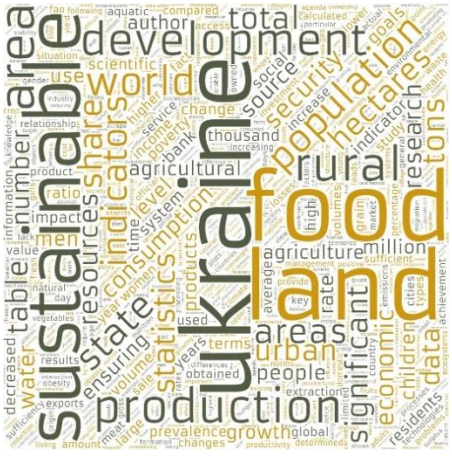
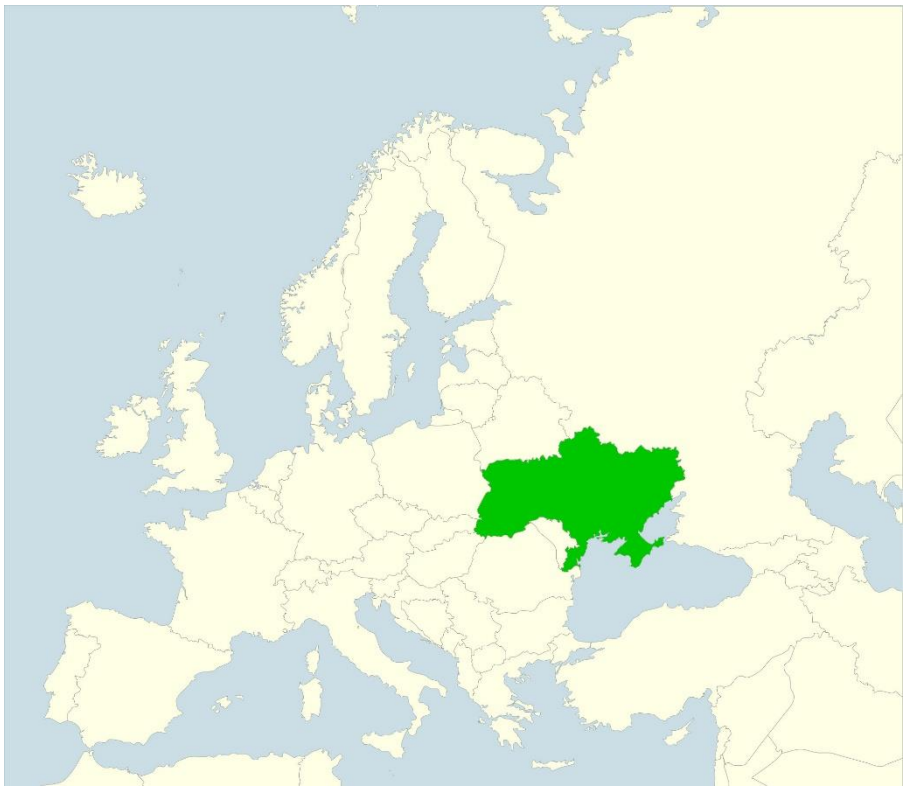
European Countryside | volume 14 | No. 4 | p. 721-752 | DOI: 10.2478/euco-2022-0036

KEY ASPECTS OF THE RELATIONSHIP BETWEEN SUSTAINABLE DEVELOPMENT GOALS, FOOD SECURITY AND AGRICULTURES IN UKRAINE

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Received 16 June 2022, Revised 9 October 2022, Accepted 22 October 2022

Abstract: According to the actual data of Ukraine, an analytical study of the main indicators of the Sustainable Development Goals 2 (SDG 2) was conducted on their impact on ensuring the achievement of the SDG. Depending on the type of indicator and the availability of information, the study period covers from 5 to 20 years. The study argues that food and agriculture are at the heart of the 2030 Agenda for Sustainable Development, proves and establishes key aspects of the SDG's relationship with food security and agriculture in the global dimension and in Ukraine. In general, Ukraine has the same problems in the implementation of the SDGs and their relationship with the SDG2 as in the world, which allows the use of already developed international protocols and tools to improve the situation and ensure the achievement of the set goals. At the same time, there are a number of differences that require significant efforts from national and regional actors in solving the issues facing Ukraine in achieving the goals of sustainable development. First, the presence of contradictions, the causes of which often lie in the plane of political and/or economic corruption, and therefore it is difficult to resolve them. Second, outdated management system and the huge resistance of this system to any reforms, especially in the field of public administration. Particular attention should also be paid to established facts concerning significant differences in the values of the analyzed indicators in relation to rural and urban areas in Ukraine. The content of these processes requires deeper research and scientific discussion in further research, because only the establishment of cause-and-effect relationships will allow us to develop an effective strategy to eliminate the existing inequality for residents of urban and rural areas.

Key words: sustainable development goals; food; agriculture; Ukraine

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Анотація: За фактичними даними України проведено аналітичне дослідження основних індикаторів Цілей сталого розвитку 2 (ЦСР 2) щодо їх впливу на забезпечення досягнення ЦСР. В залежності від типу індикатору та доступності інформації період дослідження охоплює від 5 до 20 років. За результатами дослідження висунуту тезу про те, що продовольство та сільське господарство лежать в основі Порядку денного в галузі сталого розвитку на період до 2030 року, доведено та встановлено ключові аспекти взаємозв'язку ЦСР з продовольчою безпекою та сільським господарством у глобальному вимірі та в Україні. В цілому, Україна має такі ж проблеми у запровадженні ЦСР та їх взаємозв'язку з ЦСР2, як і у світі, що дозволяє використовувати вже розроблені міжнародні протоколи та інструменти для покращення ситуації та забезпечення досягнення поставлених завдань. Разом з тим, є ряд суттєвих відмінностей, які вимагають значних зусиль від національних та регіональних суб'єктів у вирішенні питань, що стоять перед Україною у досягненні цілей сталого розвитку. По-перше, наявність протиріч, причини яких часто лежать в площині політичної та/або економічної корупції, а тому їх складно вирішити. По-друге, застаріла система менеджменту та величезний супротив цієї системи будь-яким реформам, особливо в сфері державного управління. Особливої уваги потребують також встановлені факти, що стосуються значних відмінностей у значеннях проаналізованих індикаторів щодо сільської та міської місцевості в Україні. Зміст цих процесів потребує глибшого дослідження та наукової дискусії у подальших дослідженнях, адже лише встановлення причинно-наслідкових зв'язків дозволить розробити ефективну стратегію по усуненню існуючої нерівності для жителів міської та сільської місцевості.

Ключові слова: цілі сталого розвитку; продовольство; сільське господарство; Україна

Highlights

- Production is not a defining determinant of the level of food consumption in Ukraine.
- For some products production exceeds the regulatory need for consumption.
- The actual level of consumption does not meet the established rational norms.
- The achievement of all SDG is not possible without the achievement of SDG 2.
- In Ukraine, food and agriculture are at the heart of the 2030 Agenda for Sustainable Development.

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1. Introduction

Food and agriculture are at a crossroads today. In recent decades, there has been a significant improvement in agricultural productivity to meet the food demand of a growing world population. But this progress has significantly increased social and environmental losses: water scarcity, soil degradation, ecosystem overload, biodiversity loss, declining fish stocks and forest cover, high greenhouse gas emissions. The production potential of natural resources does not have time to recover. Today, 815 million people are starving, indicating an imbalance in the food system (FAO, 2018).

Looking back, it is becoming increasingly clear to understand the reasons for this situation. After all, the necessary policy changes and effective in theory measures to meet global food security and overcome various obstacles to achieving it at the regional level have been implemented to a greater extent. However, the results obtained are far from expected. Each country has its own reasons for this state of affairs, but for the vast majority the main problem is the lack of coherence of the proposed measures in time and "space". Failure to accept the depth of interconnectedness of different industries and underestimation of their degree of interference, interdependence (when even minor changes in one area lead to significant changes in another) eventually led us to the point where we started. The main vision of the Sustainable Development Agenda for the period up to 2030 (Sustainable Development Goals Knowledge Platform, 2015) is to change misconceptions, show the connection between different sectors and strengthen the positive synergy of the proposed solutions in all spheres of life. In our deep conviction, the achievement of all seventeen SDGs is impossible without meeting the goals of SDG 2 – food and agriculture are at the heart of the 2030 Agenda for Sustainable Development. We have already felt the high impact of SDG 2 on the ability to achieve other SDGs during the COVID-19 pandemic. Now that Ukraine is at war, we are already feeling the effects of changes in the functioning of the food system on the activities of all other spheres and industries. It is truth not only Ukraine, but the whole world.

The aim of the study is to prove, on the example of Ukraine, the statement "From overcoming poverty and hunger to respond to climate change and conserve natural resources – food and agriculture are at the heart of the Sustainable Development Agenda until 2030" (Sustainable Development Goals Knowledge Platform, 2015) and identify key aspects of the relationship between the Sustainable Development Goals (SDGs), food security and agriculture in Ukraine compared to global challenges.

2. Theoretical background

In Ukraine, the search for solutions to food problems, according to the traditions inherent in the team economy, focuses on production. If we analyze the scientific works on the researched issues for the last 30 years of Ukraine's independence, nothing fundamentally new is offered in economic, agronomic or mechanization and automation science – all proposals are directly or indirectly aimed at increasing agricultural production volume. Even when it comes to the impact of agricultural production not only on food security, but also on other development indicators (poverty, access to resources, etc.), the proposals are quite standard, in which little attention is paid to regional characteristics and external factors. Already traditional

and well-understood for Europeans ideas and policies on the functioning of the food system in Ukraine find a response in a narrow circle of progressive scientists. This situation is partly due to the fact that it is difficult to conduct high-quality analytical research on the impact of certain factors in agriculture on the results of the SDG: there are problems in choosing the methodology of such research, and the system of proposed indicators and methods of calculating individual indicators. In particular, research conducted by a group of scientists (Bizikova, 2020) shows that "much of the literature on food security impacts does not actually measure food security outcomes." Even the term "food system" has recently been used by domestic scientists, and understanding its essence, constituent elements, mechanisms of their interaction and principles is often far from the ideas of sustainable development. In addition, sometimes in one scientific work you can find several different terms, which the authors, apparently, use to mean "food system". Thus, in the work "Formation of the national food system: present and prospects" (Sychevskyi and et al., 2013) the authors, except for the title of the article and annotation, no longer use the term "food system", using instead the concept of "food complex", "agro-industrial complex", "food subcomplex" and others, which obviously identify.

Sychevskyi, in one of his scientific works, uses the term "social food system", but without explaining what meaning the author puts into this concept. At the same time, the researcher identifies the main measures for the formation of the social food system: "full provision of the population with the main types of food products of domestic production; improving the quality of raw materials and finished products; energy and resource saving; introduction of innovative high-performance technologies and equipment; strengthening state influence on the process of full and high-quality food supply of all segments of the population; improving the management system and supporting the priority areas of food industry development" (Sychevskyi and et al., 2013). Thus, according to the measures identified by the author, the social food system is almost identical in content to the global food system. The research of the researcher's scientific work in general gives grounds to claim that using the term "social food system" the author is talking about the introduction of special state food aid programs for the poorest sections of the population, following the example of the United States.

It should also be noted that until recently, scientists have often replaced the concept of "food system" with the term "food security". Thus, Zelenska notes that "food security is a system that includes functional-targeted (agro-industrial complex, consumption, sales, food distribution and reserve) and providing (management, financial, information, logistics, technological, scientific support) subsystems" (Zelenska, 2013). The author also notes that food security refers to open systems, which have the properties of dynamic equilibrium, and the mechanisms of action of the components of the system under the influence of various factors determine their stability. From the point of view of content in this case we are talking about the food system, the main task of which is to ensure food security under the influence of external and internal factors.

Kuts gives the following definition: "organizationally formed by economic, political, social and environmental interaction of agriculture, industry and trade, aimed at meeting the needs of the population in food" (Kuts, 2017). In the scheme presented by the author, the chain of creating the value of food is somewhat different from its traditional representation, in particular: there is no stage of production and storage, instead of which the researcher offers agriculture. Another difference is the absence in the list of subjects / objects of the food system (in certain) of consumer.

