

Priorities of sustainable development of the agri-food sector of Ukraine: realities and perspectives

by

Pavlo Koval

Inna Levkovych

Halle (Saale), Germany

December 2022

This Brief Analysis was written as part of the project *»Land reform in Ukraine: new perspectives and challenges for sustainable development of the agricultural sector and rural areas«*, funded by the German Academic Exchange Service (DAAD) with funds from the Federal Foreign Office (AA).

ABSTRACT

It is increasingly evident that sustainable development is the only path capable of addressing global challenges and contributing to the achievement of objectives such as economic growth, environmental protection, and social inclusion. Ukraine has joined the global process of sustainable development. Achieving the SDGs requires a strategic framework where domestic policies reinforce one another and align with national sustainable development objectives. The current challenges that Ukraine is facing because of the full-scale Russian invasion influence the implementation of Ukraine's sustainable goals. It also requires an update and harmonization of tasks at the national and sector levels. In this paper, we discuss the current state and challenges concerning the development of the agri-food sector in Ukraine and the achievement of sustainable goals. These will be considered at the business level (sustainability activities, monitoring, and reporting) as well as the policy level (strategy, tasks, and implementation). The aspects of sustainable development in times of war will be considered. Further, the main principles of the strategy of sustainable development of the Ukrainian agri-food sector and its policy implications in post war times will be discussed.

KEYWORDS

Sustainable development, strategy for sustainable development, agricultural policy, land reform, Ukraine, impact of Russian aggression on agri-food sector of Ukraine

ABOUT THE AUTHORS

Dr. Pavlo Koval is the general Director of All-Ukrainian public association "Ukrainian Agrarian Confederation". He has more than 20 years of experience as a consultant in the field of economics, finance and management by agribusiness, state authorities, Ukrainian and international agricultural organisations. Pavlo Koval is also the Associate Professor of Kyiv National Economic University.

Dr. Inna Levkovych is research associate in the Department Agricultural Markets at IAMO. Her areas of expertise include international agricultural trade, agricultural and trade policy.

The views and opinions expressed in this publication are those of the authors. They do not purport to reflect the opinions or views of the IAMO.

ACKNOWLEDGEMENT

The article was written as part of the project »Land reform in Ukraine: new perspectives and challenges for sustainable development of the agricultural sector and rural areas«. The project is funded by the German Academic Exchange Service (DAAD) with funds from the Federal Foreign Office (AA).

funded by



Auswärtiges Amt



Deutscher Akademischer Austauschdienst
German Academic Exchange Service

CONTENTS

1 Introduction..... 3

2 Recent developments and implications for agricultural sector in Ukraine..... 3

3 Regarding sustainable development..... 5

4 Monitoring of information on sustainable development 6

5 Sustainable development and land reform..... 7

6 Vision of the Strategy of sustainable development of Ukraine agri-food sector tools for their implementation 9

7 References..... 12

1 Introduction

The deepening of globalization processes and Ukraine's orientation towards integration into the European space encourage active participation in implementation of the Sustainable Development Goals (SDGs) while adhering to the principles of sustainable development. The agricultural sector of Ukraine, unlike several other industries, showed signs of growth until 2022, despite the impact of the economic crisis, the war of early 2014, and all the losses and problems associated with it. In the context of the ongoing large-scale war, initiated by the Russian invasion in February 2022, Ukraine's agricultural sector has continued to strengthen its special role in the national economy. The sustainability trends within this sector will profoundly shape the overall economic landscape and its dynamics. The multifunctionality, multidimensionality, and multifaceted nature of agricultural production, which are recognized by the authors and constitute the conceptual basis of the European Union's common agricultural policy, require achieving and maintaining a balance of all its strategic goals: economic growth, food security, environmental protection, and rural development. Within this context, we discuss the current state and challenges concerning the sustainable development of the agri-food sector in Ukraine. These will be considered at the business level (like sustainability activities and reporting) as well as the policy level (strategy and implementation). The aspects of sustainable development and priorities in times of war will be also considered. Furthermore, the main principle of the sustainable development strategy for Ukraine's agri-food sector and its policy implications in post-war times will be discussed.

2 Recent developments and implications for agricultural sector in Ukraine

Over the past eleven months, starting from February 24, 2022, Ukraine's agri-food sector has faced a new and challenging reality—a large-scale invasion of its sovereign territory by the Russian Federation's regular army. The agricultural sector has suffered significant losses due to active hostilities in ten of Ukraine's twenty-five regions and constant rocket, air, and artillery fire. It is not yet possible to estimate the exact losses, but even their preliminary estimates are impressive.

