

The Main Threats and Indicators of Food Security of the Country Under Risk Conditions

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Abstract

The global food problem has always been a pressing concern for humans and has existed throughout human history, the extreme manifestation of which was famine. Since the emergence of human civilization, it has evolved in both nature and scale, becoming a global problem in the second half of the 20th century. Throughout history, humans have learned to harness atomic energy and biotechnology, and finally, have achieved significant technological advances, including space exploration. Today, powerful productive forces exist not only in industrial but also in agricultural production, yet the food security challenge remains unsolved. Moreover, with the growth of the planet's population, its scale is increasing. The practical significance of this study is determined by the fact that its theoretical and methodological results are translated into practical conclusions and recommendations for practical use. Research methods include analysis, observation, study, generalization, systematization, comparison, and measurement. The theoretical and empirical basis for this study was provided by data from educational literature, scientific articles, periodicals, and online resources.

Keywords: Security, Risks, Threats, Directions, Monitoring, Policy, Availability, Mechanisms of provision

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1. Introduction

Food security is recognized as one of the fundamental pillars of national security because it ensures the continuous availability, accessibility, and utilization of safe and nutritious food for the population (Peng & Berry, 2018).

Security is a state of an entity (organism, community, enterprise, industry, state, or global economy) that allows for minor changes in the parameters and qualitative indicators of this entity under the influence of external or internal factors while maintaining its integrity and normal functioning (Peng & Berry, 2018; Voronina, 2022).

Security can be classified into several categories: personal, social, technical, industrial, national, military (defense); food, information, and environmental. Food security is an important element of a country's national security, a necessary condition for maintaining its sovereignty and statehood, a crucial component of demographic policy, and a prerequisite for improving the quality of life of the population (Peng & Berry, 2018).

2. Literature Review

It can be noted that the role of food security in relation to other types of economic security (production, foreign trade, information, etc.) is fundamental, since the very life of the population depends on it (Peng & Berry, 2018). The list of the main goals of food security begins with ensuring a stable supply of food to the population at affordable prices (Kurbanov, 2015). Every citizen of the country should be able to obtain a sufficient food basket for life (this applies to both the availability of distribution sites and affordability). One of the areas is food support for individuals with low incomes (Voronina, 2022).

The presence, exacerbation, and increase of various types of risks, threats, challenges, and especially force majeure circumstances can have a significant negative impact on national food security and significantly slow down the solution to the problem of ensuring global food security. Such risks and threats can be classified as follows:

- Economic risks caused by the possibility of deterioration in the domestic and external economic situation and a decrease in the growth rate of the global and national economies; high inflation and a crisis in the banking system; a decrease in the investment attractiveness of domestic agriculture and fisheries; A decrease in the competitiveness of domestic products. The main economic risks to food security include unbalanced price increases, such as higher rates of resource price increases compared to increases in agricultural prices, which leads to a decrease in agricultural producer income and the competitiveness of agricultural products (Lyasnikov et al., 2023).
- Technological risks associated with the implementation of adaptive landscape farming principles, the increasing role of ICT in scientific and technological support for the agro-industrial complex, a slowdown in the pace of technical and technological modernization, and the rise of bioterrorism (Lyasnikov et al., 2023).
- Climatic and agro-ecological risks associated with adverse climate change and extreme natural disasters; an increase in the share of degraded land; a decrease in the fertility of agricultural land due to its irrational use in agriculture; and the consequences of natural and man-made emergencies (Davis et al., 2016).

Agriculture is vulnerable to natural and man-made emergencies. Natural disasters caused by droughts, earthquakes, fires, floods, and adverse weather conditions can have significant, widespread, and long-lasting impacts on the agricultural sector, causing severe damage to agricultural production, infrastructure, and farmland, as well as crop losses and livestock deaths, negatively impacting food security (Davis et al., 2016). At the international level, food security is a significant and stabilizing factor in the stability of the global system, influencing the development and adoption of policy decisions. It often correlates with the economic and political systems and development levels of countries, with significantly higher levels of food security (Peng & Berry, 2018).

Thus, food security is a crucial element of a country's national security, a necessary condition for maintaining its sovereignty and statehood, a crucial component of demographic policy, and a prerequisite for improving the population's quality of life.

At the current stage of economic development, several threats to food security can be identified:

The first threat is the saturation of the domestic food market with imported products. The introduction of food sanctions clearly demonstrated the depth of this problem: after the ban on food imports from several countries, prices for relevant food groups (meat, dairy products, cheese, and chocolate) rose sharply, while the quality of the products offered declined. Despite some improvement in the situation and the construction of large livestock farms (focused on pigs, cattle, and poultry), the problem has still not been fully resolved (Lyasnikov et al., 2023).

The second threat is low consumer demand. The income level of a significant portion of the population remains below the subsistence level (Voronina, 2022).

Food security is an indispensable component of economic security, and their dual relationship is quite obvious. Food security occupies a special place in the economic stability of regional development (Oborin et al., 2017). Compared to other types of security included within economic security (information, foreign trade, production, etc.), food security is the fundamental principle. This idea is most accurately expressed by a proverb that was used during the Civil War and Revolution: “The less grain there is, the more politics there is.”

