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National Assessment of Progress in Achieving the Sustainable Development Goals in Agriculture

The methodological and methodical foundations of enhancement of statistical assessment on the progress in achieving sustainable agricultural development and its environmental consequences requires an integrated statistical approach. Thanks to statistical analysis and evaluation it is possible to obtain a complete picture of the functioning of such a complex and dynamic system, develop means of influencing the totality of agricultural relations in order to reduce harmful effects on the environment and eliminate the negative environmental consequences of agricultural activities.

The article assesses the progress in achieving the targets for the sustainable development of agriculture in Ukraine with the help of indicators that ensure the filfillment of the objectives set. The quality of the available information support of monitoring is analyzed. In accordance with the given national targets by 2030, the actual reach of individual indicators that guarantee the implementation of the outlined objectives and targets for sustainable agricultural production was assessed.. It is noted that the main national indicators used to determine the implementation of the task are the indicators of the availability of a balanced diet at the level of reasonable standards for certain segments of the population.

It is stated that the Global Sustainable Development Goals (SDGs) form a wide range of economic, social and environmental challenges. Although global SDGs are not legally binding, countries take them into account and develop national measures to achieve them. It is noted that not all global indicators of SDG were relevant for Ukraine as for a number of indicators there are gaps in data sources, their metadata and information support for their monitoring. It is stated that during the process of introduction of national indicators the priority was given to the data that are produced on an ongoing basis within the framework of official statistics using approved methodologies and classifiers. In order to identify potential sources of the data to better reflect the sustainable development of agriculture, a comparative evaluation of global and national indicators, the achievement of which will ensure the implementation of the SDG was conducted.

Key words: *sustainable development, agriculture, Sustainable development goals, monitoring, indicators, evaluation.*

Problem statement. Sustainable, projected development of the agricultural sector is conditioned by the need to guarantee food security and provides the introduction of various forms and branches of management promoting sustainable rural communities, increasing the investment attractiveness of agricultural sectors, expanding Ukraine's participation in the world agricultural market, rational use of agricultural land and reduction of man-caused load of the agricultural sector on the environment.

National agriculture, its key role in the country's economy as well as the environmental consequences of its activities require an in-depth scientific study. The processes of agricultural development are determined by a combination of economic, environmental, political, social, legal and international factors, which are based on the strategic interests of the country, its natural and climatic conditions, geographical location and mentality of the people.

Improving the methodological and methodical foundations of statistical assessment of progress in achieving sustainable agricultural development and its environmental consequences requires a comprehensive statistical approach. Statistical

analysis and evaluation can provide the most complete picture of the functioning of such complex and dynamic system, develop means of influencing the aggregate of agricultural relations to reduce the harmful effect on the environment and eliminate the negative environmental consequences of agricultural activities.

Analysis of recent research and publications. Currently the issue of assessing the progress of achieving sustainable agricultural development at the national and regional levels is under considerable attention of scientists. Thus, the monitoring of indicators proposed by J. Rockstrem and P. Sukhdev [1] has allowed to establish a conditional division of the Sustainable Development Goals (SDGs) into economic, environmental and social components. Assessing the progress of achieving sustainable development of agriculture allows to identify economic and environmental components among the indicators of the Sustainable Development Goals. This approach involves the inclusion of SDG 12 "Responsible consumption and production" in the economic dimension.

In the FAO reports, the division of indicators in this context implies the identification of such components as production and the environmental impact of agricultural production [2]. In addition, the division of the system of indicators into agricultural and environmental was carried out by D. Kanter and co-authors in the process of assessing the trade-offs in the agricultural sector in the period of sustainable development [3]. Noteworthy is the study made by L. Campanolo and co-authors, which proposed a comprehensive index of sustainable development assessment – FEEM SI to measure overall equilibrium [4].

A native scientist O. Nikishina offers a comprehensive assessment of the natural resource potential of agriculture based on a system of complementary indicators of sustainable development, focusing on the environmental consequences of this activity [5]. At the same time a comparative assessment of progress in achieving sustainable agricultural development by global and national SDGs and relevant indicators has not yet been conducted. The purpose of the study is to assess global and national targets and indicators underlying the assessment of progress towards sustainable agriculture.

Presentation of the basic material of the study. The main priority for the development of modern society should be a comprehensive consideration of social, economic and environmental issues. This will ensure the change of modern man-made development of the planet to a sustainable one. At present this problem has become global at both national and world levels: all countries, without exception, have faced the need to change the existing economic paradigm, including the creation of new concepts of balanced and sustainable agricultural development to eliminate global and regional environmental threats.

