

Specifics of Economic Security Analysis of the Arctic Coastal Regions (the Murmansk Region Case)

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Abstract—The article substantiates the relevance of economic security analysis for a number of Arctic coastal regions. The researchers analyze the specific development factors affecting the economic security of the Arctic coastal regions, as well as their assessment indicators. These factors include the structure of the regional economy and the place of industries related to maritime activities in the regional economy; provision of transport infrastructure, its state and intensity of use; the rise in the cost of doing business and living due to challenging climatic conditions and remoteness from the federal center. The calculation of the above-mentioned indicators single out the specific features of the Murmansk Region; they should be taken into account when ensuring the economic security of a region belonging to the group of Arctic coastal territorial systems. The article argues that to ensure the economic security of the Arctic coastal region the most important and significant projects for the development of the Murmansk Region transport infrastructure should be included in such federal program and strategic documents as “Transport Strategy of the Russian Federation” and the state program “Socio-Economic Development of the Arctic Zone of the Russian Federation”.

Keywords—*economic security, Arctic coastal regions, indicators, the Arctic*

I. INTRODUCTION

Currently, the issues of assessing and analyzing economic security at the regional level have acquired relevance and significance.

Economic security as an element of the general security of the territory, which, in addition to this component, includes military, information, scientific and technical, food, cultural, environmental, energy, and other types of security [1], is such a state of economic parameters and level of development of certain territorial system economy, which allows achieving sustainable development and a sufficient degree of independence from external negative phenomena and processes.

In Russia, the aspect of analyzing and ensuring economic security at the macro level is given considerable attention at the state level; the meso level (the level of regions and their clusters) is much less affected by research. In particular, the documents regulating the economic security system at the regional level have been adopted only in a few constituent entities of the Russian Federation; their provisions are largely declarative in nature and practically are not applied for taking and implementing managerial decisions; the goals of ensuring economic security are abstract and not linked to the general tasks of socio-economic development of specific regions; the bodies that are supposed to monitor economic security indicators and to provide a system of measures to respond to their negative dynamics do not have sufficient authority, they are often being organized and functioning only nominally [2].

II. RESEARCH RESULTS

The research result is the identification of factors that characterize the specific features in the development of Arctic coastal regions. The indicated factors were divided into three groups; the first group includes the factors characterizing the influence of the branches of maritime economic activity on the regional economy. The second group consists of the factors that characterize the provision of the region with transport infrastructure; the third group unites the factors that characterize the impact of the challenging natural and climatic conditions characteristic of these regions on the life of the population and the economic activities. Also, for each group of factors, the authors suggest a list of indicators to assess their impact on the level of economic security of the Arctic coastal regions.

III. DISCUSSION OF RESULTS

It should be noted that the degree of importance of the economic security analysis and assessment for different constituent entities of the Russian Federation vary significantly. The most significant research in this area concerns such groups of the Russian Federation constituent

entities as regions which are remote from the federal center (the regions of the Far Eastern and Siberian federal districts; the Kaliningrad Region belonging to this group should be treated separately), some border regions (such as the Primorsky Krai, the North Caucasus republics), as well as the regions of great strategic importance (particularly, the Republic of Crimea, the regions of the Arctic zone of the Russian Federation (the AZRF), along which the Northern Sea Route runs). Some regions simultaneously belong to several groups of the Russian Federation constituent entities, for them the issues of analyzing and ensuring economic security are of paramount importance.

The interest to the Arctic has been growing over the past three decades, it is explained by the proven colossal reserves of minerals that this macro region is so rich in. It is here that the main reserves of natural gas and oil, gold, diamonds, copper, palladium, and other minerals are concentrated, which are in dire need of developed countries' economies. According to the Ministry of Natural Resources and Environment of the Russian Federation, the estimated oil reserves in the Russian part of the Arctic are more than 7.2 billion tons, natural gas is about 56 trillion m³, with 40% of them on the shelf of the Arctic seas [3]. Thus, at the end of 2019, the total volume of natural gas production in the Russian Federation reached 738 billion m³, which is 2% more than at the end of the previous year [4]. At the same time, the Arctic regions account for more than 80% of the gas produced in the country and about 17% of the total oil production. Taking into account the fact that a significant part of the federal budget (from 45 to 55%) is formed at the expense of tax and other deductions of oil and gas producing companies whose main activities are related to the production and transportation of hydrocarbons in the regions of the AZRF, we can conclude that the economic security of the Arctic territorial systems is of great importance for the country.