In another work, the researcher notes that in addition to certain conditions (economic, political, social and environmental conditions), the main ones also include human resources (their skills and qualifications), level of education and scientific development. Thus, the food system covers all people, institutions and processes through which agricultural products are produced, processed and delivered to consumers, and includes government agencies, civil society organizations, scientists and experts which develop policy, regulations, programs and projects that affect food production and agriculture" (Kuts, 2016). The author also defines the principles of effective functioning of the food system, which are meaningfully related to the implementation of state policy in the agricultural sector and key areas. There is a certain dissonance in this issue with the following statements of the scientist "the state should intervene in the production and

distribution of food only in exceptional cases, taking into account the interests of all subjects in the food system and create favorable conditions for entrepreneurship" and "Deregulation of the processes of food system formation does not require significant financial resources and investments, but has a decisive impact on its development and efficiency" (Kuts, 2017). So, on the one hand, there is a clear position of the author on the mandatory state regulation of the formation and operation of the food system, and on the other – deregulation of the process, which is also established in other scientific works of the author.

In our opinion, the concept of the term "food system" is most thoroughly revealed in the domestic scientific literature in the works of Bokii (2018), Sychevskyi and Deineka (2015).

In the world scientific society, the achievements in achieving the SDG and the impact on this process of fulfilling the tasks of the SDG 2 are significant. In this regard, the differences in the views of scholars are which tasks and SDG the impact implementation of SDG 2 is significant for.

Some researchers emphasize the strong link between climate, agriculture and food, which in general have a significant impact on local development, and these components should be at the heart of determining the transformation of food systems at the global and regional levels – "the importance of food systems for sustainable development: they are at the nexus that links food security, nutrition, and human health, the viability of ecosystems, climate change, and social justice. … starting point is that agriculture and food systems' policies should be aligned to the 2030 Agenda for Sustainable Development. This calls for deep changes in comparison with the paradigms that prevailed when steering the agricultural change in the XXth century" (Caron and et al., 2018).

Other researchers identify four SDGs "linked to food production and security: declining biodiversity (SDG 15), loss of ecosystem services and agroecosystem stability caused by increasing stress from food production intensification and climate change (SDG 13), declining soil health caused by agricultural practices (SDGs 2 and 6), and dependence on synthetic fertilizers and pesticides to maintain high productivity (SDG 2)" (Shahmohamadloo and et al., 2022). Johan Bouma (2014) identifies 5 SDGs that relate to land and are interconnected through it.

Sometimes scientists do not focus on certain SDG, but on the areas of their interaction – "A key question is how measures can be designed in the context of multi-dimensional sustainability targets to exploit synergies. To address this, a nexus approach is adopted that acknowledges the interconnectedness between the important sub-systems water, land, food, and climate" (Doelman and et al., 2022).

We support the view of those scholars who insist on the relationship between SDG 2 and all 17 SDGs. Thus, a group of researchers analyzed 260 scientific works on the impact of agricultural land use systems on the level of food security and ensuring the achievement of SDG 2 showed that "most articles were published between 2015 and 2019 (59%), and most of the case studies were carried out in Asia (36%) and Africa (20%). The number of studies carried out in the other continents was lower. In the last 30 years, most of the research was centred in six main research fields: land-use changes (28%), agricultural efficiency (27%), climate change (16%), farmer's motivation (12%), urban and peri-urban agriculture (11%), and land suitability (7%). Overall, the research fields identified are directly or indirectly linked to 11 of the 17 SDGs" (Viana and et al., 2022).

Thus, the World Scientific Society argues that "Agriculture land systems is relevant to 11 of the 17 SDGs" (Viana et al., 2022). The researchers themselves give examples of the relationship of SDG 2 with all 17 SDGs, with which we fully agree.

3. Methodology

The methodological basis of the study is the dialectical method, general and special methods of scientific knowledge. The following methods of economic research were used in the research process: abstract-logical (formation of theoretical generalizations and conclusions); monographic (comprehensive and in-depth study

of individual phenomena, processes and identification of causal links of their development); economic and statistical (establishing the quantitative impact of individual factors on the studied result, identifying the main factors that led to changes in economic processes); graphic etc.

The main source of information on the status and dynamics of SDG indicators in Ukraine is the State Statistics Service of Ukraine. In the study, depending on the type of indicator and the availability of information, the study period covers from 5 to 20 years.

Open global sources of information, such as analytical reports and statistics, were used in the research World Bank (WB), Food and Agricultural Organization (FAO), Climate Change Knowledge Portal, Global Panel, Sustainable Development Goals Knowledge Platform, World Health Organization.

The research methodology is based on the principles outlined in the program document National Report "Sustainable Development Goals: Ukraine". The report provides a vision of guidelines for Ukraine's achievement of the Sustainable Development Goals (SDGs), which were approved at the UN Sustainable Development Summit in 2015. The report was prepared by the Ministry of Economic Development and Trade of Ukraine and approved by the high-level Interagency Working Group for the organization of the implementation process of the Sustainable Development Goals for Ukraine and the Coordinator of the UN system in Ukraine, the Coordinator for Humanitarian Affairs in Ukraine and the Permanent Representative of the UN Development Program in Ukraine. The group included 17 representatives of ministries and departments at the level of deputy ministers. Scientific support was provided by the academician-secretary of the Department of Economics of the National Academy of Sciences of Ukraine.

The method of calculating indicators depends on the information source and is presented on the relevant websites of these sources. Information about the source from which the information was used in the research is indicated immediately after the data are provided. Indicators calculated by the authors are determined in accordance with the national methodology of their calculation (according to the methodology of the State Statistics Service of Ukraine).

According to SDG 1, the poverty rate is defined as critical (living for less than $ 1.90 per day), moderate (living for $ 3.20 per day), and upper (living for $ 5.50 per day). The poverty rate of $ 1.90 is the percentage of the population living on less than $ 1.90 per day with international prices of 2011. Poverty rates of $ 3.20 and $ 5.50 per day are similarly determined.

The poverty level ($\mathrm{P_o}$) in Ukraine is calculated according to the formula:

$$\mathrm{P_o} = \frac{Q}{n} x100\%$$

where Q is the number of the population recognized as poor according to the poverty line determined by the relevant criterion; n is the total population of Ukraine.

The provision of a sufficient consumption fund is determined by the ratio of actual production to the required amount of food according to rational consumption norms.

Deficit (-) or surplus production is defined as the difference between actual production volumes and the required food volumes according to rational consumption norms.

Sufficiency of consumption is determined by the ratio of actual consumption to rational norms.

Production losses according to the balance sheets in accordance with official data of the State Statistics Service of Ukraine are determined in a percentage as the ratio of product losses volume to the volume of production this product in the current year.

In determining the indicators of the dynamics of drinking water usage in Ukraine, the indicators of mathematical statistics were used: the base growth rate (the ratio of the indicator data in the current year to

the value of the indicator in the base year – all indicators are compared with the first) and the share of the total.

The extraction index of aquatic biological resources (in general and by types of water bodies) in Ukraine is defined as the ratio of the volume of aquatic biological resource extraction in each current year to the volume of aquatic biological resource extraction in the base year 2000.

The percentage of aquatic biological resources extraction by types of water bodies in Ukraine is defined as the ratio of the volume of aquatic biological resources extraction in a specific reservoir for the current year to the total volume of aquatic biological resources extraction for the current year.

The development of the results of the survey of household members regarding the self-assessment of their income level was carried out according to the types of household residence: urban and rural areas. At the same time, cities are divided into large (with a population of 100,000 people and more) and small (with a population of less than 100,000 people). The study used data from survey results in large cities. The category of rural areas includes rural settlements or their groups, which are subordinate to village councils, united territorial communities. In rural areas, the general population consists of non-institutional (private) households, the members of which have a registered place of residence on the territory of rural settlements, regardless of the fact of ownership and/or use of land. The number of surveyed primary territorial units of the sample, selected for the survey of the living conditions of households, is: large cities – 36 units; rural area – 556 units.

The conducted research included the following stages:

- formulation of the research problem;
- study of literary sources dedicated to the research problem;
- identification of "weak spots" on the research topic and formulation of the research hypothesis;
- formation of a system of indicators;
- calculation of indicators, description of their dynamics, structural changes and causal relationships in the context of the investigated problem;
- establishing the key aspects of the relationship between the Sustainable Development Goals and food security and agriculture globally and in Ukraine;
- comparing the obtained results with the proposed hypothesis and establishing new, unexpected facts obtained during the research;
- generalization of the obtained results and determination of prospects for further research in the context of establishing new, unexpected facts obtained during the research.

We have formed an appropriate system based on the following principled methodological approaches:

1) have a quantitative expression;
2) be extremely clear and have an unambiguous interpretation for decision-makers;
3) be representative for interregional comparisons;
4) to rely on the existing system of national statistics and not to require significant costs for the collection of information and calculations;
5) to be able to evaluate in time dynamics;
6) have a limited number;
7) to be able to collect information from open official sources;
8) comply with national and/or global indicator systems for assessing the Sustainable Development Goals.

4. Results

4.1 SDG 1. Overcoming poverty in all its forms and everywhere

According to the World Bank's national methodology for Ukraine, the poverty rate in Ukraine in 2018 was 1.3% (Fig. 1). Moderate and upper poverty rates in Ukraine are declining according to the World Bank methodology (Fig. 2), with the upper poverty rate (share of people living in the amount of 3.21–5.50 USD per day) from 2002 to 2016 years decreased sevenfold. However, the World Bank does not provide data on rural and urban populations.

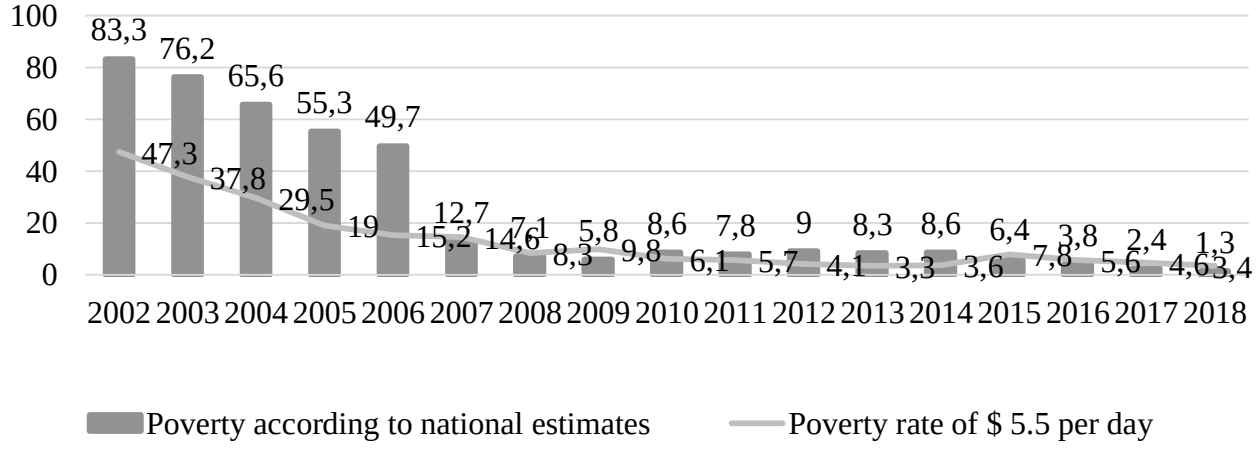


Fig 1. Poverty rate in Ukraine according to national accounts and the upper poverty rate of 5.50. USD per day according to the World Bank [%]. Source: built by the author according to the World Bank (2020)

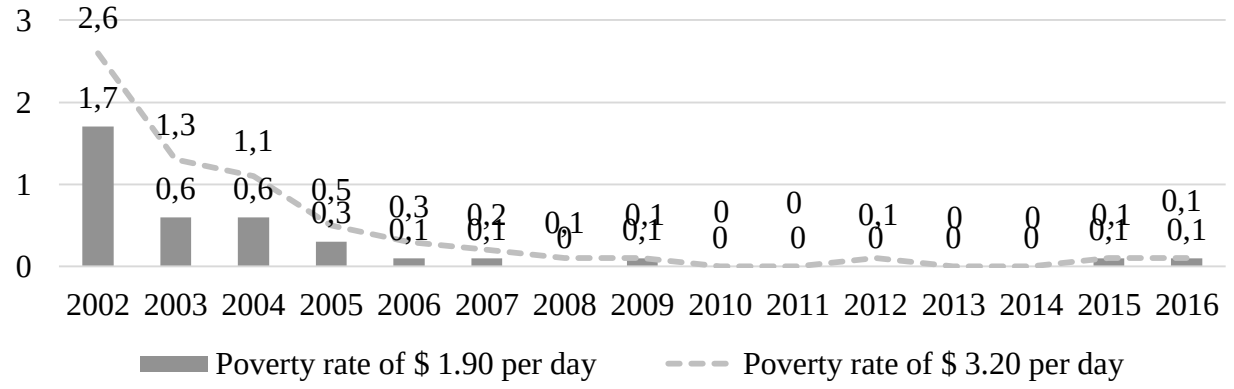


Fig 2. Critical and moderate poverty levels in Ukraine according to the World Bank [%]. Source: built by the author according to the World Bank (2020)

According to our calculations based on official data of the State Statistics Service of Ukraine, the following has been established: the actual poverty rate is much higher than the indicators calculated according to the World Bank's methodology; the level of poverty of the rural population, both in terms of money and in terms of total income, is higher than the level of poverty in large cities; the dynamics of reducing the poverty rate of the rural population is as slow as the rate of poverty reduction of the population living in large cities; the largest gap between rural and urban populations is in the critical poverty category (Table 1).

