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We will be glad to see you among the authors of "Arctic and North"!

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Spatial Organization of the National Economy in the Development of Non-Ferrous Metal Deposits in the Western Part of the Russian Arctic

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Abstract. The article analyzes the possibilities of studying the issues of the interterritorial distribution of the economy, taking into account maritime communications in the development of solid minerals in the western sector of the Russian Arctic on the basis of interaction of national and corporate interests at the regional level. Relatively large deposits of solid minerals are located in this region. The development of non-ferrous metal deposits, taking into account the requirements of rational nature management, is the engine of economic development in the western Arctic regions of Russia. An urgent task is the scientific substantiation of favorable conditions for the comprehensive development of marine activities, necessary technological and human potential, economic benefits from the use of domestic marine potential, mineral resources and spaces of the western part of the Russian Arctic in the interests of national security, economic development and improving the welfare of citizens of the Russian Federation. The information framework is based on the experience of developing lead-zinc ore deposits in the Arctic. The topic under study is consistent with the provisions of regional and sectoral economics, as well as spatial economics. This scientific basis makes it possible to substantiate the spatial organization of the national economy in the development of solid minerals in the western part of the Russian Arctic.

Keywords: *spatial organization, national economy, solid minerals, marine communication*

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Introduction

The relevance of the research topic is confirmed by the theory of new economic geography in the study of inter-territorial distribution of the economy, taking into account maritime communications and the development of theoretical foundations of the Russian scientific school in the issue of the spatial organization of the national economy in the development of solid minerals in the western sector of the Russian Arctic. The development of non-ferrous metal deposits in this

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region is of great importance for the national economy. In the western part of the Russian Arctic, along with oil and gas deposits, reserves of non-ferrous metal ores have been discovered, some of which are mined, and new deposits should be included in development. Geological mapping, prospecting, evaluation, exploration and extraction of non-ferrous metal ores should be accompanied by their processing and transportation by container ships to consumers, mainly by sea. The problem of the spatial organization of the national economy in the development of solid minerals in the western part of the Russian Arctic is relevant, its solution is necessary for the development of mineral resources in the economic activity of Russia. Modernization of maritime transport communications, which are of strategic importance for the economic and national security of the country, is urgent. In accordance with the state program for the development of the Arctic¹ and the Marine Doctrine of Russia², a significant activation of productive forces is required within the Arctic territories of the country, including the development of new deposits of solid minerals.

The urgent task is to provide scientific substantiation of favorable conditions for comprehensive development of maritime activity, necessary technological and human resources, obtaining economic benefits from the use of domestic maritime potential, mineral resources and spaces of the western part of the Russian Arctic in the interests of national security, economic development, and welfare of citizens of the Russian Federation.

Problem statement

The information framework is based on the experience of developing lead-zinc ore deposits in the Arctic. The topic under study is consistent with the provisions of regional, sectoral and spatial economics, the theory of which was promoted by foreign [1, Lesh A.], [2, Krugman P.] and domestic [3, Granberg A.G.], [4, Minakir P.A.], [5, Tatarkin A.I., Litovskiy V.V.] scientists. This scientific base allows substantiating the spatial organization of the national economy in the development of solid minerals in the western part of the Russian Arctic. The paper shows the impact of the marine communication networks in order to transport ores and concentrates from mining enterprises to consumers, as well as in the integrated development of the natural resources of the Arctic in the unity of spatial development.

This scientific framework provides a rationale for the spatial organization of the national economy in the development of solid minerals in the western part of the Russian Arctic.

¹ Gosudarstvennaya programma Rossiyskoy Federatsii "Sotsial'no-ekonomicheskoe razvitie Arkticheskoy zony Rossiyskoy Federatsii". Utverzhdena postanovleniem Pravitel'stva Rossiyskoy Federatsii ot 30 marta 2021 g. № 484 [State program of the Russian Federation "Socio-economic development of the Arctic zone of the Russian Federation". Approved by Decree of the Government of the Russian Federation of March 30, 2021 No. 484]. URL: <https://base.garant.ru/400534977/> (accessed 20 July 2022).

² Morskaya doktrina Rossiyskoy Federatsii Utverzhdena Ukazom Prezidenta Rossiyskoy Federatsii 31.07.2022 g. № 512 [Maritime Doctrine of the Russian Federation Approved by Decree of the President of the Russian Federation on July 31, 2022 No. 512]. URL: <http://www.kremlin.ru/acts/bank/48215> (accessed 20 July 2022).

Methodology

The aim of the study is to solve the task of developing the spatial organization of sea communications for solid minerals deposits exploitation in the Western Arctic. In order to achieve the goal, the following tasks are solved:

- to substantiate the addition of the theory of spatial and regional economics in terms of the development of non-ferrous metal deposits by adjusting the interests of the regional and sectoral economy in the western part of the Arctic;
- to determine the spatial organization of the national economy, the spatial distribution of economic resources in the western part of the Arctic zone of Russia, taking into account domestic and foreign experience in the development of solid minerals in the Arctic;
- to analyze regional economic development and factors of state of mineral resource base of the Western Arctic to diagnose the constraints for the effective development of non-ferrous metal ores and the spatial organization of the national economy;
- to assess the level of balance between the spatial organization of the development of non-ferrous metal deposits in the western part of the Arctic zone of Russia and the pricing environment and demand in world markets;
- to propose directions for modernization of spatial organization in the development of solid minerals deposits on the basis of balanced communications in the Western Arctic for the extraction, processing and transportation of mineral resources;
- to identify the impact of spatial organization in the development of lead-zinc ore deposits in the western part of the Arctic zone of Russia in order to assess the region's role in the national economy, its contribution to the economic development of the country.

Discussion

The spatial organization of the national economy and distribution of economic resources as a scientific and methodological basis are used in the study of socio-economic mechanisms in the Arctic [6, Kudryashova E.V., Sorokin S.E.], [7, Selin V.S., Larichkin F.D., Tsukerman V.A., Goryachevskaya E.S.]. Regional economic development and its factors are also considered, the problems of balancing regional socio-economic complexes, including the organization of maritime communication network, routes and water areas of the Northern Sea Route in the development of mineral resources (oil, gas, solid minerals) are evaluated [8, Ivanova M.V., Kozmenko A.S.], [9, Kozmenko S.Yu.], [10, Kondratyev V.B.].

Scientific problems of studying the socio-economic mechanism of development of non-ferrous metal deposits in the Arctic are most fully addressed in the works [11, Dodin D.A., Ivanov V.L.], [12, Dodin D.A., Ivanov V.L., Kaminskiy V.D.], [13, Mikhailov B.K., Vorobyov Yu.Yu., Kimelman S.A.], [14, Skripnichenko V.A.], [15, Cherepovitsyn A.E., Lipina S. A., Evseeva O.O.].

The development of the Arctic is strategically included in the Russia's system of interests, and the exploitation of non-ferrous metal deposits is one of the national security sectors of the state in ac-

cordance with the Constitution of the Russian Federation and the Law of the Russian Federation “On Subsoil”. The western part of the Arctic zone of Russia is bounded by the eastern border of the Vilkitskiy Strait (meridian 105°54'E). The region under study is distinguished from the territory of the Russian Arctic zone by the criterion of localization of mineral reserves, allowing for the extraction of non-ferrous metals (copper, nickel, zinc and lead). According to the specified criterion, it is necessary to single out a region that includes mineral resource centers for the extraction of solid minerals within the Western Arctic supporting zones. The state program “Reproduction and use of natural resources” contains the terms “priority territories”, which include the Russian Arctic. The implementation of the Program will provide conditions for the stable development of the Arctic, mining and manufacturing industries in priority areas through the exploitation of non-ferrous metal ores. The most promising deposits are the Pavlovskoe lead-zinc ore deposit on the Novaya Zemlya archipelago, as well as similar deposits on Vaygach Island and in the Polar Urals. These deposits are located within the western sector of the Russian Arctic. Transportation of ores and concentrates of non-ferrous metals is done mainly by sea. In the Arctic, along with hydrocarbons, apatite and barite ore, platinoids and gold, nickel, copper and cobalt are mined. The development of zinc and lead deposits is planned.

Development of the economy of the western part of the Russian Arctic on the basis of domestic and foreign experience of solid minerals exploitation

Freight traffic along the Arctic Sea routes is almost entirely represented by cargos that need to be delivered during the extraction of minerals. The authors have only touched upon the issues of transportation of copper-nickel ores, lead-zinc ores, rare and precious metals ores. Russian and foreign experience of spatial organization in the development of non-ferrous metal deposits in the western part of the Russian Arctic shows that the development of the region has great growth prospects (twofold). Prospects for the discovery of non-ferrous metal deposits take place in the Arctic territories of Russia, the USA, Canada and Greenland³.

Analysis of the table 1 shows that the Russian Arctic territory has the richest variety of non-ferrous metal ores in comparison with foreign countries. Geologists predict the greatest growth in the production of non-ferrous metals in the western part of the Russian Arctic on the Kola Peninsula, in Karelia, in the Arkhangelsk Oblast, in the Nenets and Yamalo-Nenets Autonomous okrugs.

The spatial organization of the national economy in the western part of the Arctic zone of Russia involves the connection of mines, quarries, pits with seaports and sea routes of the Arctic Ocean.

The development of spatial organization is determined by the following factors:

- increased international attention to the Arctic, including numerous research projects;
- balance of the Arctic socio-economic complexes in Russia and in the foreign Arctic based on the mineral resource potential;

³ Poleznye iskopaemye v Arktike. Oznakomlenie [Minerals in the Arctic. Acquaintance]. NGU. Geological Survey of Norway. Skipnes Communication AS. 1st edition 2016. URL: https://www.ngu.no/sites/default/files/Mineral_Resources_Artic_Russian_screen.pdf (accessed 20 July 2022).

- assessment of the role of the Western Arctic in the national economy, its contribution to the economic development of the country on the basis of new large deposits of non-ferrous metals;
- monitoring of the socio-economic development of the western part of the Russian Arctic, analysis of the dynamics of the strategic minerals exploitation;
- achieving access through the long-term opening of Arctic shipping lanes, combined with wide access to ice-class container ships and nuclear-powered icebreakers.

Preparation of non-ferrous metal deposits for development and construction of the infrastructure necessary for the extraction and transportation of ores is the result of the search, evaluation and exploration of deposit reserves, which prove the profitability of the development of mineral resources in the Arctic. Non-ferrous metal deposits in areas with logistical challenges must have high grades of the useful component in the ore or large reserves in order to attract significant investment from domestic and foreign investors.

Table 1

Solid mineral resources of the Arctic [10, Kondratiev V.B.]⁴

Country	Resorces
Denmark (Greenland)	Gold, molybdenum, nickel, platinum group elements, rare earth metals (tantalum, niobium)
Canada	Diamonds, gold, gypsum, iron ore, lead, uranium, zinc
USA (Alaska)	Zinc (67 Mt), Lead (67.6 Mt)
Sweden	Iron ore (2413 Mt)
Norway	Iron ore (1000 Mt)
Russia	Apatite, ceramic raw materials, coal, cobalt, copper, diamonds, gold, gypsum, iron ore, molybdenum, nickel, palladium, platinum, silver, precious stones, rare earth metals, tin, titanium, zinc. The total value of reserves is 1.5–2 trillion dollars.

Figure 1 shows the scheme of spatial organization of lead-zinc deposits development in the western part of the Arctic zone of Russia.

Regional space	Deposits of Novaya Zemlya and Polar Urals
Maritime territories Arkhangelsk Oblast, Nenets Autonomous Okrug, Yamalo-Nenets Autonomous Okrug	Existing and planned infrastructure (marine communications)
Water areas Barents Sea, Pechora Sea, Kara Sea	Shipping points Offshore transshipment complexes of the Barents Sea Fleet Container ships, bulk carriers, auxiliary vessels, icebreakers Port complexes Murmansk, Arkhangelsk, Amderma, "Port on Novaya Zemlya" and "Indiga" under construction

Fig. 1. Scheme of spatial organization of lead-zinc deposits development in the western part of the Arctic zone of Russia.

⁴ Source: URL: <https://mining-media.ru/ru/article/newtech/15541-mineralnye-resursy-i-budushchee-arktiki> (accessed 20 July 2022).

Prerequisites and constraints for effective development of non-ferrous metal ores and spatial organization of the national economy in the western part of the Arctic zone of Russia

In recent years, Russia has restored the system of strategic planning, defined plans for spatial and economic development of the state, including the Arctic territories with deposits of non-ferrous metals. Development of the Arctic territories is envisaged by state documents that determine the intensification of the development of the Northern Sea Route as an international maritime communication and transit corridor to the countries of the Asia-Pacific region. The Northern Sea Route is of great importance for coastal areas that have access to the Arctic shoreline with a long coastline and poorly developed land communications. The role of sea routes connection to river waterways and railways for transportation of ores and ore concentrates of non-ferrous metals is significant. The problems of spatial development of sea communications for the extraction of non-ferrous metal ores consist in the necessity of building new sea ports and reconstruction of the existing ones, construction of ice-resistant container ships, installation of modern navigation equipment along the Northern Sea Route [17, Belov S.V., Skripnichenko V.A.].

