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FORMATION OF A SET OF NATIONAL FOOD SECURITY INDICATORS

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ABSTRACT

The purpose of this scientific article is to form a set of indicators of national food security in order to diagnose the processes of food supply and self-sufficiency in the direction of a comprehensive and clear assessment of the actual level of national food security and independence and to identify compliance with the regulatory level, as well as to find effective ways to improve the national socio-economic development for the long term.

To achieve this purpose, a wide range of research methods has been used, the main of which were the methods of generalization and synthesis, scientific abstraction, analytical diagnostics, and regulatory and index criteria. The dialectical method of cognition of socio-economic processes, the formal-logical method and the method of system analysis have been applied in order to better understand the processes of providing the country with food, the formation of food independence from imports, the identification of the regularities of the processes of self-sufficiency in food stocks, as well as to take into account the impact of macroeconomic factors on improving the level of national food supply and food security.

The author formulates his own definition of "food security indicator" as an actual statistical value of the indicator (in dynamics), which reflects the level of provision with the resource potential for the full production of the optimal amount of food per capita (in accordance with the established standards). The "food security criterion" is identified as a threshold, an acceptable level of the indicator, the value of which indicates the state of food independence of a certain region in particular and the country as a whole.

The indicators characterizing the level of national food security have been improved in the context of the research of such aspects as quantitative, aimed at providing the country with sufficient food; qualitative, focused on providing the population with quality and safe food; and socio-economic, which involves establishing a level of income sufficient to ensure access to food.

The main composition of indicators and factors (conditions) of national food security and a set of indicators of national food security has been formed in order to address important issues of food supply in accordance with the potential capabilities of the country in the production, storage, processing of agricultural products to provide food for all categories of the population with appropriate levels of consumption, as well as food of proper quality and safety.

It is proved that at the present stage of economic development, all groups of indicators of food security and independence of the country (criteria of accessibility and sufficiency of food security, food self-sufficiency and food independence from imports) should be used. The proposed criteria and developed indicators are of both theoretical and practical importance for the economic and socio-demographic development of the country in the future.

Keywords: national food security, agro-industrial complex, food security indicator, food self-sufficiency, food independence, criterion

JEL Classification: C10, F52, F63, Q18

INTRODUCTION

The food security of any country is an integral part of its national security. Improving the supply of food to the population is an important socio-economic task, the solution of which is of great importance for every country. Ensuring food security is the most relevant area of interstate cooperation, as it covers a wide range of national, economic, social, demographic and environmental factors.

The importance of understanding the role and significance of food security is confirmed by the fact that it is a necessary condition and a basic parameter of human life. The level of food consumption by the population characterizes the level of economic development of the country as a whole since it is known that food production at a sufficient level was, is and will be the first condition for the effective operation of direct producers in particular and any production in general. It should also be noted that the level of the food supply is perceived as the most important factor and determining criterion for the quality of life of the population, the viability of the macroeconomic structure and the state system of each country.

The main goal of ensuring the food security of the state is to ensure the reliable supply of basic food for the entire population through uninterrupted production, with the mandatory condition of physical and economic accessibility of food in the quantity and quality necessary for human life, with the maximum possible independence from external sources of food supply.

The role of state regulation in the prospective development of the food market is key, since, due to its inherent natural and economic factors, instability and high social significance, there is an urgent need to coordinate market relations, especially in the current globalization of economic relations.

LITERATURE REVIEW

Ensuring the food security of the country determines the general trends of the domestic and foreign policy of the state, social stability in society, solving the demographic problem and improving the quality of life of the population. Domestic and foreign scientific opinion has accumulated considerable experience in dealing with the problems of the food supply of the population of the country both at the expense of its own production and by increasing the import potential.

At the same time, the dynamic changes in economic conditions associated with the opening of European markets for Ukraine and the growing level of competition in the domestic food market make it important to identify problematic aspects and areas for improving food security.

In fact, the food security indicators are monitored by foreign and domestic scientists. Over the past five years, there has been a large number of scientific papers in the public domain on the research of food security indicators in Ukraine. However, only a few authors have analyzed most of the food security indicators at the national level. Other authors, namely O. Sazonets, O. Pinchuk, S. Kunytskyi, O. Kotykova, I. Hryshova, N. Chorna, E. Kireeva, A. Poltorak, G. Penchuk, O. Kochetkov, R. Markov [12-20], O. Zgurska, Y. Larina, R. Dymenko, S. Kubiv, A. Tarasiuk, Y. Safonov observe the dynamics of the consumption of basic food products.