In 2015, as part of the 70th session of the UN General Assembly in New York, the UN Summit on Sustainable Development was held and the Post-2015 Development Agenda was adopted, which approved new guidelines for the world development. The final document of the Summit "Transforming our world: the agenda for sustainable development until 2030" approved 17 SDGs and 169 objectives. Ukraine, like other UN members, has joined the global process of sustainable development. In 2016–2017, the process of adapting the SDGs to the national information resource and its context took place. As a result of the adaptation process the national system of SDGs which consists of 17 goals and 86 tasks of national development, as well as 183 indicators on the information content of these tasks, was created. The national statistical system has been identified as the coordinator of data collection for SDGs monitoring [6].

By order of the Cabinet of Ministers of Ukraine a list of indicators has been approved in the context of which the data will be collected to monitor the implementation of the SDG. Also this document stipulates that the State Statistics Service of Ukraine guarantees the collection and publication of such data as well as coordination of work on the development of metadata by indicators. Central executive bodies with the participation of state bodies and other ones responsible for calculation of indicators, in terms of which the data are collected to monitor the implementation of the SDG, guarantee their collection and development of metadata and submit them to the State Statistics Service [7] . Besides, in order to ensure the national interests of Ukraine in sustainable development of the economy, civil society and the state, to achieve the increase in the level and quality of life of the population, respect for constitutional rights and freedoms of man and citizen, there was issued the Presidential Decree № 722/2019 "On the Sustainable Development Goals of Ukraine until 2030" [8].

The 2030 Agenda for Sustainable Development was agreed in September 2015 by Heads of States and senior government officials. The planned SDGs are designed to stimulate social, economic and environmental progress for the period up to 2030 in the following areas:

– eradicating poverty and hunger worldwide;

– combating inequality within and between countries;

– building a peaceful, just and free from social barriers society;

– protecting human rights, promotion of gender equality and empowerment of women;

– ensuring the reliable conservation of our planet and its natural resources.

The 2030 Agenda for Sustainable Development, a new global agenda adopted by all UN member states in September 2015, has provided a common plan for peace and development for people and the planet both now and in the future. It is based on 17 SDGs and 169 relevant objectives to achieve them. The outlined goals are unprecedented in importance and scale and are related to overcoming poverty, protecting and guaranteeing the prosperity of the world. They have become an urgent call for joint action by all countries both developed and developing, namely for global partnership. All the countries recognize that overcoming poverty and other constraints must go in the context of strategies that improve health and education, reduce inequality and stimulate economic growth, intensify the fight against climate change and conserve global biodiversity.

Monitoring and evaluation of the progress of the SDG is taking place at various levels – national, regional, global and sectoral. The High-Level Political Forum is the central platform for the UN to monitor and revise the 2030 Agenda and the SDG at the global level. To this end, Agenda 2030 calls on UN member states to conduct voluntary national reviews of progress towards the SDG.

The Decree of the President of Ukraine "On the Sustainable Development Goals of Ukraine until 2030" and other legislative and regulatory documents stipulate that the SDG s for the period up to 2030 are the guidelines for drafting the forecasting and program documents, draft regulations to ensure the balance of economic, social and environmental dimensions of sustainable development of Ukraine [8–10].

Regarding sustainable agricultural production within the framework of national CSWs, 5 tasks and 13 indicators are planned [10; 11], namely:

Goal 2. Overcoming hunger, agricultural development.

Task 2.1. Ensure the availability of a balanced diet at the level of scientifically sound standards for all segments of the population:

2.1.1. Meat consumption per capita, kg/year.

2.1.2. Consumption of milk and dairy products per capita, kg/year.

2.1.3. Fish consumption per capita, kg/year.

2.1.4. Consumption of vegetables per capita, kg/year.

2.1.5. Fruit consumption per capita, kg / year.

Task 2.2. To double the productivity of agriculture, primarily through the use of innovative technology:

2.2.1. Labor productivity in agriculture, thousands of US dollars per employee.

2.2.2. Index of agricultural products, %.

Task 2.3. Ensure the creation of sustainable food production systems that contribute to preservation of ecosystems and gradually improve the quality of land and soil, primarily through the use of innovative technology:

2.3.1. Food production index, %.

2.3.2. Share of food industry products and processing of agricultural raw materials in exports of groups 1 – 24 of Ukrainian Classification of Goods for Foreign Economic Activity, %.