The main problems of creating the Arctic marine communications are the following:

- negative temperatures prevail throughout the year, the sea level changes in the tidal zone, sea ice and icebergs on the routes complicate the situation; when carrying out prospecting and exploration work, developing deposits and transporting ores, hydrometeorological monitoring of the water areas is required;
- monitoring of ore transportation should be established to avoid oil spills from transport vessels, which may cause damage to the environment;
- necessity of construction and development of winter roads in coastal areas from mining enterprises to port complexes during winter seasons;
- use of surface communications to transport ores by rail is cost-effective in the long-term development of deposits, as the construction of railways also takes a large amount of time.

Environmental risks and risks to the profitability of non-ferrous metal deposits should be taken into account.

When transporting copper-nickel ores and concentrates, the leading position is occupied by the Arctic ports, which provide year-round navigation support along the Murmansk — Dudinka route to ensure the operation of the PJSC MMC Norilsk Nickel. These actions encourage companies developing non-ferrous metal deposits to invest in the creation of a specialized fleet (Arc7 class or higher) and icebreakers [16]. The consumption of high-tech metals in the world is planned to increase several times by 2035. Huge geological reserves of non-ferrous, rare, rare-earth and precious metals, which are used in Russia or can be sold abroad, have been discovered and estimated in the Arctic. The extraction of “battery” metals is carried out at the Arctic deposits in the Murmansk Oblast, the Krasnoyarsk Krai and Yakutia [16, Belov S.V., Skripnichenko V.A.].

The prospects for the development of non-ferrous metal deposits are related to the distance to the Arctic Ocean coast and navigable rivers, which allows using water transport for cargo delivery. The spatial organization of communications in the extraction of non-ferrous metals is a combination of water, land and air routes. Efficient operation of these routes will require the construction of new port complexes, stations and airports in the Arctic region.

Copper-nickel ores with associated extraction of rare elements and platinum group metals have been mined in the Norilsk district of the Krasnoyarsk Krai for decades. Transport communications include the Dudinka port complex, sea and river vessels, railway lines, Alykel airport, airplanes and helicopters. Concentrates of non-ferrous metal ores are delivered by container ships to the port of Murmansk and to consumers in Europe, Asia and America [16]. PJSC Norilsk Nickel is one of the world's largest producers of nickel, palladium, platinum and copper. The company has a Polar branch in the Krasnoyarsk Krai, the Kola Mining and Metallurgical Company on the Kola Peninsula and assets abroad. The Polar branch includes six mines (Zapolyarnyy, Mayak, Komsomolskiy, Oktyabrskiy, Skalistyy, Taymyrskiy), one open pit (Medvezhiy Ruchey), three processing plants (Norilskaya, Talnakhskaya, Aglomeratsionnaya), three metallurgical plants (Mednyy, Nikelevyy, Nadezhda), one refinery (Krasnoyarsk), three gas fields (Pelyatka, Solenoe, Messoyakha), one HPP (Khantayskaya). The Kola Mining and Metallurgical Company unites three mines (Tsentralnyy, Severnyy-Glubokiy, Kaula-Kotselvaara), the Zapolyarnaya processing plant, a roasting plant in Pechenga, a refinery in Monchegorsk, and a smelter in Nikel. Dudinka is the largest port in Siberia; it has received the status of an international port. The port is year-round connected by sea with the ports in Murmansk and Arkhangelsk; in the summer, there is a river connection with the ports of Krasnoyarsk and Dikson. Year-round railway and road communication are established between the port of Dudinka and the city of Norilsk, as well as the Alykel airport [17, Tarkhov S.A.].

The Pavlovskoe lead-zinc deposit was discovered on the Novaya Zemlya archipelago in the Arkhangelsk Oblast. Ore reserves at the deposit are protected by the State Reserves Commission, and a business plan for the mining and processing plant has been approved. The port complex is planned to be built in the bay of the Bezymyannaya River, which flows into the Barents Sea. It is planned to transport zinc and lead concentrates by sea to Europe in the west and to Asia-Pacific in the east. In the Yamal-Nenets Autonomous Okrug in the Polar Urals, the Saureyskoe lead-zinc deposit [18, Kontar E.S.], the Ray-Iz chromite deposit [19, Markov V.E., Karelina E.V., Emsigarrell D.Sh.], the Novogodnee-Monto gold deposit [20, Kuznetsov V.I., Pryamonosov A.P., Grigoriev V.V.] are known. The listed deposits are located away from the sea coast and navigable rivers. In order to develop the Saureyskoe deposit, a motorway to the railway should be provided. In the Soviet period, lead-zinc ores were mined underground on Vaygach Island, the deposits of which have been mothballed. The port of Varnek is in the southern part of Vaygach Island, near the Yugorskiy Shar Strait.

In the western part of the Arctic, the Pizhemsкое placer titanium deposit in the north of the Komi Republic [21, Ponaryadov A.V.], chromite deposits of the Polar Urals, Karelia and the Kola

Peninsula are promising for development. Over the past 12 years, from 2008 to 2020, the following achievements have been made in the development of the Arctic zone [22, Zhuravel V.P.]:

- maritime transport along the Northern Sea Route has increased substantially in volume, from 1.9 million tons in 2006 to 26 million tons in 2019;
- the reason for the increase in the number of sea transportations is active development of mineral deposits: liquefied natural gas, oil, copper-nickel ores and coal. An insignificant volume of shipping is accounted for by Northern Delivery and international transit traffic;
- new domestic icebreakers are being built;
- the natural environment of the Arctic is being protected and the ecological consequences of economic activity in the USSR are being eliminated. Since 2012, more than 80.000 tons of hazardous waste have been removed from the Russian Arctic. In 2009, the Russian Arctic National Park started functioning on Novaya Zemlya, which is visited by tourists and students;
- development of the Arctic zone of Russia implies the national security of the northern borders of the country. Since 2012, 475 military facilities, 9 new military bases have been built in the Arctic, 16 deep-water ports have been reconstructed and 13 airfields have been restored;
- in 2019, S-400 air defense missile systems were deployed on Novaya Zemlya, and a continuous field with Container radar stations along the country's Arctic borders is planned to be created;
- in 2035, the volume of traffic along the Northern Sea Route should reach 160 million tons. The development of sea, river, land and air transport communications, the modernization of telecommunications infrastructure should ensure a high level of well-being in the Arctic [16].

The economic development of solid minerals depends on current (traditional) and prospective (new) trends (Table 2).

Table 2

Trends in the development of mineral resources in the Arctic region

Traditional	New
Increasing the production costs of non-ferrous metal ores of Arctic deposits	Start of development of new lead-zinc deposits in the Paykhoy-Novozemelsk region
Demand stagnation of traditional consumers of non-ferrous metal ores in Europe	Significant growth in demand for non-ferrous metal ores in the Asia-Pacific region

There is an increase in the cost of mining non-ferrous metal ores in the Arctic deposits and a decline in demand among consumers of non-ferrous metal ores in Europe. It is necessary to plan production at new lead-zinc deposits in the Paykhoy–Novozemelsk region in the context of global warming with a significant increase in demand for non-ferrous metal ores in the countries of the Asia-Pacific region.

Degree of dependence of the spatial organization of solid minerals development in the western part of the Arctic zone of Russia on pricing environment and demand

Transport remoteness of the Arctic deposits of non-ferrous metals from consumers is the main obstacle to strengthening the competitive economic position of Russia in the non-ferrous metal markets in Europe and the Asia-Pacific region. International flows of ore and concentrates to China, Korea and Japan have increased due to growing demand for solid minerals from Asian countries.

Between 2000 and 2019, the growth of transported volumes amounted to 109%: from 50.0 million tons to 104.3 million tons. There was a significant increase in demand for raw materials for batteries that use non-ferrous and rare metals. Production of lithium, gallium and cobalt increased several times between 2000 and 2018. China ranks first in imports of zinc ore, as the construction of infrastructure facilities increases demand for galvanized steel. South Korea is a large consumer of zinc with ore imports of 2.07 million tonnes in 2019, accounting for 16.7% of the global share. Japan is one of the leading importers of zinc concentrate [23, Rastyannikova E.V.].

Lead is needed in the manufacture of batteries, in radiation protection devices at X-ray facilities, in the protection system of nuclear reactors, and for containers during the transportation of radioactive materials. Russian exports of lead concentrate to China in 2019 increased by 30% compared to the previous year, 368 thousand tons were sold to China, which is the world leader in the production of refined lead, accounting for about 50% of the produced metal. The Republic of Korea is increasing imports of lead ores and concentrates, with raw material purchases increasing by 8% in 2015–2019. In Japan, the import of lead ore temporarily decreased by 1% per year, dropping to 132 thousand tons, or 3.9% of the world import [23, Rastyannikova E.V.].

The system of maritime transport communications in the Western Arctic is currently poorly developed. Of the nine ports in the Western Arctic, only Murmansk, Sabetta and Dudinka have access to large-tonnage tankers with deadweight over 45.000 tons. Rapidly developing countries (China, the Republic of Korea, Japan) are interested in importing non-ferrous metal ores, which can be mined in the Russian Arctic and delivered via the Northern Sea Route to the Asia-Pacific countries [23, Rastyannikova E.V.].

Directions of modernization of spatial organization in the development of solid mineral deposits on the basis of conjugation of communications in the western part of the Arctic zone of Russia

There are seventeen seaports in the Polar region of the country. Ports are divided into four groups according to their importance. The first group includes ports with railway communications: Murmansk, Vitino, Kandalaksha, Onega and Arkhangelsk. The second group is represented by ports served by specific mining companies. The port of Varandey operates for the Lukoil oil company, and the port of Dudinka serves the Norilsk Nickel company. The third group of ports has no railway lines: Mezen, Naryan-Mar, Amderma, Sabetta, Dikson, Khatanga, Tiksi, Anadyr, Pevek, Egvekinot, Beringovskiy, Provideniya. The fourth group includes the projected port on Novaya Zemlya in the Bezymyannaya Bay near the Pavlovskoe lead-zinc deposit and the projected port of

Indiga on the Northern Timan in the Nenets Autonomous Okrug [24, Botnaryuk M.V.].

The deep-sea port of Indiga, which is under construction, is promising, provided that a railway is built through the Nenets Autonomous Okrug and the Komi Republic. The location of this port near numerous non-ferrous metal ore fields in the Northern Timan may provide an opportunity for their additional exploration and development. Coal and oil terminals, a liquefied natural gas terminal, a transshipment complex and specialized berths are planned in the port. The construction of the Indiga–Sosnogorsk railway line, 612 km long, will connect the port with the Vorkuta–Moscow Northern Railway. The Pechora coal basin has significant potential due to its favorable geographical location and competitive advantages. The railway from Konosha to Vorkuta was built at the beginning of the Great Patriotic War in record time using the labor of Gulag prisoners. The railway has been used to transport high-quality Vorkuta coal since the 1940s to the present. The projected railroad Vorkuta–Ust-Kara (Ust-Kara is a small seaport on the Kara Sea) is important for the development of coal deposits in the Vorkutinskoe, Khalmeryuskoe, Korotaikhinskoe and Karskoe coal fields.

The seaport under construction on Novaya Zemlya is linked to the Pavlovskoe field development project, signed by the government of the Arkhangelsk Oblast and enterprises of the State Corporation Rosatom – Atomredmetzoloto and JSC First Mining Company in 2019. More than 800 jobs will be created in the Arkhangelsk Oblast to recruit workers for the mining company and the port complex, an additional “front of work” will be created for many enterprises in the region. Tax revenues to the Arkhangelsk Oblast budget will be at least 1 billion rubles a year.

It is planned to deliver the necessary building materials, mining equipment, mining mechanisms for the construction of a mining plant, a processing plant and a port complex, as well as to transport the finished products of the mining and processing plant: silver-containing lead and zinc concentrates. It is necessary to organize rotational shifts for the mining and processing plant; delivery of materials to support the plant's operations at the deposit as well as fuel and vehicles is envisaged; food delivery is planned.

The construction of the port complex is determined by the depths of the water area for the means of cargo delivery and technological safety requirements. The port terminal will be built at a distance of 15–18 km from the mining and processing plant [25, Belov S.V., Skripnichenko V.A.].

The port complex includes an approach fairway and water area with the necessary navigational equipment; a berth for a transshipment complex for ore concentrates is provided; transshipment of heterogeneous cargoes is planned; power lines, water treatment system, conduit; roads, road bridge across the Britvinka River. The coastline in the area of the planned port complex is difficult for the placement of onshore transport communications. The Novaya Zemlya archipelago is characterized by harsh conditions with long winters, winds and snowstorms. The port complex is to be built in an undeveloped area of the archipelago. The construction conditions are very difficult, characterized by the presence of permafrost. Care must be taken with the technology impact on highly sensitive tundra surfaces.

The process of modernization of the Arctic transport system is a complex technological task, the main focus of which is the profitable development of deposits and transportation of non-ferrous metal ores.

