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Food Security of the Northern Territories of the Arctic Countries in the Context of Global Processes

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Abstract. The intensification of economic development of the Arctic region of the world poses an acute problem of ensuring food security for both the indigenous population and residents of newly formed settlements, as well as employees of enterprises working on a temporary basis and involved in the development of new mineral deposits and the creation of infrastructure facilities. The study by the authors of the scientific problem of food security in the Arctic was the result of previous studies of global trends in the transformation of food systems in the context of the deterioration of food supply to the world and individual regions. The purpose of the study is to identify the current state and prospects for solving the food security problem for the population of the Arctic regions. The authors' point of view is based on a set of multidirectional trends in food supply in the Arctic countries and consists in the fact that there are clearly pronounced country specifics and approaches to solving this problem in a geographically unified circumpolar region under the impact of a combination of endogenous and exogenous factors. The theoretical basis of the research is the studies of Russian and foreign researchers of food security at the global, regional and country levels. Its information base consists of official statistics of international organizations and countries of the Arctic region, programs and strategies for the development of the Arctic adopted in Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the United States. The authors have developed a typology of food systems in the Arctic regions, identified problems, specifics and general features of ensuring food security in the Arctic zone at the current stage. The conclusions and results of the study can be used in shaping and developing new areas of integrated economic development by Russian federal entities and the authorities of the northern territories of Arctic states in compliance with the basic requirements for food supply.

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Продовольственная безопасность северных территорий арктических стран в контексте глобальных процессов

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Аннотация. Активизация хозяйственного освоения арктического региона мира остро ставит проблему обеспечения продовольственной безопасности как коренного населения и жителей вновь образующихся поселений, так и работников предприятий, работающих на временной основе и вовлеченных в процесс освоения новых месторождений полезных ископаемых и создания инфраструктурных объектов. Обращение авторов к научной проблеме продовольственной безопасности в Арктике стало следствием предыдущего изучения глобальных тенденций трансформации продовольственных систем в условиях ухудшения обеспечения продовольствием мира и отдельных территорий. Цель исследования – выявление современного состояния и перспектив решения проблемы продовольственной безопасности населения арктических регионов. Точка зрения авторов базируется на сочетании разнонаправленных тенденций обеспечения продовольствием в странах Арктики и состоит в том, что под влиянием совокупности эндогенных и экзогенных факторов в географически едином циркумполярном регионе сложились явно выраженные страновые особенности и подходы к решению данной проблемы. Теоретической основой анализа стали труды российских и зарубежных исследователей продовольственной безопасности на глобальном, региональном и страновом уровнях. Информационную базу составляют официальная статистика международных организаций и стран арктического региона, программы и стратегии освоения Арктики, принятые в Дании, Исландии, Канаде, Норвегии, России, США, Финляндии, Швеции. Авторами разработана типология продовольственных систем арктических регионов, выявлены проблемы, специфика и общие особенности обеспечения продовольственной безопасности в арктической зоне на современном этапе. Выводы и результаты исследования могут быть использованы при формировании и развитии российскими федеральными структурами и властями

северных территорий новых направлений комплексного хозяйственного освоения с соблюдением базовых требований к обеспечению продовольствием.

Ключевые слова: продовольственная безопасность, продовольственные системы, арктический регион, производство, распределение.

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Introduction

The Arctic regions of the world are currently experiencing a kind of political and economic renaissance, that is a period of active economic development at a new science and technology stage with clearly expressed political and military interests and contradictions. Rich mineral and biological resources attract not only the states of the circumpolar region, whose territories are adjacent to the Arctic Ocean and are located beyond the Arctic Circle, but also other countries that consider the Arctic as the heritage of all mankind. The Arctic is a geographical region with extremely difficult living conditions and economic activity, which determined at all stages the special requirements for providing the population with food. These requirements differ depending on the type of society, the nature of the population production activity, natural and technological capability for food self-sufficiency and delivery of food from outside.

The general complication of the global food problem over recent years, the lack of progress in solving it despite of the continued efforts of the world community, caused the emergence of the United Nations' initiative to radically change approaches to ensuring food security based on a set of new concepts. The essence of this new paradigm is the transformation of the global food system and its elements through innovation and investment and relying on inclusive unique features of food systems based on their individual properties (Revenko, 2021: 214).

In the context of ensuring food security, the Arctic regions are characterized by the

commonality of difficult climatic conditions, isolation of indigenous communities, remoteness from the main territory of a country and the main transport routes, and underdeveloped infrastructure. These conditions predetermine not only the production specifics of food, but also the traditions, norms and structure of its consumption by indigenous people.