2.3.3. Share of agricultural lands under organic production in the total area of agricultural lands,%.

Task 2.4. Reduce food price volatility:

2.4.1. Consumer price index for food (average annual), %.

Goal 12. Responsible consumption and production.

Task 12.2. Reduce food losses in supply chains:

12.2.1. Share of postharvest losses in total grain production,%.

12.2.2. Share of post-harvest losses in total production of vegetables and melons, %.

In accordance with the given reference points for 2030 there has been assessed the actual state of achievement of certain indicators that ensure the implementation of the goals and objectives on sustainable agriculture. These objectives are supported by the list of indicators and benchmarks for 2020, 2025 and 2030. The indicators for assessing the sustainability of agriculture established at the national level are given in Table 1 (constructed by the authors according to the data [12]).

It is important to highlight the main problems to be solved in the framework of sustainable agricultural development:

1. Problems of food security and nutrition and promotion of sustainable development of agriculture (SDG 2). Such key goal of sustainable development as overcoming hunger, achieving food security and improving nutrition, promoting sustainable agriculture takes into account the links between supporting sustainable agriculture, empowering small farmers, promoting gender equality, ending rural poverty and promoting a healthy lifestyle etc.

2. Rural development (SDG 2).

The post-2015 sustainable development programme calls for overcoming hunger, achieving food security, improving nutrition and promoting sustainable agriculture. In particular, task 2.a implies an increase in investment, including by intensifying international cooperation, in rural infrastructure, agricultural research and agro-advocacy, technology development and establishment of genetic banks of plants and animals to strengthen the capacity of developing countries, especially the least developed countries in the field of agricultural production [10].

Table 1

Monitoring of indicators of sustainable development of agriculture in Ukraine

Indicators	Actual values						Target values		
	2015	2016	2017	2018	2019	2020	2020	2025	2030
2.1.1.	50,9	51,4	51,7	52,8	53,6	53,8	61,0	71,0	80,0
2.1.2.	209,9	209,5	200,0	197,7	200,5	201,9	270,0	320,0	380,0
2.1.3.	8,6	9,6	10,8	11,8	12,5	12,4	Not defined		
2.1.4.	160,8	163,7	159,7	163,9	164,7	164,0	Not defined		
2.1.5.	50,9	49,7	52,8	57,8	58,7	56,5	65,0	78,0	90,0
2.2.1.	8,68	8,71	9,30	10,61	10,83	12,17	10,0	12,5	15,0
2.2.2.	95,2	106,3	97,8	108,2	101,4	89,9	102,0	102,0	102,0
2.3.1.	88,6	108,9	107,1	98,5	103,9	99,5	103,0	103,0	103,0
2.3.2.	38,3	42,0	41,0	39,4	44,3	45,1	51,0	57,0	65,0
2.3.3.	1,0	0,9	0,7	0,7	1,1	1,1	1,1	1,3	1,7
2.4.1.	144,4	108,5	113,4	111,5	108,3	102,9	105,0	105,0	105,0
12.2.1.	2,3	2,0	1,8	1,8	1,8	1,7	1,8	1,0	0,5
12.2.2.	12,3	12,0	10,8	10,6	12,2	12,2	10,0	7,0	5,0

It is important to note that the main national indicators used to determine the implementation of task 2.1. are those that characterize the availability of a balanced diet at the level of reasonable standards for the population (Fig. 1, built by the authors according to the data [11]).