Tab 1. Poverty level in Ukraine depending on the place of residence.

Indicator	2015		2016		2017		2018		2019		2020		2021	
	in big cities	in the countryside	in big cities	in the countryside	in big cities	in the countryside	in big cities	in the countryside	in big cities	in the countryside	in big cities	in the countryside	in big cities	in the countryside
According to the level of average per capita equivalent monetary income														
Critical poverty rate	4.6	11.3	10.4	21.2	9.3	20.2	3.7	9.9	…	…	…	…	…	…
Moderate poverty rate	46.1	59.9	41.9	50.4	9.5	14.0	5.0	9.8	12.0	35.2	7.2	18.5	3.5	12.6
Upper poverty rate	36.5	23.7	47.7	28.4	54.2	51.9	50.1	60.3	35.2	37.1	32.3	45.7	22.2	37.8
Total	87.2	94.9	100.0	100.0	73.0	86.1	58.8	80.0	47.2	72.3	39.5	64.2	25.7	50.4
According to the level of per capita equivalent total income														
Critical poverty rate	3.1	5.0	5.2	5.7	4.5	7.2	1.8	3.0	…	…	…	…	…	…
Moderate poverty rate	25.8	26.3	39.2	42.4	9.3	9.5	5.3	6.4	10.4	22.3	5.8	9.8	2.9	6.5
Upper poverty rate	57.0	60.0	55.6	51.9	47.6	49.3	45.2	53.4	35.1	41.7	31.4	43.0	20.8	32.0
Total	85.9	91.3	100.0	100.0	61.4	66.0	52.3	62.8	45.5	64.0	37.2	52.8	23.7	38.5

Source: calculated by the author according to the State Statistics Service of Ukraine (2021b). Note: Critical poverty rate – less than 1.90. USD per day; moderate poverty rate – from 1.91 to 3.20 USD per day; upper poverty rate – from 3.21 to 5.50 USD per day

The differences in the indicators on the actual data on the level of poverty and the data of the World Bank are explained by at least two facts: first, different methods of calculation; secondly, the State Statistics Service of Ukraine distributes households according to the level of average per capita equivalent monetary and total income, rather than expenditures, as would be desirable to determine the poverty rate. In this sense, it is worth noting that, in fact, the average income and expenditure are equal, so the poverty rate, determined by the amount of income rather than expenditure, has a high degree of reliability.

4.2 SDG 2. Overcoming hunger, achieving food security, improving nutrition and promoting sustainable agriculture

According to the results of the study Babych "The state of food security in 2016 in Ukraine on most indicators… does not meet the established thresholds and norms… for livestock products decreased the average daily caloric intake of the population; the level of adequacy of grain in state resources is lower than the limit; food dependence (subject to rational consumption) on meat, milk, fish products, fruits, berries and grapes is established; exceeds the threshold level of the percentage of import dependence of Ukraine on oil, fruits, berries and grapes" (Babych, 2019).

This situation is not only due to the low purchasing power of the population (Yatsiv, 2020): even for food, for the production of which Ukraine has the necessary natural resources and conditions – milk, meat and fruit – there is a shortage in the country (Table 2). Therefore, the lack of calories in this food group is primarily due to insufficient production of these products. Moreover, all these types have significant volumes of sales for export.

The indicators of providing Ukrainians with their own production of grain crops, potatoes and vegetables are much higher (Table 3): these crops have a significant surplus of production compared to the need for

consumption according to rational norms. But it should be remembered that such indicators were achieved in the conditions of the highest level of land development in the EU (69%), the level of plowing (54%) and the provision of arable land (78 hectares per 100 people). Even in the countries of the former socialist camp, which are now EU member states, the fluctuations of these indicators are 23–60% of the level of land development, 9–41% of the level of plowing and 8–48 hectares per 100 people (except Lithuania) the provision of the population with arable land (Kotykova and Babych, 2019a).

Tab 2. Ratio of production, consumption and demand for meat, milk and fruits in Ukraine.

Indicator	2005	2010	2014	2015	2016	2017	2018	2019	2020	2021
Meat and meat products										
Ensuring sufficient consumption of production, %	42.3	56.1	68.6	67.8	68.0	68.2	69.6	74.1	74.3	73.7
Product shortage, thousand tons	-2175.9	-1608.7	-1078.1	-1101.8	-1092.3	-1078.5	-1026.8	-869.2	-858.8	-869.2
Sufficiency of consumption, %	48.9	65.0	67.6	63.6	64.3	64.6	66.0	67.0	67.3	66.3
Share of exports in production, %	5.1	2.3	9.2	10.5	13.0	15.1	16.9	19.5	19.1	20.9
Milk and dairy products										
Ensuring sufficient consumption of production, %	76.6	64.5	68.1	65.2	64.0	63.7	62.7	60.5	58.4	55.4
Product shortage, thousand tons	-4182.7	-6186.1	-5208.0	-5669.4	-5837.4	-5861.4	-5995.2	-6310.3	-6602.3	-7008.4
Sufficiency of consumption, %	59.4	54.3	58.6	55.2	55.1	52.6	52.0	52.8	53.1	53.0
Share of exports in production, %	13.9	8.5	4.7	4.4	4.2	8.1	8.0	6.1	4.7	4.2
Fruits, berries and grapes (including canned and dried products in terms of fresh)										
Ensuring sufficient consumption of production, %	50.2	52.1	62.9	65.9	62.2	64.3	79.8	65,6	61,4	67,1
Product shortage, thousand tons	-2112.3	-1976.6	-1435.2	-1313.8	-1452.2	-1363.6	-768.1	-1300,5	-1449,5	-1223,0
Sufficiency of consumption, %	41.2	53.3	58.1	56.6	55.2	58.7	64.2	65,2	62,8	65,6
Share of exports in production, %	14.3	16.4	14.4	12.8	11.9	11.8	10.9	17,4	11,8	14,2
Share of products processed into wine, %	21.1	25.4	20.2	14.0	20.0	20.2	19.6	19,3	19,6	18,4

Source: calculated by the author according to the State Statistics Service of Ukraine (2021a)

However, even under such conditions, ineffective trade policy has led to the fact that the level of grain stocks, one of the main indicators of food security, for the study period only in 2015 in Ukraine met the threshold level [9]. While the volume of grain exports is more than 60%.

Tab 3. Ratio of production, consumption and demand for cereals, potatoes and vegetables in Ukraine.

Indicator	2005	2010	2014	2015	2016	2017	2018	2019	2020	2021
Grain and legume (including grain processing products in terms of grain)										
Ensuring sufficient consumption of production, %	798.1	848.1	1471.2	1390.6	1532.3	1443.9	1640.9	1327.5	1154.6	1542.7
Surplus production, million tons	33.3	34.6	59.5	55.8	61.8	57.6	65.8	69.5	59.3	80.4
Sufficiency of consumption, %	162.7	147.0	143.4	136.4	133.2	131.9	131.4	96.6	95.6	91.8
Share of exports in production, %	33.3	36.3	52.3	63.8	62.7	68.6	61.3	77.1	80.5	60.0
Potato										
Ensuring sufficient consumption of production, %	333.3	328.8	444.5	392.2	411.0	421.6	429.3	418.0	402.1	410.7
Surplus production, million tons	13.6	13.0	18.4	15.5	16.5	16.9	17.3	15.1	15.7	16.2
Sufficiency of consumption, %	109.4	104.0	113.7	110.9	112.7	115.6	112.4	109.4	108.1	106.8
Share of exports in production, %	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.2
Vegetables and melons food crops (including canned and dried products in terms of fresh)										
Ensuring sufficient consumption of production, %	100.3	120.2	149.1	141.9	145.6	142.2	146.1	149.3	148.8	151.8
Surplus production, thousand tons	20.8	1489.4	3398.6	2893.4	3129.2	2882.8	3135.6	3475.5	3427.2	3774.8
Sufficiency of consumption, %	74.7	89.1	101.4	99.9	101.7	99.2	101.8	102.3	101.9	103.0
Share of exports in production, %	2.0	3.8	2.8	2.2	2.2	4.6	4.4	2.8	2.9	2.6

Source: calculated by the author according to the State Statistics Service of Ukraine (2021a)

The assessment of indicators of the ratio of production, consumption and demand for sugar and oil in Ukraine raises even more questions (Table 4). Thus, the provision of sufficient consumption of sugar production since 2014 is more than 120% and in dynamics increases to 126% in 2018, but the sufficiency of consumption in the same 2014 is 96% and in dynamics decreases to 78% in 2018. The reason is the sale of products for export, which for the period from 2014 to 2018 increased by 32%. The situation is the same with oil consumption – domestic demand is met by 90% while ensuring sufficient consumption by production in 1141% (!) Because 96% of manufactured products are sold for export.

It should be recalled that oilseeds, which are the main component of oil production, are depleting crops, and high production rates were achieved primarily due to their significant share in the overall structure of crops (32.4 and 22.1% in 2018, respectively; the sown area has increased in 5 and 4 times since 1990), and not due to the high level of yield (sunflower yield in 2018 – 23.0 quintals per 1 ha). Whether it is worth inflicting such significant environmental damage (soil degradation and desertification) in the event of dissatisfaction with demand for such results (sales for export) is a rhetorical question.

Tab 4. Ratio of production, consumption and demand for sugar and oil in Ukraine.

Indicator	2005	2010	2014	2015	2016	2017	2018	2019	2020	2021
Sugar (including basic sugar-containing products, in terms of sugar)										
Ensuring sufficient consumption of production, %	112.0	115.2	123.4	123.9	124.4	125.1	125.6	93.2	64.4	89.9
Surplus products, thousand tons	348.7	59.7	421.0	-167.4	400.6	430.5	147.3	-109.2	-565.0	-158.7
Sufficiency of consumption, %	100.3	97.6	95.5	93.9	87.6	80.0	78.4	75.8	73.2	75.0
Share of exports in production, %	7.2	3.6	1.9	10.5	25.0	30.2	33.9	16.6	16.6	2.6
Oil (including basic oil-containing products, in terms of oil)										
Ensuring sufficient consumption of production, %	235.0	519.2	884.8	825.6	979.5	1139.0	1140.7	1262.6	1395.0	1107.0
Surplus products, thousand tons	825.5	2503.7	4369.3	4026.1	4856.8	5725.9	5695.7	6348.0	7007.9	5428.9
Sufficiency of consumption, %	103.8	113.8	100.8	94.6	90.0	90.0	91.5	92.3	94.6	104.6
Share of exports in production, %	62.6	91.9	92.9	92.8	94.4	95.4	95.9	96.4	95.9	92.9

Source: calculated by the author according to the State Statistics Service of Ukraine (2021a)

The obtained results indicate the need to revise the policy of development of the agricultural sector in Ukraine and not only in terms of volume and structure of production, but also in approaches to the use and distribution of products.