The issue of food security occupies an important place in the concepts of national security of most advanced countries, and significant development in the study of mechanisms for ensuring food security in foreign countries has been made by well-known foreign scientists, such as Ahmed, S., and Broek, N. T. [1], Boqvist, S., Söderqvist, K., and Vågsholm, I. [3], Ghani, M., Cozzolino, C. A., Castelli, G., and Farris, S. [7], Gounden, C., Irvine, J. M., and Wood, R. J. [9], Johnson, L. K., Dunning, R. K., Bloom, J. D., Gunter, C. C., Boyette, M. D., and Creamer, N. G. [10], Jurgilevich, A., Birge, T., Kentala-Lehtonen, J., Korhonen-Kurki, K., Pietikäinen, J., Saikku, L. [11], Manning, L., and Soon, J. M. [14], Nychas, G. J. E., Panagou, E., and Mohareb, F. R. [15], Rockström, J., Williams, J., Daily, G., Noble, A., Matthews, N., Gordon, L. [19].

Some of the food security indicators, according to the Methodology for Determining Key Food Security Indicators approved by the Resolution of the Cabinet of Ministers of Ukraine "Some Issues of Food Security," can be found on the website of the State Statistics Service of Ukraine, but they are in different information sources, are not structured and do not have the necessary interpretation for the general public.

At present, in Ukraine, the concept of food security is considered in various laws: in the laws "On National Security", "On Economic Security", in certain sectoral laws, the Land Code, in the documents by which local governments are governed, and in other orders adopted by the Cabinet of Ministers. That is why the food security system is considered from the standpoint of several approaches and principles [4, 17-18].

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The first is physical accessibility, which is manifested in the availability of food throughout the region within a certain period of time and in the required assortment. The second is economic accessibility, or in other words, a sufficient level of income to ensure the purchase of vital food. The third point relates to social accessibility which is the ability to provide food to socially vulnerable groups and social institutions that are subordinate to or located on the territory of local governments. And the fourth principle is the safety of these products: the creation of a mechanism to prevent the production, sale and consumption of low-quality food products that can harm public health.

Recognizing the significant contribution of domestic and foreign scientists, we note that the intensification of the global economic crisis, as well as the instability of the political situation both in Ukraine and at the global level and the impact of these important factors on the transformation processes in the national agro-industrial complex, define the issue of a thorough study of national food security indicators.

AIMS AND OBJECTIVES

The purpose of this scientific article is to research and improve a set of key indicators of national food security using a set of criteria and coefficients to assess the level of food security, identify compliance with the regulatory level, and minimize risks to improve the level of socio-economic development of the country in the future.

METHODOLOGY AND RESEARCH METHODS

In the course of the research, a wide range of research methods has been used, the main of which were the methods of generalization and synthesis, scientific abstraction, analytical diagnostics, regulatory and index criteria. The application of the regulatory method has helped to identify the key elements of the legal framework for ensuring national food security. The dialectical method of cognition of socio-economic processes, the formal logical method and the method of system analysis have been applied to better understand the processes of providing the country with food, to identify the patterns of import dependence, as well as the level of influence of macroeconomic factors on improving the level of national food supply and food security.

The use of the index-criteria method has enabled to improve the methodology for assessing the level of food security, the level of its independence, as well as taking into account the risks that have a direct and indirect impact on the development of the national agro-industrial complex as a key aspect in the context of the development of the national food market. The developed criteria of food supply and self-sufficiency are interdependent in relation to the indicators of the socio-demographic and economic development of the country. The method of generalization and synthesis has made it possible to accumulate the entire range of scientific results into a single concept that reflects the relevance of the topic, to identify key areas of development, goals, objectives and features of adaptation of methods for developing and improving a set of indicators of national food security.

RESULTS

Unfavourable political conditions for the formation of a priority position in the international market in the current political instability of the country have led to the need to address the important issue of national food security.

In the food security system, conditions and mechanisms are formed to counteract threats to economic security, as well as to develop reproductive processes in agriculture and the agro-industrial complex, which are the basis for increasing the level of self-sufficiency of both individual regions and the country as a whole.

In the official publication "Methodology for Calculating the Level of Economic Security of Ukraine," food security is defined as a level of food supply for the population that guarantees socio-economic and political stability in society, sustainable and high-quality development of the nation, family, and individual, as well as sustainable economic development of the state [4].

The state of the food security of a country can be assessed using special tools: parameters, indicators, and evaluation criteria. The word "indicator" is derived from the Latin word "indicator" which means a measure. In the scientific economic literature, much attention is paid to the definition of indicators and criteria for food security. However, these concepts are not identical. Criteria should be understood as the features on the basis of which an assessment, definition or classification is made, and indicators should be understood as the parameters that make it possible to determine the level of development of a particular object under study, as well as the degree of achievement of the research goal.

In the course of the comparative analysis of the scientific economic literature, the author formulates his own definition of the concept of "food security indicator" as an actual statistical value of the indicator (in dynamics), which reflects the level of provision with the resource potential for the full production of the optimal amount of food per capita (in accordance with the established standards). The "food security criterion" is identified as a threshold, an acceptable level of the indicator, the value of which indicates the state of food independence of a particular region in particular and the country as a whole.