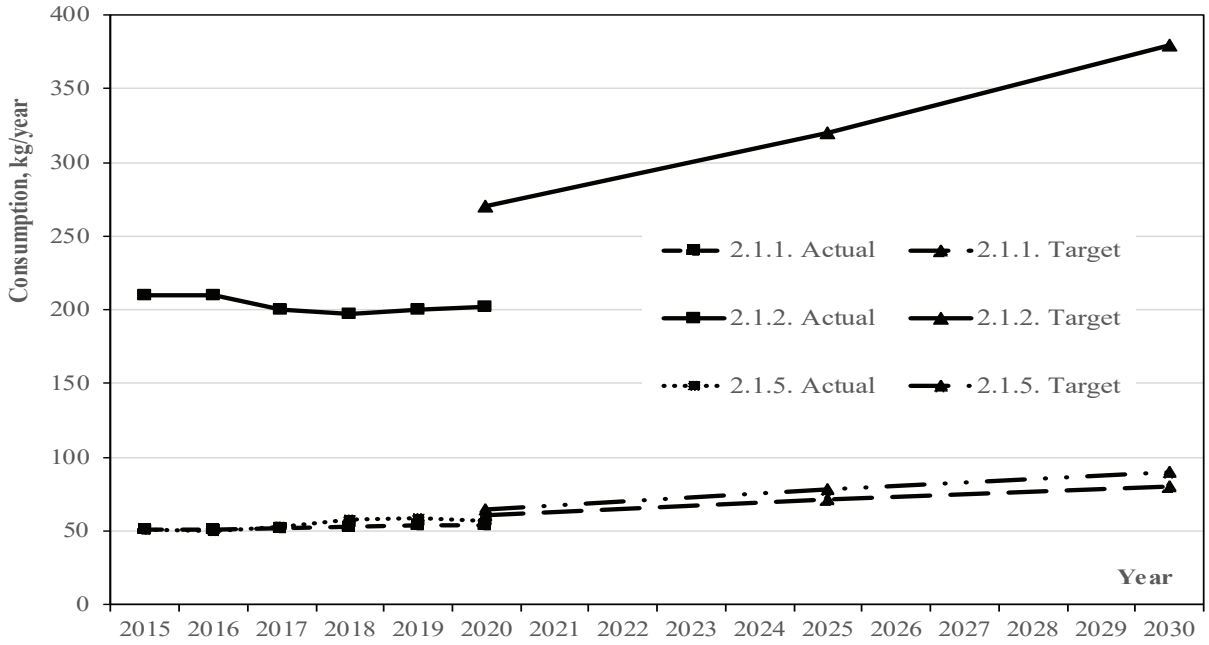

Fig. 1. Target values of the SDG task 2.1

The main problem that threatens food security is the lack of balanced nutrition of Ukrainians. Thus, due to products of animal origin, the caloric content of the diet is provided by only 28% at the optimal level of 55%. With regard to progress on Task 2.3, none of the benchmarks was reached during 2020 with the exception of indicator 2.3.3 (the share of agricultural land under organic production in the total area of agricultural land). However, it should be noted that the State Statistics Service does not currently conduct any official accounting of production and consumption of organic agricultural products. With regard to SDG 12 targets and indicators for sustainable agricultural production, only target 12.2 ("reduce food losses in value chains") is relevant. The target and actual values of the indicators for this task are shown in fig. 2 (built by the authors according to the data of [11]). The data in the figure indicate that the achievement of the target indicator 12.2.1 is quite probable, while with regard to indicator 12.2.2 there are no grounds to assert that there is any progress at the end of 2020.

Currently, there are no effective mechanisms in Ukraine to encourage the population to rational and sustainable consumption. The practice of using new and modified food products leads to irrational use of

natural resources, and collection and transportation of agricultural production are accompanied by significant losses of food products.

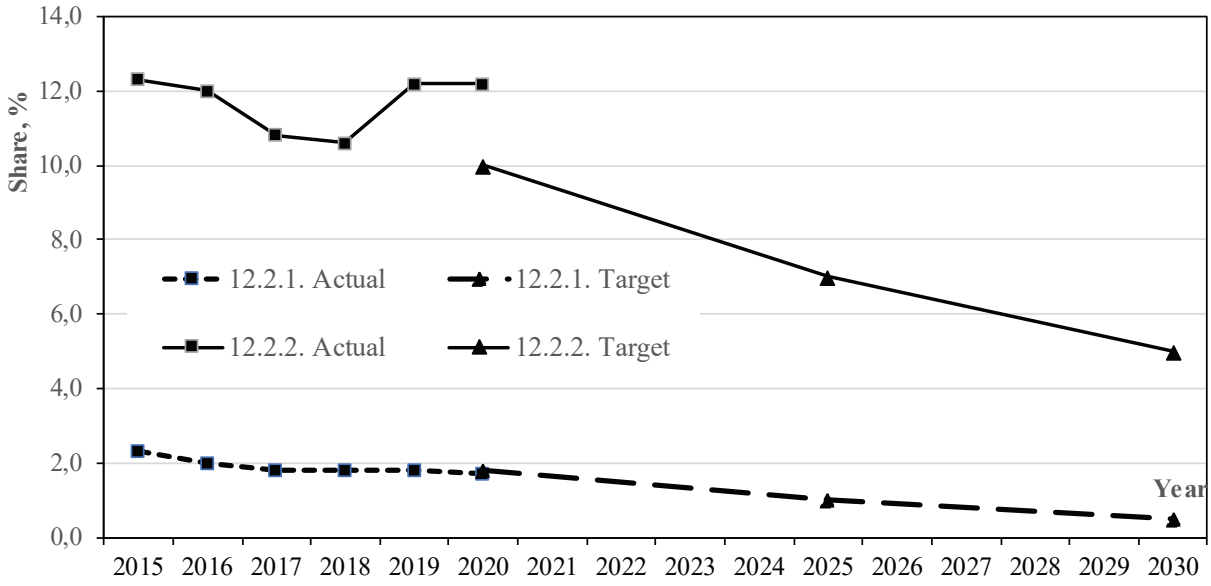

Fig. 2. Target values of the SDG task 12.2.