Impact of spatial organization in the development of lead-zinc ore deposits on national economic development in the western part of the Arctic zone of Russia

The Pavlovskoe lead-zinc deposit has been prepared for development by the JSC First Mining Company. Design of the mining company started in 2019; lead and zinc were not mined within the Arctic zone of Russia.

The Saureyskoe deposit of lead and zinc is located in the Polar Urals within the Yamalo-Nenets Autonomous Okrug. The development of the deposit is not carried out yet.

The Amderminskoe lead-zinc-fluorite deposit is located on the coast of the Kara Sea in the Northern Pay-Khoy near the village of Amderma within the Nenets Autonomous Okrug. Fluorite was mined from 1932 to 1951 and is currently mothballed. The ores are represented by fluorite, sphalerite, galena and pyrite. The zinc content in the ores ranges from 0.33 to 1.11%, the lead content is 0.2%. At a depth of 100 m, the concentration of lead and zinc in the ore increases in total to 1.5%. Lead-zinc resources have not been determined.

Lead-zinc deposits were discovered on Vaygach Island, where ore was mined from 1931 to 1934. Ore fields of lead and zinc have been discovered in the Northern Timan. Additional exploration is required in the above areas. These ore fields will be of interest to industry in case of construction of railways and highways in the ports of Indiga, Amderma and Ust-Kara, which are being designed and reconstructed.

The development of lead and zinc ore deposits in the Arctic territories is a new direction for the Russian extractive industries. Transportation of cargoes and mined ore from the Pavlovskoe deposit in Novaya Zemlya, Saureyskoe and Amderminskoe deposits in the Polar Urals has not been started. One of the problems is to ensure the regional security of Russia in the struggle for control over the mineral resources of the Arctic.

The Pavlovskoe deposit is located on Novaya Zemlya, Arkhangelsk Oblast, in the northwest of the Yuzhnyy Island of the archipelago, 16–17 km to the east of the mouth of the Bezymyannaya River within the Bezymyanskiy polymetallic minerogenic cluster. In 2020, exploration work was carried out to assess mineral resources in accordance with the JORC code and engineering surveys were carried out as part of the Pre-Feasibility study. Repeated public hearings on the environmental impact assessment were carried out. In 2021, the Pavlovskoe project was included in the list of projects planned for implementation in the Arctic zone of Russia. The conclusion of the ecological expertise for the construction of the mining and processing plant and the port complex was received.

As of February 2021, the resources of Pavlovskoe are estimated at 55 million tons with average zinc content of 4%, metal resources: zinc — 2 million tons, lead — 430 thousand tons, silver — 30.3 million ounces. Such an assessment of mineral resources confirms the status of Pavlovskoe

as the country's largest zinc deposit among new projects [17]. The drilling program has provided a sufficient degree of confidence in the mineral resource estimate in the open pit area. Geotechnical drilling with core orientation was carried out. The resource estimate for the Pavlovskoe deposit is based on open pit contour optimization with a forecast price of \$3145/t for zinc, \$2176/t for lead, and \$30/oz for silver. Zinc recovery is planned at 90%, lead extraction — at 53%, silver recovery into lead concentrate — 33%. The average content of zinc is 6.32%, lead — 1.26%, silver — 42.57 g/t, with a cut-off content of conventional zinc of 2%.

The Pavlovskoe investment project is aimed at the efficient development of a lead-zinc deposit. A mining enterprise will be created at the deposit to extract and process 3.5 million tons of ore per year. Products are two types of concentrate: 1) lead concentrate with silver content; 2) zinc concentrate. The annual production of concentrates on average will be the following: zinc — 260 thousand tons per year, lead concentrate with silver content — 67 thousand tons per year. It is planned to build berthing facilities 20 km from the processing plant to load containers with concentrates on container ships. The mining enterprise includes an open pit, a processing plant, a tailing dump, a 30 MW liquefied natural gas power plant, a shift camp, storage infrastructure and other facilities. The deposit is supposed to be developed on a rotational basis all the year round. The number of personnel is 436 employees. The development period is up to 14 years.

The project implementation strategy envisages construction works at the field facilities. Design and survey works include research and development of the project for construction of the mining and processing plant, necessary approvals and examinations of project documentation; development of working documentation for the construction of the MPP. Currently, as a result of unfriendly relations between Russia and the countries of Northern Europe, it is necessary to consider options for planning priority directions for the delivery of lead-zinc ores of the Pavlovskoe deposit to the countries of the Asia-Pacific region. Competitive sales of lead-zinc ores can be achieved on these routes using a combination of supply and demand options from potential buyers.

Conclusion

The spatial organization of communications during the development of solid minerals of the resource base in the western part of the Arctic zone of Russia has been determined. Numerous deposits of solid minerals are located in the Western Arctic. The development of non-ferrous metal deposits, taking into account the requirements of rational nature management, is the basis for the creation of mineral resource centers. An important task is to substantiate the necessary conditions for the development of water, land and air communications, technological and human potential, obtaining economic benefits from the use of communications, mineral resources and spaces of the western part of the Russian Arctic in the interests of ensuring national security, developing the economy, improving the welfare of citizens of the Russian Federation. The information framework is based on the experience of developing lead-zinc ore deposits in the Arctic.

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Challenges and Opportunities for the Development of Single-Industry Towns in the Russian Arctic

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Abstract. Broad context of the dynamics and prospects of Russian Arctic development within the framework of achieving its strategic objectives indicates the magnitude of the tasks, the solution of which consists in the actualization of, firstly, the risks and opportunities for environmental and social responsibility of vertically integrated companies, whose production branches conduct their activities in the Arctic, and, secondly, the supportive role of the state as the regulator of conditions for the development of business initiatives. The aims of the study are to identify significant factors that influence the dynamics of socio-economic development and to determine the prospects for the development of single-industry towns in the Russian Arctic. Research methods include bibliographical, comparative, economic and statistical analysis. The study substantiates the critical factors limiting the development opportunities of single-industry towns in the Russian Arctic. The first group is represented by the state of mineral resource base, which determines natural limits and cyclicity of production activities of city-forming enterprises. The second group is the global crisis phenomena, producing the dependence of production of city-forming enterprises on the external conjuncture of prices for raw materials and main export items. The third group includes risks of fulfilment of budgetary obligations. Taken together, these factors limit the opportunities for economic diversification of single-industry towns in the Russian Arctic and the development of entrepreneurial activity there. It has been revealed that the promising opportunities for the development of single-industry towns in the Russian Arctic are limited by the priority areas of investment activities of vertically integrated companies and imperfect state instruments of development support. The practical significance of the study is determined by the current trajectory of territorial development within the framework of the global strategy for sustainable development of extractive industries of a city-forming nature that takes into account not only risks, but also opportunities.

Keywords: *single-industry town, Russian Arctic, investment, budget, city-forming enterprise, unemployment, territory of advanced development, crisis*

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Introduction

The specificity of industry in the Russian Arctic has a city-forming significance: most towns were built near the sites of mineral resource development, and resource-producing enterprises have become town-forming. A single-industry town is understood as the territory of a particular

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municipality (urban district), where most of the production processes are aimed at aimed at resource extraction. The objects of our study are the towns of Novyy Urengoy, Noyabrsk, Muravlenko, Gubkinskiy (Yamalo-Nenets Autonomous Okrug); Kirovsk, Olenegorsk, Monchegorsk, Kovdorskiy urban district (Murmansk Oblast); (Vorkuta) Republic of Komi; Norilsk (Krasnoyarsk Krai).

Currently, the oil and gas production of the Yamalo-Nenets Autonomous Okrug forms about 95% of the gross regional product, including intersectoral links [1, Vizhina I.A., Zolotovskaya Yu.B., p. 65] (NOVATEK accounts for 17% of gas production, 15% of oil production, 47% of gas condensate production; GAZPROM subsidiaries — 74%, 61%, 40% respectively; ROSNEFT accounts for 16% of oil production). Subsidiaries of PJSC MMC Norilsk Nickel (JSC Norilskgazprom, JSC Norilsk-Taimyr Energy Company, Polar Branch of PJSC MMC Norilsk Nickel) produce and transport gas and gas condensate. The nickel refining center of PJSC MMC Norilsk Nickel is JSC Kola Mining and Metallurgical Company (the largest production complex in the Murmansk Oblast, created on the basis of the Severonikel plant in Monchegorsk and Pechenganickel in Zapolyarnyy). JSC EuroChem MCC is the world's leading producer of mineral fertilizers: JSC Kovdorskiy MPP, which is part of it, in the city of Kovdor, is a resident of the Arctic zone of Russia. PJSC PhosAgro is Europe's largest producer of phosphorus-containing fertilizers, including the Kirovsk branch of JSC Apatit. PJSC Severstal includes JSC Olenegorsk MPP in Olenegorsk and JSC Vorkutaugol in Vorkuta. The stability of city-forming enterprises affects the sustainability of the socio-economic development of single-industry towns in the Russian Arctic. In this aspect, it is particularly relevant to consider the problems and opportunities for the diversification of the economy of single-industry towns and the development of entrepreneurial activity, as well as the identification of structural transformations in the industrial production of the regions of the Russian Arctic based on economic and statistical analysis, correlated with the identified opportunities for the development of single-industry towns in the Arctic.

Degree of development of the issue

The main aspects of research on single-industry towns in the Russian Arctic are the following: the management system for the development of the towns — tools of strategic and program-targeted management of territorial development applied at the state and municipal levels [2, Plisetskiy E.E., Malitskaya E.A., p. 85], state support [3, Knyazeva G.A., p. 103] and problems of strategic management [4, Shumilova E.B., Avdeeva E.O., Mkhitaryan S.A., p. 101]; structural policy and the specifics of the formation of territorial infrastructure [5, Gladysheva I.V., p. 86]; social problems of single-industry towns [6, Ryabova L.A. et al., pp. 34–50; 7, Zajcev D.V., pp. 31]; social responsibility of city-forming enterprises in the territories of presence and involvement of business in the work on the socio-economic development of single-industry towns [8, Dyadik V.V., Kalugina A.S., Borzykh V.N., p. 29; 9, Skufina T.R. et al., p. 1027; 10, Samarina V.P., Skufina T.P., Savon D.Yu., p. 22]; specificity of arctic single-industry towns [11, Pilyasov A.N., Putilova E.S.,

p. 10]; management of effective development of mineral resources [12, Zharov V.S., p. 60]; the impact of Arctic single-industry specificity on the environment and local communities [13, Josephson P., p. 125]; local identity of the population [14, Nedoseka E.V., Zhigunova G.V., p. 119] and migration attitudes of young people [15, Simakova A.V., p. 136]. Assessing the degree of development of the above problem, we should note the need for a critical analysis of the inconsistency of the position of the city-forming enterprises that are part of large-scale vertically integrated companies, and the territories of their presence (local communities), which, in fact, determined the relevance of the problem, the purpose and objectives of this study. The purpose of our study is to analyze the dynamics of socio-economic development (with an emphasis on periods of crisis) of single-industry towns in the Russian Arctic with further designation of the prospects for their development. The objectives of the study include an analysis of the budgetary and financial aspects of the development of single-industry towns in the Russian Arctic, indicators of infrastructure provision and the environmental situation on the basis of an economic and statistical analysis of Rosstat data and official data from local governments. The scientific novelty of the study is provided by the identified trends in the development of single-industry towns in the Russian Arctic, the conditions for the development of large business in terms of ecologization and for the socio-economic development of the territory of presence. The practical significance of the study is determined by the modern trajectory of the development of single-industry towns in the Russian Arctic within the framework of the sustainable development strategy of the extractive industries of a city-forming nature, and is confirmed by the significance of the emerging mechanism for increasing investment activity in the Arctic zone of the Russian Federation, whose essence consists not so much in the possibility of increasing capital investment, as in the role of a catalyst to solve systemic problems of the Russian Arctic single-industry towns' economy — building up new high-tech production capacities, developing infrastructure and ensuring the socio-economic growth of the territories of presence.

Economy of single-industry towns in the Russian Arctic

Single-industry towns, which appeared in the course of large-scale development of mineral and raw material resources in the 1930–1980s, occupy a special place in the settlement system of the Arctic zone of Russia. The main objects of their economy are the production branches of the oil and gas extraction and mining profile of vertically integrated companies (hereinafter referred to as VIC).

The specificity of single-industry towns of the Yamalo-Nenets Autonomous Okrug is associated with the hydrocarbon base located in Gubkinskiy, Muravlenko, Novyy Urengoy and Noyabrsk towns. They are typical arctic single-industry towns whose economy is based on industrial activity on a vast oil and gas area with dispersed hydrocarbon deposits. Thus, the production branches of Novyy Urengoy account for more than 50% of the total volume of Russian gas [16, Larchenko L.V., Kolesnikov R.A., p. 356], the share of the fuel sector of the town's

economy in total tax revenues is more than 60% [17, Kabanova I.V., p. 25]. The largest (more than 35%) share of the turnover of enterprises in Gubkinskiy falls on mining. In the Yamalo-Nenets Autonomous District as a whole, Novyy Urengoy takes the first place in the ranking of towns by turnover of organizations (143 464 million rubles in 2020), Noyabrsk — the second place (77 406 million rubles); the sphere of mining operations accounts for the largest (more than 65%) share of investment in fixed capital of organizations ¹.