Thus, in order to assess food security, it is necessary to form its own system of indicators based on key conceptual approaches (Figure 1).

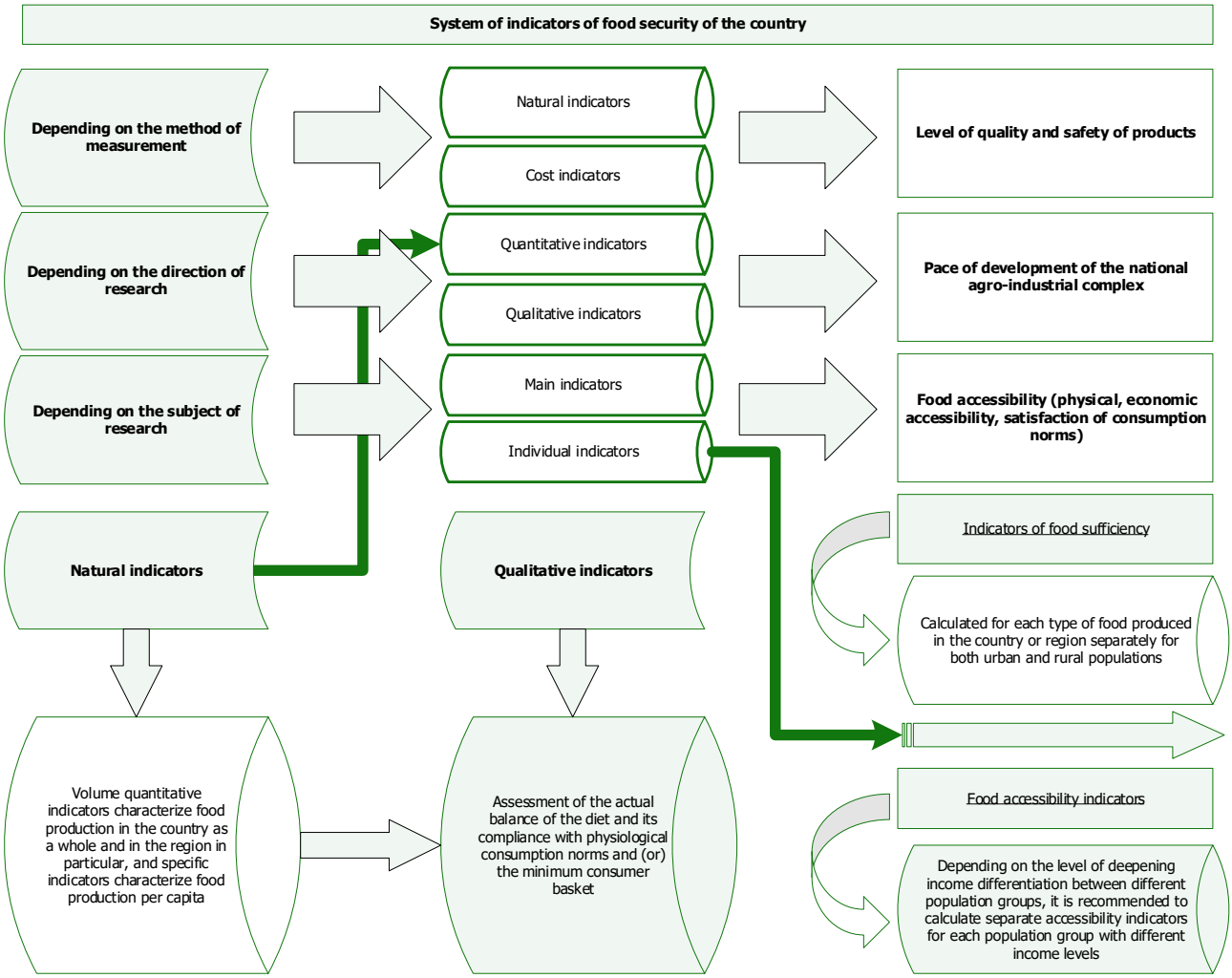

Figure 1. The basic system of food security indicators in the country.

All indicators that are used to assess the level of food security should be able to be assessed in terms of both physical and economic availability of food. The recommended food security indicators characterize only the actual state of this economic category, without taking into account the impact of primary factors. In this regard, the level of food security should be assessed from two perspectives: within the region and within the country. It should also be noted that both universal and specific indicators can be used to assess food security. Universal indicators are equally suitable for assessing food security at both the regional and national levels, while specific indicators are suitable for only one level (either the country or the region), Figure 2.

