

EVALUATION OF FOOD SECURITY LEVEL IN THE REGIONS OF THE SIBERIAN FEDERAL DISTRICT

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ABSTRACT

This article defines the specificity of the concept of «food security in the region». The authors have analyzed the adequacy of the existing regulatory and legal provision of food security at the national and subnational levels. Based on the analysis were made conclusions about the absence of an unified system of criteria and indicators for assessing the level of food security. The necessity to develop an evaluation system is determined by the needs of managing food security at the regional level. The authors examined the accumulated domestic experience on the question of the food security level evaluation. Based on the results of the analysis were developed the main stages of evaluating the food security of the Russian Federation subjects from the standpoint of food self-sufficiency and food independence. In accordance with the proposed methodology the authors assessed the level of food security in the regions of the Siberian Federal District of the Russian Federation and identified threats in the food sector at the regional level. For the purposes of the evaluation were used statistical, empirical and indicative analysis methods. The results of the study can be applied by regional government authorities to monitor threats in the regional food sector in order to make managerial decisions on adjusting the tools and methods of the implemented regional food policy.

Keywords: food security, food self-sufficiency, food independence, food policy of the region, regions of the Siberian Federal District.

INTRODUCTION

INTRODUCTION

The problem of population food security has been regarded by the international community since the mid '70s of the 20th century. The term «food security» was first introduced in 1974 at the World Food Conference in Rome, organized by the Food and Agriculture Organization (FAO) of the United Nations after a sharp increase in world grain prices, and was disclosed as a concept only in 1996 at the World Summit on Food Problems. The Summit resulted in the adoption of the Rome Declaration on World Food

Security. This declaration emphasizes that food security is a state of the economy, at which access to food, drinking water and other food products in quality, range and volumes necessary and sufficient for the physical and social development of the individual, ensuring health and expanded reproduction of the population of the country is guaranteed to the population of the country as a whole and each citizen individually [1].

Considering the structure of food security, we can come to the conclusion that it is a multilevel hierarchy. There are 7 levels of food security: global, subregional, interethnic, national, local, population groups, family [2]. The structure of food security depends on which subject solves the food problem and what its functions are.

All levels of food security are interlinked and interdependent. Coordination of actions of subjects of all levels is the best option for solving the food problem.

A significant role in ensuring the country's food security is assigned to ensuring the food security of the population at the regional level.

Food security of the region – is the existence of economic and social conditions under which economic and physical accessibility for each inhabitant of the region of high-quality and safe food products is provided in the amount of not less rational consumption norms necessary for an active and healthy way of life. It should be noted that the specifics of the regions predetermine the appropriateness of using in each specific case a certain set of levers and incentives for food security.

An important part and one of the fundamental vectors for the creation and development of a system for ensuring food security at all levels is its legislative framework.

The system for ensuring food security is determined by federal laws, decrees and orders of the President of the Russian Federation, decrees and orders of the Government of the Russian Federation, as well as decisions of the Security Council of Russia.

The Constitution of the Russian Federation does not directly contain norms that guarantee the right to a decent level of food consumption by the population, but generally accepted principles and norms of international law, international treaties are universally recognized and guaranteed by the Russian Federation, being part of its legal system. The legal basis for guaranteeing food security is mainly ensured by federal constitutional laws and other regulatory and legal acts of the Russian Federation.

A brief historical digression of the regulatory and legal regulation of food security of the country and its regions reflects the fact that this sphere has for a long time had an ambiguous normative and legal ground. Since the second half of the 1990s, numerous attempts have been made in the Russian Federation to legislatively consolidate the foundations of the food security of the country and the region. The documents of the time, in particular, pointed to a sharp decline in agricultural production and increased dependence on food imports. In this connection, it was proposed to create a State Commission on Food Security of the Russian Federation, to develop and adopt the Federal Law «On Food Security of the Russian Federation» [3]. On the 4th of July 1996 the Federal Law «On Food Security of the Russian Federation» was considered by the Council of the State Duma, and on December 25, 1997 approved by the Federation Council. However, the President of the Russian Federation did not approve the draft. Thus, today in Russia there is actually no federal law «On Food Security of the Russian Federation» [4].