The Arctic coastal regions belong to the priority clusters in the system of ensuring economic security of Russia. Research in this area has been carried out for several years [5-7]. The strategic importance of this region is taken seriously at the federal level; it is evident from the adoption in 2020 of the "Fundamentals of State Policy of the Russian Federation in the Arctic for the Period up to 2035" [8] and the recent "Strategy for the Development of the Arctic Zone of the Russian Federation and Ensuring National Security for the Period up to 2035" [9]. It is also proved by the fact that the "Strategy for the Economic Security of the Russian Federation for the Period up to 2030" defines the competition for access to the Arctic resources as one of the main challenges [10].

The Decree of the President of the Russian Federation of October 26, 2020 "On the Strategy for the Development of the Arctic Zone of the Russian Federation and Ensuring National Security for the Period up to 2035" [9] drew a line under the long-term work of various departments and professionals dealing with Arctic issues. This strategy clearly singles out 14 targets; the special attention is given to an increase in life expectancy from 72 to 78 years by 2024, to reaching positive values in terms of the coefficient of migration growth of the population of the Russian Arctic regions, to the increase in average wages by 30% by 2024, and to a threefold increase in the cargo transportation amount in the Northern Sea Route water area by 2030.

Besides, the document contains the data characterizing the state of this macro region development and the main results achieved during the implementation of the "Strategy for the Development of the Arctic Zone of the Russian Federation and Ensuring National Security for the Period until 2020"; the document also defines the main directions for the new strategy implementation in some regions and municipalities of the AZRF.

The implementation of the strategy will be carried out in three stages: the first 2020-2024, the second 2025-2030, and the third 2030-2035. The main sources of financing will be budgetary funds, as well as the funds raised from non-budgetary sources.

At present, the group of Arctic coastal regions includes the Murmansk Region, the Republic of Karelia, the Arkhangelsk Region, the Nenets Autonomous District, the Yamalo-Nenets Autonomous District, the Republic of Sakha (Yakutia), the Krasnoyarsk Territory, and the Chukotka Autonomous District.

The Arctic coastal specificity of these regions necessitates the identification of specific features when analyzing and assessing the state of economic security of these constituent entities of the Russian Federation. The following specific development factors affecting the level of economic security of the Arctic coastal regions should be distinguished: 1) the structure of the region's economy and the place of industries related to maritime activities in the regional economy; 2) provision of transport infrastructure, its state and intensity of use; 3) the rise in the cost of doing business and living due to challenging climatic conditions and remoteness from the federal center. Specific indicators that can quantify the identified factors are presented in Table I.

TABLE I. INDICATORS FOR ASSESSING SPECIFIC DEVELOPMENT FACTORS AFFECTING THE LEVEL OF ECONOMIC SECURITY OF THE ARCTIC COASTAL REGIONS

Factor	Assessment Indicator
1. The structure of the region's economy and the place of industries related to maritime activities in the regional economy	1.1 Specialization level index (by extractive industries) 1.2 Specialization level index (by fishery industry branches) 1.3 The ratio of the volume of inter-port cargo transportation by sea transport to the transportation of goods by road and rail 1.4 The share of employment in industries related to coastal activities (fishing, fish processing, shipping) in the total number of employees in the region
2. Provision of transport infrastructure, its state and intensity of use	2.1 The ratio of dispatched cargo (road, rail and sea transport) to the region's GRP 2.2 The share of roads belonging to the property of the constituent entities of the Russian Federation, the share of roads that do not meet regulatory requirements 2.3 Density of railway tracks, km of tracks per 10,000 km ² of territory 2.4 Density of public roads with hard surface, km of tracks per 1000 km ² of territory
3. The rise in the cost of doing business and living due to challenging climatic conditions and remoteness from the federal center	3.1 The ratio of per capita income to the cost of a fixed set of consumer goods and services 3.2 The ratio of the cost of diesel fuel in the region and the average for the Russian Federation 3.3 The amount of transport services per capita

The assessment of these factors should complement the methods for assessing the level of regional economic security, developed by leading researchers (a detailed analysis of the methods for assessing the level of economic security and the possibility of their application on the regional level is given by the authors in [11]).