In addition to the industry affiliation, it is advisable to combine the entire set of national food security indicators into two groups [3]:

1. Priority indicators (primary or initial).
2. Secondary indicators (derivatives of primary ones).

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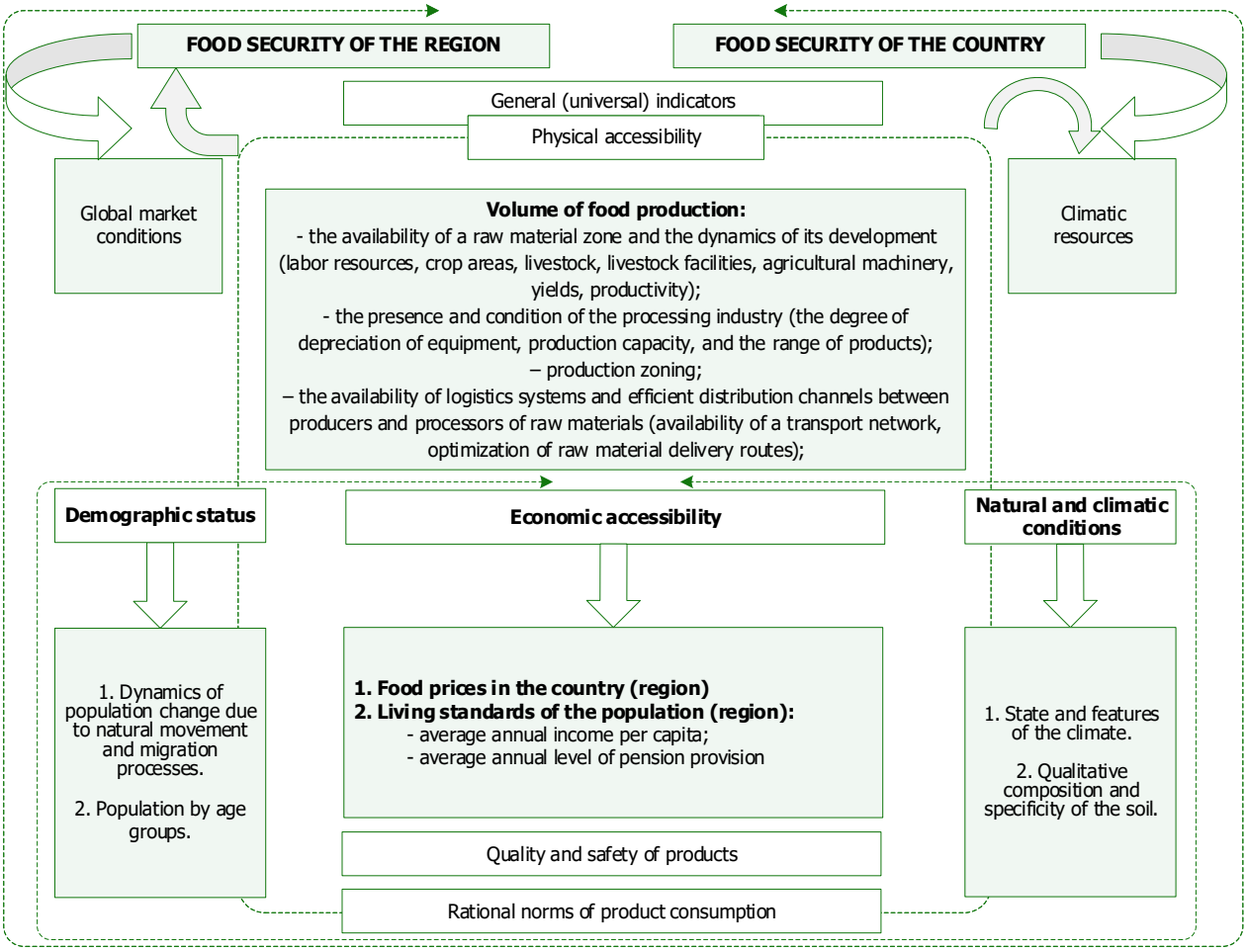

Figure 2. The main composition of indicators and factors (conditions) of national food security.

The food security assessment indicators are characterized by the following mandatory features, namely:

1. Reliability is the indicator that reflects the real state of agricultural producers and the processing industry and is officially recognized and documented.
2. Consistency is the indicator that can be observed (measured, recorded) continuously over time (daily) or over a certain time period.
3. Public accessibility means that the results of the evaluation and analysis of indicators should be made publicly available in official online and offline networks.

Therefore, food security (FS) is a complex economic category. To assess the level of food security in a region (country), it is necessary to use a system of indicators. The number of criteria for national food security (NFS), including the optimal level of self-sufficiency, depends on the level of national economic development, natural and climatic conditions of certain regions, the level of scientific and technological progress of the country, as well as on the nutritional traditions of the population.