Currently, one of the main documents regulating the issues of ensuring the security of the Russian Federation, is a National Security Strategy, approved by Presidential Decree on December 31, 2015 [5]. In this document, food security, being one of the factors of

Russian citizens quality life improvement, acts as a national priority, along with ensuring, for example, military, environmental, financial security.

Basic legal act in the field of food security is the Doctrine of food security of the Russian Federation approved by Presidential Decree on January 30, 2010 № 120 [6]. The strategic goal of the Doctrine is the reliable provision of the country's population with safe agricultural, fishery products and food in the amounts necessary for active and healthy life.

The basis for achieving this goal is stable domestic production, as well as the availability of necessary reserves. Also in the Doctrine is disclosed a food safety-related concept – food independence of the Russian Federation, which means stable domestic production of food products in volumes not less than the established threshold values of its specific gravity in the commodity resources of the domestic market of the corresponding products [6].

METHODS

The food security doctrine is intended to be the basis for the development of other regulatory legal acts containing methodological recommendations for ensuring food security, in terms of regulatory legal acts in the field of food security of the subjects of the Russian Federation. An analysis of the regulatory and legal framework for food security in the regions of the Russian Federation shows that not all normative acts are aimed at the development of state policy, taking into account all specific regional characteristics. Hence, there is a risk of ineffectiveness of the measures taken, and, consequently the ultimate objective - ensuring the food security of the region - is under threat.

Recently, the issue of assessing the level of food security becomes urgent.

В последнее время актуализируется вопрос оценки уровня продовольственной безопасности. The Doctrine of food security of the Russian Federation has the system of indicators presented in the table 1.

Table 1 – Groups of criteria for assessing food security at the state level

In the consumption sphere	In the sphere of production and national competitiveness	In the sphere of organization and management
<ul style="list-style-type: none"> – disposable household resources by population groups; – food consumption by type; – volumes of targeted assistance to the population; – amount of proteins, fats, carbohydrates, vitamins, macro- and microelements consumed by a person per day; – consumer price index for food products. 	<ul style="list-style-type: none"> – volumes of production of agricultural and fish products, raw materials and foodstuffs; – imports of agricultural and fishery products, raw materials and foodstuffs; – budgetary support of producers of agricultural and fishery products, raw materials and foodstuffs per ruble of sold products; – productivity of land resources used in agriculture; – sales volumes of food products by trade and catering organizations. 	<ul style="list-style-type: none"> – volumes of foodstuffs of the state material reserve formed in accordance with the Russian Federation legal acts; – stocks of agricultural and fishery products, raw materials and foodstuffs.

Based on data [6]

These indicators can serve as a basis for comparing the state of food security in the country as a whole, but not all indicators are applicable to the regional level.

The Doctrine states that for the assessment of the state of food security the share of domestic agricultural, fishery products and food in the total volume of commodity resources

of domestic market of relevant products is defined as a criterion (table 2). It can be noted that in the Doctrine this indicator is the only one to which threshold values are defined. In the opinion of the authors, such threshold values can not be established for the regions of the country, since not in each of them natural-climatic and economic conditions are favorable for the creation and operation of specialized production of all types of agricultural products.

Table 2 – The share of domestic agricultural and fishery products, raw materials and food in the total volume of commodity resources of the domestic market

Product	Specific gravity, %
Corn	not less than 95
Sugar	not less than 80
Oil	not less than 80
Meat and meat products (in terms of meat)	not less than 85
Milk and milk products (in terms of milk)	not less than 90
Fish products	not less than 80
Potatoes	not less than 95
Salt	not less than 85

Based on data [6]

Next we consider another set of official indicators of food security. As noted in the previous section, the Russian Government approved the list of indicators in the field of ensuring food security, which includes target indicators of food security state, food security monitoring indicators and food security forecast indicators (table 3).

