

Current Food Security Issues: Evaluation Toolkit

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Abstract

The world community is presently grappling with the problem of ensuring global and national food security. Under conditions of increasing international political tension, military conflicts in different parts of the globe, the pandemic, connected with spreading of coronavirus infection, the problem of food security has aggravated both in the country as a whole, and in regions, in particular, and demands urgent decision.

The food security dynamics in the Russian Federation have been assessed based on the data of the Global Food Security Index. The study of the dynamics of basic foodstuffs sales by agricultural organizations in the Russian Federation and the reduction of food expenditures in the structure of consumer spending of households has led to the conclusion that the Russian population has sufficient physical and economic access to safe and nutritious food that meets their dietary needs and food preferences in order to maintain an active and healthy lifestyle.

Keywords: Food Security, Food Security Level, Food Resources, Population Income, Quality of Life.

Introduction

The issue of food security is considered to be one of the major global problems of our time. Food security involves a socio-economic objective focused on ensuring and guaranteeing the accessibility of foodstuffs in the required quantity and quality for the entire population.

The main characteristic of the State's food security is the condition of its food resources, which makes it possible to satisfy its food needs mainly through domestic production. The food security situation has a direct impact on the creation of a congenial atmosphere in the country in particular and in the world in general (Makeeva O.A., Shirokova O.V., 2020).

Food security of a state is an integral and essential part of national and economic security, which ensures sustainable production of basic foodstuffs and their accessibility to the population. Food security contributes to a stable social climate in society.

The choice of food security strategy is made considering the specifics of the regions, based on their socio-economic situation, natural-climatic and economic opportunities. There are no uniform criteria for food security. The comprehensive

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analysis of the totality of food security indicators in the country (region) and the selection of the most optimal ones, as well as the development of new ones on their basis, is the primary task in developing a food security strategy.

The problems of practical implementation of food security technologies at the global scale and at the level of individual countries are presented in the works of Altieri M., Nicholls C., Henao A. (2015), Buks, J., Obiedziska A., Prandecki, K. (2016); Nelson G. C., Rosegrant, M. W., Palazzo, A., Gray I., Ingersoll C., Robertson R., Tokgoz S., Zhu T., Sulser T. B., Ringler C. & Msangi S. (2010); Rosin C., Stock P., Campbell H. (2012), the relationship between strategic priorities and foreign economic activity to ensure food security in the works of Altukhov A., Drokin V., Zhuravlev A. (2016); Sandu I. S., Veselovsky M. Ya., Fedotov A. V., Semenova E. I., Doshchanova A. I. (2015), the impact of fiscal mechanisms on the development of the country and food security industries - Sevriukova, L. V., & Trusova N. C. (2014), Tkacheva T.Yu., Afanasjeva L.V., Goncharenko L.Iv., Sevrukova L.V., Pankov V.G. (2019), Belousova L., Markina S., Afanasjeva L., Rodionova I.N.(2019), Golovin, A., Derkach, N., & Zyukin, D. (2020); Nosachevskaya, E. & Afanasyeva, L. (2020) et al.

Results and Discussion

Food security is an indispensable component of economic security, and their dual relationship is quite obvious. Relative to other types of security that are part of economic security (information, foreign economic, production, etc.), food security is a primary pillar (Koshevoy, O.S. Fudina E.V., 2015). The key stage of developing a food security strategy for Russia and its regions is the stage of strategic analysis of food market conditions and agro-industrial potential of the regions.

The Global Food Security Index is used to assess the level of food security in various countries around the world.

The Global Food Security Index is a global survey and accompanying country food security rankings produced by the Economist Intelligence Unit, the analytical arm of the British magazine Economist. The study has been conducted since 2012 and currently presents the most comprehensive set of indicators of the state of food security in different countries of the world.

The index measures the policies of states and the effectiveness of their institutions in the area of food security. The study uses an analysis of four main groups of indicators of food security in the world: the level of availability and consumption of food, availability and adequacy of food, the level of quality and safety of food, the diversity of natural resources and their sustainability.

The categories include a large number of different indicators measured over the course of the biennium.