It should be noted that the use of the indicators highlighted in the table allows quantifying the impact of specific factors on the economic security of the Arctic coastal regions. It is recommended to make comparisons in three directions:

- within the framework of horizontal analysis (comparison of indicator values for several analyzed periods) – it allows assessing the influence of the selected factors in dynamics;
- within the framework of a comparative analysis (comparing the values of indicators for a specific region with the average Russian values) – it allows drawing a conclusion about the intensity of the influence of these factors on the level of economic security (strong, weak, medium influence);
- within the framework of a comparative analysis (comparing the values of indicators for a specific region with the recommended threshold values determined by expertise – the recommended values, RV).

The practical application of the selected development indicators affecting the economic security level will be carried out on the example of a definite Arctic coastal region – the Murmansk Region.

Murmansk Oblast (Region) is a region located in the Northwestern Federal District, the whole territory of which belongs to the Arctic zone of the Russian Federation. This region has a coastal position; it is washed by the Barents Sea in the north and the White Sea in the east. Another geographical feature that determines the importance of studying the economic security of this constituent entity of the Russian Federation is its border position. The Murmansk Region in the east borders on two Scandinavian countries – Norway and Finland.

The results of calculating indicators of the Murmansk Region economic security for 2016-2018 are presented in Table II.

The indicators calculated in the table allow highlighting the key factors of the Murmansk Region as an Arctic coastal region, which must be taken into account while implementing the activities aimed at the increase of its economic security level.

Coastal activities (activities related to fisheries and the shipping of goods by sea) constitute one of the main areas of region specialization. This fact has been repeatedly stated by many leading researchers [5, 13]. In 2018, the share of agriculture, fishing and fish farming sector (mostly represented by sea fishing in the region) in the gross product structure accounted for 14.4%, which is even higher than the share of extractive industries (12%); the latter are traditionally also considered a specialization of the Murmansk Region. In the region, extracting activities are carried out by the Kirov branch of JSC “Apatit” belonging to the structure of

PJSC “Phosagro” (apatite-nepheline ores mining), the Kola Mining and Metallurgical Company, a subsidiary of PJSC “Norilsk Nickel” (sulfide copper-nickel ores mining), JSC “Olkon” (iron ores), and others. At the same time, in recent years, the share of extractive industries in the economy of the region has been gradually decreasing; currently, it corresponds to the average level of the same indicator for the constituent entities of the Russian Federation. The critical importance of the industries related to marine fishing is also confirmed by the number of enterprises working in this area: in 2019, 103 enterprises were engaged in fishing in the region, 31 enterprises with more than 6 thousand employees were processing fish. In addition, the Murmansk Region is one of the leaders in the supply of processed fish products (the region accounts for about 13% of the total Russian volumes).

TABLE II. INDICATORS OF ASSESSING SPECIFIC DEVELOPMENT FACTORS AFFECTING THE LEVEL OF ECONOMIC SECURITY OF THE MURMANSK REGION (BASED ON DATA [12])

Indicators	The Murmansk Region		RF (2018)	RV
	2016	2018		
1.1 Specialization level index (by extractive industries)	1.05	0.81	1	-
1.2 Specialization level index (by fishery industry branches)	20.4	26.0	1	-
1.3 The ratio of the volume of inter-port cargo transportation by sea transport to the transportation of goods by road and rail, t/t	1.07	1.66	0.14	-
1.4 The share of employment in industries related to coastal activities (fishing, fish processing, shipping) in the total number of employees in the region, %	2.0	2.2	0.2	-
2.1 The ratio of dispatched cargo (road, rail and sea transport) to the region's GRP, t/mln rbl	153.1	186.1	93.0	-
2.2 The share of roads belonging to the property of the constituent entities of the Russian Federation, the share of roads that do not meet regulatory requirements, %	61	59	56	30
2.3 Density of railway tracks, km of tracks per 10,000 km ² of territory	60	60	51	-
2.4 Density of public roads with hard surface, km of tracks per 1000 km ² of territory	23	23	63	-
3.1 The ratio of per capita income to the cost of a fixed set of consumer goods and services, rbl/rbl	2.19	2.26	2.14	2.5
3.2 The ratio of the cost of diesel fuel in the region and the average for the Russian Federation, rbl/rbl	1.093	1.074	1.000	-
3.3 The amount of transport services per capita, thous. of rbl	9.60	9.71	13.14	-