Table 3 – Target indicators of food security state in the Russian Federation

Indicator	Level of statistical information aggregation	Responsible body
I. Target indicators in the field of food consumption		
1. Rational norms of food products consumption that meet modern requirements for healthy nutrition, per capita per year	Russian Federation as a whole	Ministry of Health
2. Norms of physiological demand for energy and nutrients for different groups of the population of the Russian Federation on average per person per day	Russian Federation as a whole	The Federal Service for Supervision of Consumer Rights Protection and Human Well-Being
II. Target indicators in the field of physical accessibility of food for the population		
3. The norms of the minimum provision of the population with food retail facilities per 1000 people	by subjects of the Russian Federation	Ministry of Industry and Trade of the Russian Federation
III. Target indicators in the field of independence of the Russian Federation		
4. Threshold (minimum) values of the share of domestic agricultural, fishery products and food in the total volume of commodity resources (taking into account the carryover stocks) of the domestic market	Russian Federation as a whole	Ministry of Agriculture of the Russian Federation

Based on data [7]

Table 3 shows that there is only one indicator for the region – the norms of the

minimum provision of the population with food retail facilities per 1000 people. The rest are represented in Russia as a whole and are not adapted for each region. This circumstance led to the development of methods for assessing food security at the regional level.

As a result of the analysis of methodological support for assessing food security at the regional level [7, 8, 9, 10, 11, 12, 13, 14, 15], it was decided to use the methodology of E.N. Anthomoshkina. The methodology is based on the indicators of the assessment of production and consumption of food, correlated with the following criteria [11]: the level of food self-sufficiency; degree of satisfaction of physiological needs of the population in food products; level of economic accessibility of foodstuffs.

The chosen methodology of evaluation assumes a consistent system of actions, represented in the figure 1.