4.3 SDG 3. Ensuring a healthy lifestyle and promoting well-being for everyone at all ages

Many people do not have year-round access to the safe, affordable and healthy diets needed to promote health and well-being (Kotykova, 2017). As a result, malnutrition in all its forms is a global problem, and every country is feeling the effects. One in three people now suffers from at least one form of malnutrition, such as hunger, stunted growth, atrophy, micronutrient deficiencies, overweight and / or obesity, and the effects of non-communicable diets. The consequences of malnutrition include deteriorating health and premature death, as well as huge economic and social losses. Global estimates suggest that malnutrition in all its forms costs society up to $ 3.5 trillion per year, and overweight and obesity cost $ 500 billion per year (Global Panel, 2016).

Thus, the food danger is characterized not only by hunger or malnutrition, but also the consumption of poor quality products and excessive nutrition, which leads to obesity. Overweight and obesity and related non-communicable diseases lead to 4 million deaths worldwide. Today 2 billion adults and more than 40 million children under the age of five are overweight worldwide. Moreover, more than 670 million adults and 120 million girls and boys (5–19 years old) are obese. Improper nutrition costs people their health, well-being and productivity. It also has high socio-economic losses for society in all regions of the world (World Health Organization, 2020).

In Ukraine, there is a constant shortage of calories of animal origin, which indicates the low quality of the diet, and excessive consumption of calories of plant origin – carbohydrates – leading to obesity. Official statistics

of Ukraine do not provide data on underweight or overweight people. According to the WHO, in 2000 Ukraine had the highest percentage in the world (!) of the percentage of overweight children under 5 years – 26.5% (Table 5). 22.0% of children under the age of 5 have a growth retardation (the highest in the world – 55.95%). Significantly lower, compared to the highest value in the world (39.94%), is the prevalence of malnutrition in children – 4.1%. In Ukraine, high rates of overweight among adults (61.9%) and high cholesterol (44.4%), as well as significant problems with the prevalence of anemia in children under 5 years (26%), women (24, 8%) and women of reproductive age – 23.5%.

Tab 5. Prevalence of morbidity as a result of malnutrition in children and adults in Ukraine.

Indicator	Actual data on Ukraine	World data	
		minimum value (min)	maximum value (max)
Year 2000			
Percentage of overweight children under 5 years, %	26.50	0.93	26.50
Growth retardation of children under 5 years, %	22.00	1.30	55.95
Prevalence of malnutrition in children, %	4.10	0.00	39.94
Percentage of live births weighing less than 2500 g (less than 5.51 lbs), %	5.5	2.8	50.9
Year 2012			
Mortality of children under 5 years per 1,000 births	5.7	5.7	171.4
Year 2014			
Elevated blood glucose, %	7.3	4.0	29.2
Elevated total cholesterol, %	44.4	15.2	69.8
Year 2016			
Prevalence of anemia in non-pregnant women, %	23.50	8.70	70.18
Prevalence of anemia in children under 5 years, %	25.98	8.55	86.18
Prevalence of anemia in women, %	24.80	16.16	62.96
Prevalence of anemia in women of reproductive age, %	23.54	9.09	69.60
Prevalence of obesity among adults, %	24.1	0.1	61.0
Prevalence of obesity among children and adolescents, %	5.8	0.0	31.7
Prevalence of overweight among adults, %	61.9	4.7	87.9
Prevalence of underweight among children and adolescents, %	2.3	0.1	26.7
Prevalence of underweight among adults, %	1.5	0.2	29.7
Adult mortality rate (probability of death from 15 to 60 years per 1000 population)			
- total	180.0	49.2	483.5
- men	264.3	60.9	463.7
- women	98.4	35.6	393.6

Source: grouped by World Health Organization (2020)

4.4 SDG 4. Ensuring comprehensive and equitable quality education and promoting lifelong learning for all

According to a study by Babych (2019) "school nutrition to a very small extent contributes to the needs of energy and nutrients (especially minerals). It is necessary to change the structure of children's diet in schools to meet the needs of minerals, vitamins and nutrients, because today school meals meet only 22–44% of such needs" (Table 6). It is clear that the school should not satisfy the diet of children in one hundred percent, but given the time spent by children at school, this indicator should be at least 50%.

Tab 6. Ratio of nutrition norms in secondary schools for one-time nutrition of students and physiological demand of the population of Ukraine for basic nutrients and energy.

	Sex	Energy [kcal]	Proteins [g]		Fat [g]	Carbohydrates [g]
			total amount	animal		
*Norms of physiological demand of the population of Ukraine for basic nutrients and energy **						
7–10 years	boys, girls	2100	72	51	70	295
11–13 years	boys	2400	84	62	84	327
11–13 years	girls	2300	78	55	76	326
14–17 years	young men	2700	93	68	92	375
14–17 years	girls	2400	83	59	81	334
*Nutrition standards in secondary schools for one-time meals for students ***						
6–10 years	boys, girls	794	27	14.1	25.6	114
from 10 years and older	boys, girls	975	31.8	15	30.7	143
Ratio of nutrition norms in general-educational institutions for one-time nutrition of students and physiological demand of the population of Ukraine for basic nutrients and energy						
7–10 years	boys, girls	37.8	37.5	27.6	36.6	38.6
11–13 years	boys	40.6	37.9	24.2	36.5	43.7
11–13 years	girls	42.4	40.8	27.3	40.4	43.9
14–17 years	young men	36.1	34.2	22.1	33.4	38.1

Source: according to Babych (2019). Note: * in accordance with the Order of the Ministry of Health of Ukraine dated 03.09.2017 № 1073; ** in accordance with the resolution of the Cabinet of Ministers of Ukraine of November 22, 2004 № 1591.

Otherwise, children follow an unhealthy diet, which leads either to overweight and / or obesity among children and adolescents, or to the prevalence of underweight among children and adolescents and prevalence in children under 5 years (see Table 5).

4.5 SDG 5. Ensuring gender equality, empowerment of all women and girls

Data on the gender distribution of land resources in Ukraine were first collected by the State Geocadastre in 2017. According to the data obtained, according to Form 2-lands for 2015, there are 31.5 million hectares of privately owned land in Ukraine, although according to the data provided by the State Geocadastre on gender distribution of land resources, the total area is 33.2 million hectares. For further analysis in this section, we will use the last value as one that is more credible. In 2017, 90,398,665 land plots with a total area of 17.6 million hectares (53%) were owned by women, and 8,480,442 land plots with an area of 15.6 million hectares (47%) were owned by men. Among all landowners in Ukraine in 2017, women own 560 thousand more land plots than men, i.e., 3.2% more (51.6% vs. 48.4%). However, the general structure of Ukraine's population is dominated by women. In 2017, there were 7.4% more women than men (53.7% vs. 46.3%). According to the State Geocadastre, there are 0.43 plots of land per man in Ukraine (i.e., 43 out of 100 men own a plot of land) and 0.40 per woman. In terms of area, 0.79 hectares of land are owned by one man in Ukraine, and 0.77 hectares by one woman. For rural areas, the situation is as follows: one man owns an average of 0.86 plots of land, while the area per capita is 1.7 hectares; one woman – an average of 0.81 land, and an area of 1.7 hectares. In cities, there are 0.08 hectares of land with an area of 0.04 hectares per man, and 0.07 hectares of land with an area of 0.04 hectares per woman. It should be remembered that more people live in cities than in rural areas (55% in cities, 45% in districts). According to the average area of land owned, the advantage is on the side of women. The average value in Ukraine is: 1.8 hectares owned by men and 1.9 hectares owned by women; for rural areas – 2 hectares and 2.1 hectares, respectively; in the city – 0.5 hectares and 0.6 hectares. If we consider the number of land plots by oblast per 100 men and per

100 women, then only in two oblasts (Volyn and Rivne oblasts) and in Kyiv do women own more land plots than men.

Moreover, in Rivne oblast for every 100 women there are almost 3 land plots more than for the same number of men. In all other oblasts, there are 4.4 fewer plots per 100 women on average. The biggest difference is observed in Kyiv oblast, where for every 100 men there are 12.5 plots of land more than for 100 women. On average, the situation in Ukraine is different: there are 2 hectares more land plots per 100 men than the same number of women. The largest predominance in favor of men is observed in Kirovohrad (Kropyvnytskyi), Poltava and Mykolayiv oblasts (100 men have 21.5, 17.6 and 12.7 hectares more than 100 women, respectively). In Kyiv, the difference between the area of land plots per 100 men and 100 women is almost zero, but the average land plots per 100 people in the capital is very small (so these values are not visible on the graph) – about 0.22 hectares owned by 100 women and 0.19 hectares owned by 100 men (Nizalov and et al., 2018).

The initial distribution of agricultural land during the unbundling provided relative gender equality among landowners in Ukraine. However, according to the index of gender distribution of land, the number of land plots and the total area of ownership, there is a slight advantage in favor of men.

Obviously, in the near future, the situation will change significantly: currently the main landowners of agricultural land are retirees, most of whom, according to the Law of Ukraine "On Amendments to Certain Legislative Acts of Ukraine on the Circulation of Agricultural Land" (Verkhovna Rada of Ukraine, 2020), will put their shares for sale. Thus, there will be a significant redistribution of landowners and, given the disparities in the level of wages of women and men in agriculture, forestry and fisheries (Table 7), there is no hope of improving the gender distribution index.

Tab 7. Ratio of average wages of women and men [%]. Source: compiled according to the State Statistics Service of Ukraine (2020)

Indicator	2015	2016	2017	2018	2019	2020
The ratio of average wages of women and men	74.9	74.6	79.1	77.7	78.1	81.4
including in agriculture, forestry and fisheries	82.4	82.2	81.9	79.7	80.2	81.3
of which is agriculture	83.7	83.8	82.6	80.1	78.7	80.0

4.6 SDG 6. Ensuring the availability and rational use of water resources and sanitation for all

According to the State Statistics Service of Ukraine, the use of drinking water for irrigation in 2018 is almost identical to 2000, but their share in the volume of used fresh water is constantly growing and in 2017–2020 exceeded the amount of used fresh water for drinking and sanitary needs (Table 8).

Tab 8. Dynamics of drinking water use in Ukraine. Source: calculated by the author according to the State Statistics Service of Ukraine (2020)

Indicators	2000	2005	2010	2015	2016	2017	2018	2019	2020
Used fresh water – total, million m^3	12175	9360	8886	6556	6608	6284	6790	6821	6761
growth rate up to 2000, %	100.0	76.9	73.0	53.8	54.3	51.6	55.8	56.0	55.5
including: - drinking and sanitary needs	3311	2409	1917	1267	1239	1174	1171	1148	1169
growth rate up to 2000, %	100.0	72.8	57.9	38.3	37.4	35.5	35.4	34.7	35.3
share in the total volume of fresh water, %	27.2	25.7	21.6	19.3	18.8	18.7	17.2	16.8	17.3
- irrigation	1699	1186	1377	1237	1211	1549	1591	1343	1453
growth rate up to 2000, %	100.0	69.8	81.0	72.8	71.3	91.2	93.6	79. 0	85.5
share in the total volume of fresh water, %	14.0	12.7	15.5	18.9	18.3	24.6	23.4	19.7	21.5

Although it seems that irrigation helps to increase production, especially vegetables, in fact, such dynamics will have very negative consequences for food supply: increasing production with modern technologies of cultivation, collection, storage and processing, leads to increased food losses and food waste, in turn, means wasting resources on their production. Thus, according to the calculations of Babych M. M. [10, p. 309] "in 2016, the amount of wasted fresh water consumption for irrigation and agriculture in agricultural production amounted to 30382.0 thousand m3, which is 2.3% of total water consumption for irrigation and agriculture" in Ukraine. According to modern desalination technologies, fresh water is currently a non-renewable resource, so its waste is unacceptable.