The scores for the four criteria are calculated as a weighted average of the core indicators and are measured from zero to a maximum possible score of 100. The calculation uses data from international organizations and national institutions. Based on the analysis of indicators the final ranking of the world countries by the Food Security Index is compiled. A country's high position in the rating means that its food security is at a high level. At the same time, the level of development does not always correlate with the affordability of food: there are a number of expensive to live in countries where everything except food is expensive. At the same time, there are a number of developed countries where people have high incomes but high food prices, so food availability can be lower than in poorer countries. Moreover, food security is not only about prices relative to income, but also about the availability of sufficient food in the market, the variety of products, and the likelihood that the market will run out in case of any crisis fluctuations. Table 1 shows the ranking of countries of the world in terms of food security.

Table 1: World Food Security Ranking

Rating	Global Food Security Index					
	2018		2019		2020	
	Country	Index	Country	Index	Country	Index
1	2	3	4	5	6	7
1	Singapore	85,9	Singapore	87,4	Finland	85,3
2	Ireland	85,5	Ireland	84,0	Ireland	83,8
3	UK	85,0	USA	83,7	Netherlands	79,9
4	USA	85,0	Switzerland	83,1	Austria	79,4
5	Netherlands	84,7	Finland	82,9	Czech Republic	78,6
6	Australia	83,7	Norway	82,9	UK	78,5
7	Switzerland	83,5	Sweden	82,7	Sweden	78,1
8	Finland	83,3	Canada	82,4	Israel	78,0
9	Canada	83,2	Netherlands	82,0	Japan	77,9
10	France	82,9	Austria	81,7	Switzerland	77,7
11	Germany	82,7	Germany	81,5	USA	77,5

12	Norway	82,2	Australia	81,4	Canada	77,2
13	Sweden	82,2	Qatar	81,2	Germany	77,0
14	Austria	82,1	Denmark	81,0	New Zealand	77,0
15	New Zealand	81,3	Belgium	80,7	Denmark	76,6
16	Denmark	80,9	France	80,4	Italy	76,6
17	Belgium	80,2	UK	79,1	France	76,5
18	Japan	79,9	Israel	79,0	Norway	76,2
19	Portugal	79,3	New Zealand	78,8	Portugal	75,7
20	Israel	78,6	Portugal	77,8	Singapore	75,7
21	Spain	78,0	Japan	76,5	Belgium	75,2
22	Qatar	76,5	UAE	76,5	Romania	74,2
23	Italy	76,3	Italy	75,8	Belarus	73,8
24	Czech Republic	76,1	Poland	75,6	Russia	73,7
25	South Korea	75,6	Chile	75,5	Poland	73,5
26	Poland	75,4	Spain	75,5	Spain	73,4
27	Chile	75,1	Kuwait	74,8	Greece	73,0
28	Kuwait	74,8	Malaysia	73,8	Costa Rica	72,3
29	Oman	74,4	South Korea	73,6	South Korea	72,1
30	Hungary	72,8	Saudi Arabia	73,5	Uruguay	71,4
31	UAE	72,5	Greece	73,4	Australia	71,3
32	Saudi Arabia	72,4	Czech Republic	73,1	Kazakhstan	70,8
33	Greece	71,6	Uruguay	72,8	Kuwait	70,7
34	Uruguay	71,3	Hungary	72,7	Chile	70,2
35	Slovakia	70,3	China	71,0	Oman	70,2
36	Costa Rica	69,3	Belarus	70,9	Hungary	70,1
37	Argentina	69,2	Argentina	70,8	Qatar	69,6
38	Romania	68,9	Romania	70,2	Saudi Arabia	69,5
39	Brazil	68,4	Brazil	70,1	China	69,3
40	Malaysia	68,1	Costa Rica	70,1	Slovakia	69,2
41	Bahrain	67,8	Turkey	69,8	Panama	68,9
42	Russia	67,0	Russia	69,7	UAE	68,3
43	Mexico	66,4	Colombia	69,4	Malaysia	67,9
44	Belarus	65,7	Mexico	69,4	Bulgaria	67,4
45	SOUTH AFRICA	65,5	Panama	68,8	Mexico	66,2
46	China	65,1	Oman	68,4	Peru	65,7
47	Bulgaria	64,5	Slovakia	68,3	Turkey	65,3
48	Turkey	64,1	Kazakhstan	67,3	Dominica	65,2
49	Colombia	63,7	SOUTH AFRICA	67,3	Bahrain	64,6
50	Panama	61,9	Bahrain	66,6	Brazil	64,1

Source: <https://foodsecurityindex.eiu.com/>

Analysis of the data presented in Table 1 suggests that in 2020 Russia has almost doubled its position in the Global Food Security Index compared to 2018 and 2019. In 2018 and 2019, Russia consistently ranks 42nd in the Global Food Security Index: then it scored 67, 0 (2018) and 69.7 (2019) out of a possible 100 points; in 2020, it already scores 73.7. According to the authors of the rating, the level of food security in the countries that scored over 60 points is good, and over 80 points - very good. In 2020, only two such countries have food security scores: Finland (85.3) and Ireland (83.8). In previous years, according to the data given in the table, there were many more such countries.