To achieve target 12.2, it is necessary to create prerequisites for establishing a sustainable economy in Ukraine; this, in turn, will reduce the dependence of economic (including agricultural) growth on the use of natural resources.

The basis for planning the development and making sustainable management decisions is to conduct quality assessment and monitoring. Therefore, after adapting of the SDGs in Ukraine their national monitoring and evaluation was introduced. It is important to note that the global system of indicators, objectives and the actual formulation of the SDGs is somewhat different from the corresponding national system.

Global SDGs, having set a wide range of economic, social and environmental objectives, call for action all countries of the world regardless of their level of economic development. Although not legally binding, global SDGs are taken into account and national measures are set to achieve them. It should be emphasized that not all global indicators turned out to be relevant for Ukraine, for a number of indicators there are gaps in data sources, their metadata and information support for their monitoring. In the process of implementing national indicators, the priority was given to the data produced on an ongoing basis within official statistics using approved methodologies and classifiers. In addition, administrative reporting from other ministries and departments is involved.

In order to identify potential data sources for a better reflection of sustainable agriculture, a comparative assessment of global and national indicators that ensure the achievement of the objectives of the SDGs was carried out. The indicators in the field of sustainable agricultural production are presented in fig. 3 (developed by the authors):

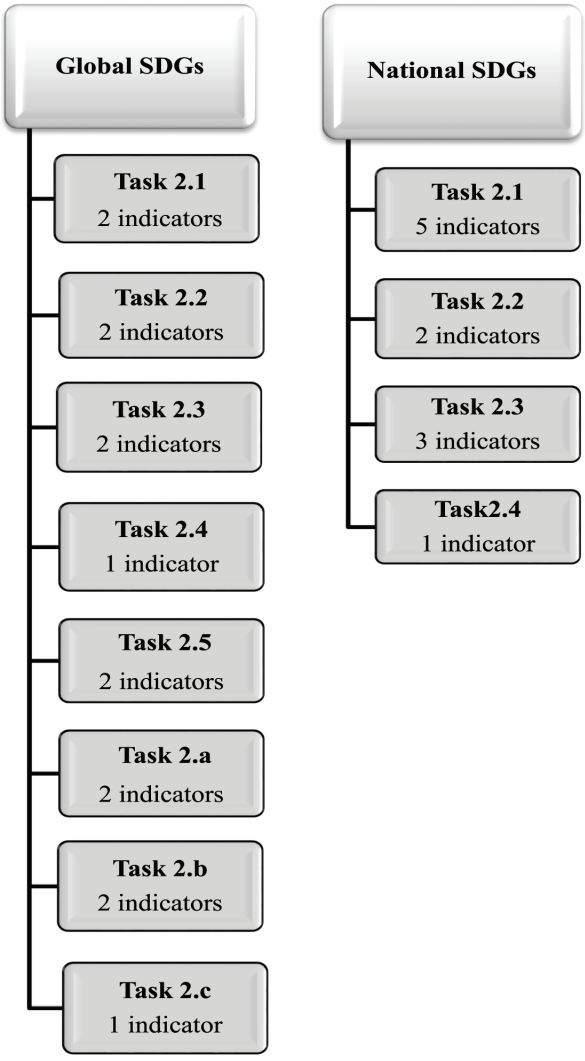

Fig. 3. Comparative assessment of global and national SDGs

So, the list of global SDGs contain 8 tasks and 14 indicators that in the information support of monitoring the goals cover a wider range of issues ensuring the production of better statistical indicators. Comparison of global and national goals by tasks and number of indicators is presented in fig. 4 (developed by the authors according to the data [11]).