In Norilsk, about 70% of the town's gross product and about 87% of industrial production are accounted for by the Polar Branch of PJSC MMC Norilsk Nickel. Industrial production is the basis for the development of a single-industry town: the share of the sector in the total volume of shipped products is about 90% (the city-forming enterprise makes the largest contribution to the total volume of shipped products). The dependence of the socio-economic development of Norilsk on the city-forming enterprise is also manifested in the investment sphere ².

The mining industry of Vorkuta is represented by the city-forming enterprise JSC Vorkutaugol, the largest coal mining company in the Russian Federation, which is part of PJSC Severstal. The coal industry of the economy of a single-industry town creates 80% of the volume of industrial production and almost 60% of its gross product.

The city-forming enterprises of Kirovsk are the branch of JSC Apatit, which develops deposits of apatite-nepheline ores, and JSC North-Western Phosphorus Company (Akron), which exploits its own phosphate deposit. The economic specialization of Monchegorsk is formed by the structural subdivision of JSC Kola MMC — the Severonickel plant (VIC production units form almost a third of the budget of the Murmansk Oblast and 40% of regional exports). The city-forming enterprise of Olenegorsk is a structural subdivision of PJSC Severstal JSC Olenegorskiy MPP, which develops deposits of ferruginous quartzites. A structural subdivision of EuroChem MCC JSC Kovdor MPP operates in the Kovdorskiy district. It is the largest producer of apatite, iron ore and baddeleyite concentrates (the annual production of baddeleyite concentrate is 100% of world production; the share in the apatite concentrate production is 18%). The share of the city-forming enterprise in the total volume of shipped goods of its own production is 94% ³.

The sustainability of the socio-economic development of single-industry towns in the Russian Arctic depends on the stability of the city-forming enterprises, which, in turn, is determined by such factors as natural and climatic conditions (reflecting, for example, on the cost of production), the cyclical nature of production activities (determined by the possibilities of the mineral resource base), the dependence of production on the external conjuncture of prices for raw materials and main export items, global crisis phenomena. Thus, the global financial crisis of

¹ The results of the socio-economic development of the city of Gubkinskiy of Yamalo-Nenets Autonomous Okrug for 2021. URL: <https://www.gubadm.ru/documents/reports/166088/> (accessed 21 May 2022).

² The results of the socio-economic development of the municipality of the city of Norilsk for 2021. URL: <http://norilsk-city.ru/docs/22661/33155/index.shtml> (accessed 04 June 2022).

³ Annual reports on the achieved values of indicators for evaluating the effectiveness of local self-governments. URL: https://kovadm.ru/social_and_economic_development/годовые-доклады-о-достигнутых-значен/ (accessed 14 September 2022).

2008 provoked a decrease in demand and prices for coal products: a decrease in the prices of coal sold by JSC Vorkutaugol and CJSC Vorgashorskaya Mine 2 (which became part of JSC Vorkutaugol in 2012) by 29.5% led to a reduction in the revenue of enterprises by 3385 million rubles (the reduction in sales of coal products amounted to 9%)⁴; the volume of tax revenues to the budget system decreased by 1.5 billion rubles. As a result of mass dismissals, the number of people registered as unemployed increased in 2008–2009 by 29% (the average number of employees at JSC Vorkutaugol decreased by 19% in 2009). In 2009–2010, the level of industrial production in Novyy Urengoy and Noyabrsk decreased by 40%; the volumes of own revenues of municipal budgets decreased by 16–18% [18, Kolesnikov R.A., Sukhova E.A., p. 121]. In 2008–2009, decrease of revenue of PJSC MMC Norilsk Nickel (by 49%) [19, Kuznetsov S.V., Zamyatina M.F., Fesenko R.S., p. 92] led to a decrease (by 2 times⁵) in the volume of capital investments. The result of the decline in metal prices was a reduction in tax revenues, a decrease in budget revenues for single-industry towns. Significant local budget deficit in 2008–2009 was formed in Norilsk, Novyy Urengoy, Monchegorsk, Kovdorskiy district (Table 1).

Table 1

Budget surplus/deficit of single-industry towns in the Russian Arctic, million rubles⁶

Single-industry town	2007	2008	2009	2013	2014	2015	2019	2020
Gubkinskiy	52.9	-69.1	44.3	55.6	-105.3	-49.4	1.2	299.3
Novyy Urengoy	928.2	-278.5	-593.7	-799.3	-648.7	-171.4	681.8	1026.5
Noyabrsk	103.2	131.4	286.2	-250.1	-90.7	23.0	68.2	86.5
Muravlenko	3.6	28.2	25.6	-105.8	-28.4	93.4	7.0	199.2
Vorkuta	94.1	236.1	216.2	104.5	-343.4	-132.1	-104.3	-50.9
Norilsk	1552.6	-977.6	-2011.0	-798.7	1241.3	561.7	1377.2	1113.2
Kirovsk	61.2	-40.6	27.5	-75.3	-47.2	-12.9	-104.4	-93.6
Monchegorsk	389.9	-279.3	-277.8	-88.8	-186.9	-246.9	-2.8	-14.3
Olenegorsk	-8.4	-60.6	-74.9	-8.9	-137.7	-151.1	-4.9	22.8
Kovdorskiy district	-13.8	-7.0	-215.7	-66.5	-35.7	-0.2	5.8	5.7

The lowest share of tax and non-tax revenues of local budgets in the total volume of own revenues (Table 2) was formed in the single-industry towns of Muravlenko, Gubkinskiy, Noyabrsk; a significant growth in this indicator was in 2009-2020 in the towns of Kirovsk and Monchegorsk.

⁴ Comprehensive investment plan for the single-industry city of Vorkuta for 2010 and for the period up to 2020. URL: http://xn--80adykng.xn--p1ai/city_council/third_convocation/368/ (accessed 18 May 2021).

⁵ Norilsk monotown modernization plan. URL: http://econ.krskstate.ru/dat/bin/art_attach/1730_kompleksnij_investicionnij_plan_modernizacii_monogoroda_norilkska.pdf. (accessed 14 April 2021).

⁶ Database of indicators of municipalities. URL: <https://rosstat.gov.ru/storage/mediabank/Munst.htm> (accessed 04 June 2022).

Table 2

The share of tax and non-tax revenues of the local budget in the total volume of own revenues of the budgets of single-industry towns in the Russian Arctic, million rubles⁷

Single-industry town	2009	2013	2014	2015	2019	2020
Gubkinskiy	n/d	33.4	35.3	31.7	20.5	17.8
Novyy Urengoy	n/d	73.9	71.0	75.0	47.4	47.0
Noyabrsk	n/d	36.3	49.6	42.8	28.0	24.0
Muravlenko	n/d	20.8	21.9	24.0	13.6	11.9
Vorkuta	37.0	48.0	57.0	53.0	42.1	37.8
Norilsk	79.0	75.0	72.0	55.0	68.0	85.7
Kirovsk	43.9	86.0	92.2	88.7	69.0	74.0
Monchegorsk	38.7	60.3	86.7	85.4	67.3	62.0
Olenegorsk	48.0	65.4	54.4	84.6	48.0	39.9
Kovdorskiy district	39.8	60.9	68.8	71.8	63.9	38.0

Today, single-industry towns in the Yamalo-Nenets Autonomous Okrug continue to reduce the volume of personal income tax revenues from city-forming enterprises. In particular, in Muravlenko, this trend is caused by the restructuring of JSC Gazpromneft-NNG (in 2020, personal income tax payments of the enterprise to the local budget decreased by 14% compared to 2019⁸).

Global financial crises have a negative impact on the investment activity of city-forming enterprises, which depends on the prices of raw materials and the state of hydrocarbon markets. For example, in terms of the volume of investments in fixed capital at the expense of local budgets (Table 3), in the pre-crisis 2007, the leaders were Norilsk, Novyy Urengoy and Noyabrsk; in 2007–2009, the volume of investments in fixed assets in Novyy Urengoy decreased by 33 times, in Norilsk — by 6.8 times, in Noyabrsk — by 3 times.

Table 3

Fixed capital investments at the expense of municipal budgets of single-industry towns in the Russian Arctic, million rubles⁹

Single-industry town	2007	2008	2009	2013	2014	2015	2019	2020
Gubkinskiy	221.8	41.5	128.6	116.6	113.7	62.5	792.0	1492.4
Novyy Urengoy	745.4	583.8	22.5	333.6	267.4	150.8	230.4	406.8
Noyabrsk	709.2	398.5	239.5	605.4	119.4	804.3	363.3	550.7
Muravlenko	215.8	717.8	n/d	748.9	584.7	18.4	41.6	99.5
Vorkuta	8.6	40.7	68.1	122.3	251.3	43.4	26.8	18.7
Norilsk	1517.5	702.7	221.8	138.7	384.2	1015.7	643.2	957.4
Kirovsk	30.1	70.0	66.7	57.8	55.8	47.3	67.6	99.5
Monchegorsk	76.5	123.1	254.3	52.6	35.1	106.9	24.0	56.4
Olenegorsk	59.3	64.8	84.0	68.6	13.5	13.9	44.4	23.8
Kovdorskiy district	26.6	44.4	15.3	66.6	94.0	4195.1	5.4	7.9

⁷ No data for 2007–2008. Source: Municipality Indicators Database. URL: <https://rosstat.gov.ru/storage/mediabank/Munst.htm> (accessed 04 June 2022).

⁸ About the report of the Head of the city of Muravlenko on the results of his activities and the activities of the Administration of the city of Muravlenko in 2020. URL: <https://muravlenko.yanao.ru/documents/reports/> (accessed 11 August 2022).

⁹ Database of indicators of municipalities. URL: <https://rosstat.gov.ru/storage/mediabank/Munst.htm> (accessed 04 June 2022).

Price environment on global markets in 2015 was unfavorable for Russian exporters: average annual world prices for nickel decreased by 29.8% against 2014, for copper — by 19.8%; the growth rate of average annual dollar exchange rate in 2014-2015 amounted to 158.9%. Nevertheless, ruble depreciation provoked revenue growth at the Polar Division of PJSC MMC Norilsk Nickel (in rubles) and improved the financial and economic indicators of the company (in 2015, metallurgical production and finished products output amounted to 16.2%)¹⁰.

In general, the dynamics of investment in fixed capital in the single-industry towns of the Russian Arctic is undulating, since VIC forms a significant share in the structure of this indicator: the leading positions by the volume of investment in fixed capital in the Russian Arctic are occupied by Norilsk, Novyy Urengoy, Noyabrsk, Kirovsk, Kovdorskiy district (Table 4). Such situation is determined by the varying degree of intensity of implementation of major investment projects of city-forming enterprises of the Russian Arctic single-industry towns.

Table 4

Investments in fixed assets made by organizations (excluding small businesses), located in single-industry towns of the Russian Arctic, million rubles¹¹

Single-industry town	2009	2013	2014	2015	2019	2020
Gubkinskiy	1991.5	2232.0	3297.4	2579.4	5097.2	5752.1
Novyy Urengoy	17477.3	61313.5	62780.4	100047.3	42292.8	37589.4
Noyabrsk	8838.4	11000.6	6280.1	7944.7	21416.6	30608.0
Muravlenko	1067.4	4017.9	1438.0	2563.4	1656.0	1276.7
Vorkuta	2641.8	42749.5	22275.8	21703.6	7105.9	9060.8
Norilsk	16911.5	43053.9	44757.5	74394.3	57877.3	89079.2
Kirovsk	4868.8	17343.6	12674.6	13906.9	17682.6	20605.4
Monchegorsk	1092.5	1699.2	2929.9	6804.5	9511.3	8124.3
Olenegorsk	520.7	1911.2	2117.4	1357.1	3562.2	2062.9
Kovdorskiy district	854.7	4897.7	4200.1	4195.1	9363.0	14426.9

The majority of investments in Norilsk are in the development and modernization of industrial production and environmental safety. In Novyy Urengoy, the share of the fuel and energy complex in investments in fixed assets is 79%. In Kirovsk, the value and dynamics of investment in fixed capital is determined by the branch of JSC Apatit and JSC NWPC: in 2020, the total investment of city-forming enterprises amounted to 79.4% of the total investment in fixed capital¹². In the Kovdorskiy district, 98% of investments are the funds of OJSC EuroChem MCC and JSC Kovdorsky MPP. JSC Alkon accounts for 90% of investments in Olenegorsk.

The global crisis phenomena and the dependence of production activities of city-forming enterprises on the external conjuncture of prices for raw materials and the main export items

¹⁰ The results of the socio-economic development of the municipality of the city of Norilsk for 2015. URL: http://norilsk-city.ru/files/22661/33155/itogi_ser_zh_2015_god.docx (accessed 07 August 2022).

¹¹ No data for 2007–2008. Source: Municipality Indicators Database. URL: <https://rosstat.gov.ru/storage/mediabank/Munst.htm> (accessed 04 June 2022).