Food policy should be viewed as a set of measures to effectively address the challenges of intensive development of agricultural production, storage and processing of products, foreign trade, food market regulation, and social development in rural areas. It determines the priorities and growth points for individual activities in the agro-industrial complex and the national economy (Kurbanov, 2015). The competitiveness of businesses, regions, and the country as a whole depends on it. Without food security, a state cannot be economically sustainable or have prospects for progressive development (Voronina, 2022).

The next goal is related to supporting agricultural production (Moronova, 2023). This goal is comprehensive and includes subgoals such as increasing the effectiveness of price support for agricultural production, supporting lending to agricultural producers, supporting scientific research in food production (this may include not only agriculture itself but also food processing, for example, not only grain growing methods but also methods of storing it, making flour, and eventually bread), and ensuring resource conservation (their careful use, adhering to the intended purpose of land). The food security framework is presented in Table 1.

Table 1. Food security framework.

Level	Problem Solver	Function of the subject
1	2	3
Global	UN, specialized bodies (FAO, WTO, Committee on Food Security, World Bank, etc.)	Promoting stable economic development of states, long-term food security programs, and creating food reserves
Subregional	Interregional entities with relevant bodies, forums	Promoting sustainable economic development. Improving food quality.
Interethnic (interstate)	Loosely organized entities (excluding the EU). Solidarity through agreements on trade, prices, and food standards.	Promoting sustainable economic development and the formation of state and local food reserves. Improving food quality.
National (state)	Governments, legislative bodies	Stability of economic development, formation of state food funds, and balance of supply and demand
Local	Territorial governing bodies (municipality, district, region) (Oborin et al., 2017)	Creating conditions for household income generation. Food supply and quality control (Oborin et al., 2017).
Population groups	Households by income groups	Achieving an income that ensures consumption according to scientific standards
Family	Households	Purchase and use of food products, etc.

Source: Prepared by the author based on Peng and Berry (2018), Voronina (2022), and FAO concepts.

Furthermore, the development of agricultural market infrastructure remains underdeveloped, and producers are experiencing a shortage of qualified personnel (due to labor market imbalances and distorted societal perceptions of prestigious professions) (Moronova, 2023).

- A region's economic security is characterized by the state of various spheres of activity, based on which studies identify the following components:
- Production, characterized by the availability of a resource base, conditions that support integration processes, and the development of a reproduction system in the region's objectively established specialization (Moronova, 2023);
- Raw materials, reflecting the efficient use of natural resources;
- Financial, characterized by the sustainability of the regional budget system and its ability to ensure socio-economic stability and development of the territory;
- Scientific and technical, characterized by the dynamics of the implementation of innovations and scientific and technological progress in the socio-economic sphere, the degree of production modernization, and the qualifications and number of personnel engaged in research and development;
- Socio-demographic, characterized by the level of social differentiation in society, the level of poverty, access to education, culture, healthcare, housing, communication services, etc.;
- Labor market security, characterized by industry-specific regional specialization, changing demand for appropriately qualified specialists, unemployment rates, and the system of tasks and functions performed by specialists;
- Social security, expressed in the absence of criminalization of society, the shadow economy, corruption, etc.;
- Food security, characterized by the level of regional food supply and the quality of food products (Oborin et al., 2017);
- Environmental security, violations of which manifest themselves in exceeding maximum permissible pollution standards and in high costs for eliminating the consequences of man-made disasters;
- Information security, ensuring data integrity and confidentiality, combined with its accessibility to all users.

Ensuring food security is associated with risks that can significantly undermine it. The most significant risks fall into the following categories (Figure 1):



Figure 1. The most significant food security risks.

Source: Prepared by the author based on Lyasnikov et al. (2023).

The presence of these risks creates threats to food security, which may lead to non-compliance with food security criteria. Broadly defined, global food challenge encompasses the production, distribution, exchange, and consumption of food, both globally and within individual countries.

This study proposes an interpretation of “food security” (of the state) and defines it as the state of the national economic system and agro-industrial complex that ensures the state's food independence, that is, its ability to meet the population's needs for high-quality products with high nutrient and energy value, the economic and physical availability of food, and the compliance of products with domestic quality standards defined at or above the corresponding international level.