Regarding agricultural resources, significant portion of *agricultural land*, approximately 20% of the total agricultural area, has been withdrawn from active production. These lands are mined, including randomly-mined, contaminated with explosive devices and subject to clean up, destroyed and subject to reclamation, flooded as a result of the destruction of hydraulic structures, etc. The total area of Ukraine's territory under temporary occupation, mined,

and contaminated with explosives is about 250 thousand square kilometres, which is larger than the area of Great Britain or Romania.

The agricultural sector has suffered significant losses in the embodied *capital of agricultural enterprises*. We have lost a huge fleet of agricultural machinery due to physical destruction, some of which was mobilized for the war. In addition to this, irrigation and drainage systems, livestock facilities, production and processing plants, utility networks, bridges and overpasses, and energy facilities were destroyed. Biological assets, such as livestock and poultry, and perennial plantations, have suffered significant losses. According to preliminary estimates of KSE, the economic losses of Ukraine's agriculture could be up to \$33 billion as of today. However, it's important to note that this amount is not final, as the fighting is ongoing at this moment (AWDR, 2022).

The destruction of *infrastructure* has a negative impact on agricultural production. About 15 million tons of elevator capacities out of 60 existing and identified elevator capacities have been lost or are not controlled by Ukraine. Furthermore, 14 out of the 17 seaports in the Black and Azov Seas are currently blocked and non-operational (Potaeva, 2022; Page et al., 2022). Additionally, 13 railway crossing points to European countries are overloaded with cargo traffic. Generating power facilities, such as the Zaporizhzhia Nuclear Power Plant (ZNPP), a number of thermal power plants (TPP), thermo-centrals (CHP), and DRPPs, have been decommissioned, making it impossible to provide uninterrupted power supply to agricultural and food enterprises. This creates problems for livestock complexes and farms, food processing companies, and industries with a continuous production cycle and a chemically aggressive environment. Several large logistics distribution complexes have been destroyed, which has disrupted the rhythmic and timely delivery of finished and semi-finished products to the final user, including food, medicines, etc.

An important factor influencing the development of the agricultural sector and rural areas is the *human capital*: the huge number of internally displaced persons and people who have left Ukraine. Their total number reaches about 14 million people (OPORA, 2023) - almost a third of Ukraine's population! This has changed the size and structure of the domestic consumption market and redistributed the density of people's settlements by territory within the country. The loss of *human capital* for agricultural and food businesses and the population of rural areas is inestimable. Agricultural production systems are already experiencing a shortage of workers of certain professions and qualifications, both in labor occupations (tractor drivers, drivers, operators of technological equipment) and in specialists and management personnel (veterinarians, logisticians, financiers, managers, and others).

To date, there has been insufficient attention paid to the environmental impact of the war. The situation is already quite threatening - nuclear power facilities are being shelled. Chemical industry facilities, oil, gas, and product pipelines are being destroyed; hydraulic structures are being destroyed and large areas of land are being flooded. Coal mines are flooded, natural ecosystems are disrupted, nature reserves and sanctuaries are destroyed,

which affect biodiversity, and finally, explosives (trinitrotoluene) and rocket fuel are dangerous carcinogens. Thousands of tons of this substance have already been used in the territory of hostilities and rocket attacks...

3 Regarding sustainable development

Previous assessments of the agricultural business environment naturally raise questions about the feasibility of adhering to sustainable development principles at all. These questions have several levels, which nowadays should be considered under the prism of the Russian Federation's war against Ukraine: government policy and position, business strategies and responsibility, and civil society philosophy for the future.

We consider it appropriate to note the full commitment and inevitability of adherence to the principles of sustainable development in accordance with Ukraine's declared intentions and chosen strategic integration direction, but under the conditions of possible guarantees in the controlled territories. Ukraine and Ukrainian agribusiness, even under the war conditions, fulfil their international obligations to ensure food security in Africa, the Middle East, and Asia throughout the year. Unlike the Russian aggressor, the Ukraine guarantees compliance with all ratified conventions on the conduct of war. Ukraine guarantees access for international organizations such as the IAEA, UNESCO, WHO, the Red Cross and Red Crescent, etc. to monitor the facilities and the situation at nuclear facilities, cultural heritage sites, the epidemiological situation, etc. All these processes take place in an open dialog between the government and civil society.