¹² Forecast of the socio-economic development of the municipality of the city of Kirovsk with its subordinate territory for 2021 and the planning period of 2022-2023. URL: https://kirovsk.ru/administraciya/structure/oer/prognoz_ser/ (accessed 21 May 2021).

have a negative impact (Table 5) on the labor markets of single-industry towns in the Russian Arctic [20, Kotov A.V., p. 49].

Table 5
*Rate of registered unemployment in single-industry towns of the Russian Arctic, %, 2010–2020*¹³

Single-industry town	2007	2008	2009	2013	2014	2015	2019	2020	2021
Gubkinskiy	1.2	0.7	1.2	0.5	0.4	0.6	0.4	1.0	0.4
Novyy Urengoy	1.9	n/d	1.9	0.4	0.4	0.6	0.3	1.9	0.3
Noyabrsk	1.8	2.4	1.9	0.3	0.5	1.1	0.7	3.3	1.3
Muravlenko	n/d	3.7	2.6	0.9	0.9	1.1	0.7	1.9	0.9
Vorkuta	2.9	2.6	3.4	1.0	1.0	1.3	1.5	1.8	1.2
Norilsk	2.4	1.4	1.8	0.9	0.9	0.8	0.6	1.7	1.4
Kirovsk	5.1	3.7	4.8	2.4	3.1	4.4	2.4	2.6	1.7
Monchegorsk	5.4	3.5	5.1	2.1	2.2	2.7	2.2	2.5	1.7
Olenegorsk	2.7	2.8	4.3	1.4	1.6	1.9	1.7	2.3	1.9
Kovdorskiy district	5.3	4.1	5.7	3.5	3.3	3.9	2.3	2.8	1.8

In particular, in 2008–2009, the rate of registered unemployment in the town of Gubkinskiy increased by 71%, in Olenegorsk — by 53%, in Monchegorsk — by 46%; in 2014–2015, the level of registered unemployment in Noyabrsk increased by 120%, in Kirovsk — by 42%. In order to prevent a critical unemployment situation during crisis periods, regional executive authorities implemented additional measures aimed at reducing social tension in the territorial labor markets, including advanced vocational training for employees of city-forming enterprises at risk of dismissal, organization of public works and temporary employment, development of entrepreneurial initiatives. These timely measures made it possible to slow down the growth of unemployment and ultimately bring this indicator to pre-crisis levels.

The spread of the COVID-19 negatively affected the situation with unemployment in the single-industry towns of the Russian Arctic: due to the introduction of restrictive measures aimed at ensuring the sanitary and epidemiological welfare of the population, the dynamics of unemployment worsened. In all the single-industry towns under consideration, there was a significant increase in the registered unemployment rate (growth peaks in May and June 2020). However, in the pandemic context, the situation on the labor markets in the single-industry towns of the Russian Arctic in 2020 remained under control¹⁴ due to the implementation of measures to create temporary jobs; in 2021, the single-industry towns reached the pre-pandemic level of registered unemployment (Table 5).

¹³ Sources: Interactive portal of the employment service of the Murmansk Oblast. URL: <https://murman-zan.ru>; Interactive portal of the employment service of the Yamalo-Nenets Autonomous Okrug. URL: <https://rabota.yanao.ru>; Interactive portal of the employment service of the Republic of Komi. URL: <https://komitrud.rkomi.ru>; Interactive portal of the agency of labor and employment of the population of the Krasnoyarsk Krai. URL: <https://trud.krskstate.ru> (accessed 12 June 2022); Municipal formations of the Murmansk Oblast / Federal State Statistics Service, Territorial body of the Federal State Statistics Service for the Murmansk Oblast. Murmansk, 2011. 194 p.; Statistical and socio-economic indicators. URL: <https://www.norilsk-city.ru/docs/22661/33169/index.shtml> (accessed 05 June 2022).

¹⁴ Brief analysis of the situation on the labor market for 2020. URL: <https://murman-zan.ru/News/Detail/7203e3c8-aff0-47bf-8091-27873302e5ff> (accessed 17 March 2021).

Infrastructure provision of single-industry towns in the Russian Arctic

The current state of most of the infrastructure facilities of single-industry towns in the Russian Arctic does not allow creating conditions for sustainable territorial socio-economic development, including comfortable life. The most important factor in ensuring the stability of city-forming enterprises and, accordingly, the sustainable socio-economic development of single-industry towns in the Russian Arctic is infrastructure provision [21, Novokshonova E.N., p. 144], including transport accessibility and housing and communal services. Thus, typical for the Russian Arctic lack of transport routes narrows the choice of profitable ways of transporting goods: the limited and low quality of transport infrastructure facilities actually stop the increase in production volumes due to colossal transport costs [5, Gladysheva I.V., p. 81]. The length of roads in the Arctic regions of Russia is 0.6% of the total length of the road network of the Arctic zone of the Russian Federation (only 79.5% are paved); more than half of public roads do not meet the standards of the technical and operational condition [22, Serova N.A., Serova V.A., p. 51]. According to Rosstat¹⁵, in Kirovsk, the share of the length of public roads of local importance that do not meet the relevant standards is 43% of the total length of such roads, in Olenegorsk — 54.3%, in Monchegorsk — 78.6%; in Vorkuta — 63.1%; in Norilsk — 30.1%; in Novyy Urengoy — 0.6%, in Muravlenko — 11%, in Gubkinskiy — 22.6%, in Noyabrsk — 44.4%.

The most acute problem of single-industry towns in the Russian Arctic is the problem of providing modern housing and communal infrastructure facilities. The uncomfortable urban space is evidenced by dilapidated and emergency housing, a low level of social and engineering facilities, high wear and tear of municipal water supply systems, a high proportion of inefficient heating with low loads and remote fuel delivery. Thus, due to the closure of mines in Vorkuta, the share of vacant housing was 40% of the total municipal housing stock; at the same time, the annual costs of paying for heating and maintaining the empty housing stock amount to 580 million rubles. Depreciation of the engineering infrastructure (Usinskiy water pipeline of Vorkuta) is 95%¹⁶. In Norilsk, physical depreciation of housing is 50%, 33% of residential buildings are under special control (for the condition of load-bearing structures and soil)¹⁷. In Gubkinskiy, 43% of the housing stock is in disrepair.

The threat to epidemiological safety is the current state of heat, water and sewerage systems in permafrost conditions [23, Kutsenko S.Yu. et al., p. 10]. In Gubkinskiy, only 10% of the road network is provided with storm water drain; more than 30% of the total length of the main

¹⁵ Database of indicators of municipalities. URL: <https://rosstat.gov.ru/storage/mediabank/Munst.htm> (accessed 04 June 2022).

¹⁶ Plan for the further development of single-industry municipalities — urban districts of Vorkuta and Inta. URL: https://econom.rkomi.ru/uploads/documents/proekt_plana_razvitiya_vorkuti_i_inti_pdf_2020-02-07_02-24-03.pdf (accessed 17 August 2022).

¹⁷ Vlasti Krasnoyarskogo kraja: iznos zhil'ya v Noril'ske priblizhaetsya k 50% [Authorities of the Krasnoyarsk Krai: depreciation of housing in Norilsk is approaching 50%]. URL: <https://www.kommersant.ru/doc/4530638> (accessed 14 May 2021).

drain in Norilsk is in dilapidated or emergency condition¹⁸. In 2009–2020, the length of heating networks in need of replacement increased by 8.2 times in Kirovsk (Table 6), in Gubkinskiy — by 6 times, in Novyy Urengoy — by 3 times, in Olenegorsk — by 1.7 times. The length of the street water supply network in need of replacement in Vorkuta increased 4 times, in Norilsk — 2.3 times; the length of the street sewage network in need of replacement: in Norilsk — 6.4 times, in Novyy Urengoy — 4.7 times.

Table 6
Main indicators of infrastructure provision of single-industry towns in the Russian Arctic, 2009, 2020¹⁹

Single-industry town		Length of two-pipe heat and steam networks in need of replacement, km	Street water network in need of replacement, km	Length of street sewerage network in need of replacement, km	Number of families registered as being in need of housing at the end of the year
Gubkinskiy	2009	2.3	0.5	0.5	418
	2020	14.3	3.4	0.6	604
Novyy Urengoy	2009	29.0	2.6	1.0	1153
	2020	97.0	1.1	4.7	1350
Noyabrsk	2009	148.0	36.3	n/d	1627
	2020	153.9	7.0	11.1	2478
Muravlenko	2009	58.4	27.5	10.5	561
	2020	46.2	42.8	7.5	361
Vorkuta	2009	142.5	6.0	20.0	909
	2020	35.2	24.3	14.8	173
Norilsk	2009	40.2	11.2	6.5	n/d
	2020	46.7	26.3	41.7	245
Kirovsk	2009	2.0	0.3	0.07	61
	2020	16.4	0.01	0.6	80
Monchegorsk	2009	54.0	9.4	0.2	512
	2020	46.2	21.1	6.8	204
Olenegorsk	2009	9.7	5.4	n/d	54
	2020	17.0	3.7	0.8	39
Kovdorskiy district	2009	20.9	4.8	0.9	74
	2020	22.0	0.8	1.5	42

In Monchegorsk, 72% of water supply networks are up to 100% depreciated (the percentage of depreciation of water inlets to residential buildings, educational and healthcare facilities is high); the problem of uninterrupted supply of heat to consumers is acute (the heat supply system is characterized by a high degree of depreciation of fixed assets, large losses of energy and water). The power supply scheme of the single-industry town was originally built without taking into account long-term development and has a low degree of reliability (capacity of

¹⁸ Noril'sku nuzhna novaya programma sotsial'no-ekonomicheskogo razvitiya, ubezhdeniy v Sovete Federatsii [Norilsk needs a new program of socio-economic development, the Federation Council is convinced]. URL: <http://council.gov.ru/events/news/120774/> (accessed 14 May 2021).

¹⁹ No data for 2007–2008. Source: Municipality Indicators Database. URL: <https://rosstat.gov.ru/storage/mediabank/Munst.htm> (accessed 04 June 2022).

transformer substations and throughput of networks built in 1938–1965 are designed only for housing stock not equipped with electric stoves)²⁰.

Ecological situation in single-industry towns in the Russian Arctic

Another problem of socio-economic development of single-industry towns in the Russian Arctic is associated with an environmental threat to public health, the need to eliminate the accumulated environmental damage, and environmental restrictions in the development of production activities. The mining industry has a significant impact on ecosystems due to mechanical disturbances of vegetation, soils, permafrost, emissions of toxic compounds into the atmosphere. Pollution of surface waters occurs: the main reservoirs of pollutants are small lakes (in areas near mines, reservoirs are characterized by high values of total mineralization and organic substances content)²¹. Thus, the analysis of the peculiarities of the accumulation of heavy metals in fish from small lakes in the Murmansk Oblast [24, Terentiev P.M. et al., p. 52] shows the negative consequences of aerotechnogenic pollution of water bodies of the JSC Kola MMC (natural fish populations are subject to the toxic effects of heavy metals), associated with the danger of reducing the biological diversity of the ichthyofauna. Significant seasonal fluctuations in the nickel content in water are caused by the fact that polymetallic dust, concentrated in the snow cover during the long winter period, enters the water bodies of Monchegorsk in increased amounts with the beginning of snowmelt; as a result of dust and gas emissions and discharges with wastewater from the Severonickel plant, pollutants enter Lake Monche (a facility of the I category of household and drinking water use) and Lake Imandra (a facility of the II category of cultural and domestic water use) [25, Devyatkin P.N., p. 396].

A problematic issue in the field of environmental protection is waste management: almost all types of industrial activities in the tundra and forest tundra produce vast areas that are not capable of self-recovery²².

Environmental factors account for up to 25% of the health forming factors, while their contribution to the formation of public health disorders becomes more significant when it comes to the population of single-industry towns in the Russian Arctic living in extreme natural conditions [26, Klyukina E.S., p. 91]. The Murmansk Oblast is one of the main centers of environmental tension in the Russian Arctic: the environmental crisis not only in single-industry towns, but also in

²⁰ О внесении изменений в Комплексный инвестиционный план модернизации моногорода Мончегорск Мурманской области, утверждённый постановлением администрации города Мончегорска от 14.12.2010 № 1221 [On amendments to the comprehensive investment plan for the modernization of Monchegorsk monotown, Murmansk Oblast, approved by the Decree of the Monchegorsk City Administration dated December 14, 2010 No. 1221]. URL: https://monchegorsk.gov-murman.ru/gorod/munitsipalnye-uchrezhdeniya-goroda/mku-uer-goroda-monchegorska/sotsialno-ekonomicheskoe-planirovanie-i-statistika/post_1599-_29.12.2018.pdf (accessed 14 September 2021).

²¹ Стратегия социально-экономического развития муниципального образования городского округа «Воркута» на период до 2020 года [Strategy for socio-economic development of the municipality of the urban district "Vorkuta" for the period up to 2020]. URL: <http://воркута.рф/upload/iblock/a0b/strategia-2020.pdf> (accessed 17 August 2022).