The following factors influence the food security challenge (Figure 2):

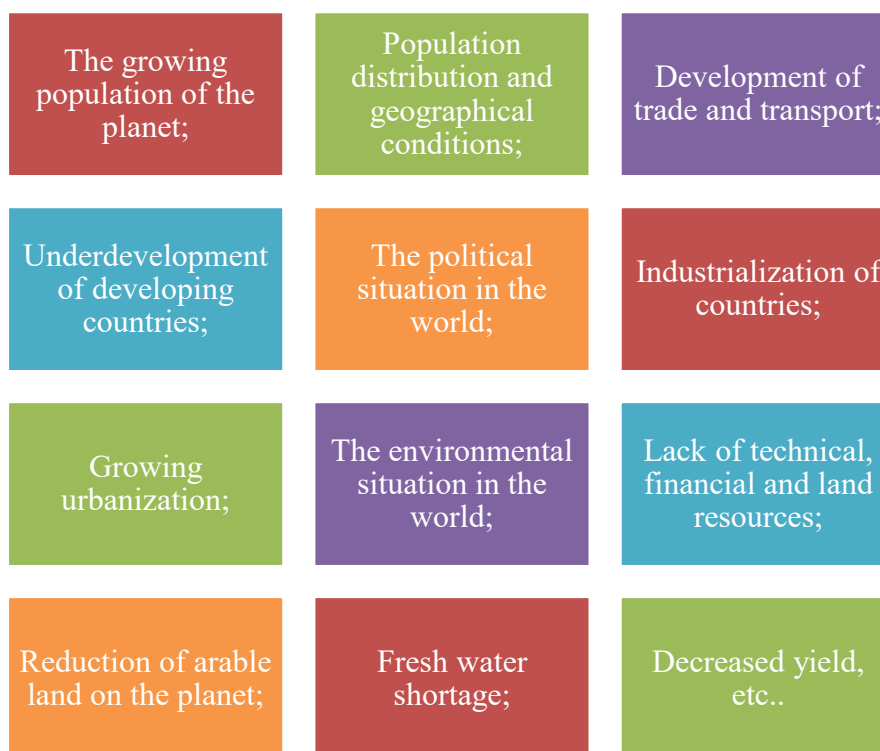


Figure 2. Factors affecting the food security problem.

Source: Prepared by the author based on Kaputsina (2023).

Assessing the performance indicators of the agro-industrial complex within the economic security system becomes the core content of the monitoring process (Moronova, 2023). The results of this process can be used to assess the potential, prospects, challenges, and risks of providing the population with food in the required quantities and qualitative aspects of their needs.

Thus, to summarize the above, the problem of food security integrates a combination of factors: the socio-economic development of the state, its agricultural and production resource potential, and its domestic and international policies.

3. Food Security Indicators of the Country

The following system of indicators is used to assess the state of food security:

a) in the consumption sphere:

- available household resources by population group;
- availability of retail and catering space per 1,000 people;
- food consumption per capita;
- volume of targeted assistance to the population;
- daily caloric intake of a person;
- amount of proteins, fats, carbohydrates, vitamins, macro- and microelements consumed by a person per day;
- consumer price index for food products.

b) in the sphere of production and national competitiveness (Moronova, 2023):

- production volumes of agricultural and fishery products, raw materials, and food;
- imports of agricultural and fishery products, raw materials, and food;
- budgetary support for producers of agricultural and fishery products, raw materials, and food per ruble of sold output;
- productivity of land resources used in agriculture;
- volumes of food sales by retail and catering organizations.

c) in the area of management organization:

- volumes of food in the state material reserve, formed in accordance with the regulatory legal acts of the Russian Federation;
- reserves of agricultural and fishery products, raw materials, and food.

To assess the state of food security, the criterion is the share of domestic agricultural, fishery, and food products in the total volume of commodity resources (including carryover stocks) of the domestic market for the relevant products, with threshold values for:

- grain – at least 95%;
- sugar – at least 80%;
- vegetable oil – at least 80%;
- meat and meat products (in terms of meat) – at least 85%;
- milk and dairy products (in milk equivalent) – at least 90%;
- fish products – at least 80%;
- potatoes – at least 95%;
- edible salt – at least 85%.

Discussions about how to solve the global food challenge have been ongoing for a long time. Leaving aside some differences, two main approaches can be identified: extensive and intensive. The extensive approach involves producing food by expanding agricultural land, although there is virtually no arable land left (Peng & Berry, 2018).

International organizations, primarily UN specialized agencies, play a major role in solving the global food challenge. The constitution of the Food and Agriculture Organization (FAO) states that its main goal is to improve nutrition and raise living standards (Peng & Berry, 2018). Thus, the food security challenge is the

production, distribution, exchange, and consumption of food, both globally and within individual countries.

4. Conclusion

Food security is a crucial element of a country's national security, a necessary condition for maintaining its sovereignty and statehood, a crucial component of demographic policy, and a prerequisite for improving the population's quality of life. The global food challenge encompasses the production, distribution, exchange, and consumption of food, both globally and within individual countries.

International organizations, primarily specialized UN agencies, play a major role in addressing the food security challenge. According to the Doctrine, the most important indicator of food security is the level of achievement of rational per capita food consumption standards. It is necessary to maintain and strengthen the balance and resilience of the entire supply chain network, including food production, transport, and logistics infrastructure, wholesale distribution centers, and wholesale and retail trade (Kapustina, 2023).

Author Contributions

The author solely contributed to the conceptualization, methodology, investigation, data collection, data analysis, writing, review, and editing of the manuscript.

Conflict of Interest

The author declares no conflict of interest.

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