The coastal location of the Murmansk Region caused the development of another specialization – the sea transportation of goods (the share of transportation in the structure of the gross regional product is 10.7%; this industry is second only to the two above-mentioned industries and the manufacturing industry amounting to 11.5%). There are three seaports in the Murmansk Region (Murmansk, Kandalaksha, and Vitino), which uniqueness has been emphasized by many researchers [14]; there the icebreaker fleet is based, providing transportation along the Northern Sea Route. The amount of

cargo transported by the ports of the Murmansk Region has more than doubled over the past five years and in 2018 it amounted to about 62 million tons. The region is one of the few where sea transport prevails in the structure of cargo transportation (the evidence, in particular, is the ratio of inter-port cargo transportation amount by sea transport to cargo transportation by road and rail, which in 2018 rose to 1.66, which is almost 12 times more than the average Russian value). With a high level of the port economy development, the level of the railway and road infrastructure development is insufficient in the region. Thus, despite the fact that the density of railway tracks in the Murmansk Region is higher than the average in Russia, when comparing the same indicator with the average values for the Central Federal District or Northwestern Federal District, the region's lag becomes obvious. There is no railway connection with many cities; the plans for the construction of a railway connecting the region with the Scandinavian countries remain unfulfilled. The federal highway R-21 "Kola" passes through the territory of the Murmansk Region, connecting the capital city of the region with the central part of the country. Lately, significant funds have been allocated for its repair and maintenance, as well as the development of road infrastructure (reconstruction of bridges, construction of an interchange near the city of Murmansk, etc.).

At the same time, regional and inter-municipal roads do not always meet modern requirements, and their condition does not correspond to the target guidelines. In particular, in terms of the density of public roads with hard surface, the Murmansk Region is significantly inferior to the average Russian level; the share of regional roads that do not meet regulatory requirements is about 60%.

For the Arctic coastal regions, the characteristics of the rise in the cost of doing business and the living of the population are important in regards to challenging climatic conditions and remoteness from the center. The relatively little remoteness of the Murmansk Region from the federal centers (in comparison with some other Arctic regions) does not lead to a significant increase of economic activity costs in this entity; a fairly high level of wages, in general, compensates for the higher cost of goods and services compared to the central regions. This, in particular, is evidenced by the ratio of average per capita income to the cost of a fixed set of consumer goods and services and the ratio of the cost of diesel fuel in the region and the average for the Russian Federation, which slightly differ from the average Russian values of indicators, as well as by the low level of transport services per capita (by 25% less than the average for the Russian Federation).

The analysis of the specific factors of the Murmansk Region development as an Arctic coastal region allows us to define the priority areas for ensuring the economic security of this region.

IV. CONCLUSIONS

Thus, while ensuring the economic security of the Murmansk Region as an Arctic coastal region, first of all, it is necessary to pay attention to the development of a cluster of industries related to maritime activities, as well as the development of transport infrastructure, which is of key importance in the economic system of coastal regions with a high amount of sea freight. The most important condition for ensuring high rates of maritime economic activity

development is a sufficient level of investment in fixed assets of enterprises in these industries; their attraction should become a strategic task of regional authorities. When assessing the adequacy of capital investments in activities related to the coastal position of the Murmansk Region, the key task is to analyze not only the dynamics, but also the state of fixed assets in these industries, particularly, wear and tear indicators.

Another important condition for ensuring the economic security of the Murmansk Region is the inclusion of the most important and significant projects aimed at the development of the regional transport infrastructure in the federal programs and strategic documents, in particular, in the Transport Strategy of the Russian Federation [15] and in the updated version of the state program "Socio-Economic Development of the Arctic Zone of the Russian Federation", which will be adopted in accordance with the "Strategy for the Development of the Arctic Zone of the Russian Federation and Ensuring National Security for the Period until 2035" approved in October, 2020. The development of the Murmansk Region transport system could improve the accessibility of many remote municipalities and ensure an increase in the quality of life of the population, as well as become a catalyst for the development of key sectors of the region's economy, including those related to maritime activities.