However, the Arctic's economic development in the 20th century and its intensification in the current century led to the creation of settlements with a diverse social, national, cultural, and religious composition and attracted a vast new group of people such as temporary and seasonal workers engaged in the exploitation of mineral resources and in the creation of industrial and transport infrastructure. Thus, the prerequisites have been created for the development of different types of Arctic food systems with individual features, where provision of food to population groups is based on the specifics of their functioning.

The goal of this article is to identify the current state of food security in the countries of the Arctic region and the main trends in food supply to their population in the context of the intensification of the economic development of the Arctic, and its compliance with social, humanitarian and cultural strategies of the Arctic countries. The need for such an analysis is strengthened by the global trend of active transformation of food systems within the new paradigm.

Methodological approach and data (basic definitions)

An integrated approach to the analysis of socio-economic system through the prism of a

new paradigm in the run-up to and during the UN Food Systems Summit in 2021 is the basic principle of the research methodology applied in this article. Since the main purpose of the food system functioning is to ensure food security, reliance on criteria and definitions of relevant concepts is justified. Thus, the interpretations of the basic definitions of food security and food system, as well as of the main indicators used in this work, are in the interpretation of the international organizations of the UN system, unless otherwise specified.

Although there is no single definition of food security, most researchers adhere the wording contained in the FAO report “The State of Food Insecurity in the World 2001” (2001). According to it, the food security is “a situation that exists when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active, healthy life”. Four dimensions of food security can be identified based on this definition: food availability, economic and physical access to food, food utilization and stability over time.

The development of the food security concept in recent years consists in recognizing the important role of sustainability, which includes the long-term ability of food systems to ensure food security and nutrition in a way that does not compromise the economic, social and environmental bases that ensure food security and nutrition for future generations (The State of Food Security..., 2021: 190).

The authors use the definition of the food system developed within a new paradigm developed in the run-up to the historic UN Food Systems Summit 2021. This is “the entire range of actors and their interlinked value-adding activities involved in the production, aggregation, processing, distribution, consumption and disposal of food products” (The State of Food Security..., 2020: 254).

Based on the UN approach to identifying criteria and characteristics of the food systems in the Arctic countries (Revenko, Soldatenkova, Revenko, 2021: 100–101), the authors developed a typology of these systems. This made it possible to assess the factors affecting the state of food security in the region. The diversity of food systems in the Arctic makes any classifi-

cation conditional, but the following typology is methodically justified for the purposes of this study (Table 1).

An important part of the applied methodology was the definition of Arctic countries to analyze their food security. Based on the spatial and geographical dimension, there are five Arctic countries: Canada, Denmark (via Greenland), Norway, Russia, and the USA. However, the existence of territories beyond the Arctic Circle in the absence of access to the Arctic Ocean allowed the Arctic Council to include Finland, Iceland and Sweden in the list of Arctic states. In this study, the authors rely on the last approach.

The use of statistics and analytical information from international organizations (FAO, OECD, the Arctic Council and the Arctic Economic Council), national authorities and food business companies from the Arctic countries is methodically justified to evaluate the state of food security in the Arctic. To sum up the processes and phenomena under study, the authors give a priority to a group of methods for gaining, processing and systematizing empirical knowledge with elements of comparative studies.

Theoretical base and literature review

Over the past decades, there has not been a uniform theoretical approach in the international scientific space to the analysis of food security problems and the food systems functioning at the intercountry regional level. The pluralism of existing opinions and scientific concepts implies the need to substantiate in each study the author’s opinion on the used works of predecessors. The theoretical base of this article is the studies of Russian and foreign researchers on food security in the Arctic, who explore it comprehensively, taking into account economic, environmental, historical, and social realities. This being said, the main conceptual approach of the authors is to explore the food security problem through the lens of the diversity of Arctic food systems, their inclusiveness and traditionality.