4.7 SDG 7. Ensuring access to low-cost, reliable, sustainable and modern energy sources for all

In recent years, Ukraine has been a leader in the European and, for some products, world markets in terms of exports, but this opportunity to increase sales directly correlates with increased production, which requires additional resources: land, water and energy. The use of energy resources has a significant impact not only on the cost of production, but also on climate change, which has much greater negative consequences in environmental, economic and social contexts. It should be borne in mind not only diesel fuel, which is used for crop and harvesting, but also those energy resources that are used for the production and use of fertilizers for crop and animal feed, for growing vegetables in greenhouses and greenhouse gas emissions of animal origin.

According to Babych (2019) the amount of useless greenhouse gas emissions in Ukraine in the production and processing of agricultural products (in terms of lost food and food waste) "in 2016… amounted to 401.2 thousand tons, which is 13.2% of total emissions. At the same time, useless emissions at the stage of product processing are much higher – 384.4 thousand tons, which is almost 23 times higher than useless emissions at the stage of production (17.0 thousand tons)". It is not possible to make calculations at all stages of production, as in Ukraine there are no official statistics on emissions at the stages of storage and consumption, which means that the amount of such useless emissions is even higher.

4.8 SDG 8. Promoting sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Agriculture has good potential to increase economic growth and living standards of Ukrainians, but agricultural productivity in Ukraine is much lower than in European and other competing countries. Ukraine has the largest amount of arable land in Europe – 33 million hectares, compared to 18 million hectares in France, 12 million hectares in Germany and 11 million hectares in Poland. Ukraine also has fertile soils and a strategic location with access to the markets of Europe, the Middle East, North Africa and Asia. But, unfortunately, the level of agricultural productivity in Ukraine is low compared to other European countries. Value added of agriculture in Ukraine per hectare in 2018 was $ 440, compared with $ 1,100 in Poland, $ 1,400 in Brazil, $ 1,700 in Germany, and $ 2,450 in France. The main reason for this is that agricultural production in Ukraine is focused on lower value-added products (such as grain) (World Bank, 2019c).

The moratorium on the sale of agricultural land is a major obstacle to attracting investment and unlocking agricultural productivity. The moratorium undermines land tenure security and incentives for productivity-enhancing investments and sustainable land management, for example by investing in irrigation systems, perennial crops and crop rotation. Limited investment undermines farmers' ability to grow produce and switch to labor-intensive, high-value-added goods. The moratorium is also hampering the financing of small and medium-sized producers, as land cannot be used as collateral. If land ownership cannot be transferred, it also cannot be used as collateral for financing. Lack of access to finance prevents the emergence of a large number of small and medium-sized farmers and the transition to higher value-added goods. Thus, the moratorium prevents millions of landowners from using their most valuable asset as collateral (World Bank, 2019c).

The lack of a land market does not create the right market motivation for the most efficient use of land and investments that could help increase productivity. In particular, investments in irrigation, growing crops with higher value added and the introduction of new technologies. According to a special report by the World Bank, lifting the moratorium on the sale of agricultural land and creating a transparent and efficient land market has the potential to accelerate economic growth in Ukraine by 0.5–1.5 percent per year over the next 5 years (World Bank, 2019a). The main channel of influence on the growth process would be the expansion of the number of producers of goods with higher value added and the exit from the market of producers of goods with lower value added as the price of land increases. The impact would be noticeable at the upper end of this range with fewer restrictions and efficient and sustainable access to finance for small farms with limited access to credit so that they can participate in the market and increase their productivity World Bank (2019b).

4.9 SDG 9. Creating consistent infrastructure, promoting inclusive and sustainable industrialization and innovation

In the first half of 2019, Ukraine's economy grew by 3.6 percent. This was due to high crop yields and the growth of the services sector, while growth in industrial production and investment remained low. At the same time, growth in industrial production and investment remained weak, with the industrial sector shrinking by 0.2 percent and investment in fixed assets slowing to 12 percent. The level of investment in fixed assets at 20 percent of GDP remains insufficient to accelerate economic growth. Investments were limited to low foreign direct investment – only 0.6 percent of GDP in the first half of 2019; high interest rates and structural deficiencies in the financial sector (no significant progress has been made so far in resolving non-performing loans); and distortions of market mechanisms due to the lack of a market for agricultural land, anti-competitive environment, as well as a large number of state-owned enterprises (State Statistics Service of Ukraine, 2019c). According to the State Statistics Service of Ukraine, in the period from 2010 to 2020 the share of agriculture, forestry and fisheries in the total gross domestic product increased by 1.9 percentage points, while the share of the processing industry decreased by 3.1, in addition, the share of construction, transport and warehousing decreased by 0.4 and 1.4 percentage points, respectively. (Table 9). Thus, sub-goals 9.1 and 9.2 of SDG 9 are no longer met, which in fact calls into question the achievement of sub-goal 9.4.

Tab 9. The structure of gross domestic product by type of economic activity in Ukraine. Source: compiled according to the State Statistics Service of Ukraine (2020)

Indicators	Structure [%]							
	2010	2015	2016	2017	2018	2019	2020	2020 +,- up to 2020
Agriculture, forestry and fisheries	7.4	12.1	11.7	10.2	10.1	9.0	9.3	1.9
Processing industry	13.2	11.9	12.2	12.1	11.6	10.8	10.1	-3.1
Construction	3.3	1.9	2.0	2.2	2.3	2.7	2.9	-0.4
Transport, warehousing, postal and courier activities	7.7	6.8	6.6	6.4	6.4	6.7	6.3	-1.4
Professional, scientific and technical activities	2.5	2.8	2.9	2.9	3.2	3.6	3.3	0.8

Such data indicate the predominant development of agriculture as a raw material base without proper provision of processing and infrastructure for food storage. From the point of view of food security, this approach creates a spiral of increasing production, which leads to increased losses of food and food waste, which requires increasing production and is repeated over and over again on an ever-increasing scale.

4.10 SDG 10. Reducing inequalities within and between countries

The level of wages of rural residents in Ukraine is almost twice lower than the wages of urban residents, and the level of cash income – 1.5 times (Table 10).

The difference in the monetary income of rural and urban residents is reduced due to a much higher amount of income of rural residents from the sale of agricultural products and property income, in particular – income from land lease. The gap between the total income of rural and urban residents is smaller due to non-monetary income, in particular – the value of consumed products obtained from personal subsidiary farms and from self-procurement.

Tab 10. Cash income and total resources of households in urban and rural areas in Ukraine on average per month per household (fragment).

Indicator	In large cities, EURO			In rural areas, EURO			In large cities, %			In rural areas, %		
	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020
Remuneration	212.54	291.51	316.30	122.13	171.49	186.76	63.6	65.5	66.5	41.6	46.5	45.7
Income from entrepreneurship and self-employment	19.46	34.73	31.44	15.02	17.79	20.71	5.9	7.9	6.6	5.1	4.8	5.1
Income from the sale of agricultural products	0.04	0.33	0.07	21.29	28.62	23.24	0.0	0.1	0.0	7.2	7.7	5.7
Income from property (dividends from shares and other securities, interest on deposits, income from renting real estate, income from renting land, etc.)	0.15	0.30	0.29	10.97	1.15	21.36	0.0	0.1	0.1	3.7	0.3	5.2
Monetary income	**313.13**	**428.56**	**465.32**	**246.72**	**317.34**	**362.74**	**93.7**	**96.6**	**97.8**	**83.9**	**86.2**	**88.8**
The cost of consumed products obtained from personal farms and self-procurement	0.99	1.02	1.17	28.32	32.36	35.98	0.3	0.2	0.2	9.6	8.9	8.8
Non-cash benefits for the payment of goods and services for health care, travel services, holiday vouchers, etc.	0.74	1.47	0.22	0.33	0.46	0.27	0.2	0.3	0.0	0.1	0.2	0.1
Non-cash benefits for payment of transport and communication services	1.09	1.74	1.16	0.20	0.15	0.11	0.2	0.3	0.2	0.1	0.1	0.0
Non-monetary income	**13.18**	**9.77**	**6.58**	**42.49**	**39.81**	**41.27**	**3.8**	**2.0**	**1.4**	**14.4**	**11.1**	**10.1**
Total income	**326.31**	**438.33**	**471.90**	**289.21**	**357.15**	**404.01**	**97.5**	**98.6**	**99.2**	**98.3**	**97.3**	**98.9**
Income from the sale of property	0.25	0.73	0.37	0.08	0.13	0.05	0.1	0.1	0.1	0.0	0.0	0.0
Income from the sale of real estate	1.53	0.00	0.00	0.02	5.90	0.00	0.5	0.0	0.0	0.0	1.6	0.0
Use of savings, loans, repaid debts	6.25	6.02	3.64	4.88	4.45	4.55	1.9	1.3	0.8	1.7	1.1	1.1
Total resources	**334.34**	**445.08**	**475.91**	**294.19**	**367.62**	**408.61**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: compiled by the author according to the State Statistics Service of Ukraine (2020). Note: calculating according to the official rate NBU hryvnia to euro (2018 – 1 EURO = 32.14 UAN; 2019 – 1 EURO = 28.95 UAN; 2020 – 1 EURO = 30.79 UAN)

Given the significant share in the structure of incomes of rural residents of income from the sale of agricultural products (6–8%) and the cost of consumed products obtained from personal farms and self-procurement (9–10%), with much lower compared to urban residents, the share of remuneration (46% vs. 67%), the fact of determining the impact on the level of income of rural residents of land reform is obvious, which will increase the level of rent for land and increase income from the sale of agricultural products. It should be also noted that the significant share of the cost of consumed products obtained from personal farms and self-procurement indicates a significant dependence of the level of food security of rural residents on land supply, and fair access of rural residents to land is a determining factor in solving this problem.

In addition, the rent for agricultural land in Ukraine is much lower than in other European countries, which negatively affects the livelihood of a large number of landowners in rural areas and hinders the productive use of land. In Ukraine, the rent per hectare of agricultural land in 2017 was $ 50, compared to $ 181 in Hungary, $ 243 in France, $ 271 in Bulgaria and $ 957 in the Netherlands. As a result, a large number of landowners in the countryside are deprived of a decent income from the use of one of their most valuable assets (World Bank, 2019c).

4.11 SDG 11. Ensuring openness, security, vitality and environmental sustainability of cities and towns

The biggest problem according to this criterion is the migration of the population of Ukraine, and not so much international as domestic by type of settlement: positive migration in cities and negative in villages (Fig. 3).