Researchers note that the share of household expenditures on food helps determine the overall welfare of the population. The lower the share of expenditures on food - the richer the country. The wealthiest people spend less than 20% of total expenditures on food. Those who spend 50% or more on food are in a difficult financial position.

Table 2 shows the share of food expenses in the structure of consumer expenditures of households by federal districts of the Russian Federation.

Table 2: Share of food expenses in the structure of consumer expenditures of households by federal districts of the Russian Federation, %

Territorial affiliation	2015 г.	2016 г.	2017 г.	2018 г.	2019 г.	Dynamics 2019 / 2015	
						Absolute deviation	Growth rate
Russian Federation	35,4	35,5	34,3	33,5	29,7	-5,7	83,90
Central Federal District	34,5	35,0	32,8	31,6	26,2	-8,3	75,94
Northwest Federal District	36,2	35,2	33,7	33,5	29,6	-6,6	81,77
Southern Federal District	37,1	37,3	37,9	38,1	35,8	-1,3	96,50
North Caucasian Federal District	43,5	44,7	42,7	41,8	39,5	-4	90,80
Volga Federal District	35,0	35,6	34,2	32,9	30,3	-4,7	86,57
Ural Federal District	32,9	33,5	33,0	33,5	29,5	-3,4	89,67
Siberian Federal District	33,6	34,6	34,4	33,9	31,7	-1,9	94,35
Far Eastern Federal District	36,4	33,3	33,3	31,6	29,3	-7,1	80,49

Source: Compiled by the authors based on data from Rosstat (2020)

Among the federal districts in the studied period the highest share of food expenses in the structure of consumer expenditures of households was observed in the North Caucasian Federal District: the population spent more than 40% of the total amount of spending on the purchase of food. Slightly less (about 38% of the total amount of expenses) was spent on the purchase of food by the residents of the Southern Federal District. In general, the share of food expenses in the structure of consumer expenditures of households in the studied period is decreasing in all federal districts, which indicates an increase in the standard of living of the population.

The basis of food security, both in the country as a whole and in the regions in particular is a high level of agricultural production.

Table 3 shows the dynamics of sales of main products by agricultural organizations in the Russian Federation.

Table 3: Dynamics of sales of main products by agricultural organizations in the Russian Federation

Product Type	2015 г.	2016 г.	2017 г.	2018 г.	2019 г.	Dynamics 2019 / 2015	
						Absolute deviation	Growth rate, %
Grain, mln t	32,1	40,6	67,2	70,4	63,0	30,90	196,26
Sugar beet, mln t	19,2	28,2	45,6	48,3	41,8	22,60	217,71
Oilseeds, mln tonnes	2,8	4,8	10,2	11,2	13,9	11,10	496,43
Potatoes, thousand tons	856	1890	2782	2726	2772	1916,00	323,83
Vegetables, thousand tonnes	1835	1715	2758	3143	3235	1400,00	176,29
Livestock and poultry (live weight), million tonnes	3,0	6,3	10,9	11,4	11,7	8,70	390,00
Milk, million tonnes	12,5	13,2	14,8	15,4	16,2	3,70	129,60
Eggs, bln.	22,5	28,2	31,4	31,9	32,5	10,00	144,44

Source: Compiled by the authors based on data from Rosstat (2020)

The data in Table 3 show that the sales of main crop products by agricultural enterprises and organizations in 2019 were as follows: potatoes - 2,772 million tons, which is 3.2 times higher than in 2015; vegetables - 3,235 million tons, this indicator is 76, 29% higher than in 2015; grain - 63.0 million tons (the increase was 96, 26%); sugar beet - 41, 8 million tons, which is 2, 1 times higher than in 2015; oilseeds - 13, 9 million tons, this indicator is 5 times higher than in 2015. The dynamics of the volume of sales of basic products by agricultural organizations in the Russian Federation and the reduction of the share of spending on food in the structure of consumer spending of households suggests that the Russian population has physical and economic access to a sufficient amount of safe and nutritious food to meet their nutritional needs and preferences for an active and healthy lifestyle.