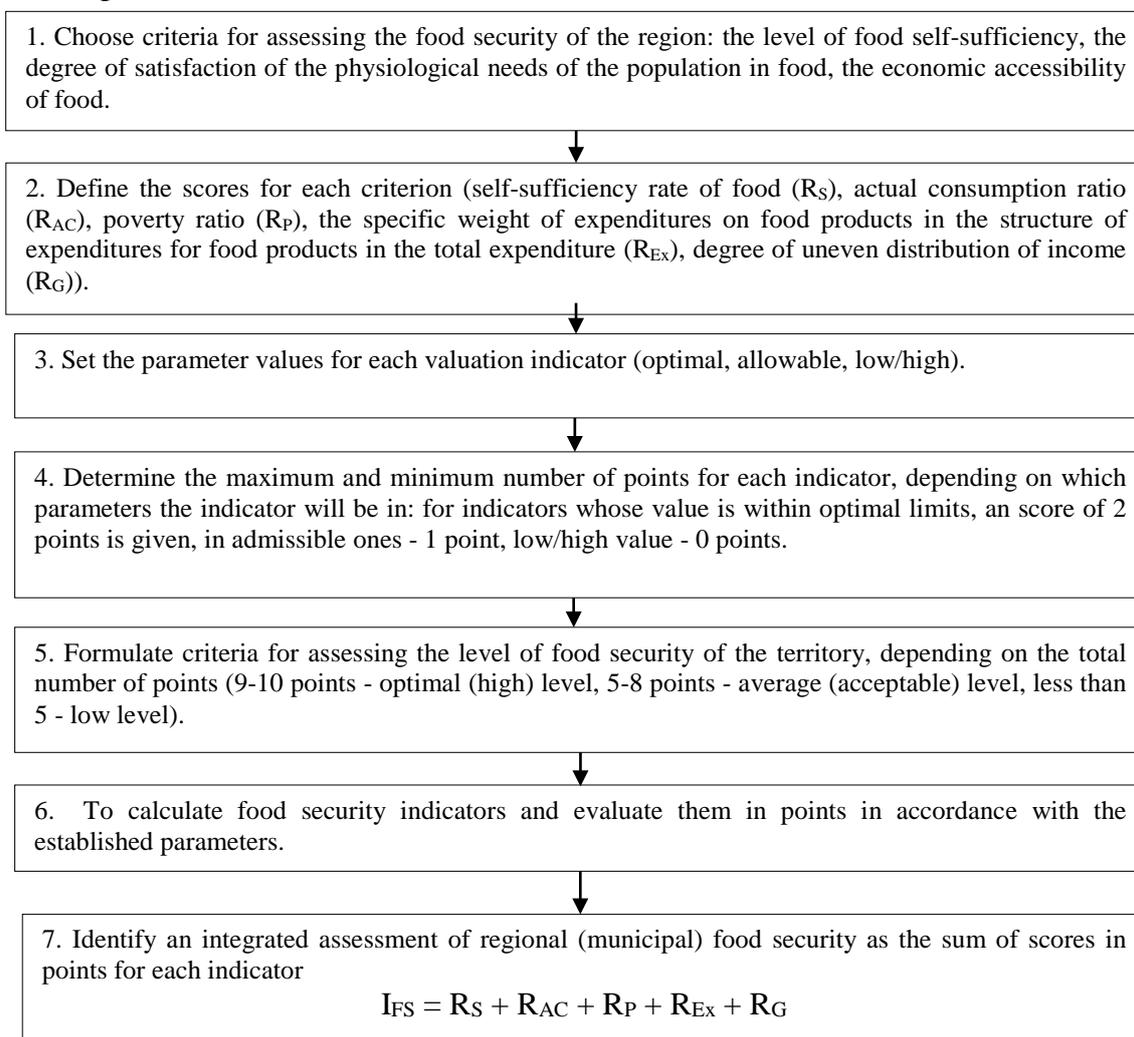


Figure 1 – Algorithm for assessing the level of food security in the region by the method of E.N. Antamoshkina

Further, it is necessary to consider in more detail the indicators determined by the methodology of E.N. Antamoshkina, as well as the indicators of food security in the region.

1. The level of food self-sufficiency in the region can be estimated using the food self-sufficiency ratio (R_S), which characterizes the extent to which the region fully meets the needs of the population in various types of food products through local production (1):

$$R_S = \frac{q}{q_p} \quad (1)$$

where q – the actual volume of production of the main types of agricultural products in the region during the reporting period; n – amount of population in the region; q_p – the amount of food needed for a given region in accordance with established rational consumption norms.

To analyze the level of food security, it is necessary to compare the actual level of production of certain types of agricultural products in the region with the necessary amount of food, calculated in accordance with rational norms of food consumption. It is expedient to calculate the ratio of self-sufficiency for those types of agricultural products that can be produced in bulk, based on the natural and climatic conditions in the territory of the region. As a result of the calculations R_S can take a different value: the value of the indicator can be attributed to a low ($R_S \leq 0,5$), permissible ($0,5 < R_S \leq 0,9$) or optimal level ($0,9 < R_S \leq 1$) of the region's self-sufficiency in food.

2. To assess the degree of satisfaction of the physiological needs of the population in food, it is advisable to use the ratio of actual food consumption (R_{AS}). The indicator characterizes the actual level of food consumption over a certain period of time (q_{ac}) in comparison with rational norms of consumption (q_n). Calculation is performed according to the formula (2):

$$R_{AC} = \frac{q_{ac}}{q_n} \quad (2)$$

The ratio of actual food consumption by population (R_{AS}) can have the following values: $R_{AS} \leq 0,5$ – low; $0,5 < R_{AS} \leq 0,95$ – permissible; $0,95 < R_{AS} = 1$ – optimal. Based on the calculation of the actual consumption of food for different types of food, it is necessary to determine the average value of the indicator.