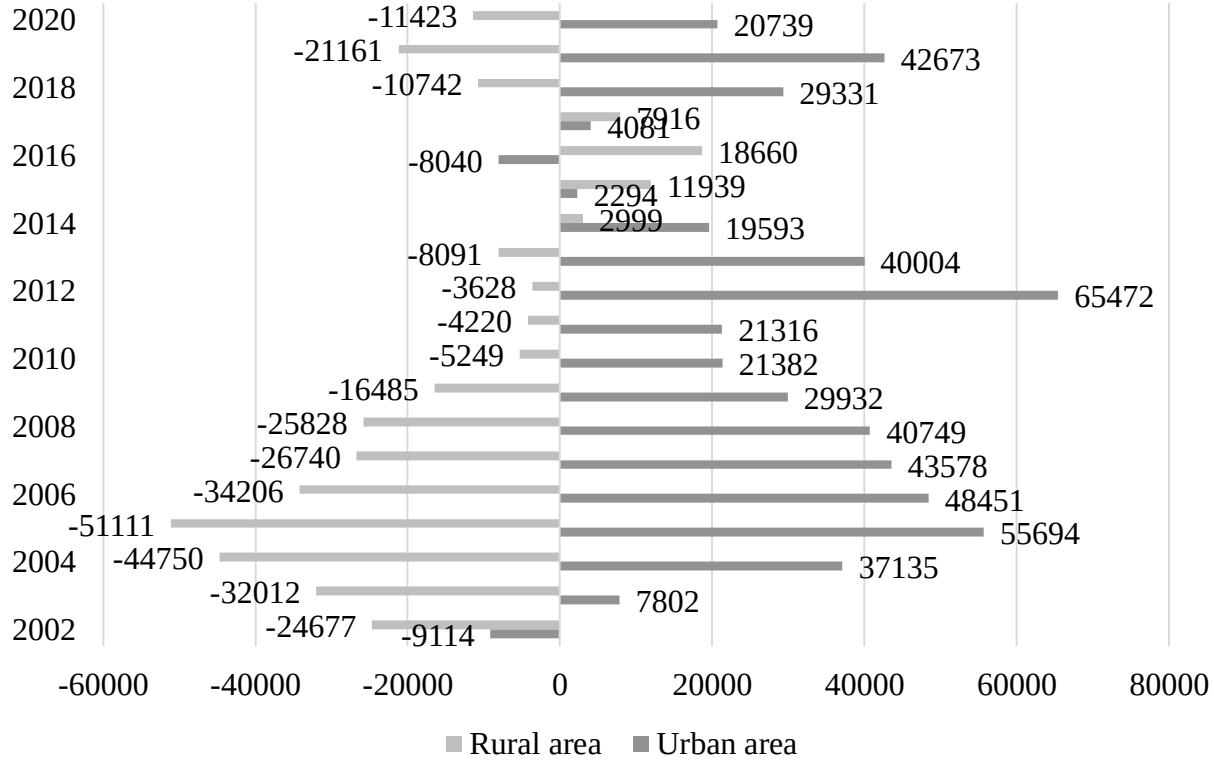


Fig 3. Migratory growth (+), reduction (-) in Ukraine. Source: according to the State Statistics Service of Ukraine (2020)

Migration has been at an unprecedented level for more than 70 years, as the social cohesion and cultural traditions of the rural population are threatened by limited access to land and resources, growing crises, conflicts and catastrophes, most of which are due to climate change. The State Statistics Service does not provide information on internal migration of the population for an earlier period than in 2002. Analysis of

the dynamics of urban and rural population for the period from 1991 to 2020 shows that the number of both urban and rural population decreased by 16.9 and 25.6%, respectively, while the share of urban population in the total population increased from 67.5 to 69.6%. Of course, these changes were influenced not only by migration processes, but also by natural population growth and other factors, however, the fact of gradual urbanization remains obvious. Such a process requires systematic and comprehensive monitoring to ensure environmentally sustainable urbanization and opportunities for integrated and sustainable settlement planning and management.

It is also important to take into account the regional peculiarities of migration processes, as the possibilities of social and environmental burden of regions are very differentiated: we have a significant outflow of population from depressed to economically stable regions, which increases the degradation of areas where the outflow of human capital is (Fig. 4).

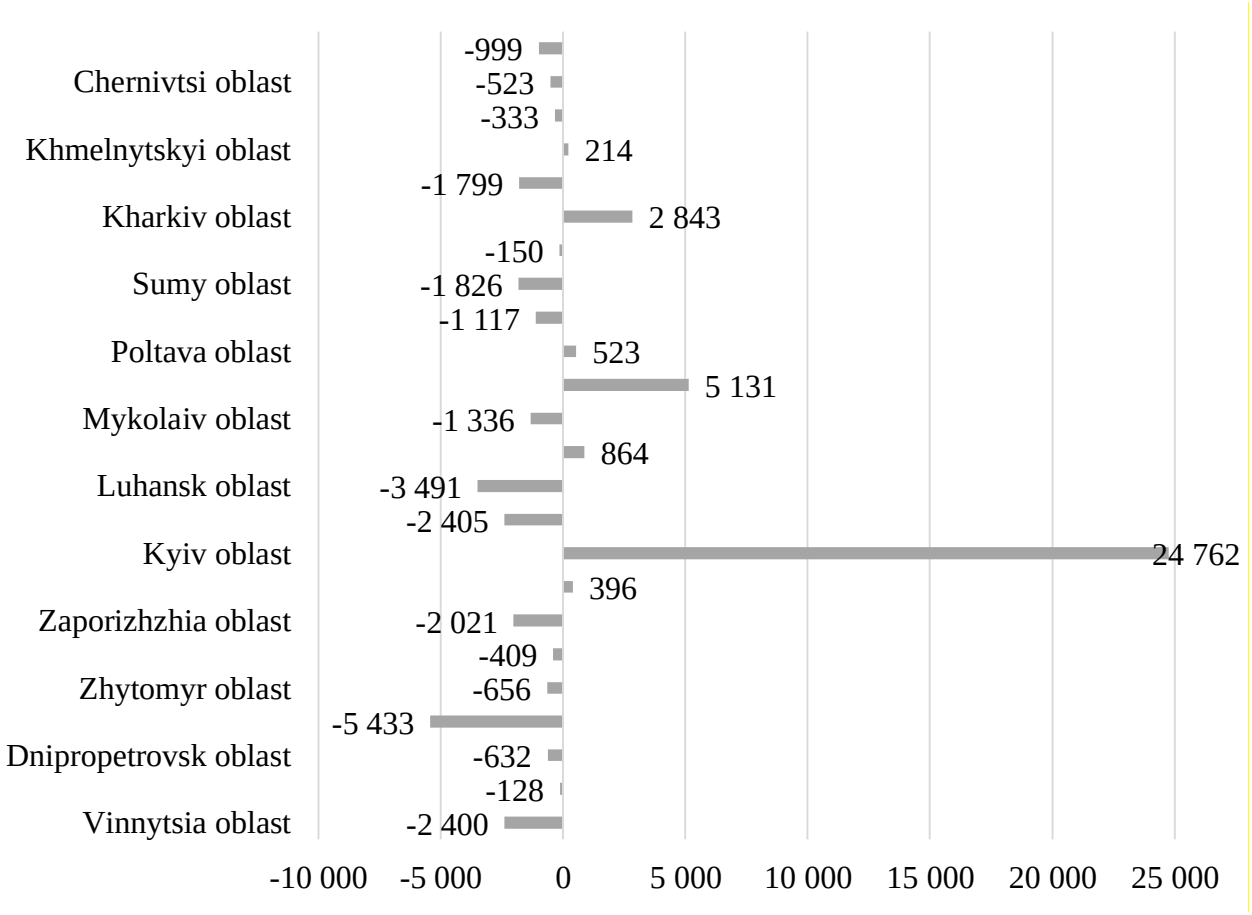


Fig 4. Migratory population growth by region in 2020. Source: according to the State Statistics Service of Ukraine (2021c)

After all, the vast majority of migrants from rural areas are young people between the ages of 25 and 39 who leave with their children (under the age of 14), which leads to another problem – the aging population in the village. Most likely, the category of young people aged 15 to 19 are students who enter urban universities, and later some of them return to the countryside (young people aged 20 to 24), but most of them are not remain there due to significant differences between quality of life and prospects for young people in rural and urban areas (Table 11).

By the way, potential opportunities or, rather, their absence in the village are more important for young women, because more men come to the village than leave, and women – on the contrary: leave more than come.

Tab 11. Number of migrants by age and type of locality in 2020 in Ukraine (all flows). Source: according to the State Statistics Service of Ukraine (2020)

Years	Number of arrivals			Number of departures			Migratory growth, reduction (-)		
	urban and rural areas	urban area	rural area	urban and rural areas	urban area	rural area	urban and rural areas	urban area	rural area
Total	435280	307221	128059	425964	286482	139482	9316	20739	11423
including in age, years									
0–4	28537	18479	10058	27467	17817	9650	1070	662	408
5–9	23715	16402	7313	23608	13597	10011	107	2805	-2 698
10–14	17926	12087	5839	17843	10604	7239	83	1483	-1 400
15–19	55334	45161	10173	51966	35548	16418	3368	9613	-6 245
20–24	67015	47196	19819	66555	53595	12960	460	-6399	6 859
25–29	46944	35047	11897	46740	29247	17493	204	5800	-5 596
30–34	43801	31920	11881	42968	26940	16028	833	4980	-4 147
35–39	35064	24686	10378	34481	22455	12026	583	2231	-1 648
40–44	25025	17113	7912	24639	16535	8104	386	578	-192
45–49	19179	12696	6483	18733	12552	6181	446	144	302
50–54	15228	9734	5494	14775	10070	4705	453	-336	789
55–59	15595	9622	5973	15029	10208	4821	566	-586	1 152
60–64	14730	8895	5835	14308	9899	4409	422	-1004	1 426
65–69	9966	6431	3535	9822	6756	3066	144	-325	469
70–74	6790	4568	2222	6695	4521	2174	95	47	48
75–79	4101	2765	1336	4058	2484	1574	43	281	-238
80–84	4392	3056	1336	4383	2642	1741	9	414	-405
85 and	1938	1363	575	1894	1012	882	44	351	-307

4.12 SDG 12. Ensuring the transition to rational models of consumption and production

According to research by Babych (2019) "The physical volume of food losses and food waste in Ukraine for the period from 2015 to 2017 amounted to 5.8 million tons of grain, 14.0 – potatoes, 9.2 – vegetables, 3.1 – fruits, 2.0 – meat and 5.4 – milk. In terms of production, the largest losses are food and food waste from fruits and berries (42%), meat (35%) and vegetables (31%), and the smallest – grain (3 percent)".

Official statistics are much more "modest" (Table 12): product losses in Ukraine for the period from 2014 to 2021 amounted to 68 thousand tons of meat (0.3% of production), 99 thousand tons milk (0.1%), 89 thousand tons of eggs (1.1%), 10562 thousand tons of grain (2.0%), 29946 thousand tons of potatoes (17.3%), 9522 thousand tons of vegetables (11.8%), 1886 thousand tons of fruits (9.4%), 575 thousand tons of sugar (4.5%) and 255 thousand tons of oil (0.6%).

Tab 12. Losses of products in accordance with the balance sheets according to official data of the State Statistics Service of Ukraine.

Product losses	2005	2010	2014	2015	2016	2017	2018	2019	2020	2021	2014–2021
Meat and meat products											
thousand tons	7	8	8	8	10	10	10	10	6	6	68
% to production volumes	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.2	0.2	0.3
Milk and dairy products											
thousand tons	3	8	14	15	14	13	12	11	10	10	99
% to production volumes	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Eggs and egg products											
thousand tons	6	16	37	21	11	6	4	4	3	3	89
% to production volumes	0.8	1.6	3.3	2.2	1.3	0.7	0.4	0.4	0.3	0.4	1.1
Grain and legume crops (including grain processing products in terms of grain)											
thousand tons	375	794	1593	1400	1350	1106	1253	1363	1073	1424	10562
% to production volumes	1.0	2.0	2.5	2.3	2.0	1.8	1.8	1.8	1.7	1.7	2.0
Potato											
thousand tons	2062	2720	3824	3799	3174	3361	3799	3871	3764	4354	29946
% to production volumes	10.6	14.5	16.1	18.2	14.6	15.1	16.9	19.1	18.1	20.4	17.3
Vegetables and melons food crops (including canned and dried products in terms of fresh)											
thousand tons	393	835	1223	1203	1195	1050	1052	1252	1238	1309	9522
% to production volumes	5.2	9.4	11.8	12.3	12.0	10.8	10.6	12.2	12.2	12.5	11.8
Fruits, berries and grapes (including canned and dried products in terms of fresh)											
thousand tons	191	170	231	218	213	225	285	231	230	253	1886
% to production volumes	9.0	7.9	9.5	8.6	8.9	9.2	9.4	9.3	10.0	10.1	9.4
Sugar (including basic sugar-containing products, in terms of sugar)											
thousand tons	120	94	80	105	74	71	70	65	55	55	575
% to production volumes	5.6	5.2	3.9	7.2	3.7	3.5	4.0	4.4	5.4	3.9	4.5
Oil (including basic oil-containing products, in terms of oil)											
thousand tons	52	41	35	33	25	24	25	26	30	57	255
% to production volumes	3.6	1.3	0.7	0.7	0.5	0.4	0.4	0.4	0.4	1.0	0.6

Source: calculated by the author according to the State Statistics Service of Ukraine (2021a); Note: the indicator of adequacy of consumption is determined by the ratio of actual consumption to the rational norm of consumption

However, there is every reason to believe that even the calculations of food and food waste losses according to the FAO method do not show the full scale of this problem, as Ukraine belongs to the group of EU countries where technologies are used at a much higher level than in Ukraine (Kotykova and Babych, 2019a), coefficients according to the FAO method for Ukraine will obviously be higher.

