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## METHODOLOGICAL APPROACH TO THE ASSESSMENT OF REGION'S FOOD SECURITY LEVEL

**Abstract.** Nowadays there are exist numerous methods for assessment of state of food security, the widest use of these evaluation techniques gained methodologies that explore food security at the national level. Regional level of food security is not examined, because number of methods for concluding complex research of food security at regional level is insufficient. Providing only research of national food security does not fully describe the state of food security of the population of all regions in the country, there always exist territories that prosper and regions that need help in providing people with necessary level of food-stuffs. Therefore, we need to identify gaps and challenges of this concept in the context of some territories. Our goal is to develop such a methodology that will characterize food security from different sides, not only as providing people with sufficient quantities of food, but also as including economically affordable and high-quality food. Our methodological approach to the assessment of region's food security will allow exploring the food situation at each region of the country, taking into consideration the economic, social and environmental aspects of food security. In the article detailed analysis of every aspect (market, social, ecological) of food security is conducted and certain criteria for these aspects research are defined. Under the market aspect of food security we understand such state of food market, at which the market is able to provide a stable supply of products at any given time necessary for livelihood. At the center of social aspect of food security is the ability to purchase the necessary food for all segments of the population. Ecological aspect is responsible to ensure the quality and safety of food. The research of all aspects of food security allows implementing complex analysis of the country's and its regions food security.

**Keywords:** food; food security; region; economic aspect; social aspect; ecological aspect.

**JEL Classification:** E20, H56, I31

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#### МЕТОДОЛОГІЧНИЙ ПІДХІД ДО ОЦІНКИ РІВНЯ ПРОДОВОЛЬЧОЇ БЕЗПЕКИ РЕГІОНІВ

**Анотація.** Автором розроблено методологічний підхід до оцінки рівня продовольчої безпеки, що дозволить дослідити продовольчу ситуацію в кожному регіоні країни. Проаналізовано складові продовольчої безпеки – ринкову, соціальну, якісну – та визначено критерії їх дослідження. Ринкову складову автор розглядає як стан ринку продовольства, за якого в будь-який момент часу стабільно надається пропозиція продуктів, необхідних для забезпечення життєдіяльності населення. Під соціальним аспектом продовольчої безпеки розуміється спроможність придбати необхідні продовольчі товари всіма прошарками суспільства. Сутність якісної складової полягає в забезпеченні якості та безпеки продовольства. Дослідження всіх складових (аспектів) продовольчої безпеки регіонів дозволить здійснити комплексну оцінку рівня продовольчого забезпечення країни та її регіонів, а також виокремити регіони-виробники, здатні поставити на ринок достатні обсяги певних видів продуктів харчування.

**Ключові слова:** продовольство, продовольча безпека, регіон, ринковий аспект, соціальний аспект, якісний аспект.

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#### МЕТОДОЛОГИЧЕСКИЙ ПОДХОД К ОЦЕНКЕ УРОВНЯ ПРОДОВОЛЬСТВЕННОЙ БЕЗОПАСНОСТИ РЕГИОНОВ

**Аннотация.** Автором разработан методологический подход к оценке уровня продовольственной безопасности, что позволит исследовать продовольственную ситуацию в каждом регионе страны. Проанализированы составляющие продовольственной безопасности – рыночную, социальную, экологическую – и определены критерии их исследования. Рыночную составляющую автор рассматривает как состояние рынка продовольствия, при котором в любой момент времени стабильно предоставляется предложение продуктов, необходимых для обеспечения жизнедеятельности населения. Под социальным аспектом продовольственной безопасности понимается способность приобрести необходимые продовольственные товары всеми слоями общества. Сущность экологической составляющей заключается в обеспечении качества и безопасности продовольствия. Исследование всех составляющих (аспектов) продовольственной безопасности регионов позволит осуществить комплексную оценку уровня продовольственного обеспечения страны и ее регионов, а также выделить регионы-производители, способные поставить на рынок достаточные объемы определенных видов продуктов питания.

**Ключевые слова:** продовольствие, продовольственная безопасность, регион, рыночный аспект, социальный аспект, экологический аспект.

**Introduction.** Nowadays there are exists numerous methods of assessment of food security that allow studying some aspects of food provision of the population. The most widely used become valuation techniques for food security at the national level, while the regional food security requires a more detailed analysis taking into account all aspects of the subject. Exploration of a national food security does not fully describe the state of food security of the population on all country's territories. Indeed, to ensure the highest level of food safety, it is

necessary to develop such an approach in case of which implementation, it would be clearly seen what regions of the country are able to satisfy its residents with wide range, sufficient volumes of high-quality products and which can't.

**Brief Literature Review.** Significant contribution to the study of methodological approaches, indicators, criteria of state of food security have made such famous Ukrainian scientists: O. Goychuk (2004) [1; 2], I. Manziy (2009) [3], V. Vlasov, V. Sabluk, M. Lysak (2009) [4], V. Rulykivskyy (2009) [5], O. Shevchen-

ko (2008) [6], M. Odintsov (2009) [7] and others. The first who determined this question was Food and Agriculture Organization of the United Nations (FAO) (1996) [8]. Among foreign scientists: T. Ahalova, L. Vakhrusheva (2001) [9], N. Ohluzdin (2008) [10], H. Leibenstein (1957) [11], A. Shah (2008) [12].