The solution to the task of improving the NFS indicators is characterized by the following aspects: quantitative, which is aimed at providing the country with sufficient food; qualitative, which is focused on providing the population with quality and safe food; and socio-economic, which involves establishing a level of income sufficient to ensure access to food.

The quantitative aspect is characterized by the indicators of the level of current needs for a certain time period and the level of food stocks, where the evaluation criteria should be considered [13, p.145-148]:

- the level of independence of the national food supply and the level of dependence of the resource supply of the agro-industrial complex on imports;
- the level and pace of development of the sectors of the agro-industrial complex;

volumes of current and strategic food stocks of countries, where the level of food security is usually determined according to the assessment of the state of the national agro-industrial complex, the level of food independence of the country, as well as the efficiency of the national food supply system. The food security criteria that characterize the state of the national agro-industrial complex should be divided into the following groups (Figure 3).

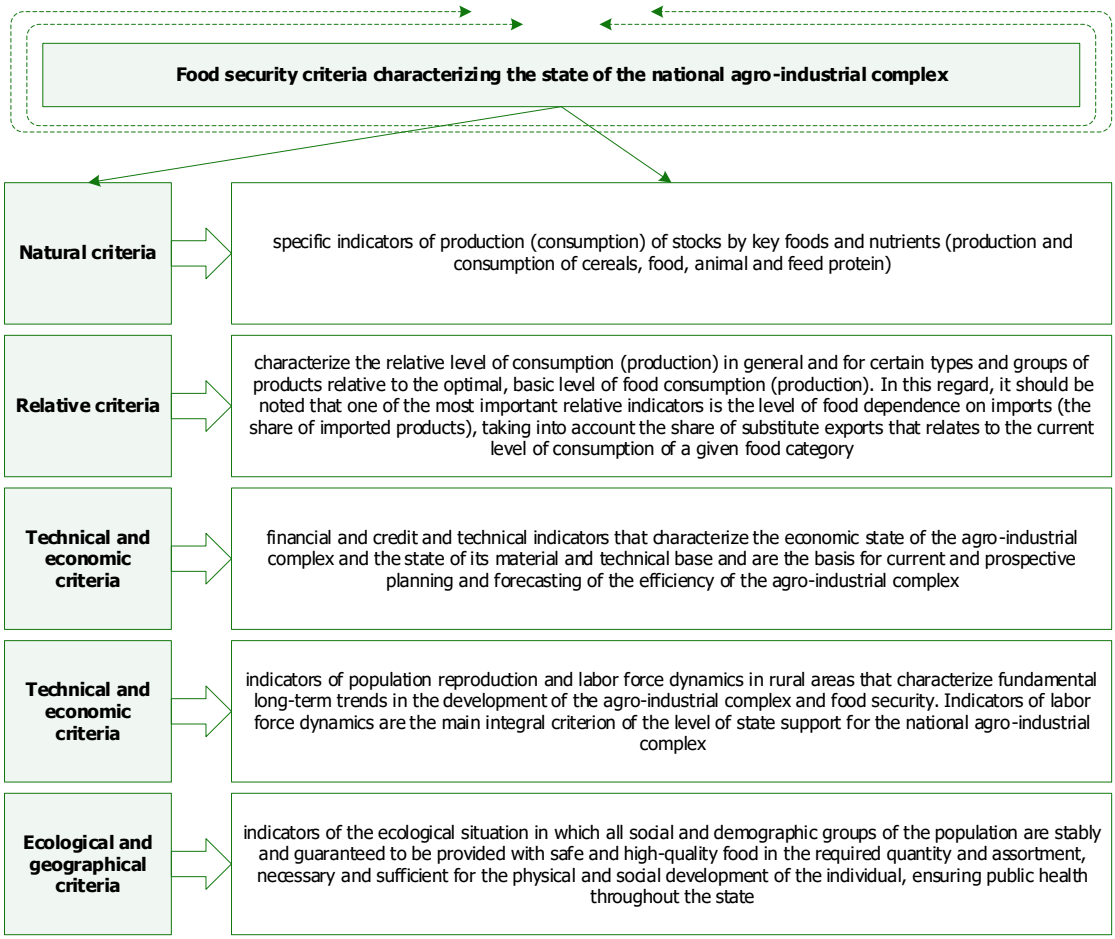

Figure 3. Food security criteria characterizing the state of the national agricultural sector. *(Source: built by the authors based on sources [12; 19])*

The lower limit of the food security of the country is considered to be the consumption of domestic food by the majority of the population (at least 20%) at the level of the volume of the minimum consumer basket or minimum physiological norms of food consumption. This amounts to about 10-15% of total food imports, while 30-35% of imports in food sales indicate a critical level of loss of food independence [14-15].