We would like to highlight the presence and nature of transformation in the position of agribusiness in terms of commitment to and adherence to the principles of sustainable development, along with the Sustainable Development Goals. In Ukraine, scientists, experts, and NGOs monitor and evaluate compliance with the principles of sustainable development of agribusiness and rural areas, although not on a regular basis. For example, The European Business Association (EBA, 2022) assesses the integral index of the implementation of sustainable development goals by business and the state. In 2022, the integral index increased by 0.23 points compared to 2021 and reached 3.5 out of 5. In terms of sustainable development components, the social aspect was the most important and the environmental aspect the least important.

The survey (EBA, 2022) identified the four most relevant areas of sustainable social development: support for women, business support for people with disabilities, families with children, and support for the elderly. In agriculture, one-third of agricultural businesses have increased their support for women and the elderly in these areas compared to last year. In terms of environmental aspects, in 2022, in all monitored sectors, including agriculture, all environmental improvement programs were reduced, except for attention to

biodiversity. The overall assessment of structural shifts in sustainable development projects shows a shift in resources in 2022 toward supporting the country's defense capability, with a share of 79% of respondents. One-third of businesses affected by the war have fully maintained funding for sustainable development programs.

4 Monitoring of information on sustainable development

Next, let's try to briefly characterize the attitude of the agricultural business toward the perception and implementation of sustainable development programs and goals at enterprises. In this context, it is important to understand the existing structure of agricultural production in terms of the scale and size of the producer. According to the Commercial Code of Ukraine, there are four categories of agricultural enterprises in the sector by size: micro, small, medium, and large enterprises. From the point of view of public monitoring and evaluation of a business's sustainability policy, this is only possible for companies that use forms of disclosure and reporting like the company's official website, a page on social media, a non-financial report, and a section in the annual report. The practice of using these forms shows that information on social responsibility and sustainable development is available in the public space mostly for large enterprises, rarely for medium-sized ones. The global practice provides for the preparation of an annual report of the company according to the GRI Standards and Global Compact framework. In Ukraine, only a few agricultural companies and enterprises prepare a report according to these standards, and even fewer use the procedure of independent confirmation of the information on sustainable development set out in the non-financial part of the report for compliance with the GRI Standards.

In the context of the war, the number of agricultural companies and small and medium-sized enterprises that provide sustainability reporting in any form and according to a certain reporting standard has decreased to a few. Mainly, these are public companies listed on global stock exchanges, where such a report is mandatory. Some companies have publicly available information on social responsibility and sustainable development but do not formalize it in the form of a report.

In this situation, we can give some brief recommendations on why and how to improve this reporting work in the agri-food sector of Ukraine. First of all, it is necessary to determine the need for reporting - why, to whom, and in what form it is necessary to be reported. Next, the reporting procedure should be properly communicated within the company. The next step is to prepare the staff for the reporting procedure according to a particular standard. The following action is to determine a preliminary list of material topics that are important to include in the report. From the beginning, the report should be prepared in accordance with the requirements of the standard, but do not expect impressive results right away. It is

also worthwhile to use the procedure of external confirmation of the report on the implementation of sustainable development goals. It is important to build a dialogue between businesses through NGOs and government institutions that coordinate work on the implementation of the Sustainable Development Goals. The introduction of such a procedure will contribute to transparency, highlighting the social responsibility of the Ukrainian agricultural sector and its maximum involvement in the implementation of the goals of sustainable development, which is especially relevant in view of the intensification of the process of European integration and the acquisition of the status of a candidate for EU membership.

5 Sustainable development and land reform

The opening and development of an efficient and effective agricultural land market is an important factor for the full involvement of Ukraine's agricultural sector in the responsible achievements of the Sustainable Development Goals (SDGs). Thus, land ownership and the right to sell land, along with a balanced agricultural policy of the state to support micro and small agricultural producers, are of crucial importance for reducing poverty among rural residents, implementing targeted social assistance programs for the poor, and increasing the resilience of socially vulnerable groups (SDG1 "End Poverty").

The state's agricultural policy, especially the part focused on micro and small agricultural enterprises, increases access to food for local consumption and increases the sustainability of production systems (SDG2: End hunger).