In this context, the results of the research project “The Arctic as a Food Producing Region”, carried out in 2016 under the umbrella

Table 1. Typology of food systems in the Arctic regions of the world

The main classification feature	Type of food system (FS)
The diversification level of food produced and consumed	<ul style="list-style-type: none"> – closed, highly specialized FS, based on a limited number of types of products; – FS highly specialized in the production of one or more types of food, but universal in consumption (depending on the capability of food supply); – FS widely diversified in the production and consumption of food.
The degree of territorial localization of communities producing and consuming food	<ul style="list-style-type: none"> – FS of indigenous communities that are traditionally remote from transport routes and infrastructure; – FS of settlements with a mixed population according to the migration type; – FS of settlements around facilities of industrial activity with a temporary visiting population.
The basic production facilities	<ul style="list-style-type: none"> – oceanic FS (fishery, aquaculture, whale fishery products); – FS based on reindeer-breeding; – FS based on hunting; – the previous three FSs, supplemented with collecting of wild herbs; – classic agricultural FS; – FS based on production of various crops by high-tech facilities.
Degree of involvement in the global value chains (GVC)	<ul style="list-style-type: none"> – FS with a relatively high degree of involvement in GVC due to a production base for processing of local food raw materials focused on other regions; – FS with occasional involvement in GVC (mainly based on the implementation of cross-border projects); – FS with a zero degree of involvement due to the remoteness and lack of appropriate traditions and mentality.
Degree of inclusiveness	<ul style="list-style-type: none"> – FS with a low degree of inclusiveness characterized by a low involvement of the indigenous population in providing food to the entire population of the territory, and the presence of population groups with limited access to food; – FS with an average degree of inclusiveness, characterized by the involvement of the indigenous population in providing food to the entire population of the territory and the presence of groups with an insufficient level of food supply; – FS with a high degree of inclusiveness, characterized by the involvement of the indigenous and local population in providing food to the entire population of the territory in quantity and quality sufficient to embrace a healthy lifestyle and maintain working capacity.

Source: compiled by the authors

of the Arctic Council's Sustainable Development Working Group, are worth noticing. A group of researchers from Canada, Greenland, Iceland, Norway and Russia analyzed the food production in these countries, the potential to increase production and the added value of foodstuffs produced in the Arctic (The Arctic as a Food..., 2019).

Hossain, Nilsson and Herrmann (2020) explored the problems of food security, sustainability and supply chains in the Arctic with an emphasis on the interests of the indigenous peoples of the European High North region.

They emphasized the importance of developing and maintaining the traditional component in meeting food needs. Different aspects of regional cooperation to ensure food security in the European region, including the Arctic countries, are explored by Revenko, Panteleeva and Isachenko (2019).

Ensuring food security in the several Arctic countries is considered both through the lens of common problems and with an emphasis on the needs of indigenous peoples. Thus, analyzing the situation in Northern Canada, where indigenous peoples experience food

shortages more than twice as often as all Canadian households, Islam and Berkers (2016) propose an integrated approach to assessing food security based on the entitlement theory and the food sovereignty concept.

A team of researchers at the University of Alaska Fairbanks explored the impact of the changing Arctic climate on food and water security (White, et al., 2007). Carlo (2020) believes that understanding the Arctic environment and the cultural values of indigenous peoples will allow for a broader and stronger Arctic surveillance system.

Several groups of Russian researchers focused in their studies on various aspects of the current state of food security in the Russian Arctic zone. For example, the research by the scientists from Lomonosov Northern (Arctic) Federal University (Andronov, et al., 2020) contains a comprehensive analysis of the impact of socio-economic and environmental risks on food security and living standards of indigenous peoples of the Arctic zone of Western Siberia in the context of traditional lifestyle transformation, climate change and industrial development.

Ivanov and Ivanova (2017) highlight in their study the increase in the production of local agricultural products, the creation of rear food bases and the food supply from agricultural regions of Russia as the main directions for improving the level of self-sufficiency in food for the population of the European North-east of Russia.

A group of researchers from the Institute of Economics of the Ural Branch of the Russian Academy of Sciences substantiated the need to develop a model of an agro-innovation system to provide food for the population in the Russian Arctic. According to the authors, such system will make it possible to shape and distribute food flows based on forecasting the food needs of the population of the Arctic territories, building an entrepreneurial sector from agricultural producers and food distributors and food distribution infrastructure (Tatarkin, 2015; Tatarkin, Zakharchuk, Loginov, 2015).

Russian researchers Dudin and Anishchenko (2021) carried out an interesting study on the assessment of the food production and

consumption in the Russian Arctic zone. They outline the range of common problems related to the nutrition to the population of the region, assess the internal potential for their solution with an emphasis on innovative development components. Korzunova and Ruiga (2022) have built their own mathematical model for assessing the food security of macroregions with an emphasis on the Arctic region.

With a variety of approaches amongst researchers and a high degree of pluralism of opinions, the authors give preference to theoretical works focused on the practical solution of the food problem in the Arctic.