²² Plan for the further development of single-industry municipalities - urban districts of Vorkuta and Inta. URL: https://econom.rkomi.ru/uploads/documents/proekt_plana_razvitiya_vorkuti_i_inti_pdf_2020-02-07_02-24-03.pdf (accessed 17 August 2022).

the adjacent territories (agglomerations) produces high rates of 95 classes of environmentally dependent diseases (diseases of the respiratory system, skin and subcutaneous tissue, congenital anomalies, malignant neoplasms, diseases of the blood and hematopoietic organs) [26, Klyukina E.S., pp. 94–95]. Atmospheric pollutants include nitric oxide, formaldehyde, phenol, lead, nickel, sulfur dioxide, benzene, benzopyrene, fluorides, inorganic dust, etc. [27, Kovshov A.A. etc., pp. 218–219]). The largest volume of pollutant emissions into the atmosphere is in the Pechenga district (JSC Kola MMC) [28, Martynova A.A., Pryanichnikov S.V., p. 300]. Industrial specialization of the Apatity-Kirovsk agglomeration (JSC Apatit MMC) produces the prevalence of circulatory system diseases (the morbidity rate for this class of causes is 1.6 times higher than in Central Russia), diseases of the musculoskeletal system and the genitourinary system (2.6 times higher), diseases of eyes and adnexa (2.7 times) [29, Petrov V.N., Tereshchenko P.S., Megorsky V.V., p. 90]. In Monchegorsk (JSC Kola MMC), the mortality rate of the male population from diseases of the circulatory system is 35% higher than the average for the region and 1.5 times higher than the average Russian level [30, Tikhonova G.I., Bryleva M.S., Gorchakova T.Yu., p. 773].

Prospects of socio-economic development of single-industry towns in the Russian Arctic

City-forming enterprises and, accordingly, single-industry towns in the Russian Arctic undergo certain stages of the life cycle. Therefore, continuous updating of growth factors is necessary to initiate new stages of development: the socio-economic sustainability of territorial development depends on its ability to respond to external changes and adapt to them in a timely manner [31, Kryukova O.G., Aksenova E.V., p. 85].

A critical factor in the sustainable activity of city-forming enterprises is the depletion of the resource base: the sustainable socio-economic development of single-industry towns in the Russian Arctic depends on the stability of such enterprises, determined by the capacity to extract minerals at the level of economic efficiency, achieved through the implementation of appropriate investment projects. In particular, until 2018, the development of JSC Olenegorskiy MPP was unpromising, therefore, a gradual shutdown of production was planned from 2021 and the closure of the enterprise in 2026. Today, Olkon's long-term development strategy up to 2045 is being implemented, which provides for the development and commissioning of the Pechegubskoe deposit, construction of a new underground mine and creation of necessary infrastructure (priority areas: maintaining the natural resource base with the prospect of developing reserves until 2038, updating equipment for the mining and transportation and factory complexes). Another example is JSC Kovdorskiy MPP, a resident of the Arctic zone of the Russian Federation with an investment project to expand its own capacities (the estimated investment is 24.5 billion rubles; the project will increase the enterprise's capacity from 14.5 million tons to 19.5 million tons of ore per year and create almost 500 jobs). The investment projects of JSC Apatit also include the expansion of production capacities — the construction of an underground mine at the Rassumchorr Plateau deposit and the development of the Koashvinskiy and Nyurkpkhkiy open

pits. Mining assets of the investment projects of PJSC Norilsk Nickel MMC in Norilsk include the Skalistyy, Komsomolskiy, Mayak, Taymyrskiy, Oktyabrskiy mines; processing projects include the modernization of the Talnakh concentrator²³.

City-forming enterprises are the key objects of the economies of single-industry towns in the Russian Arctic: the single-industry nature of the economies of such towns has formed a weak development of local markets and a narrow list of economic entities. This situation produces the need to search for suppliers, contractors, service industries ready to work at the sites of the city-forming enterprises. One of the tools to get out of this situation is the establishment of a special legal regime for the implementation of entrepreneurial and other activities in order to create favorable conditions for attracting investments and thereby ensuring the sustainable socio-economic development of city-forming enterprises and single-industry towns (PSEDA, PDA). In 2017, in order to attract new enterprises of alternative industrial and service industries, a Priority Social and Economic Development Area (PSEDA) was created [32, Skufina T.P., pp. 59–60]. Today, Kirovsk PSEDA includes 6 residents: a repair center for machinery and equipment used by JSC Apatit, JSC NWPC and JSC Olkon; repair and service centers for the maintenance of vehicles and equipment for processing plants in the Murmansk Oblast; a production facility for emulsion explosives components; workshop for repair of crushing and sorting equipment of city-forming enterprises. The total investment is 114.5 million rubles; the number of new jobs is 187²⁴. Among the preferences and benefits of PSEDA are reduced rates of insurance premiums (7.6%), income tax (5% for the first 5 years, 12% for the next 5 years), property tax (0% for the first 5 years, 1.1% during the subsequent 5 years), land tax (0%)²⁵. According to preliminary data²⁶, the volume of investments in fixed assets of PSEDA residents in 2021 amounted to 15 million rubles, the number of jobs created — 24. In 2020, the “Capital of the Arctic” Priority Development Area (PDA) was created on the territory of the Murmansk Region. Its administrative preferences included the possibility of applying the free customs zone procedure on residents’ land plots, the provision of land plots at preferential rental rates and the possible attraction foreign labor without quotas. Among the tax preferences are reduced rates of social insurance contributions (7.6% for 10 years), property tax (0% for the first 5 years), income tax (5% for the first 5 years, 12% for the following 5 years), tax on land (0% for 3 years) and mining tax reduction coefficients (0 — 0–2 years, 0.4 — 4–

²³ Mining assets. URL: <https://ar2020.normickel.ru/strategic-report/key-investment-projects/mining> (accessed 17 August 2022).

²⁴ Residents of PSEDA "Kirovsk". URL: https://kirovsk.ru/business/investoru/rezidenty_tosehr_kirovsk_i_azrf/rezidenty_tosehr_kirovsk/ (accessed 07 September 2022).

²⁵ PSEDA "Kirovsk". URL: <https://invest.nashsever51.ru/pages/toser-kirovsk> (accessed 07 September 2022).

²⁶ Prognoz sotsial'no-ekonomicheskogo razvitiya munitsipal'nogo obrazovaniya munitsipal'nyy okrug gorod Kirovsk s podvedomstvennoy territoriey Murmanskoy oblasti na 2022 god i planovyy period 2023-2024 godov [Forecast of the socio-economic development of the municipality of the municipal district of the city of Kirovsk with the subordinate territory of the Murmansk Oblast for 2022 and the planning period of 2023-2024]. URL: https://kirovsk.ru/files/npa/adm/2021/1107/pril_post.pdf (accessed 07 September 2022).

6 years, 0.6 — 6–8 years, 0.8 — 8–10 years)²⁷. On the territory of the Kovdorskiy district, there are 2 residents of the “Capital of the Arctic” PDA — JSC Kovdorskiy MPP and LLC Flogopit (a project to revive the processing of mica); Olenegorsk — JSC Olenegorskiy MPP, a project for an integrated car wash and tire fitting and a project for the construction of a data processing center; Monchegorsk — 3 projects in the service sector, 1 project each in the areas of transport and logistics, mining and tourism; Kirovsk — 9 projects in tourism, 2 projects in the service sector, 1 project in the mining industry, 1 projects in the field of real estate and development.

Nevertheless, the implementation of such an instrument as a special legal regime for business and other activities is fraught with risks. Firstly, it is the enclave nature of single-industry towns that causes problems with logistics, expansion of sales markets and difficulties with exports²⁸. Secondly, it is the shortfall of tax revenues from the granting of preferences and tax privileges. Thus²⁹, in the Murmansk Oblast, according to the data for 2017, for 1 resident of the PSEDA who declared benefits, the amount of shortfall in tax revenues amounted to 1.7 million rubles, in 2018 — 13.2 million rubles.

Critical risks for single-industry towns in the Russian Arctic are the fulfillment of budget obligations (due to a possible reduction in the level of labor income, in the number of employees of city-forming enterprises and, accordingly, in income from personal income tax to local budgets). Therefore, the prospects for the socio-economic development of single-industry towns in the Russian Arctic are associated with increased emphasis on the interaction of single-industry towns with city-forming enterprises on the social orientation of subsoil use. Today, there are successful examples of such interaction. One of them³⁰ is the social and economic partnership between PJSC PhosAgro and the Government of the Murmansk Oblast, the financial volume of which amounted to 4 billion rubles in 2020–2022 (including 2.65 billion rubles by PJSC PhosAgro). Projects of such a partnership included the construction of an artificial snowmaking system on one of the slopes of the Bolshoy Vudyavr ski resort and the construction of a panoramic restaurant complex Plateau. The socio-economic partnership between the Murmansk Oblast and PhosAgro will amount to 15

²⁷ PDA “Capital of the Arctic”. URL: <https://invest.nashsever51.ru/pages/reestr-rezidentov-arkticheskoy-zony-rf> (accessed 07 September 2022).

²⁸ Itogi kompleksnogo issledovaniya malogo i srednego biznesa v Noril'ske predstavili na kruglom stole v MFTs [The results of a comprehensive study of small and medium-sized businesses in Norilsk were presented at a round table in the MPSC]. URL: <https://arnorilsk.ru/news/itogi-kompleksnogo-issledovaniya-malogo-i-srednego-biznesa-v-norilске-predstavili-na-kruglom-stole-v-mfts/> (accessed 14 July 2022).

²⁹ Otchet o rezul'tatakh ekspertno-analiticheskogo meropriyatiya «Analiz praktiki primeneniya preferentsial'nykh rezhimov, deystvuyushchikh na territorii Rossiyskoy Federatsii, s tochki zreniya ikh vliyaniya na ekonomicheskiy rost i sootvetstviya zavavlennym tselyam» [Report on the results of the expert-analytical event “Analysis of the practice of applying preferential regimes in force on the territory of the Russian Federation in terms of their impact on economic growth and compliance with the stated goals”]. URL: <https://ach.gov.ru/upload/iblock/d22/d22daa028b1854b51b99c9d2927c2e06.pdf> (accessed 06 July 2022).

³⁰ FosAgro i Pravitel'stvo Murmanskoy oblasti v khode PMEF-2022 zaklyuchili Soglashenie o sotsial'no-ekonomicheskom partnerstve do 2024 goda [PhosAgro and the Government of the Murmansk Oblast signed an Agreement on social and economic partnership until 2024 during SPIEF-2022]. URL: <http://www.phosagro.ru/press/company/fosagro-i-pravitelstvo-murmanskoy-oblasti-v-khode-pmef-2022-zaklyuchili-o-sotsialno-ekon/council.gov.ru/events/news/120774/> (accessed 16 June 2022).

billion rubles in 2022–2024. The partnership provides for the improvement of the infrastructure of the Apatity-Kirovsk Central Municipal Hospital (purchase and installation of special equipment, an oxygen station and other medical equipment); financing the rehabilitation treatment of Kirovsk and Apatity residents at the corporate health resort; financing major repairs of the hospital's medical building, and major repairs and equipment for vocational training rooms at the sponsored branches of Murmansk Arctic State University and schools in Kirovsk and Apatity included in the PhosAgro-School project; development of a sports and tourism cluster in Kirovsk and Apatity; reconstruction of the Apatity-Kirovsk highway and improvement of the infrastructure of the Khibiny airport; external renovation of Kirovsk. During the 16 years of this partnership, an ice arena has been built in Kirovsk, a new building for a ski-resort Olympic sports school, and a sports complex and hockey court for one of the local sports schools in Apatity were built in Apatity. Between 2022 and 2025, the agreement between the Government of the Murmansk Oblast and JSC Kovdorskiy MPP (JSC MCC EuroChem) stipulates medical development (construction of an infectious diseases department of the hospital and renovation of apartments for guest doctors), education (creation of an educational and production center on the basis of the Kovdor Polytechnic College and a center for additional education on the basis of a secondary school), culture (renovation of buildings), physical culture and sports, tourism, and landscaping. The volume of investments in the development of Kovdor until 2027 will be about 1 billion rubles. The agreement on interaction and cooperation in order to implement comprehensive measures for the socio-economic development of Norilsk for the period up to 2024 and for the future up to 2035 provides for renovation of the housing stock of the single-industry town, modernization of housing and communal services, its engineering and communal infrastructure, elimination of emergency and dilapidated housing and reconstruction of multi-storey residential buildings, construction of a waterworks facility on the Norilskaya River, modernization of cultural, healthcare, education and sports facilities. The total amount of financing of the agreement is 120.1 billion rubles, 68% of which are funds from PJSC MMC Norilsk Nickel, 20% — from the federal budget³¹. On the territory of the Yamalo-Nenets Autonomous Okrug, 8 general cooperation agreements are being implemented between the Government of the okrug and PJSC Gazprom, PJSC NOVATEK, PJSC LUKOIL, PJSC Gazprom Neft, PJSC Rosneft Oil Company, under which VICs participate in construction and repair of social and cultural facilities, sports facilities, residential buildings³².