Food self-sufficiency is defined as the ability of a country to meet its domestic food needs. The level of food self-sufficiency is calculated as the ratio of the volume of national food to the volume of domestic consumption, which varies from country to country and is characterized by the effective demand for food by the population, the development of the agro-industrial complex, the size of its commodity resources, and the degree of reliability of mutually beneficial international relations in the field of food trade.

The basic criteria for making optimal decisions in ensuring an effective agricultural policy are the indicators of "provision" and "self-sufficiency" in food. The indicator of "provision" with food in this aspect is defined as the ratio of rational norms of food consumption to actual consumption, including food products of national and imported production.

The qualitative aspect of food security is based on the level of provision of an optimal range of food products, their quality and environmental friendliness. The issues of product range, nutrient content and energy sufficiency are of great importance here, which are the basis for setting consumption standards that form the basis for the formation of a minimum consumer basket. Product safety parameters are generally considered to be compliance with the minimum level of permissible substances harmful to health.

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The social aspect of food security is characterized by the creation of optimal conditions for sufficient consumption of food by different segments of the population in accordance with the optimal amount of quantity, assortment and established quality level.

The essence of the economic aspect of food security lies in the potential ability of different segments of the population to purchase food products in the market in accordance with the established price level and the income received. In addition, the economic accessibility of food is determined by the ability of the rural population to produce agricultural products for their own consumption in subsidiary farms. The sustainability parameters of the food market, in turn, are determined by the level of purchase and retail prices for agricultural products and food, taking into account the level of normative profitability of production and the cost of products of the minimum consumer basket.

Thus, the level of food security is estimated [11]:

- at the international level by the volume of world grain reserves carried over to the next harvest and the level of world average annual grain production per capita.
- at the state level, the main criteria are:
  - the degree of state self-sufficiency in food, as well as the degree of independence of food supply from imports;
  - the size of operational and strategic food reserves in accordance with regulatory needs;
  - the level of food production per capita;
  - the level of consumption of essential products;
  - the level of physical and economic accessibility of food for different categories and social groups of the population;
  - the level of price stabilization (inflation rate) for the main types of food;
  - the level of food safety, quality and environmental friendliness.

Therefore, at the state level, it is necessary to address important issues of food supply in accordance with the potential capabilities of the country in the production, storage, and processing of agricultural products to provide food for all categories of the population with appropriate levels of consumption, as well as food of proper quality and safety. We believe that it is necessary to simultaneously use both the natural and cost indicators, as well as the indicators that measure the physical and economic accessibility of food to the population of the country.

By summarizing the above and using a systematic approach, a comprehensive system of national food security indicators will be formed, which includes the following components according to the main criteria:

1. The degree of satisfaction of the physiological needs of the population for basic products in accordance with scientifically based medical standards of the subsistence minimum and rational consumption standards, which are differentiated according to the geographical location of a particular region, taking into account natural and climatic, socio-demographic, economic and environmental features.
2. The level of energy composition of the food ration of the population of a particular region in accordance with its specifics and characteristics.
3. The degree of physical and economic accessibility of food.
4. The level of national food dependence on imports.
5. The size of national seasonal food stocks.

The degree of satisfaction of physical needs is determined on the basis of scientifically based indicators of medical standards of the subsistence minimum and rational consumption rates (index method). The calculation of aggregate (Vф.п.) and individual (Iф.п.) is carried out according to formulas (1-2):

$$\text{Vp}h.\,\text{n.} = \frac{\sum \text{Qr.P}}{\sum \text{Qac.P}} \quad (1)$$

$$\text{Iph.\,n.} = \frac{Qr.}{Qac.} \quad (2)$$

where Qr. and Qac. are the volume of consumption of products according to actual and rational consumption rates; P is the level of established prices for consumption products.

The threshold values of food security parameters (minimum and maximum permissible) for this indicator should be calculated using formulas (3-6):

$$V_{ac.}^{min} = \frac{\sum Q\prime ac.\times P}{\sum Qac.\times P} \quad (3)$$

$$V_{ф.п.}^{min} = \frac{Q'ac.n.}{Qac.n.} \quad (4)$$

$$V_{ac.n.}^{max} = \frac{\sum Q\prime ac.\times P}{\sum Qac.\times P} \quad (5)$$

$$V_{ac.n.}^{max} = \frac{Q'ac.}{Qac.} \quad (6)$$

where $Q'ac.n.$ *and* $Qac.n.$ *are the volume of food consumption according to rational consumption norms and minimum subsistence standards.*

Thus, the lower limit of the level of national food security calculated by formulas 3-4 will be measured in fractions of one, and the upper limit will be one. The value of the aggregate index $Qac.$ is less than the lower limit $V_{ac.}^{min}$, which indicates that the food security of the country is under threat. If $Qac.c.>1$, on the contrary, it indicates an increased level of over-eating by the population.