An efficient and effective agricultural sector of the Ukrainian economy contributes to the dynamic, sustained, inclusive, and sustainable economic growth of the Ukrainian economy and the reduction of unemployment. It contributes also to the realization of full employment and the creation of decent work opportunities for all, with a special emphasis on providing avenues for rural youth to realize their potential (SDG8: "Decent Work and Economic Growth").

The introduction of sound land management practices in agricultural production, coupled with support for micro and small farmers, as well as the promotion of niche and high-value crops, serves to conserve and enhance biodiversity. It also protects, enhances, and promotes the sustainable use of terrestrial ecosystems (SDG15: "Protect Terrestrial Ecosystems").

Free and transparent market-oriented land relations play an important role in expanding economic opportunities for women, enabling them to realize their potential. This, in turn, contributes to gender equality and the empowerment of all women (SDG5: Gender Equality).

The execution of the land reform, aimed at sustainable land relations through the introduction and development of an effective land market, is one of the main factors in sustainable community development and effective local self-government. According to their content, the above-mentioned opportunities for implementing the sustainable development goals are interdependent with the development of the area, organizational forms of compact settlement of rural populations, and the realization of equal opportunities. (SDG11 "Sustainable Development of Cities and Communities")

In our opinion, the implementation of the above-mentioned principles contributes to the end-to-end achievement of sustainable development goals - from the family farm, community, and vertically integrated production system to the agri-industrial complex, national economy, and the country as a whole, with its enormous potential.

It is obvious that Ukraine is still on the way to completing the land reform. We analyzed 100 days of the reform, and then we could have analyzed a year of reform based on the same tools and procedures, but the situation with the dynamics of the land market was changed by the full-scale military invasion of the Russian Federation into the territory of Ukraine. This influenced the implementation of the reform. For example, territories and agricultural land on them were occupied, along with local governments, notaries, land technical assessment bodies, the treasury, tax administration, banks, and other state institutions that were evacuated. Notary registries in the occupied territories were closed, and the State Land Cadastre suspended its work until June 9, 2022 on the whole territory of Ukraine. The state authorities have adopted several laws to regulate land relations and identify territories and lands, such as occupied territories, border areas, liberated territories, etc. These and some other factors have changed the "peaceful" trends and procedures for alienation and acquisition of land ownership. There has been a pause in the development of demand and supply for agricultural land; the number of land sale and purchase transactions has changed, and prices have changed. Obviously, such estimations should be differentiated depending on the region of Ukraine. In short, the market came to a standstill when the aggression began.

Some facts about land reform in Ukraine in 2022

As of December, 2022, since the land market for Ukrainian individuals has opened, with a limit of 100 hectares per person, 142,945 land purchase transactions have been made, with a total area of 322,194 hectares (StateGeoCadastre of Ukraine, 2022). During the period of full-scale war, 41,979 transactions were concluded for a total area of 77,668 hectares. The average price of 1 hectare was UAH 52,462, which was calculated only based on open data about transactions, namely 117,586 transactions, covering an area of 268.3 hectares. For some reason, the data is open only for 82.3% of transactions and 83.3% of the area. It is not worth focusing on the average price, as the price range can be significant even within the same community! According to the published data, the Ivano-Frankivsk region is the leader in terms of price. 292.7 thousand UAH/ha; the lowest price in December 2022 was in the

Sumy region, about 54.3 thousand UAH/ha. It is important to note that the average price differs slightly from the prices of the pre-war period, which is mainly due to the presence of the normative monetary value of land as a lower limit.

The market for lease rights and land leases itself is developing more actively, as expected. Starting in January 2023, the minimum tax liability per hectare will be introduced, which is intended to bring a significant area of land out of the shadows. However, the warnings about the transparency of the first phase of the reform have come true: about 20% of information about land transactions (e.g. price) is closed! Additionally, the system of monitoring the formation of supply and demand for land is complicated, and the formation of the price per hectare is often not market-based.

6 Vision of the Strategy of sustainable development of Ukraine agri-food sector tools for their implementation

So far, a protracted economic crisis and economic depression have shaped the Ukrainian model of sustainable development, and now, a full-scale war is reinforcing these constraints. In this context, the post-war restart and transformation of the economic system and the agricultural sector of the economy at various levels should be based on a balance of economic, social, and environmental interests in an open market economy with the attraction of a significant amount of investment and the functioning of an effective, transparent mechanism for managing it. Today, we can recognize that Ukraine's economy is uncompetitive due to its high energy intensity and resource consumption, and it is therefore imperative to “green” it by switching to renewable energy sources, introducing green technologies, and taking a rational approach to resource use. At the same time, the Ukrainian economy still continues to focus on the changing external environment and raw material exports and imports of energy resources without caring about the development of modern national industries, environmentally friendly infrastructure, or stopping the degrading impact on the environment throughout the country.