In any case, "ensuring the physical and economic availability of food, reducing food and food waste losses can significantly reduce poverty, provide gender benefits, reduce pressure on ecosystems and climate.... zero food and food waste losses on grains, potatoes and vegetables allow to fully form a food insurance fund for these products, and for meat and meat products, milk and dairy products, fruits and berries – to provide up to 50% coverage of the existing deficit of consumption of these products. There is no need to spend additional resources, which creates excessive pressure on the environment and leads to greater environmental and economic losses. … reduction of food losses and food waste has positive social consequences due to the possibility of expanding the physical accessibility of food, which, other things being equal, leads to greater economic affordability, and – promotes gender equality and poverty reduction of rural residents" (Kotykova and Babych, 2019b).

4.13 SDG 13. Taking urgent action to combat climate change and its effects

According to the Climate Change Knowledge Portal (2020), Ukraine is threatened by natural disasters, which primarily affect agriculture and health care. The impact of climate change is making Ukraine increasingly vulnerable to drought, high temperatures, forest fires, heavy rainfall, mudslides and floods. The most common natural disasters are heavy rains, which can cause landslides and flooding of large areas of agricultural land, residential buildings and industrial buildings. Climate change is expected to increase the risks and severity of natural disasters due to higher temperatures, as well as precipitation and moisture shortages. In recent years, the country has seen an increase in the number of natural disasters and, in many cases, they have been seen as catastrophic, killing people and causing significant economic losses.

Such climate changes will undoubtedly have a significant impact on the country's agriculture. According to Climate Change Knowledge Portal (2020), although rising temperatures may have a positive effect on winter wheat, potato and corn production in central and northern Ukraine, the expected reduction in precipitation in the south is expected to have a negative impact on winter wheat production: winter wheat yield is very vulnerable to adverse weather conditions during the growing season and may decrease by 20–50%; similarly, fluctuations in spring grain yield can be 35–75%. According to forecasts, earlier onset of warm weather in spring and onset of cold weather in autumn. Increasing the number of dry days combined with decreasing rainfall and warm days in summer will obviously require a shift from rainfed farming to irrigation.

4.14 SDG 14. Conservation and sustainable use of oceans, seas and marine resources for sustainable development

According to the State Statistics Service of Ukraine, the extraction of aquatic bioresources in Ukraine for the period from 2000 to 2020 decreased by 78.2% (Table 13). However, starting from 2014, the data are given without taking into account the temporarily occupied territory of the Autonomous Republic of Crimea, Sevastopol and part of the temporarily occupied territories in Donetsk and Luhansk oblasts, which significantly distorts the factual information.

Analysis of data from 2013 compared to 2000 shows a decrease in the extraction of aquatic bioresources (by 35.5%), but there was a significant increase in the volume and share of extracted resources: in inland water bodies – by 19.6 and 9.3%; in the exclusive (maritime) economic zone of Ukraine – by 38.4 and 18.6%, respectively. At the same time, the volumes of extraction of aquatic bioresources and on the high seas decreased by 44.8 and 94.1%, respectively, and the share of their volume in the total amount of aquatic bioresources decreased by 7.2 and 20.7%. These indicators show the development of fisheries in agriculture:

since 2019, data are given for enterprises whose main economic activity according to the NACE is in section 03 "Fisheries" of section A "Agriculture, forestry and fisheries".

On the other hand, insufficient quantities for the consumption of fishery products are traditionally replaced by other proteins of plant or animal origin, the production of which is also provided by agriculture. Thus, from the point of view of ensuring the SDG 14 in the context of the CSD 2, agriculture plays a key role.

Tab 13. Extraction of aquatic bioresources in Ukraine.

Year	Extraction of aquatic bioresources								Including fish		
	Total		Including by types of water bodies								
			in inland water bodies			in the exclusive (maritime) economic zone of Ukraine, %	in exclusive (marine) economic zones of other states, %	on the high seas, %			
	tons	index	tons	index	%				tons	index	%
2000	350087	1.000	38210	1.000	10.9	16.3	50.0	22.8	346699	1.000	99.0
2001	333363	0.952	38257	1.001	11.5	40.4	45.5	2.7	310451	0.895	93.1
2002	293205	0.838	38011	0.995	13.0	31.7	52.3	3.0	253847	0.732	86.6
2003	248176	0.709	37703	0.987	15.2	22.2	56.8	5.8	222385	0.641	89.6
2004	225905	0.645	35365	0.926	15.7	23.2	56.1	5.0	195067	0.563	86.3
2005	265585	0.759	37396	0.979	14.1	23.0	56.3	6.5	234185	0.675	88.2
2006	228840	0.654	36701	0.961	16.0	20.5	53.5	10.0	202231	0.583	88.4
2007	213669	0.610	43207	1.131	20.2	22.0	57.8	-	198335	0.572	92.8
2008	244527	0.698	41229	1.079	16.9	22.5	57.5	3.1	220543	0.636	90.2
2009	256853	0.734	42201	1.104	16.4	26.2	57.4	-	238600	0.688	92.9
2010	218681	0.625	38364	1.004	17.5	31.9	50.6	-	215017	0.620	98.3
2011	211182	0.603	37574	0.983	17.8	35.5	46.8	-	205285	0.592	97.2
2012	203926	0.583	41569	1.088	20.4	31.1	48.5	-	195490	0.564	95.9
2013	225802	0.645	45695	1.196	20.2	34.9	42.8	2.1	216354	0.624	95.8
2014[1]	91252	0.261	39612	1.037	43.4	24.3	22.2	10.1	80958	0.234	88.7
2015[1]	88552	0.253	38507	1.008	43.5	38.6	…	…	73963	0.213	83.5
2016[1]	88443	0.253	40754	1.067	46.1	45.6	…	…	78490	0.226	88.7
2017[1]	92645	0.265	42176	1.104	45.5	45.9	…	…	81875	0.236	88.4
2018[1]	86223	0.246	46820	1.225	54.3	…	…	…	64738	0.187	75.1
2019[1]	92682	0.265	22929	0.600	24.7	…	…	…	58096	0.168	62.7
2020[1]	76508	0.218	23291	0.609	30.4	…	…	…	…	…	…

Source: calculated by the author according to the State Statistics Service of Ukraine (2020). Note: Data are given without taking into account the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and part of the temporarily occupied territories in Donetsk and Luhansk oblasts.

4.15 SDG 15. Protection and restoration of terrestrial ecosystems and promotion of their rational use, rational forest management, combating desertification, stopping and reversing the process of land degradation and stopping the process of biodiversity loss

This block includes a significant number of indicators – let's focus on those that are directly related to agriculture (Table 14).

Tab 14. Indicators of SDG 15 – Protection and restoration of land ecosystems "Restore degraded lands and soils using innovative technologies".

Product losses	2015	2016	2017	2018	2019	2020
Area of territories and objects of the nature reserve fund, thousand hectares	3803.1	3985.6	3985.0	3991.6	4082.2	4105.5
Share of the area of territories and objects of the nature reserve fund in the total territory of the country, %	6.30	6.60	6.60	6.61	6.76	6.80
The share of the area of the national ecological network in the total territory of the country, %	38.16	38.16	38.16	38.16	38.16	38.17
Forest cover of the country, %	15.9	15.9	15.9	15.9	15.9	15.9
Wood reserves in forests, million cubic meters.	2102	2102	2102	2102	2102	2102
Area of arable land, thousand hectares	32531	32541	32544	32544	32756	-
Share of arable land in the total territory of the country, %	53.9	53.9	53.9	53.9	54.3	-
Area of agricultural lands of extensive use (hayfields, pastures), thousand hectares	7848.3	7840.5	7833.8	7820.8	7534.2	-
Share of the area of agricultural lands of extensive use (hayfields, pastures), in the total territory of the country, %	13.0	13.0	13.0	13.0	12.5	-
The share of nature reserve fund territories in mountainous regions, thousand hectares	656.72	657.15	658.80	659.24	683.80	717.22
The share of nature reserve fund territories in mountainous regions in the total territory of the country, %	1.09	1.09	1.09	1.09	1.13	1.26

Source: according to the State Statistics Service of Ukraine (2020)

According to the data, no indicator, as of 2020, has shown a positive trend in approaching the target values for 2020. To understand how dangerous the indicators are, we must cite data from the World Bank (2020): among 233 countries in 2016, Ukraine ranked second after Bangladesh (59.6%) in the level of plowing and only three countries have similar values: Denmark (56.6%), Moldova (55.6%) and India (52.6%). The average data of the indicator are as follows: world – 11.1%; Central Europe and the Baltics – 32.8%; Europe – 23.9%; Europe and Central Asia – 12.4%; European Union – 24.9%; OECD members – 10.9%; South Asia – 43.3%.

At the same time, the largest number of countries with a level of plowing below 10% – 119 states. Therefore, it is impossible to solve food security issues extensively due to the increase in arable land, and a significant reduction in the level of the plowed territory is an extremely important task of national importance.

4.16 SDG 16. Promoting a peaceful and open society for sustainable development, ensuring access to justice for all and creating effective, accountable and participatory institutions at all levels

One of the most relevant indicators of SDG 16, in our opinion, is the number of migrants (for developed countries) and refugees (for underdeveloped countries or for democracies in unstable times). The dynamics of refugees in the country clearly reflects the situation in the east, associated with the temporary occupation of Ukraine as a result of armed aggression by the Russian Federation (Fig. 5): the peak falls to 2014–2016. Objectively, all wars are fought to obtain human or material resources: land, subsoil, water, etc. Refugees of

war appear when there is a direct threat to human life, including due to lack of resources for their physical existence. From this point of view, overcoming hunger can indeed contribute greatly to peace and stability.

In Ukraine, the issue of food security in terms of quantity of products is not acute, but we understand what resource this is achieved through: a huge level of plowed land, which leads to desertification, which will lead to food problems in the future. In addition, it should be noted that, even under such conditions, the cost of food in Ukraine is very expensive – 45% of total household expenditures in urban areas and 50% in rural areas (State Statistics Service of Ukraine, 2020).

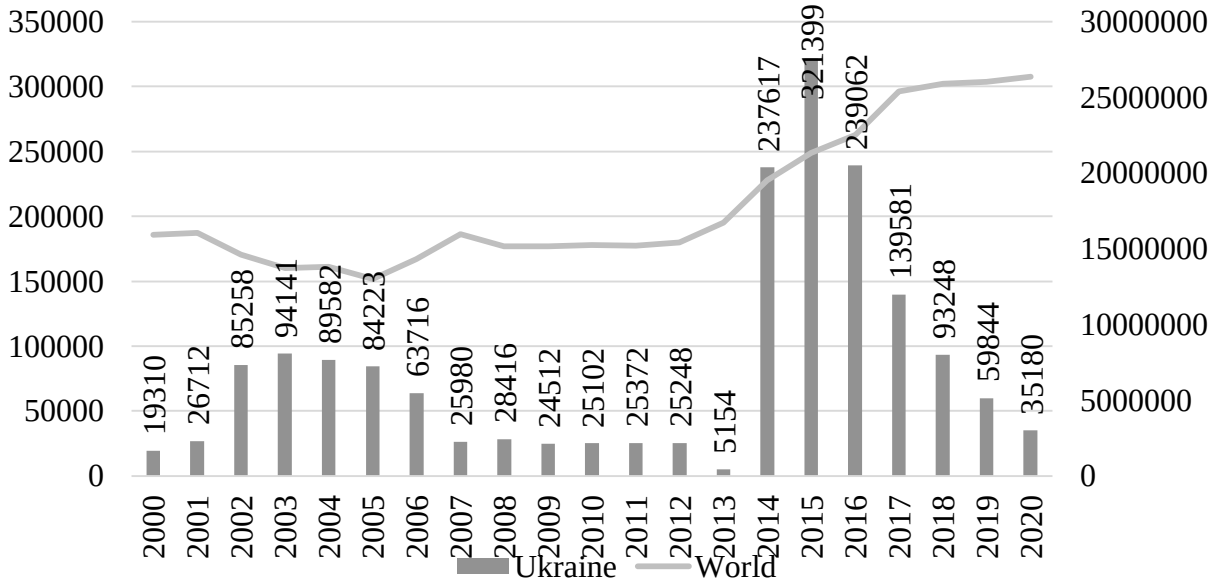


Fig 5. Number of refugees in Ukraine (human) and the world (million people). Source: Built according to the World Bank (2020)

4.17 SDG 17 Strengthening and implementing the global partnership for sustainable development

Three tasks and 4 indicators are assigned to SDG 17 at the national level (Table 15).