The level of satisfaction of the physiological needs of the population for basic food products on average in the country is determined by the following formula:

$$Isat.ac.n. = \frac{Qac.}{Qac.(reg.)} \quad (7)$$

where Qac. and Qac.(reg.) are the volume of actual per capita consumption in the country as a whole and in the region under study, respectively.

The level of energy composition of the entire diet of the population is determined by its caloric content, the norms of which are differentiated per day in accordance with natural and climatic conditions, demographic characteristics and national consumption habits of certain social groups.

The indicators of the level of economic affordability of food are determined by the formula:

$$Vec.aff. = \frac{Ninc.}{N} \quad (8)$$

where Ninc. and N are the numbers of people with incomes above the minimum subsistence level and the total population, respectively. The additional indicators include the share of food expenditures in total expenditures of the population, as well as the level of their purchasing power.

The indicators of national food dependence are aggregate and individual consumption indices calculated using the following formulas:

$$Vn.f.d. = \frac{\sum Qimp.\times P}{\sum Qac.\times P} \quad (9)$$

$$In.f.d. = \frac{Qimp.}{Qac.} \quad (10)$$

where Qac. and Qimp. are the volume of actual per capita consumption and imports of food, respectively.

$$V'n.f.d. = \frac{\sum Ql.f.pr.\times P}{\sum Qac.\times P} \quad (11)$$

$$I'п.з. = \frac{Qм.в.}{Qф.с.} \quad (12)$$

where Ql.f.pr. is the volume of local (regional) food production.

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According to formulas 9 and 11, $V_{\text{П. З.}}$ and $V'n.f.d.$ will be measured from 0 to 1, and $I_{\text{П. З.}}$ and $I'n.f.d.$ will be measured from 0 to 1. At the same time, the full food dependence of the country will be at the values of $Vn.f.d.$=1, $V'n.f.d.$=0.

Determining the level of food dependence of a country, taking into account the use of aggregate indices, the calculation of which is somewhat difficult due to the lack of information on the price level, is possible with the use of other indicators - indices of the ratio of production per capita and consumption per capita (I'c.):

$$\text{I'n. f. d.} = \frac{Qp.c.cons.}{Qp.c.prod.} \quad (13)$$

where Qp.c.prod. and Qp.c.cons. are the per capita production and per capita consumption volumes.

It should be noted that $V_{\text{ф.п.}}^{min}$, which is the basis for calculating the threshold value of food security parameters for each individual region of the country, is calculated based on the recommended minimum food set for the main socio-demographic groups of the population, differentiated by individual territorial regions.

$$\sum \text{Q'ac. n.} = \sum_{i=1}^{5} \text{Qp. f. pr.} \times \text{Ni} \quad (14)$$

where Qp.f.pr. is the consumption rate of a particular food product, according to which the minimum subsistence level is calculated for the i-th socio-demographic group of the population. The rate of food consumption in accordance with the subsistence level is differentiated by five socio-demographic groups (i=5), namely: able-bodied men (aged 25-60), able-bodied women (aged 25-55), pensioners (from the age of 60), young children under 7 years old, and children aged 7-15 years old.

Hence, it should be summarized and noted that at the current stage of economic development, all groups of indicators of food security and independence of the country (criteria of accessibility and sufficiency of food security, self-sufficiency in food and food independence from imports) can be used. The proposed criteria are of both theoretical and practical importance for the economic and socio-demographic development of the country in the future.

DISCUSSION

The conducted research makes it possible to conclude that at present, the level of variation in the economic accessibility of food for certain population groups and over time is an important characteristic of the food security of a country. We agree with the opinion of scientists [16, 21] that the economic accessibility of food reflects the ability of the population to obtain basic food products both through their purchase and through production in their own households.

By supporting researchers who identify the drivers of food security, [3, 9] it should be noted that one of the most important requirements for ensuring food security is the accessibility of food and the sufficiency of its consumption, which can be determined by means of general and special coefficients, namely:

$$\text{К.}\,acc.1 = \frac{Vac.(daily,monthly)}{Vrat.(med.)} \quad (15)$$

$$\text{К}acc.2 = \frac{Kcal\ ac.}{Kcal\ rat.(\text{мед.})} \quad (16)$$

where $Vac.(daily, monthly)$ *is the cost of the actual daily (monthly) food ration;* $Vrat.(med.)$ *– the cost of a daily (monthly) diet in accordance with established medical standards (rational consumption norm).*

Special food sufficiency coefficients can be calculated for the main types of products, separately for urban and rural populations in a particular region of the country. The overall accessibility coefficient is calculated using formula 17.

$$\text{К}suff. = \frac{Cc.c.b.(min)}{Va.m.s.} \quad (17)$$

where $Cc.c.b.(min)$ *is the cost of the minimum consumer basket;* $Va.m.s.$ *– the amount of the average monthly salary (income per capita).*

Taking into account the fact of income differentiation between different socio-demographic groups [14], we are convinced that the above indicator of the food sufficiency rate needs to be supplemented by certain special accessibility coefficients calculated for individual population groups with different income levels.