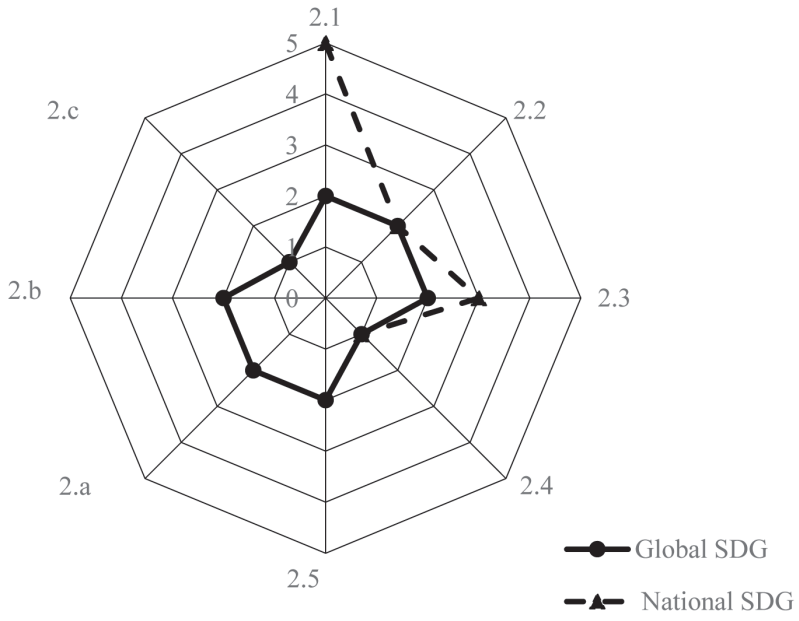

Fig. 4. Comparative assessment of global and national Sustainable Development Goals by indicators

It should be noted that global SDGs may not always reflect national characteristics, which means that national goals must be formulated and developed for each individual country taking into account the possibilities of its statistical production. Some of the indicators needed to quantify indicators remain uncertain or require methodological clarification at the international level.

Conclusions. Therefore, the study of the goals, objectives and indicators of the economic dimension of sustainable agricultural development in Ukraine gives the grounds to assert that the monitoring the achievement of the planned benchmarks, especially for the consumption of basic types of food by the population of Ukraine, must be brought to scientifically substantiated levels. Our research allowed us to evaluate the indicators of agricultural development in the framework of achieving sustainable development goals.

The prospects for further research include identifying objectives and indicators for sustainable agricultural production and developing methodologies and methods for calculating them, as well as introducing special surveys to conduct qualitative monitoring of the implementation of the SDGs.

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Національна оцінка прогресу досягнення Цілей сталого розвитку у сфері сільського господарства

Удосконалення методологічних і методичних засад статистичного оцінювання прогресу досягнення сталого розвитку сільського господарства та його екологічних наслідків вимагає комплексного статистичного підходу. Завдяки статистичному аналізу й оцінюванню можна отримати найповніше уявлення про функціонування такої складної й динамічної системи, розробити засоби впливу на сукупність сільськогосподарських відносин з метою зменшення шкідливого впливу на навколишнє природне середовище та елімінувати негативні екологічні наслідки сільськогосподарської діяльності.

У статті оцінено прогрес досягнення цільових орієнтирів сталого розвитку сільського господарства України з допомогою індикаторів, які забезпечують виконання поставлених завдань. Проаналізовано якість наявного інформаційного забезпечення моніторингу. Відповідно до заданих національних цільових орієнтирів до 2030 року, проведено оцінювання фактичної досяжності окремих індикаторів, які забезпечують реалізацію окреслених завдань і цілей щодо сталого сільськогосподарського виробництва. Зазначено, що основними національними індикаторами, з допомогою яких визначається виконання за-

вдання, є індикатори доступності збалансованого харчування на рівні обґрунтованих норм для окремих верств населення.

Зазначено, що глобальні Цілі сталого розвитку (ЦСР) формують широкий діапазон економічних, соціальних та екологічних завдань. Хоча глобальні ЦСР не є юридично обов'язковими, країни беруть їх до уваги та розробляють національні заходи для їх досягнення. Зазначено, що не всі глобальні індикатори ЦСР виявилися релевантними для України, для низки показників наявні прогалини в джерелах даних, їх метаданих та інформаційному забезпеченні їх моніторингу. Вказано, що у ході процесу запровадження національних індикаторів пріоритет було надано даним, які виробляться на постійній основі в рамках офіційної статистики з використанням затверджених методологій і класифікаторів. З метою виявлення потенційних джерел даних для якіснішого відображення сталого розвитку сільського господарства проведено порівняльне оцінювання глобальних і національних індикаторів, досягнення яких забезпечить виконання завдань ЦСР.

Ключові слова: *сталий розвиток, сільське господарство, Цілі сталого розвитку, моніторинг, індикатори, оцінка.*

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