In our opinion, the main problem of the socio-economic development of single-industry towns in the Russian Arctic is the implementation of a competent socio-economic policy, developed not so much at the corporate and regional levels, but with the participation of local governments and the local population. An example of this is the comprehensive investment plans for the modernization of single-industry towns (CIP), the analysis of the experience of their

³¹ Activities of the comprehensive plan for the socio-economic development of the City of Norilsk. URL: <https://www.norilsk-city.ru/100694/index.shtml> (accessed 16 May 2022).

³² Social partnership: practices of Yamal. URL: <http://regcomment.ru/analytics/sotsialnoe-partnerstvo-praktiki-yamala-2/> (accessed 17 September 2022).

application has shown a low degree of effectiveness [33, Oborin M.S., p. 115]: most of the indicators established in the CIPs were formal and non-informative and did not reflect the real situation in addressing the problems of unemployment and economic diversification. In particular, when calculating the created jobs, temporary jobs were included; when calculating the attracted investments, investments made before the adoption of the CIP were included on a cumulative basis³³. Moreover, promotion of the modernization of single-industry towns with production units operating in the Arctic has not become the task of VIC³⁴. An analysis of the implementation of the state priority program “Integrated development of single-industry towns”, including the experience of implementing special legal regimes (PDA), also indicates a low degree of their effectiveness. Thus, according to the Accounts Chamber of the Russian Federation, there is virtually no relationship between sources of funding and the activities included in such a program, the synchronization of the implementation of investment projects and the construction of infrastructure facilities is not fully ensured, there is a shortage of specialists for newly created industries, as well as managers involved in modernization projects. As a result, there is a shortage of projects that meet banking investment standards, lengthy procedures for the formation of technical and permitting documentation, etc.³⁵

Conclusion

As a result of the analysis of the dynamics of the socio-economic development of single-industry towns in the Russian Arctic, we substantiated the critical factors (problems) that limit the possibilities of their territorial development due to the negative impact on budgetary security and investment activity.

The first group of such factors is represented by the capabilities of mineral resource base, which determine the natural limits and cyclical nature of the production activities of city-forming enterprises.

The second group of critical factors is formed by global crisis phenomena that produce dependence of the production of city-forming enterprises on the external conjuncture of prices for raw materials and main export items.

The third group of critical factors consists of the risks of budgetary obligations fulfillment of single-industry towns in the Russian Arctic. Firstly, the withdrawal of mineral resources by

³³ «O rezul'tatakh sovместnogo kontrol'nogo meropriyatiya «Proverka rezul'tativnosti podderzhki monogorodov na territorii Kirovskoy oblasti v ramkakh realizatsii prioritnoy programmy «Kompleksnoe razvitie monogorodov» v 2016 - 2017 godakh» (s kontrol'no - schetnym organom sub"ekta Rossiyskoy Federatsii) [“On the results of the joint control event “Checking the effectiveness of support for single-industry towns in the Kirov Oblast as part of the implementation of the priority program “Integrated development of single-industry towns” in 2016-2017” (with the control and accounting body of the constituent entity of the Russian Federation)]. URL: <https://ach.gov.ru/upload/iblock/700/700ca4572b11e125ebce9867eba67971.pdf> (accessed 17 September 2022).

³⁴ Analytical report on the management of the development of single-industry towns. URL: https://urbaneconomics.ru/sites/default/files/a_monogoroda_iue_2011.pdf (accessed 17 September 2022).

³⁵ Report on the results of the expert-analytical event “Monitoring and evaluation of the implementation of the priority program “Integrated development of single-industry towns”. URL: <https://ach.gov.ru/upload/iblock/1a5/1a5fb021746e6c823bc8457f6e200a0c.pdf> (accessed 17 September 2022).

vertically-integrated companies' production assets occurs without the actual return of a percentage of the extracted profit to municipal budgets. Secondly, the level of sustainability of city-forming enterprises affects the level of social tension in the labor markets, producing critical risks in terms of fulfilling budget obligations due to a possible reduction in the number of employees, a subsequent decrease in the level of labor income, and, accordingly, a decrease in income from personal income tax in local budgets. Thirdly, the development opportunities for single-industry towns in the Russian Arctic depend on the policy of vertically integrated groups, their interests in the implementation of socio-economic partnership in their territories.

Taken together, these factors limit the possibility of diversifying the economy of single-industry towns in the Russian Arctic and developing entrepreneurial activity there, which, in particular, is evidenced by the current state of most infrastructure facilities (lack of transport routes; dilapidated and emergency housing; low level of social and engineering infrastructure). Undoubtedly, promising opportunities for the development of single-industry towns in the Russian Arctic are associated with the successful implementation of investment projects of city-forming enterprises, as well as the creation of favorable conditions for attracting investment through the establishment of special legal regimes for entrepreneurial and other activities. However, the analysis of investment projects of city-forming enterprises shows that the priority areas of investment activity today are related to maintaining the natural resource base with the prospect of developing reserves and expanding own capacities of the production assets of vertically integrated companies; conclusions about the effectiveness of special legal economic regimes are premature.

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Key Aspects of the Economic Potential Development of the Agro-Industrial Complex of the Northern Regions (Case Study of the Komi Republic)

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Abstract. The article presents a scientific approach to the actual problem of the formation of a full-fledged economic potential (industrial and consumer) of the agro-industrial complex of the northern regions. The key premise of the study is that the content of the economic potential makes it possible to identify not only the dynamics of the accumulation of production capacities, but also to determine the trends and prospects for socio-economic, environmental, infrastructural, demographic and market transformations. The principle of conducting a systematic analysis of the state, composition and structure of the agro-industrial complex of the regions of the North of potential was chosen as the main prerequisite for the study. The most reliable method that reveals the directions of the prospective development of the agro-industrial complex of the regions of the North is a retrospective analysis of the state of their technical, economic and other indicators. Given the interrelated and interdependent properties of the economic potential, it is proposed to develop the production and consumer potentials of the agro-industrial complex of the regions of the North in a single context of relevant economic relations and development strategies. Emphasis should be placed on the constant renewal of the elements of the economic potential of the agro-industrial complex of the Northern regions. An important role in increasing the economic potential of the agro-industrial complex of the Northern regions should be played by the formation of regular state financial, economic, legal and other support for the agro-industrial complex of the regions of the North. The long-term strategic line for the development of the agro-industrial complex of the regions of the North should be determined not only by the level of production and sales of marketable products, but also by the combination of state and non-state program measures into a clear and coordinated effective system of strategic measures. It is recommended to regularly transform the elemental structures of the agro-industrial complex of the Northern regions from a passive state into an active carrier of intellectual capital, fixed assets and investments.

Keywords: *agro-industrial complex, economic potential, production potential, consumer potential, material value, structural elements, intellectual capital, resource, principle, regions of the North*

Introduction

Within the framework of this study, the list of regions of the North includes the regions of the Far North and areas equated to the regions of the Far North, listed in Decree of the Government of the Russian Federation dated November 16, 2021 No. 1946 “On approval of the list of re-

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gions of the Far North and areas equated to regions of the Far North , in order to provide state guarantees and compensations for people working and living in these regions and areas, recognizing certain acts of the Government of the Russian Federation as invalid and recognizing certain acts of the Council of Ministers of the USSR as inoperative on the territory of the Russian Federation”.

The economic potential of agro-industrial complex (AIC) is a combination of capital resources and human capital, which make it possible to produce competitive products and provide services in the required volume for the development of production and consumption of agricultural products. In terms of the essential characteristic, the economic potential of agro-industrial complex can be considered as a system, the elements of which are its branches and infrastructure, forming a single integrity. On the other hand, the economic potential is the main factor in ensuring the sustainability of the agro-industrial complex as a whole. The economic potential of agro-industrial complex also includes natural and climatic conditions, the impact of environmental impact, internal incentives for the development of production, consumption, distribution and exchange of products.

The economic potential of agro-industrial complex includes market and production potentials. The latter represents the real volume and quality of manufactured products, achieved with the availability and full use of available capital, labor, land and other resources.

An important factor of the economic potential of agro-industrial complex is the dynamics of income. The assessment of the economic potential of AIC should proceed from the possibilities of obtaining future income, which are mostly the consequence of investment resources.

Based on the existing principles of management, complex natural, climatic and economic conditions of functioning, as well as the methods and mechanisms of integration behavior, it can be said that in the process of achieving sustainable development of the agro-industrial complex of the North, its branches and sub-sectors operate in special natural, climatic and economic conditions that allows them to be united in a specific economic zone, which can be assigned a certain legal status, implying constant state support. This indicates the necessity to form a new form and new methods of financing and functioning of the agro-industrial complex of the regions of the North. In essence, this is a special form of management, which will ensure reliable and comprehensive development of the agro-industrial complex of the regions of the North with the provision of regular state financial, economic, legal and other support.

The main focus of the study is on the development of production and consumer potentials of the agro-industrial complex of the regions of the North in a single context within the framework of relevant economic relations. This will make it possible to accelerate the processes of their transfer from passive states to a high-tech industrial-intellectual basis with progressive management methods. The study has determined that more reliable analysis of the economic potential gives a clear idea of the integrity of its elemental structures and the state of their operating assets.

According to the general economic activity, the most reliable method for identifying the directions for the prospective development of the agro-industrial complex of the regions of the North is a retrospective analysis of the state of their technical, economic and other indicators. This method allows not only to identify the content characteristics of the economic potential of the AIC of the regions of the North, but also to assess the ongoing changes in individual sectors, sub-sectors, and activities. In this regard, the present study is of current importance. The need for this kind of research is constantly growing.

The purpose of the study is to determine the ways, directions and methods for the formation of a full-fledged economic potential (production and consumer) of the agro-industrial complex of the northern regions, the formation of a full-fledged economic potential of the AIC of the regions of the North, and the improvement of their quantitative and qualitative parameters of the structural composition. The formation of a full-fledged economic potential of the agro-industrial complex of the northern regions will make it possible to radically change the nature of work of the AIC parts of the regions of the North, to ensure their efficiency in the long-term prospect. Real specific technical, economic and other indicators, as well as the current results of production, distribution, consumption and exchange, provide convincing arguments of the necessity to achieve long-term and sustainable development of the agro-industrial complex of the regions of the North by forming a full-fledged economic potential.

The objectives of the study are to identify real trends in the content of economic potential, sources of expansion and renewal of the economic potential of the agro-industrial complex of the regions of the North, ensuring the systemic development of its main elements and the necessary conditions for their interdependent development, designing and implementing progressive principles for regulating the proportionality of the AIC of the northern regions. The article reveals the theoretical, methodological and practical foundations for the efficient management of the agro-industrial complex of the regions of the north, the forms and methods for transferring them from the current condition to a state adequate to the intensive investment development. In terms of substantial characteristics, the economic potential of the agro-industrial complex is a set of socio-economic objects and relations, which reflects not only the stages of accumulation of production capacities, but also the level of balance between the main parameters of production and consumer potentials, probable changes in the infrastructural and demographic components of the AIC, the load on the environment.

Literature review

Studies of the economic potential of the agro-industrial complex of the northern regions occupy a prominent place in the economic literature.

The scientific literature devoted to the study of the economic potential of the AIC of the northern regions confirms that, from the classical approach perspective, the economic potential is the main initial component of the sustainable development of the agro-industrial complex. This

potential is the driving force behind the development of not only production, but also the food market. Based on the economic potential, the key tasks of the development of the agro-industrial complex of the regions of the North are being solved. The state of economic potential in different regions determines their inequality in terms of efficiency of AIC production. The level of economic potential vividly characterizes the economic power of the spheres and enterprises of the agro-industrial complex, while the dynamics — the degree of reproduction efficiency. This indicates the need for large-scale and diverse forms of development of the economic potential of the agro-industrial complex of the regions of the North, which cover both its integral movement and the proportionality of the basic technological cycles (BTC) — “finance – science – production – market”.

However, the scientific literature confirms that socio-economic and other transformations of AIC are difficult for technical and static assessments. Therefore, the study of the economic potential of the agro-industrial complex of the northern regions requires versatile methods of scientific analysis.

In the scientific literature, the key aspects of research are the identification of the content of the economic potential, the determination of the dynamics of production capacities accumulation, the forecasting of trends and the recommended choice of organizational efforts in the process of socio-economic, environmental, infrastructural, demographic, market and other transformations.

Epstein D. and Hockman G. consider the relationship of resource potential and efficiency of agricultural enterprises [1].

Gadzhiev Yu.A., Styrov A.A., Mustafaev A.A. and others analyze the investment and innovation system of the agro-industrial complex of the northern regions, the problems and prospects for its improvement [2].

Gorbunov A.A. notes that special importance in the research of AIC of the Northern regions is given not only to the study and achievement of its full economic potential, but also to the improvement of the interdependent characteristics of its main production and consumer elements [3, p. 82].

Magomedov R.M. and Khalimbekov H.Z. consider the production potential of the agro-industrial complex as a set of production resources measured in quantitative and qualitative indicators, in unity with their return under the condition of the best use in given natural and climatic conditions and given trends in the development of technologies [4]. In order to characterize the economic potential, the authors, along with the category of production capital, use the category of “consumer potential” (the prospective level of consumption of agricultural products). In their opinion, the unity of production and consumer potentials determines the category of economic potential.