Conclusion

Thus, experts consider the issue of reducing the country's dependence on food imports through the development of import substitution to be an important factor in ensuring food security. The implementation of the food security strategy will ensure food security as the most important component of national security, predict and prevent emerging socio-

economic development risks and threats to national security, enhance its sustainability, create conditions for dynamic and balanced development of agriculture and fisheries, improve the well-being of the population.

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References

- Makeeva, O.A. Makeeva, O.V. Shirokova (2020). Food policy and security. 2.p. 149-154.
- Altieri, M., Nicholls, C., Henao, A., Lana, M. 2015. Agroecology and the design of climate change-resilient farming systems. *Agronomy for Sustainable Development* (2015), 35: 869-890.
- Buks, J., Obiedzi ska, A., Prandecki, K. (2016). Environmental externalities and food security. *J. Agribus. Rural Dev.*, 2(40), P. 257-264.
- Nelson, G. C., Rosegrant, M. W., Palazzo, A., Gray, I., Ingersoll, C., Robertson, R., Tokgoz, S., Zhu, T., Sulser, T. B., Ringler, C. & Msangi, S. 2010. Food security, farming, and climate change to 2050: scenarios, outcomes, policy options. Washington, DC, IFPRI.
- Nicholls, C. I., Altieri, M. A., Vazquez, L. 2016. Agroecology: Principles for the Conversion and Redesign of Farming Systems. *Journal of Ecosystem & Ecology*, 55: 010.
- Rosin, C., Stock, P., Campbell, H. Food Systems Failure. *The Global Food Crisis and the Future of Agriculture*. N.Y., Earthscan. 2012, p. 236.
- Altukhov, A., Drokin, V., Zhuravlev, A. (2016). From the strategy of food independence to the strategy of raising the competitiveness of agroindustry // *R-Economy*. T. 2. № 4. p. 469–479.
- Sandu, I. S., Veselovsky, M. Ya., Fedotov, A. V., Semenova, E. I., Doshchanova, A. I. (2015) . Methodological aspects of social and economic efficiency of the regional activities// *Journal of Advanced Research in Law and Economics*. T. 6. № 3. p. 650–659.
- Sevriukova, L. V., & Trusova N. C. (2014). State policy to promote investment activity in regions. *Ekonomichnij casopis-XXI (Economic Annals-XXI)*, 9-10, 106-107. Retrieved from <http://soskin.info/en/ea/2014/9-10/contents>
- Tkacheva T. Yu., Afanasjeva L. V., Sevrukova L. V., Goncharenko L. Iv., Panskov V. G (2019) . Formation of modern fiscal mechanisms: integrated approach: Proceedings of the 33rd International Business Information Management Association Conference, IBIMA 2019: Education Excellence and Innovation Management through Vision 2020 . 9578-9582.
- Belousova L., Markina S., Afanasjeva L., Rodionova I.N.(2019) Improvement of industrial policy in Russia in the conditions of key calls for industrial development and economic security. Proceedings of the 33rd International Business Information Management Association Conference, IBIMA 2019: 2253-2263
- Golovin, A., Derkach, N., & Zyukin, D.. (2020). Development of food exports to ensure economic security. *Economic Annals-XXI*, 186(11-12), 75-85. doi: <https://doi.org/10.21003/ea.V186-09>
- Nosachevskaya, E., & Afanasyeva, L. (2020). New trends in the development of the world economy in view of the effects of the emerged crisis. *Economic Annals-XXI*, 186(11-12), 4-11. doi: <https://doi.org/10.21003/ea.V186-01>
- Koshevoy, O.S. Food security - the basis of economic security [Text] / O.S. Koshevoy, E.V. Fudina // Proceedings of higher educational institutions. Povolzhskiy region. Social Sciences. – 2015. - № 4 (36). – p. 190.
- The State of Food Insecurity in the World [Electronic resource]. - Access: <http://www.fao.org/hunger/en/>
- Federal State Statistics Service. (2020, December 12). Agriculture, hunting and forestry. https://rosstat.gov.ru/enterprise_economy (in Russ.).