Tab 15. Indicators of SDG 17 – partnership for sustainable development.

Product losses	2015	2016	2017	2018	2019	2020
Mobilize additional financial resources based on investment incentives for foreign and domestic investors						
The ratio of private remittances from abroad with GDP, %	7.6	8.1	8.2	8.5	7.8	7.7
Net inflow of foreign direct investment, million USD	3012	3268	2593	2360	2422	-950
Consistently reduce the debt burden on the economy						
The ratio of gross external debt to exports of goods and services in annual terms, %	245.8	244.6	214.3	194.0	192.0	207.2
Develop partnerships between government and business to achieve sustainable development goals						
Number of public-private partnership projects, units	177	186	191	189	187	192

Source: according to the State Statistics Service of Ukraine (2020). Note: * data will be provided additionally.

Target values for three indicators in 2020 have not been reached. It should also be noted that in six oblasts of Ukraine (Vinnytsia, Volyn, Rivne, Sumy, Ternopil and Cherkasy) no public-private partnership project has been concluded, and in 7 (Dnipropetrovsk, Zhytomyr, Ivano-Frankivsk, Odesa, Kharkiv, Chernivtsi and Chernihiv) region) – only 1 project per year. However, in our opinion, this goal has a slightly deeper meaning than declared by certain indicators: to promote the ideas of sustainable development and promote them in every

possible way at different levels; share information, knowledge, technologies; unite to achieve a synergistic effect; provide help and support where needed, whenever possible.

5. Conclusion and discussion

Thus, the results of the study confirm the thesis that food and agriculture are the basis of the Agenda for Sustainable Development until 2030. The key aspects of the relationship between the SDG and food security and agriculture in the global dimension and in Ukraine include the following (Fig. 6): SDG 1 – 79.5% of rural residents consider themselves poor; SDG 2 – unbalanced diet due to ineffective agricultural policy; SDG 3 – 27% of children under 5 years are overweight; high rates of overweight among adults; SDG 4 – unhealthy diet in general secondary education institutions of Ukraine (less than 40% of kcal and less than 27% of animal protein requirements); SDG 5 – women in the agricultural sector receive 20% lower wages and less access to land; SDG 6 – wasted consumption of fresh water in the industry (2%), growth in the volume and share of fresh water under irrigation; SDG 7 – 13% of total greenhouse gas emissions in the industry are useless; SDG 8 – lifting the moratorium on the sale of agricultural land will provide economic growth of 0.5–1.5% per year; SDG 9 – increase of agriculture in the share of gross value added while reducing the share of industry and infrastructure; SDG 10 – land reforms will help reduce inequalities between rural and urban residents; SDG 11 – social cohesion and cultural traditions of the rural population are under threat; SDG 12 – zero losses will provide up to 50% coverage of the existing consumption deficit; SDG 13 – droughts and downpours will require significant changes in agricultural technologies; SDG 14 – the defining role of agriculture in the extraction of water resources in inland waters; SDG 15 – Ukraine ranks second in the world in terms of plowed territory; SDG 16 – lack of attention to food security may lead to instability in the future; SDG 17 – Ukraine can help solve world hunger problems.

It is also necessary to pay attention to certain aspects and established new facts obtained during the research. It is, in particular, about significant differences in the values of the analyzed indicators in relation to rural and urban areas in Ukraine.

The higher rate of poverty in rural areas compared to urban areas was, of course, not an unexpected indicator. But attention should be paid to the fact that the gap between indicators of the poverty level (critical, moderate and upper) in rural areas compared to similar indicators in urban areas in terms of total income is much lower than in terms of monetary income. This fact testifies to the wider opportunities of the rural population to generate income from various spheres of activity, for example, from land rent (in kind) or natural exchange of products, which are related to agricultural activities – an opportunity that urban residents do not have. Indeed, according to official data, the main share of non-monetary incomes of the population in rural areas is the cost of consumed products obtained from personal subsidiary farms and from self-harvests. This fact is important from the point of view of understanding the priorities of spending budget funds – on increasing social payments or expanding investment projects (or reducing tax rates or credit rates for agricultural producers) in the countryside, because the second approach ensures not only the achievement of the goal of increasing incomes, but also contributes increasing revenues to the budgets of various levels, development of the countryside and the level of employment of the rural population. The last indicator, by the way, is also a significant problem, which, among other things, negatively affects the increase in migration of the rural population. It could be assumed that such a problem exists in general, regardless of the place of residence, but the data indicate a positive increase in the migration of the urban population with a negative level in rural areas. This fact is determined by the influence of a number of factors: firstly, the low level of wages, which in rural areas is almost twice lower than in urban areas; secondly, the underdeveloped infrastructure and lack of opportunities for self-development, which forces young people who return to the village after school to look for a better place to live; thirdly, the activities of large agricultural holdings, which, on the one hand, are a carrier of progress, applying the latest technologies, and on the other, a problem for the local population, which remains without work and alone with environmental damage due

to the social irresponsibility of large companies. The content of these processes requires deeper research and scientific discussion in further research, because only the establishment of cause-and-effect relationships will allow us to develop an effective strategy to eliminate the existing inequality for residents of urban and rural areas.

Thus, Ukraine has the same problems in the implementation of the SDGs and their relationship with the SDG2, as in the world, which allows the usage of already developed international protocols and tools to improve the situation and ensure the achievement of the set goals. At the same time, there are a number of differences that require significant efforts from national and regional actors in solving the issues facing Ukraine in achieving the goals of sustainable development.

First, the presence of contradictions, the causes of which often lie in the plane of political and/or economic corruption, and therefore it is difficult to resolve them. It is hard to imagine, but Ukraine, which has the highest level of arable land supply in Europe and is one of the largest exporters of grain in the world, cannot provide rational standards of food consumption for its own population. At the same time, other problems appear, because the achievement of the highest indicators occurs at the expense of an extraordinary load on the environment (Ukraine ranks second in the world in terms of the level of plowed territory!), which in turn leads to the degradation and depletion of natural resources and inevitable climate changes, which will have an even worse effect on the incomes of the rural population and their ability to produce agricultural products, etc. in a spiral.

Secondly, the outdated management system and the huge resistance of this system to any reforms, especially in the field of public administration. In fact, reforms in Ukraine began only in 2014. Everything that was tried to pass off as reforms until this period did not have any positive effect on the management system. However, even this time was not enough to implement even half of the set tasks, and in some areas, the achievements were even smaller. From the agricultural point of view, the most significant is the land reform, but a full-fledged land market was launched only in the summer of 2021, when the moratorium on the purchase and sale of land was finally lifted. Until now, Ukraine was a member of the "club" of 7 countries in the world (Venezuela, North Korea, Congo, Cuba, Tajikistan and Belarus), where the sale of agricultural land is prohibited. Currently, it is not possible to estimate the economic benefits of making such a decision due to the lack of statistical data. However, at least the right of citizens enshrined in the Constitution of Ukraine has become real, and the land market is gaining transparency and openness. Another important milestone in Ukrainian modern history was the decentralization reform, which is aimed at the development of communities and introduced completely different rules for the formation and use of local budgets. But currently, the results of decentralization are not very noticeable in most communities. Mostly elderly people live in the village and it is psychologically difficult for them to adjust to the new rules of the game, where they have to decide, and not be decided for them, as it was before. The Soviet authorities eradicated the historical Ukrainian heritage and the peasants began to lose their identity and forget their traditions. It will take some time to restore lost trust and bring back production traditions based on respect for nature.

Finally, due to the full-scale invasion of the Russian Federation into Ukraine, already existing problems will only deepen, and with them new challenges and risks are appearing for both state institutions and people. It is difficult to imagine the consequences of this war, but it is already clear how fragile peace is and how strong we can be in its defense. This is a time when civilized countries must be steadfast in showing unity and upholding the basic principles of sustainable development for all.

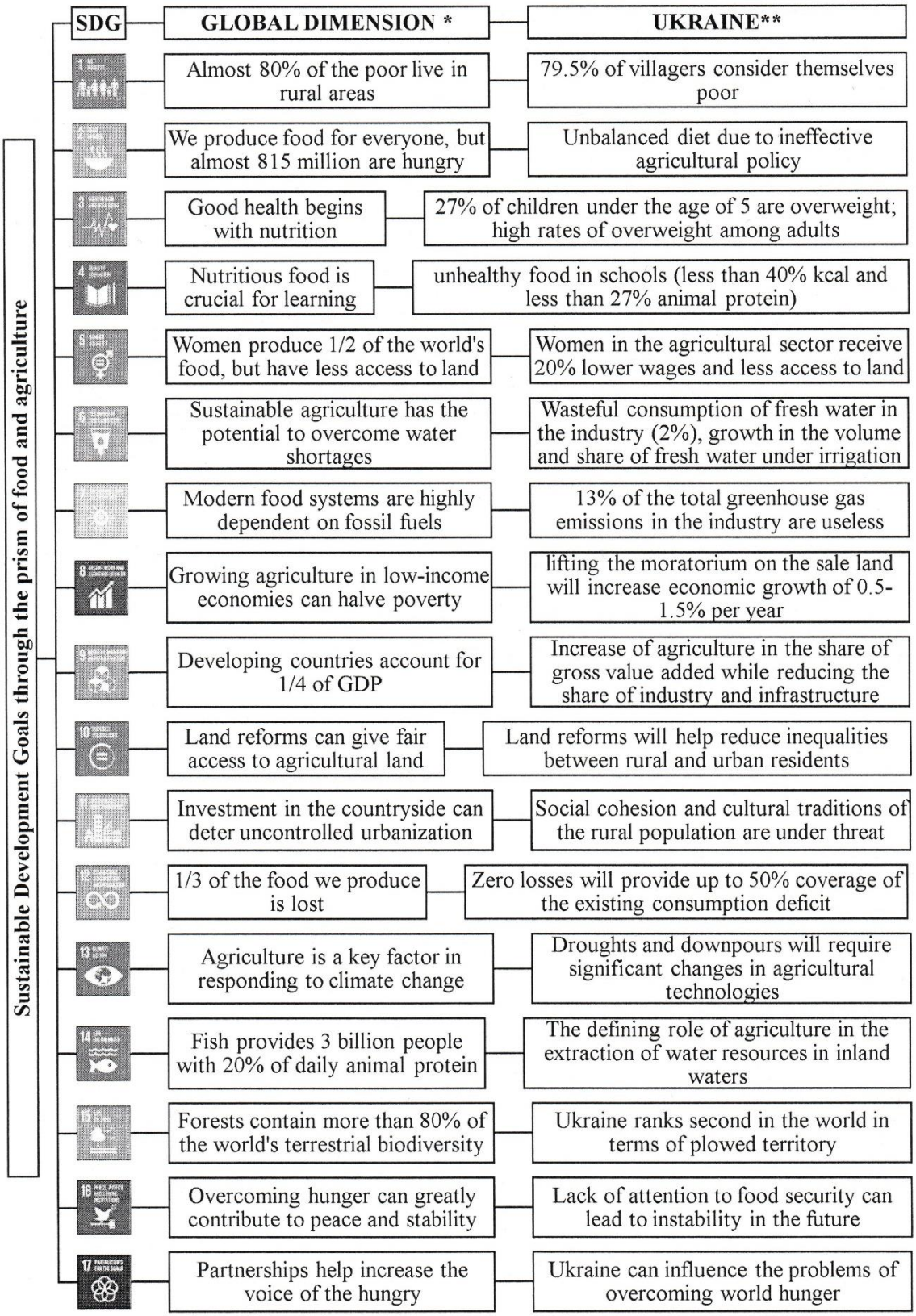


Fig. 6. Key aspects of the relationship between the SDG, food security and agriculture. Source: * summarized by the author according to FAO (2016), ** developed by the author

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