As for the EU member states, in the context of achieving sustainable development goals, the circular economy is becoming increasingly important. The circular economy is a concept of resource management in closed systems and an important component of the European Green Deal strategy agenda. The Circular Economy Action Plan encourages sustainable consumption in the EU and aims to double the reuse of resources in the coming decades, while promoting economic growth. Implementation of the strategy could also increase EU GDP by an additional 0.5% by 2030 and create around 700,000 new jobs¹. It describes initiatives for the entire product life cycle, from design and production to consumption,

¹ https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_419

reuse, recycling, and return of resources to the economic system. In terms European integration of Ukraine and the post war recovery it is necessary that the Ukrainians national and regional development strategies targeting various economy sectors are oriented on objectives of the European Green Deal.

In September 2017, Ukraine, as a member of the UN, joined the global process of ensuring sustainable development, and the government presented the National Report "Sustainable Development Goals: Ukraine". The document defines the baseline indicators of the 17 global SDGs, taking into account the specifics of national development. It should be noted that the basic goal of Ukraine's sustainable development is to ensure dynamic socio-economic growth, preserve environmental quality, and rationally use natural resources. At the same time, it is also important to meet the needs of current and future generations by building a highly efficient economic system that stimulates environmental sustainability, productive labour, scientific and technological progress, and a social orientation. However, the current government neither renounces nor revises its declared goals and guiding principles.

To deliver sustainable development, the establishment of a clear national strategic framework integrating economic, environmental, and social policies is needed. Domestic sector policies should be aligned with national sustainable development objectives and contribute to the achievement of the SDGs. The fundamental objective of the sustainable development strategy is to ensure the conditions for the balanced functioning of the social, economic, and environmental components of the Society-Economy-Nature system. According to this, the urgent tasks of the sustainable development strategy include:

- studying the parameters of the relevant subsystems and processes that affect their development; use of integrated quantitative and/or qualitative indicators to assess the status of social, economic, and environmental subsystems;
- study of the impact of information factors in managing the transition to sustainable development;
- buildout the pathways of development of territories, regions, and countries in accordance with the SDGs;
- development of local environmental action programs in the context of a sustainable development strategy;
- identification of a set of indicators necessary for a reliable assessment of the state of the social, economic, and environmental subsystems;
- implementation of management decisions and the development of measures for the targeted transformation of social, economic, and environmental subsystems;
- division of territories by the level of development of socio-economic subsystems, taking into account environmental constraints;
- development of mechanisms for implementing management decisions to ensure sustainable development of socio-economic systems.

The tools for realizing the prospects and declared goals of sustainable development are based on the fastest possible legitimization and deployment of the competence of strategic thinking and the competence of strategy elaboration. Traditionally, for the last 25 years, Ukraine, in comparison to the EU, did not have legalized permanent competence in strategy development, and strategies, including agricultural development strategies, were developed with the next change of the Minister of Agrarian Policy. At the same time, the strategy developers did not adhere to a number of important principles, such as the continuity of the strategy process, the continuity of previous strategic decisions, the principle of subordination, nesting, etc. As a result, *none of the strategies developed have been fully implemented*. For any sector of the economy, this is a big problem, and for agribusiness, it is a problem that is much more complicated. Agribusiness is most closely connected with living organisms and objective natural cycles and rhythms, in addition to all other cycles and rhythms (political, economic, and social) inherent in other industries. The absence of a strategy, its unreasonable change, or erroneous strategic goal-setting can be disastrous for agriculture.

Strategizing is a permanent function in the system of state regulation of the agri-industrial complex, which includes 1) the process of developing a strategy, 2) organizational support for its implementation, including its review and adjustment, and 3) assessment of the effectiveness and level of achievement of strategic goals. An effective strategy system is possible only if there is a clear understanding of the interdependent elements of the strategy's higher and lower priorities and the place of the strategy in the holistic, meaningful structure of strategy.

Only by having such a basic strategic tool or system can we develop the concept and doctrines of the future strategy of agrarian and rural development based on the principles and values of sustainable development and formulate them as guiding principles. At the same time, specific proposals should be implemented as reforms, development programs, and projects in the framework of a long term strategy.