In order to obtain more detailed and comprehensive information on determining the level of national food security, we consider it necessary to conduct an in-depth analysis of the above indicators in terms of identifying their thresholds, namely: the upper limit in calculating the sufficiency ratio is the established medical norms of a certain diet and the corresponding number of calories, while in calculating the accessibility ratio is the cost of a consumer basket that meets the established requirements for ensuring a healthy and active life for the population.

CONCLUSIONS

Hence, ensuring food security is a key element of sustainable socio-economic development in the future. In the long run, the goals of food security and achieving an optimal level of national food independence should be mutually agreed upon and based on the defined indicators in the context of the above assessment methodology. New solutions are needed for our future food security and sustainability without compromising food safety. The indicators and parameters that are used to assess food security, as well as the tools by which the strategies defined in this area are implemented, must be clearly aligned with food safety, public health, and the achievement of a sufficiently high level of national economic development for the country as a whole and for each citizen in particular.

Therefore, the right combination of security, independence and sustainability of food production will require a careful balance between addressing the need to ensure adequate food security and minimizing the risks associated with achieving sustainability and independence. That is why the assessment of national food security should be carried out taking into account all the indicators considered in this research. This approach provides a comprehensive and clear assessment of the actual level of food security and independence of the country in order to identify compliance with the normative level, as well as to find effective ways to improve national socio-economic development for the long term.

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ФОРМУВАННЯ КОМПЛЕКСУ ІНДИКАТОРІВ НАЦІОНАЛЬНОЇ ПРОДОВОЛЬЧОЇ БЕЗПЕКИ

Метою цієї наукової статті є формування комплексу індикаторів національної продовольчої безпеки з метою діагностики процесів забезпечення та самозабезпечення продовольством у напрямі здійснення комплексної та чіткої оцінки фактичного рівня національної продовольчої безпеки й незалежності та для ідентифікації відповідності нормативному рівневі, а також пошуку ефективних шляхів підвищення національного соціально-економічного розвитку на довгострокову перспективу.

Для досягнення цієї мети було використано широкий спектр методів дослідження, основними з яких стали методи узагальнення та синтезу, наукової абстракції, аналітичної діагностики, нормативно-правовий та індексно-критеріальний. Застосовано діалектичний метод пізнання соціально-економічних процесів, формально-логічний метод та метод системного аналізу з метою глибшого розуміння процесів забезпечення країни продовольством, формування продовольчої незалежності від імпорту, виявлення закономірностей перебігу процесів самозабезпечення продовольчим запасами, а також урахування впливу макроекономічних факторів на підвищення рівня національного продовольчого забезпечення та харчової безпеки.

Сформульовано власне визначення понять. «Індикатор продовольчої безпеки» – фактичне статистичне значення показника (в динаміці), який відображає рівень забезпечення ресурсним потенціалом для повноцінного виробництва оптимального обсягу продуктів харчування з розрахунку на душу населення (відповідно до встановлених нормативів). «Критерій продовольчої безпеки» – ідентифіковано як пороговий, допустимий рівень індикатора, значення якого вказує на стан продовольчої незалежності певного регіону зокрема та країни – в цілому.

Удосконалено індикатори, що характеризують рівень національної продовольчої безпеки в контексті дослідження таких аспектів, як: кількісний, що спрямований на забезпечення країни достатнім обсягом продовольства; якісний,

що орієнтований на забезпечення населення якісним та безпечним продовольством, а також – соціально-економічний, що передбачає встановлення рівня доходів, достатнього для забезпечення можливості доступу до продовольства.

Сформовано основний склад показників та чинників (умов) національної продовольчої безпеки й комплекс індикаторів національної продовольчої безпеки з метою вирішення важливих питань продовольчого забезпечення відповідно до потенційних можливостей країни в напрямі виробництва, зберігання, переробки сільськогосподарської продукції для забезпечення всіх категорій населення відповідними розмірами споживання продукції, а також продуктами харчування належної якості та безпеки.

Доведено, що на сучасному етапі економічного розвитку варто використовувати всі групи показників продовольчої безпеки та незалежності країни (критерії доступності й достатності продовольчої безпеки, самозабезпечення продовольства та продовольчої незалежності від імпорту). Запропоновані критерії та розроблені індикатори мають і теоретичне, і практичне значення для економічного та соціально-демографічного розвитку країни на перспективу.

Ключові слова: національна продовольча безпека, агропромисловий комплекс, індикатор продовольчої безпеки, самозабезпечення продовольством, продовольча незалежність, критерій

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