3. To assess the economic accessibility of food, it is necessary to analyze several indicators: the poverty rate (R_P), consumption ratio (R_{Ex}), Gini coefficient (R_G). These indicators are calculated by federal and territorial bodies of state statistics. Nevertheless, it is necessary to determine in which parameters for each region there will be one or another indicator. The following values of indicators and values of points are established (table 4).

Table 4 – System of criteria and indicators of economic accessibility of foodstuffs

Criteria	Indicator	Indicator value
1) share of the population with incomes below the established level of the subsistence minimum	R_P	$R_P > 0,4$ – high; $0,2 < R_P \leq 0,4$ – permissible; $R_P \leq 0,2$ – optimal.
2) specific weight of expenditure on food in the structure of consumer spending	R_{Ex}	$R_{Ex} > 0,5$ (or $> 50\%$) – high; $0,25 < R_{Ex} \leq 0,5$ – permissible; $R_{Ex} < 0,25$ – optimal.
3) degree of uneven distribution of the population by income level	R_G	$R_G > 0,5$ – high; $0,3 \leq R_G < 0,5$ – permissible; $R_G < 0,3$ – optimal.

RESULTS

In accordance with the methodology, a comparative assessment of the level of food security was carried out for the Russian Federation as a whole, the Siberian Federal District, and the Krasnoyarsk Territory. The results of the evaluation are presented for year 2015 (table 5).

The value of the integral indicator (8 points) indicates the average level of food security of the Russian Federation, the Siberian Federal District and the Krasnoyarsk Territory. However, analyzing the values of indicators, we can note a significantly low level of food self-sufficiency in the Krasnoyarsk Territory in comparison with the federal district and the country as a whole. Also noteworthy is the increased value of the poverty coefficient and the coefficient of uneven distribution of income ($K_{Дж}$) in the Krasnoyarsk Territory.

Given the prevailing socio-economic situation due to the sanctions, it is possible to identify the main threats to food security in the regions of Siberia: the drop in demand for food products as a result of a decrease in real disposable incomes of the population; a relatively high percentage of the poor population; deterioration of financial performance of agricultural organizations; inefficient state regulation of the food market; the manufacturers do not have a planned volume; the continuing dependence on imports of basic types of food (35-45%) of individual regions of Siberia; the deficit of the budgets of the Siberian regions, the growth of their debts to the federal budget; relations with commodity networks (control of foreign firms); poor quality of food.

Table 5 – Comparative assessment of food security of the Russian Federation, the Siberian Federal District and the Krasnoyarsk Territory, 2015

Valuation indicators	Number of points
the Russian Federation	
1) the food self-sufficiency ratio, $R_S = 3,00$	2
2) actual consumption ratio, $R_{AC} = 1,09$	2
3) poverty ratio, $R_P = 0,13$	2
4) specific weight of expenditure on food, $R_{Ex} = 0,35$	1
5) Gini coefficient, $R_G = 0,384$	1
Total:	8 points
Siberian Federal District	
1) the food self-sufficiency ratio, $R_S = 1,29$	2
2) actual consumption ratio, $R_{AC} = 1,09$	2
3) poverty ratio, $R_P = 0,2$	2
4) specific weight of expenditure on food, $R_{Ex} = 0,34$	1
5) Gini coefficient, $R_G = 0,378$	1
Total:	8 points
Krasnoyarsk territory	
1) the food self-sufficiency ratio, $R_S = 1,09$	2
2) actual consumption ratio, $R_{AC} = 1,13$	2
3) poverty ratio, $R_P = 0,19$	2
4) specific weight of expenditure on food, $R_{Ex} = 0,29$	1
5) Gini coefficient, $R_G = 0,398$	1
Total:	8 points

Calculated according to the Federal State Statistics Service (Rosstat)

CONCLUSION

The presence of potential threats and problems of food security at the regional level necessitates the establishment of a special food security system aimed at effectively countering of negative influences.

