I, Stohnii, V.A. (2018). Rational use of land in the agrarian sector of Ukraine. *Visnyk of Zaporizhzhya National University*. *Economical Sciences,* 1(37), 60-68. URL: http://visnykznu.org/issues/2018/2018-econ-1/10.pdf.

21. Yatsenko, O.M., Yatsenko, O.V., Nitsenko, V.S., Butova, D.V., Reva, O.V. (2019). Asymmetry of the development of the world agricultural market. *Financial and credit activity: problems of theory and practice*, 30(3), 423-434. DOI: https://doi.org/10.18371/fcaptp.v3i30.179821.

22. Wang, G., Shi, R., Mi, L., Hu, J. (2022). Agricultural Eco-Efficiency: Challenges and Progress. *Sustainability*, 14, 1051. DOI: https://doi.org/10.3390/su14031051.

23. Leonets, V.A. (2001). Modern problems of land management and land protection. *Land management,* 1, 42-47.

24. Bilan, Y., Zos-Kior, M., Nitsenko, V., Sinelnikau, U., Ilin, V. (2017). Social component in sustainable management of land resources. *Journal of Security and Sustainability*, 7(2), 107-120. DOI: https://doi.org/10.9770/jssi.2017.7.2(9).

25. Rural Voices. A qualitative analysis of the findings from stakeholder workshops contributing to the long-term vision for rural areas (2021). *European network for rural development.* URL: https://enrd.ec.europa.eu/sites/default/files/enrd_publications/rural-voices.pdf.

26. The Food and Agriculture Organization (2021). World Food and Agriculture Statistical Pocketbook – Statistical pocketbook. Rome. URL: http://www.fao.org/3/CA1796EN/ca1796en.pdf.

27. European statistics (2021). Statistics Explained Agriculture, forestry and fishery statistics. *Statistical books.* URL: https://ec.europa.eu/eurostat/statistics-explained/index.php/Agriculture,_forestry_and_fishery_statistics.

28. The Food and Agriculture Organization Corporate Statistical Database (2021). Food and agriculture data. URL: http://www.fao.org/faostat/en/.

29. State Statistics Service of Ukraine (2022). Statistical Information. URL: https://ukrstat.gov.ua.

30. Patyka, V.P., Solomakha, V.A., Burda, R.I., Boiko, A.L. et al. (2003). Prospects for the use, conservation and reproduction of agrobiodiversity in Ukraine: monograph. Issue 3. Agrobiodiversity. Institute of Agroecology and Biotechnology, Academy of Sciences of Ukraine. Kyiv, Vyd-vo "Khimdzhest".

DOI: 10.55643/fcaptp.4.45.2022.3782

31. Makhortov, Yu.A. (1999). Ecological and economic problems of land use: monograph. Lugansk, Ukraine.

32. Saiko, V.F. (2008). Agriculture in the context of climate change. *Proceedings of the National Research Center "Institute of Agriculture of NAAS"*, Special issue, 3-14. URL: http://nbuv.gov.ua/UJRN/znpzeml_2008_Spets.

33. Yurchenko, A.D, Hrekov, L.D, Miroshnychenko, A.M, Kuzmin, A.V. (2009). Modern land policy of Ukraine: monograph. Kyiv, Intertekhnolohiia.

34. World Bank's Poverty and Equity Global Practice (2021). PovcalNet: an online analysis tool for global poverty monitoring. URL: http://iresearch.worldbank.org/PovcalNet/home.aspx

35. Organisation for Economic Cooperation and Development (2019). Trends and drivers of agri-environmental performance in OECD countries. OECD Publishing, Paris. DOI: https://doi.org/10.1787/b59b1142-en.

36. Organisation for Economic Cooperation and Development (2021). Agri-environmental indicators database. URL: http://www.oecd.org/agriculture/topics/agriculture-and-the-environment/.

37. Ritchie, H., Roser, M. (2020). Environmental Impacts of Food Production. Published online at OurWorldInData.org. URL: https://ourworldindata.org/environmental-impacts-of-food.

38. Eurostat Statistics Explained (2016). URL: https://ec.europa.eu/eurostat/statistics-explained/images/d/d3/Causes_of_death_%E2%80%94_standardised_death_rate%2C_EU%2C_2016_%28per_100_000_inhabitants%29_Health20.png.

39. Consumption of foodstuffs – the world (2021). URL: https://www.efsa.europa.eu/en/microstrategy/foodex2-level-1.

40. European Data News Hub (2019). Food consumption in the EU. URL: https://www.ednh.news/food-consumption-in-the-eu.

41. United Nations Economic Commission for Europe (2021). URL: https://w3.unece.org/PXWeb/ru/Table?IndicatorCode=6#.

42. Food and Agriculture Organization of the United Nations (2022). The State of Food Security and Nutrition in the World 2021. The world is at a critical juncture. URL: https://www.fao.org/state-of-food-security-nutrition/en/.

43. Eurostat (2021). Organic crop area by agricultural production methods and crops (from 2012 onwards). URL: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=org_cropar&lang=en.

44. Research Institute of Organic Agriculture (2021). The World of Organic Agriculture. URL: https://shop.fibl.org/CHde/mwdownloads/download/link/id/1202/?ref=1.

45. Worldometer (2021). Life Expectancy of the World Population. https://www.worldometers.info/demographics/life-expectancy/#countries-ranked-by-life-expectancy.

46. European Foundation for the Improvement of Living and Working Conditions (2021). URL: https://europa.eu/european-union/about-eu/agencies/eurofound_en.

47. Life Expectancy of the World Population (2021). URL: https://www.worldometers.info/demographics/life-expectancy/.

48. The Social Progress Imperative (2021). Social Progress Index. URL: http://www.socialprogressindex.com/.

49. The International Fininace Company (2021). URL: https://www.ifc.org/wps/wcm/connect/corp_ext_content/ifc_external_corporate_site/home/sitemap.

Петриченко В., Петриченко О., Федоришина Л., Кравчук О., Корнійчук О., Ніценко В.

АГРАРНЕ ВИРОБНИЦТВО В УКРАЇНІ: ЕКОЛОГІЧНІ ВИКЛИКИ ТА ВПЛИВ НА ЯКІСТЬ ЖИТТЯ

Розглянуто основні екологічні виклики аграрного виробництва України в умовах євроінтеграції. Актуальність обраної теми обґрунтовується високим аграрним потенціалом України, яка має спільні цінності та загальні інтереси на європейському економічному просторі. Це підтверджується бенчмаркінг-аналізом забезпечення та ефективності використання земельних ресурсів України серед країн ЄС-28. Відомо, що якість життя суспільства залежить від стану навколишнього середовища, від рівня інтенсифікації виробництва й переробки в аграрній сфері. Досліджено, що за показниками якості життя й соціального розвитку Україна відстає від країн ЄС. Тому питання формування програми захисту ґрунтових ресурсів України від деградації та ефективного їх використання з урахуванням соціальних потреб та екологічних ризиків є важливою проблемою для країн Європи як єдиної екологічної системи. Авторами визначені

напрями інтенсифікації аграрного виробництва України з урахуванням вимог якості та безпечності продукції. Обґрунтовано підхід гармонізації нормативно-правових актів, що регламентують виробництво сільськогосподарської продукції та забезпечують сталий розвиток екосистем на принципах зеленої економіки.

Ключові слова: зелена економіка, аграрне виробництво, бенчмаркінг землекористування, індекс соціального прогресу, інтенсифікація, органічне виробництво

JEL Класифікація: R14, D18, P2, B40, G39, M40

DOI: 10.55643/fcaptp.4.45.2022.3782