Results and discussion

The assessment of the state of food security in the Arctic territories of the Arctic countries is complicated due to the lack of a unified methodology for assessing its state at the global and regional levels and the lack of statistics for the territories of the Arctic zones of the Arctic countries.

One of the indicators that allows a comparative analysis of the state of food security is the Global Food Security Index (GFSI), calculated for 113 countries on 58 indicators that characterize the level of food affordability and consumption, availability and sufficiency of food, quality and safety level of food. In 2021, the Natural Resources and Resilience's category was included in the GFSI to assess a country's exposure to a changing climate, its susceptibility to risks associated with natural resources, and how the country adapts to these risks.

All countries of the Arctic region, excepting Iceland and Finland, have a good level of food security (Table 2). The food security level in Finland is high, and the GFSI is not defined for Iceland because it is not listed among the 113 countries for which it is calculated. The GFSI is also calculated for Denmark, not for Greenland. Therefore, the GFSI cannot be fully used to assess food security in the Arctic but the methodology for its calculation can be adapted and used.

Another source of assessment indicators could be the annual FAO reports on the state of food security and nutrition in the world. However, these reports do not contain any

Table 2. The Global Food Security Index for the Arctic countries in 2021

Country	GFSI	Affordability	Availability	Quality and safety	Natural Resources and Resilience
Canada	79.8	97.6	77.7	94.5	54.4
Finland	80.9	91.7	66.2	93.8	75.1
Denmark	76.5	93.1	61.4	93.5	56.9
Iceland	n/a	n/a	n/a	n/a	n/a
Norway	76.0	83.3	60.6	90.7	76.1
Russia	74.8	86.9	64.9	85.8	59.9
Sweden	77.9	91.0	62.7	92.3	67.3
USA	79.1	88.7	71.0	94.3	61.3

Source: Global food security index 2021. Ranking and Trends. Available at: <https://impact.economist.com/sustainability/project/food-security-index/index>

comprehensive indicator that allows to assess all aspects of a country's or region's food security, i.e., affordability, availability, quality and safety of food, natural resources and resilience. Additionally, the food insecurity indicator, measured on the scale of its perception, indicates limited access of individuals or households to food due to lack of money or other resources, but data for measurement is collected through a population survey, which significantly increases the role of the subjective factor. Therefore, we can only state that all Arctic countries are characterized by a low prevalence of malnutrition, acute or moderate food insecurity of the population without

distinguishing the Arctic zone and the rest of each state (Table 3).

At the same time, it should be noted that the level of food security in the territories of the Arctic zone may differ significantly from the assessment made for the entire country. Thus, data from the survey "Household Food Insecurity in Canada, 2017–18", carried out by the interdisciplinary research group PROOF, indicate an increase in food insecurity in the North of this country. Household food insecurity rates reached 57 percent in Nunavut, 21.6 percent in the Northwest Territories and 16.9 percent in Yukon. For comparison, these rates in other provinces ranged from 11.1 percent in

Table 3. Some indicators of food security in the countries of the Arctic region according to FAO data on average in 2018–2020, percent of the total population

Country/region	Prevalence of undernourishment in the total population	Prevalence of severe food insecurity in the total population	Prevalence of moderate or severe food insecurity in the total population
Canada	<2.5	0.9	5.8
Finland	<2.5	1.9	8.0
Denmark	<2.5	1.1	5.0
Iceland	<2.5	1.5	6.6
Norway	<2.5	1.0	4.1
Russia	<2.5	<0.5	6.0
Sweden	<2.5	1.2	5.3
USA	<2.5	0.8	8.0

Source: The State of Food Security and Nutrition in the World 2021. Transforming food systems for food security, improved nutrition and affordable healthy diets for all. (2021). Rome, FAO, 140–141. DOI: 10.4060/cb4474en. Available at: <https://www.fao.org/documents/card/en/c/cb4474en>

Quebec to 15.3 percent in Nova Scotia over the same period (Tarasuk, Mitchell, 2020: 14, 24).

The U. S. Department of Agriculture conducts annually a nationwide survey to assess food security. According to the most recent available average for three years (2018–2020), 89.3 percent of the population of the United States is provided with food, 10.7 percent experience its shortage, including 4.1 percent severe shortage (Coleman-Jensen, et al., 2020: 27). During the same period, 14.0 percent of Alaska's population experienced food shortages and 5.2 percent severe food shortages. Indicators of food security in a survey conducted in 99 communities in Alaska between 2009 and 2017 varied widely from 100 to 54 percent of households provided with food (Fall, Kostick, 2018: 3, 5).