7 References

- AWDR (2022):** Agricultural War Damages Review, No 2. From 10 November 2022, Kyiv School of Economics, Available at: https://kse.ua/wp-content/uploads/2022/11/Losses_report_issue2_ua-1.pdf
- Decree of the President of Ukraine (2019).** “On the sustainable development goals of Ukraine for the period until 2030” (in Ukrainian). Verkhovna Rada of Ukraine, Document 722/2019, valid, current version – Adoption on September 30, 2019. Available at: <https://zakon.rada.gov.ua/laws/show/722/2019?lang=en#Text>
- European Business Association (EBA) (2023).** “The war could not discourage businesses from the principles of sustainable development – EBA study”. Available at: <https://eba.com.ua/en/vijna-ne-zmusyla-biznes-vidmovytyts-vid-pryntsypiv-stalogo-rozvytku-doslidzhennya-eva/>
- Koval P. (2022).** “Analytical Note. Vision of the concept of agricultural sector development strategy of Ukraine during war and post-war period. Organizational and substantive overview”. Agricultural policy report APD Ukraine APD/APB/02/2022 (in Ukrainian). Available at: https://www.apd-ukraine.de/images/2022/Agrarpolitische_Berichte/02-2022/%D0%97%D0%B2%D1%96%D1%82_%D0%90%D0%9F%D0%94_%D0%A1%D1%82%D1%80%D0%B0%D1%82%D0%B5%D0%B3%D1%96%D1%8F_%D1%80%D0%BE%D0%B7%D0%B2%D0%B8%D1%82%D0%BA%D1%83_%D0%9A%D0%BE%D0%B2%D0%B0%D0%BB%D1%8C_UA.pdf
- Koval P. (2022).** “Concept of creating and functioning of an expert advisory body on strategic planning for agricultural business and rural development in Ukraine”. Agricultural policy report APD Ukraine, APD/APB/15/2022 (in Ukrainian). Available at: https://apd-ukraine.de/images/2022/Agrarpolitische_Berichte/15_2022/Konzept_Koval_Strategierung_Beratungsorgan_UA.pdf
- Ruda M.,V. and Mazuryk M., M. (2021).** “Cooperation between Ukraine and the EU in the field of sustainable development: An overview of perspectives.” (in Ukrainian). Management and Entrepreneurship in Ukraine: Stages of Formation and Development Issues, No 3(1)
- OPORA Civil Network (2023).** “The impact of a full scale war on the migration of Ukrainian people: how the scale of displacement is

assessed by the state of Ukraine and international organizations.”

Available at:

https://www.oporaua.org/en/report/viyana/24523-vpliv-povnomasshtabnoyi-viini-na-migratsiiu-ukrayintsiv-iak-masshtabi-peremishchennia-otsiniuiut-derzhava-ukrayina-ta-mizhnarodni-organizatsiyi?gclid=EAAlQobChMIiJP_8ez6_gIV0vGyCh1eSQUdEAMYASAAEgL3RPD_BwE

European Business Association (2022). “Sustainable development index.” Analytical report, (in Ukrainian). Available at: <https://eba.com.ua/wp-content/uploads/2023/01/Sustainability-Index-2022-short-version-for-December-29.pdf>

Potaeva O. (2022). “Through the war, Ukraine lost approximately 13 million tons of elevator capacity.” (in Ukrainian). AgroTimes from 20.07.2022, Available at: <https://agrotimes.ua/elevator/erez-vijnu-ukrayina-vratyla-blyzko-13-mln-tonn-elevatornyh-potuzhnostej/>

Page J. and Dykalenko M. (2022). „Rating of destroyed and damaged elevators in Ukraine: suffered from 15 to 50% of the existing capacity.” (in Ukrainian). The Page from 17.10.2022 Available at: <https://thepage.ua/ua/economy/znisheni-ta-poshkodzheni-elevatori-v-ukrayini-2022-po-oblastyam-rejting>

UGA (2022): “Ukraine lost every sixth granary due to the war – study”. Ukrainian Grain Association, from 16September 2022, Available at: <https://uga.ua/news/ukrayina-vtratila-kozhne-shostezernoshovishhe-cherez-vijnu-doslidzhennya/>

StateGeoCadastre of Ukraine (2022). Monitoring of land transactions, State Service of Ukraine for Geodesy, Cartography and Cadastre, Available at: <https://land.gov.ua/monitorynh-zemelnykh-vidnosyn/>