Acknowledgment

The research was carried out within the framework of the RFBR grant 19-010-00159 A "Identification of problems and development of approaches to ensuring the economic security of the Arctic coastal regions in the new geopolitical conditions".

References

- [1] M.V. Ulchenko, R.V. Badylevich, and D.L. Kondratovich, "Specific features of ensuring economic security of coastal Arctic regions", In Proceedings of IOP Conference Series: Earth and Environmental Science, 2019, vol. 302(1), 012104. DOI: 10.1088/1755-1315/302/1/012104
- [2] D.S. Krapivin, "Main factors and threats affecting the sustainable socio-economic development of the coastal regions of the Arctic zone of the Russian Federation", *Fundamental Research*, 2020, vol. 6, pp. 75-79. (In Russ.).
- [3] Ministry of Natural Resources and Environment of the Russian Federation, 2020. (In Russ.). Retrieved from <https://www.mnr.gov.ru/opendata/>
- [4] Ministry of Energy of the Russian Federation, 2020. (In Russ.). Retrieved from <https://minenergo.gov.ru/>
- [5] J.F. Kuranov, "Areas and main factors of increasing competitiveness and sustainable development of the coastal zone of the northern coastal regions of Russia", *The Arctic: Society and Economy [Arktika: obshchestvo i ekonomika]*, 2012, vol. 8, pp. 128-132. (In Russ.).
- [6] Economic security and reduction of uneven spatial development of the Russian North and Arctic, Ed. by V.S. Selin, and E.P. Bashmakova, Apatity: KSC RAS, 2012, 232 p. (In Russ.).
- [7] E.N. Dvortsova, "Coastal territories: foreign business and management experience" ["Pribrezhnyye territorii: zarubezhnyy opyt khozyaystvovaniya i upravleniya"], *Russian Foreign Economic Bulletin*, 2010, vol. 7, pp. 13-17. (In Russ.).
- [8] Decree of the President of the Russian Federation of March 5, 2020 No 164 "On the Fundamentals of State Policy of the Russian Federation in the Arctic for the Period until 2035", 2020. (In Russ.). Retrieved from <https://www.garant.ru/products/ipo/prime/doc/73606526/>
- [9] Decree of the President of the Russian Federation of October 26, 2020 No 645 "On the Strategy for the Development of the Arctic Zone of the Russian Federation and Ensuring National Security for the Period until

- 2035”, 2020. (In Russ.). Retrieved from <https://www.garant.ru/products/ipo/prime/doc/74710556/>
- [10] Decree of the President of the Russian Federation of May 13, 2017 No 208 “On the Strategy of the Economic Security of the Russian Federation for the Period until 2030”, 2017. (In Russ.). Retrieved from http://www.consultant.ru/document/cons_doc_LAW_216629/
- [11] R.V. Badylevich, M.V. Ulchenko, and D.L. Kondratovich, “Specific nature and prospects of using integral methods of economic security assessment for the Arctic regions of RF”, *Gênero & Direito*, 2020, vol. 9(04), 30. DOI: <https://doi.org/10.22478/ufpb.2179-7137.2020v9n04.52846>
- [12] Federal State Statistics Service, 2020. (In Russ.). Retrieved from https://rosstat.gov.ru/bgd/regl/b19_14p/Main.htm
- [13] T.P. Skufina, and S.V. Baranov, “Murmansk transport node and development of the Arctic zone of the Russian Federation”, *Fundamental Research*, 2017, vol. 11(2), pp. 445-449. (In Russ.).
- [14] A.M. Vasiliev, “An analysis of fishing industry functioning in Murmansk region under institutional innovations”, *The Fisheries journal*, 2016, vol. 2, pp. 36-43. (In Russ.).
- [15] Transport strategy of the Russian Federation for the period up to 2030, 2008. (In Russ.). Retrieved from <http://government.ru/docs/22047/>