Despite the existing differences, the following general features of ensuring food security of the population living in the Arctic zone of the Arctic countries can be highlighted:

1. Extreme climate conditions do not allow achieving food self-sufficiency, and therefore there is a high dependence on food supply from outside the Arctic zone. Thus, the population of the Russian North is mainly provided with food through its supply from other Russian regions and abroad. In most of the Russian northern regions, more than 80 percent of the total food consumed is supplied from other parts of the country (Poleshkina, 2018: 826). All heat-loving products (gourds, fruits), most types of processed food products such as sugar, tea, vegetable oil, flour, cereals, canned vegetables, most of meat, dairy and vegetable products are supplied from outside (Ivanov, 2021).

In Norway, the food self-sufficiency rate has been relatively stable, at about 50 percent over the past half century. In contrast, it is estimated that local agriculture accounts for only about 5 percent or less of food demand in Alaska, and the remaining 95 percent or more are supplied (Stevenson, et al., 2014). In some areas of Greenland (especially in the capital and major cities), access to food is heavily dependent on supply, mainly from Iceland and Denmark (Elde, et al., 2018: 5).

2. Limited transport and storage infrastructure and long distances between settle-

ments complicate the agricultural production and restrict access to production resources and sales markets. The average delivery time of goods, for example, to the territory of the Republic of Sakha-Yakutia (Russia), ranges from 220 to 260 days, and for some northern regions even exceeds 365 days (Poleshkina, 2018: 829). A significant volume of goods shipment in Sakha-Yakutia is carried out by winter snow roads which can be used from 120 to 210 days during the year depending on weather conditions (Polbitsyn, Drokin, Zhuravlev, 2012: 6).

The roads network necessary to meet the most basic food needs of the inhabitants of Alaska (USA) has several thousand miles by air, sea and land roads (Stevenson, et al., 2014: 272). In Greenland, all goods must be transported by sea or by air because there are no roads connecting cities and towns (Elde, et al., 2018: 5).

3. Fishing (coastal or marine) and aquaculture play an important role in the household economy and in providing the population with food in the Arctic. The long coastal zone and climatic conditions of the countries in the Arctic region are favorable for these types of fishing and economic management, whose products are sold not only within the countries, but also exported. For example, 95 percent of Norwegian seafood is exported to more than 140 countries around the world. In Greenland, the fishing industry is the largest sector of the economy, and 90 percent of its exports arrive from fishing (Elde, et al., 2018: 4). Commercial fishing is developed in the coastal waters of Alaska (Fall, Kostick, 2018), and most of the salmon, cod, pollock and crab are exported.

In Russia, fishing and fish production are one of the most important sectors of the economy in the Far North. 492 thousand tons of fish were caught in the Northern Basin in 2020 (Federal Agency..., 2021).

4. The food systems in the Arctic countries are a set of traditional food systems for this area, formed under the impact of the culture of the indigenous peoples, including the food production and consumption, and food systems traditional for agriculture of the country. In addition to fishing and aquacul-

ture, such activities as hunting and wild plants picking have been part of the lifestyle of indigenous peoples in the Arctic for thousands of years.

5. The complex system of allocation of resources for food production and fluctuations in energy prices entail significant differences in retail food prices for the population of northern communities compared to these prices in southern communities in the same country. Thus, a survey conducted in 49 isolated northern communities of Canada back in 2006–2007 found that a food basket that would provide a full meal for a family of four costs from 350 to 450 Canadian dollars per week. The same food basket costs from 195 to 225 Canadian dollars in southern Canada (Food Security Across the Arctic, 2012: 5). In 2020, the cost of a fixed set of consumer goods and services in the Russian Arctic territories significantly exceeded the cost of the same set on average in Russia: from 17 percent in the Murmansk Region to 67 percent in the Chukotka Autonomous District (The cost of a fixed..., 2022).

6. Local small and medium-sized enterprises play a significant role in the production, processing, and distribution of food in the Arctic territories, but they face some shared problems. One of them is the outflow of the population, especially young people, from small settlements to large cities or other countries. This not only causes difficulties in attracting workers to food production, but also reduces the capacity of local markets and decreases the number of local enterprises.

Climate change and environmental pollution have a more serious impact on local food producers, because, unlike larger producers, they cannot easily move their business without significant, and in some cases critical, costs. New regulations and control regimes aimed at improving food safety often favor large firms that can afford to make the necessary investments in people and equipment, but their implementation is more expensive for small producers. At the same time, stricter regulation of CO₂ emissions may favor local food producers compared to larger multinational corporations that transport food on hydrocarbon-powered ships (Johansen, 2014).