It can be argued that the system of ensuring food security at the regional level is completely absent. The situation is such that there is no developed and effective monitoring system, moreover, there is no system of indicators (ratios) by which the level of food security of individual territories could be monitored. There is a system of food security of the state, but it cannot be called effective because of its «blurriness» and focus on exclusively the aspect of the country's food independence, as well as on the generalized and fragmented nature of the regulatory.

According to the authors, the food security system should include three main units: 1) legal support; 2) organizational and functional support; 3) information support (monitoring system).

The presence of these elements in the system will contribute to the achievement of such a state of food security in the regions when threats can be prevented in advance or maximally effectively neutralizes the negative consequences

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REFERENCES

1. Римская декларация по всемирной продовольственной безопасности [Электронный ресурс]: Декларация Всемирного саммита по продовольственной безопасности от 13 ноября 1996 г. – Режим доступа: http://observer.materik.ru/observer/N3-4_97/019.htm.
2. Ускова Т. В. Продовольственная безопасность региона, ИСЭРТ РАН г. Вологда, 2014 г.
3. О продовольственной безопасности Российской Федерации [Электронный ресурс]: Проект Федерального закона от 10.12.1997 № 96700526-2 // Справочная правовая система «КонсультантПлюс». – Режим доступа: <http://www.consultant.ru>
4. Кожевников В.В. Конституция Российской Федерации и проблемы продовольственной безопасности / Вестник Омского университета. Серия «Право». – 2015. – № 3 (44). – С. 56–60.
5. О Стратегии национальной безопасности Российской Федерации [Электронный ресурс]: Указ Президента Российской Федерации от 31.12.2015 №683 // Справочная правовая система «КонсультантПлюс». – Режим доступа: <http://www.consultant.ru>.
6. Доктрина продовольственной безопасности Российской Федерации [Электронный ресурс]: Указ Президента РФ от 30.01.2010 № 120 // Справочная правовая система «КонсультантПлюс» – Режим доступа: <http://www.consultant.ru>

7. Балацкий, Е. Качественная составляющая продовольственной безопасности России / Е. Балацкий, Н. Екимова // Общество и экономика. – 2011– № 11-12. – С. 224-245.
8. Маслаков В.В. Научные основы формирования системы продовольственной безопасности индустриально-аграрного региона / В.В, Маслаков. – Екатеринбург: Банк культурной информации, 1998. – 320с.
9. Костяев, А.И. Национальная и региональная продовольственная безопасность / А.И. Костяев, М.У. Тимофеев // Региональная экономика: стабилизация и развитие. – М., 2000. – Т. 1 – С. 500-517.
10. Модебадзе Н. Оценка продовольственной безопасности региона // АПК: экономика, управление. - 1997. - № 12.
11. Антамошкина, Е. Н. Обеспечение продовольственной безопасности и аграрная политика России / Е. Н. Антамошкина // Аграрная наука. – 2013. – № 8. – с. 2-3.
12. Омелай А.Ю. Методический подход к оценке региональной продовольственной безопасности // Институт экономических проблем им. Г.П.Лузина Кольского научного центра РАН // Север и рынок – 2014. –№ 2– С. 105-107.
13. Оловянных, Д.Г. Методика оценки продовольственной безопасности региона на примере Республики Бурятия [Электронный ресурс] / Д.Г. Оловянных. – Режим доступа: <http://izvestia.isea.ru/pdf.asp?id=4878>
14. Анищенко А.Н. Оценка продовольственной безопасности региона // Проблема развития территорий. – 2013. – № 4. – С. 30-39.
15. Руйга, И.Р. Методическое обеспечение оценки внешнеэкономической безопасности регионов сырьевой направленности [Текст] / И.Р. Руйга, Ю.А. Тетерин // Конкуренция в глобальном мире: экономика, наука, технологии. 2017. № 7-2 (54). С. 127-132.