We want to highlight O. Goychuk's methodology approach; her proposed system of basic parameters, indicators can describe the state of food security in terms of self-sufficiency, independence, accessibility of food. However, proposed approaches are more focused on economical aspect of food security and do not take into account social and ecological aspects. That's why we propose to your attention our complex methodological approach to study food security in country and its regions.

**The purpose** of this article is to propose author's approach for analysis regional level of food security. We mean methodology that will help to implement integral assessment of regional food security based on three aspects: market, social, ecological and each of it is presented by its own indicators. Plus to that develop for each of aspect list of questions that will answer research of this statement.

**Results.** Food security is a task which fulfillment should be resolved comprehensively. From our point of view, food security should be understood as stable providing the population with food at the rational level under normal conditions of life and in case of emergency (for example, war) – at a minimum level, including (Figure 1): the ability of the market to offer a sufficient amount of high-quality food (market aspect); the ability to purchase food for all social groups (social aspect); assuring the high quality products (ecological aspect).

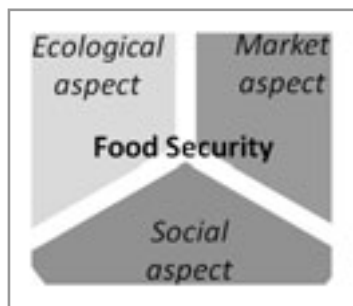


Fig. 1: Author's approach to the category of «food security»  
Source: Development of the author

In this article, we propose systematic approach to determining the state of food security at the regional level that takes into account all the aspects of this question: market, social and quality. The study of food security requires an integrated regional assessment as food security of the population analysis not only provides research of production line (agricultural sphere, producing food products, imports of goods that are in short supply in the country, such as fish, fruit and so on), but also analysis of the economic aspects of providing with food (consumption of food, the diet of the population, its compliance with the standards, the level of salary in relation to the expenses costs for purchasing of food products), and of course level of quality food (poisoning, complaints, etc.).

Study of market aspect of food security shows the level of production of basic foodstuffs by regions of the country per capital, determines the rate of decline (increase) in production over the previous year, analyze the market capacity for a particular product and discover the level of food independence by products.

Analysis of the social aspect of food security will determine the level of consumption for particular products according to rational and minimum standards of consumption, calorie coefficient of food sufficiency, coefficient of economic affordability of consumption, the share of household expenses in the regions for purchasing food, to understand how much food is available for people all over the country.

Quality aspect of food security represented by the following factors: the level of complaints about the quality of food, coeffi-

cient of rejected goods, coefficient of trade food enterprises which activity is suspended, share of revealed violations in the food trade and restaurants production in the region, share of production and sale of food products in the region that do not meet regulatory requirements and share of flashes of food poisoning in the region. According to the proposed system of indicators can be estimate the actual state of food security in each region and country. Directions of integral assessment of food security are shown in Figure 2.

Each of the three aspects of food security is equally important and mandatory to ensure a high level of regional food safety.

Integrated assessment of market aspect of food security involves the study of food production sphere. Consumer basket that was approved by the Cabinet of Ministers of Ukraine on 14.04.2000 «Approval of sets of food products, sets of nonfood products, sets of services for basic social and demographic groups of population» were determined 10 food groups, the consumption of which is a requirement of vital activity of population. Therefore it is necessary to analyze the volumes of production of these essential products per 1 person in a particular region accordingly to minimal and rational norms of consumption. To summarize food-production situation in the regions and in general around the country, it is necessary all indicators of 10 group products to bring into a single index the integral level of production of basic food products. To study level of food security in dynamics we have to calculate the rate of decline or increase of production of food products by regions. Indicator of capacity of the domestic market is an important component for compiling the balance of supply and demand and the determination of food independence for a particular product. Food independence at 30-percentage minimum criteria of indicator is mandatory requirement of countries food security and proposes for a more wide analysis use it to determine the level of region's food security. Therefore, if we study the market aspect of food security, we will answer the following questions:

- is every region of the country produces enough food (10 groups) for physiological needs (minimum, rational) of its population;
- which products are produced in abundance and which are in short supply in the food market;
- the volume of domestic products on the market are increasing over the years, or vice versa, there is a decline in production;
- research of capacity of production market will show the volumes of consumed products in previous periods and how decreased or increased has been market capacity;
- how much country and its regions are import dependent and which products are the main source of imports;
- is achieving food security in all regions in terms of production aspect.