The analysis of the causes and factors affecting the food security in the Arctic region allowed to identify its indicators (Table 4).

Based on the analysis of the causes and phenomena affecting the food security of the Arctic region, we propose to use the full set of the above indicators for a comprehensive assessment of the food security of the population living in the Arctic zone of the Arctic countries, however, the development of a specific methodology for calculating and collecting relevant data will require consolidated efforts of all countries of the region.

Thus, ensuring food security of the population in the Arctic region depends on a set of interrelated factors. The remoteness and isolation of northern communities from the rest of a country and the high costs of shipping and storing perishable and nutritious food are the causes of the high living costs there. The social and economic conditions of the Arctic territories also significantly affects the food provision to the population of the region. In recent years, climate change and environmental pollution have been one of the important factors that have a multidirectional impact on food security in the Arctic region.

Conclusion

The Arctic regions of the world, despite all their specifics, cannot be outside the scope of global food security trends. One of the most important of them at the end of the second – beginning of the third decade of this century is the increase in the number of hungry and malnourished people in almost all regions of the world. For this reason, it is impossible to achieve the stated Sustainable Development Goals 2030, especially SDG-2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture) in the current state of food systems. This period is also characterized by the symptoms of a protracted agri-food crisis, which turned into an active phase during the COVID-19 pandemic.

Price imbalances and destabilization of food supply chains (global and local) were most clearly revealed under the impact of a set of conditions and factors such as pandemics, political and military conflicts, trade wars and

Table 4. Basic indicators for analyzing the state of food security in the Arctic region

	Dimension	Indicator
Summary indicator of food security	Food affordability	Changes in the average cost of basic food basket
		Share of the population below the poverty line
		Gross regional product per capita in PPPs
		Access of agricultural producers to the market and financial services
	Food availability	Sufficiency of food supply
		Government expenditures on agricultural research and development
		Infrastructure development level
		Volatility of agricultural production
		Food losses and waste
		Food independence level
		Food production by indigenous peoples
	Food quality and safety	Diversity of diet
		Nutrition standards: availability of national dietary guidelines, nutrition plan or strategy
		Preserving the dietary preferences of indigenous peoples
		Consumption level of microelements
		Quality of consumed protein
		Ensuring food safety
		The incidence rate of the population with diseases of the gastrointestinal tract and infectious diseases
	Natural resources and resilience	The vulnerability degree of the territory to climate change
		Availability and quality of fresh water
		Availability and quality of soil
		State of oceans, rivers and lakes
		The territory vulnerability to depletion of natural resources and decline in agricultural productivity
Disaster risk management		
Demographic stress: population growth/decline and the level of urbanization		

Source: compiled by the authors

inconsistencies. During this period, the technological, including digital, inequality of countries, economic entities, and end-users became apparent in the food sector of the global economy. All these global problems could not but have a destabilizing effect on the food security in the Arctic countries.

For the Arctic region, with the commonality of some conditions for food production, sale and consumption, a high degree of diversity of food systems has been revealed, which

depends to a greater extent not on nationality, but primarily on the historically formed living circumstances of the peoples inhabiting the Far North. Food systems based on the unique lifestyle of numerous ethnically diverse communities and universal ones, that are typical for this country and neighboring states, function simultaneously in each Arctic country. There is a diffusion between them, the degree of which is determined by many factors – from the distances between the main habitats to the level of

the sustainability of production and consumption traditions.

Food security in the Arctic regions is ensured in food systems with a high degree of inclusiveness, and this creates a dispersion of basic indicators. The Arctic countries face a difficult challenge to combine the solution of a dual goal: to preserve the centuries old unique lifestyle and dietary habits of the indigenous population and to provide affordable, safe food to all categories of the population, taking into account the increase in migration flows due to the active industrial development of the Arctic.

The solution of this problem requires both the increase of local food production, despite its obvious low competitiveness, and the opti-

mization of supply both of traditional products for the Arctic and goods from the consumer basket of the visiting population.

In addition, the assessment of the current state and trends in ensuring food security of the population in the Arctic territories plays an important role. This requires long-term joint efforts of the scientific and business communities, indigenous people's associations, government agencies, intergovernmental organizations, and other interested actors. Despite the difficult geopolitical circumstances, the Arctic countries, while maintaining and developing international cooperation, will be able to achieve positive effects in solving the problem of food security in the northern territories.

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