Integrated assessment of the social aspect of food security involves an analysis of the ration of the population, its compliance with the minimum standards determined in food consumption basket and offered by scientists, rational food norms, purchasing ability of the population in all regions of the country. An important indicator of the social aspect of food security is to determine the level of food consumption by the same 10-th groups of essential food items. Caloric intake is an important indicator of the sufficiency of food for human organism, so it is suggested to consider the average caloric intake in the regions and equate to norm. Thus we obtain the parameter which indicates the sufficiency or insufficiency of nutrition in calories. Since the human diet should compose products that provide human organism with different nutrients (vitamins and other), so food must be carried out according to rational norms, in which the specified list of products and their consumption levels. Equate the actual consumption of the 10-th product group to minimum and rational norms. In this way, we understand as far as the actual consumption meets scientific standards. To summarize above, we use integral index of food consumption. The social aspect of food security includes not only an analysis of statistical data on food consumption, but also to study the economic accessibility of food for the population. For this purpose,

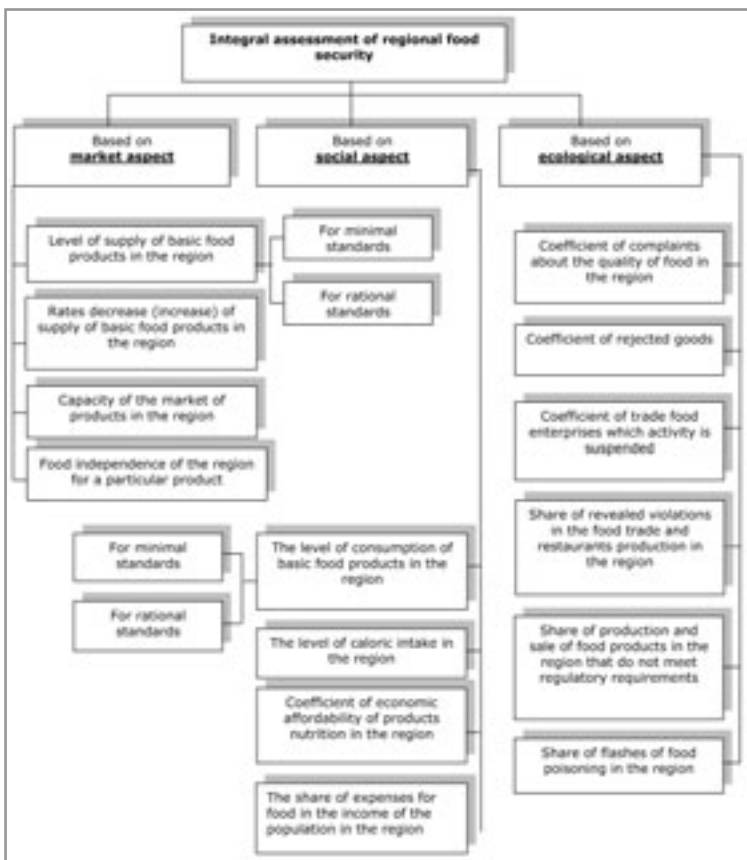


Fig. 2: Areas of assessment of food security in the region  
Source: Development of the author

we use the coefficient of economic accessibility of food and determine the share in expenses for purchase food in incomes. Therefore, in evaluating the social aspect of food security, we get answers to the following questions:

- whether the caloric intake of the regions correspond to norms;
- consumption of which products is above the norm, which food-stuffs are not consumed by the population in required nutritional standards;
- is rational food intake affordable for households;
- what percentage of income citizens spend on food;
- is achieving food security situation in all regions in terms of consumption.

Evaluation of the quality of food is as important a component of food security, nowadays there are problems of falsification products, selling groceries that do not meet the standards of production, resulting in that customers, at best, are not satisfied with the purchased goods, and at worst, such products make harm to health. Every year the food become more expensive, households spend up to 50% of gross income on purchasing food at that time quality of food does not meet the high foreign standards, in such circumstances, it is obligatory to ensure proper quality. Therefore this component of food security is a necessary requirement of time. According to data of Ukrainian Statistics, Ministry of Health of Ukraine, we will study the quality of food by region of the country, for this purpose it is necessary to calculate the following parameters: coefficient of complaints about the quality of food, coefficient of rejected goods, the rate of products enterprises of commercial trade which activities are suspended, the proportion of violations in the food trade, the share of manufacturing and selling food products that do not comply with regulatory requirements, the proportion of outbreaks of food poisoning. With the help of above calculated coefficients we get answers to the following questions:

- population, of which regions are most dissatisfied with purchased food, in what regions it was written the minimum number of consumer complaints on food;

- during the inspections which regions was considered as leaders in the areas of rejected goods;
- regions where exist the largest share of products enterprises of commercial trade which activities were suspended;
- in what regions where have been found the most violations in food trade;
- regions where selling food products that do not comply with regulatory requirements and documentation;
- rating of regions by food poisoning.

**Conclusion.** We consider that food security is a task which fulfillment must be solved comprehensively. In our opinion under term food security should be understood stable providing of population with food on a rational level under normal living conditions and in case of extraordinary situations (ex. war) at minimum, including: ability of the market to offer sufficient quantity of food, opportunity to purchase food for all social groups, ensuring the required quality of goods. Proposed author assessment method is complex, because it includes all aspects of the ensuring population with food products: production aspect (market), consumption aspect (social) and quality of food (ecological).

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