Serova E.V., Grazhdaninova M.P., Karlova N.A. analyze the market of purchased resources as a factor of the economic potential of the agro-industrial complex [5, p. 105].

Vitun S.E. and Rysenko A.V. emphasize that, as a rule, the basis for increasing the level of economic potential of AIC of the Northern regions are reliable internal and external sources of financing, sufficient for regular investment in its areas and enterprises [6, p. 69].

Kagan A.Kh. devotes his research to revealing the essence of economic potential. The author believes that the economic potential expresses the highest quantitative and qualitative capabilities of a system that functions at a certain level of development of science, engineering, and technology [7].

Important theoretical and methodological aspects of interrelation of economic potential and production efficiency are disclosed in articles of Svobodin V.A. [8].

Herath J. shows that the income of the population positively correlates with the development of agriculture, which leads to the strengthening of its economic potential in the process of economic growth acceleration [9].

Kiseleva N.N. and Papushoya M.S. clarify the categorical content of the resource potential of agriculture and its structure, taking into account the innovative component [10].

Naydenov N.D., Mustafaev A.A., Naydenova T.A. analyze the economic potential for the development of agriculture in the penitentiary institutions of the Arctic [11].

Anishchenko A.N. assesses the production potential of the subjects of the European North in the field of agriculture and argues that they have a significant potential for agricultural development [12].

Thus, the issues of increasing the economic potential of agriculture and the agro-industrial complex are being widely discussed in Russia and abroad. The authors are unanimous that the economic potential of AIC of the regions of the North is promising for investment. However, in practice, its economic potential is underestimated, and its specifics have not been sufficiently studied. It is important to deepen the understanding of the specifics of the economic potential of the agro-industrial complex of the Northern regions and to find forms and methods for strengthening its positive impact on their economic growth.

Research materials

Let us consider the dynamics of investments to the fixed capital and fixed production assets of agriculture in the regions of the Far North (Table 1).

Table 1

Dynamics of investments to the fixed capital and fixed production assets of agriculture in the regions of the Far North of Russia, thousand rubles¹

Regions of the Far North	Investments in the fixed capital of agriculture (average), thous. rubles			Change in investments as a percentage of the previous period		
	2010–2013	2014–2017	2018–2020	2010–2013	2014–2017	2018–2020
Arkhangelsk Oblast	1876069.0	543817.3	1169780.0	100	28.5	215.1
Komi Republic	647174.3	764191.0	1004223.0	100	15.4	131.4

¹ Source: materials provided upon official request by the Federal State Statistics Service of Russia, authors' calculations.

Republic of Karelia	283521.3	296831.0	346725.2	100	104.6	122.2
Murmansk Oblast	219407.6	259007.6	229456.5	100	118.0	88.5
Khanty-Mansi Autonomous Okrug	81165.3	73546.6	63297.0	100	90.6	77.9
Yamalo-Nenets AO	238623.6	329045.6	200632.0	100	137.8	84.0
Nenets AO	111165.3	99426.3	197258.7	100	89.4	198.0
Republic of Sakha (Yakutia)	447526.0	257005.6	313521.5	100	57.4	121.9
Magadan Oblast	28016.0	41857.3	18765.0	100	149.4	44.8
Kamchatka Krai	194777.6	289621.0	241933.0	100	148.6	124.4
Chukotka AO	228110.0	120175.0	59209.0	100	53.1	49.2
Sakhalin Oblast	379542.6	1154068.6	4854736.5	100	304.0	420.6
Average				100	108.5	139.8
Median					97.6	122.5
Dispersion					9637.8	5324.6

Analysis of the data shown in Table 1 indicates that the process of investing in agriculture in the regions of the Far North is unstable and uneven. This is especially true for the Arkhangelsk, Murmansk and Magadan oblasts, the Khanty-Mansi, Yamalo-Nenets, Chukotka and Nenets autonomous okrugs. Instability in the investment sphere of the agro-industrial complex creates favorable conditions for a de-investment trend in agricultural production in the regions of the North. In addition, instability of investment processes is an expression of disproportionality. Instability in the investment sphere leads to an increase in disproportionality in the technological structure of capital and the specific structure of fixed production assets. Ultimately, instability in the investment sphere leads to a decrease in the production and consumer potentials in the agro-industrial complex of the Arctic regions as a whole (see Table 2).

Table 2

Dynamics of the fixed production assets of agriculture in the regions of the Far North of Russia, thousand rubles²

Regions of the Far North	The fixed production assets of agriculture (average), thousand rubles			Change in the fixed production assets of agriculture as a percentage of the previous period		
	2010–2013	2010–2013	2014–2017	2010–2013	2014–2017	2018–2020
Arkhangelsk Oblast	8680042.0	4010761.6	5338016.7	100	46.2	13.3
Komi Republic	4423036.3	5889853.3	8969080.7	100	133.0	152.2
Republic of Karelia	2644679.6	3223455.3	2913692.7	100	121	180.7
Murmansk Oblast	1729071.3	1933268.6	1899883.0	100	111.8	98.2
Khanty-Mansi Autonomous Okrug	1365131.0	1503373.0	727837.5	100	110.1	48.4
Yamalo-Nenets AO	1427401.0	1964953.0	1900025.7	100	137.6	96.6
Nenets AO	648679.6	694404.0	1233297.5	100	107	177.6
Republic of Sakha (Yakutia)	4244420.3	4738432.6	8066495.2	100	111.6	170.2
Magadan Oblast	181942.3	526357.0	379017.7	100	289.2	72.0
Kamchatka Krai	1342830.3	1656873.0	1682135.2	100	123	101.5
Chukotka AO	1049496.3	709467.6	954222.0	100	67.6	134.4

² Source: materials provided upon official request by the Federal State Statistics Service of Russia, authors' calculations.

Sakhalin Oblast	2310404.0	4455993.0	11364818.2	100	192.8	255.0
Average				100	129.2	119.9
Median					116.4	101.5
Dispersion					3499.1	4135.2

As Table 2 shows, the absolute decrease in the volume of capital investments in the agro-industrial complex of the regions of the North slowed down the processes of modernization and reconstruction of fixed production assets.

The decrease in innovation activity has increased the volume of old equipment and has led to a discrepancy between production needs. The direct correlation between the growth dynamics of investment resources and the growth rate of production has collapsed. There were problems not only with the destructive location of production capacities, but also with disproportions in the agro-industrial spheres. Ultimately, imbalances in the agro-industrial sectors lead to inefficient use of capital values, deterioration of cultivated land and destructive distribution of workers.

According to our observations and estimations, there is an increase in costs and prices for new equipment in the main regions of the North, which causes an increase in the volume of repair work. Hence the phenomenon of fictitious property arises. It is expressed in the increase of current expenses (first of all, repair works) and expenses for maintenance of the available obsolete equipment (machines and mechanisms) while maintaining or even reducing production capacity.

The above data allow us to conclude that it is necessary to form a full-fledged investment cycle, which includes extensive use of innovations, for a more complete use of the economic potential of the agro-industrial complex of the Northern regions. The investment cycle is a closed chain of successively interconnected links of the AIC activity.

It should be noted that the growth in the cost of fixed production assets is determined by two sources: 1) increasing the amount of investment in agriculture to a volume that can improve the quantitative and qualitative characteristics of the fixed production assets; 2) conducting a periodic revaluation of fixed production assets that can “artificially” increase their value and strengthen the authorized capital of agricultural enterprises. Despite all the circumstances, forecasting the growth of investments and the formation of fixed production assets of specific enterprises is of particular importance. Although “...unlike historical and alternative estimates, the forecast calculation does not contain prudent values of exogenous variables” [13, p. 135].

In contrast to the growth of new investments and funds, the revaluation of the old value of funds (equating their old value to the current market value) is not a natural source of changes in the physical characteristics of fixed assets, which consist of quantitative and qualitative parameters of operating assets. Thus, the revaluation of the value of funds worsens the prospects for increasing the level of use of the AIC economic potential. “The lower the level of competition in the market, the more problems with the efficiency of enterprises” [14, p. 350].

It is known that the formation of the AIC production potential proceeds from the efficiency of investments. However, at the low level of efficiency of economic activities of agricultural entities in the North, carried out in harsh natural and climatic conditions, the postulate of investment

efficiency, not lower than the average for Russia, is not fully applicable. It is necessary to take into account the specific financial and economic circumstances and to bring the correspondence between the effectiveness of investments and the parameters of expected return.

The main task in using the economic potential of the agro-industrial complex of the Northern regions is the effective implementation of the production function of resources and technologies. Taking into account the best functional characteristics of the AIC of the Komi Republic, let us consider some basic indicators of the development of its production potential (Table 3).

Table 3

*Dynamics of the main indicators characterizing the level of production potential of agriculture in the agro-industrial complex of the Komi Republic for 2010–2020*³

Indicators	Average		
	2010–2013	2014–2017	2018–2020
Volume of manufactured products, million rubles. Agriculture, total:	7243.1	10041.6	10749.1
of which: crop production	2134.8	2826.8	2737.2
animal breeding	5108.3	7214.8	8811.8
Index of agricultural production (in comparable prices), in % to the previous year	97.8	100.3	101.8
Index of investments in fixed capital of agriculture, in % to the previous year	102.3	118.0	131.4
Index of availability of fixed assets in agriculture, in % of the previous year	114.8	133.1	152.2
Structure of agricultural production by categories of farms:			
agricultural organizations, units	67	70	71
households, units	28	26	24
peasant (farm) households, units	5	4	5
Share of profitable organizations, units	54	56	65
Balanced financial result (profit minus loss), million rubles	394.9	514.7	402.0
Level of profitability of sold goods (works, services), %	2.7	2.3	-3.7

As Table 3 shows, the economic potential of the agro-industrial complex of the Komi Republic showed a negative trend in its development in terms of profitability in 2010–2020. The reason for this trend is the low competitiveness of agricultural products of the Komi Republic in the regional market. The processes of formation of the AIC production potential of the Komi Republic are constrained by import of products from more southern regions. However, this does not exclude the search for effective segments of commodity agricultural markets of competitive local producers and solvent buyers.

Due to low labor productivity, the production volumes of the majority of AIC enterprises of the regions of the North are small. Therefore, the agribusiness entities of the Northern regions are not able to purchase high-performance machinery and equipment intended for use in large-scale production. Many agro-industrial enterprises in the Northern regions are not able to apply effec-

³ Source: materials provided upon official request by the Federal State Statistics Service of Russia, authors' calculations.

tive methods of financing and functioning — to rationalize the resources turnover and to apply effective mechanisms for economic activity. The efficiency of using the AIC economic potential of the Northern regions depends on equipment and technology adapted to the conditions of small-scale production [15, p. 64].

According to our observations and estimates, the service life (primarily the average age and average service life) of machinery and equipment in agricultural organizations of the North exceeds the standard service life, which results in the active degradation of agricultural machinery and tractor fleets.

Therefore, some of the production capacities, which are not actually used as part of the economic potential due to increased repair costs, hinder the effective use of production potential. Unused production capacities cannot be reserved, and they are not the result of temporary market changes in demand.

The production potential of the agricultural sector in the North regions includes assets that are obsolete or outdated, and do not correspond to natural and climatic conditions. This property interferes with the expected rate of return and should be disposed of.

In the Northern regions, land suitable for agricultural use is often abandoned. However, the development of local markets in mining and transportation areas has made it possible to expand the amount of land in use.

In the regions of the North, the area of agricultural land is insignificant relative to the total area. On this basis, it should be emphasized that the economic effect of agricultural land use in the regions of the North consists largely not so much in the growth of income and optimization of operating costs, but in indicators characterizing the improvement of land use and related real estate objects [16, p. 80].

Urgent tasks in the process of using the land potential in the agro-industrial complex of the Northern regions are land monitoring with the organization of modern geoinformation technologies, compiling a land cadastre and legal registration of lands. Work in these areas is just beginning.

A special place in the economic potential of the agro-industrial complex of the Northern regions is occupied by the formation of labor potential. The analysis shows that over the past 10 years, the absolute number of the rural population in the regions of the North has decreased. There is an outflow of the rural population to nearby cities, towns and other settlements.

The main reasons are: 1) strong decline in agricultural production; 2) low wages in the agricultural sector. According to our calculations, the average wage in agriculture, hunting and forestry in the regions of the North is slightly more than 60% of the average wage in the Russian economy. Low wages are pushing the active able-bodied population and young people, who are trying to get specialties not related to agriculture, out of the village [17, p. 151].

The main task in terms of improving the use of labor potential is to transfer labor resources from negative attitude to work in the AIC into active carriers of the intellectual capital of the agro-industrial complex of the Northern regions.

Even at first glance, it is obvious that, due to objective and subjective reasons, the pace of development of the economic potential of the agro-industrial complex of the Northern regions, both between individual regions and between different areas and enterprises within AIC, is far from being equal; they differ especially strongly in agricultural output. However, certain regularities are also observed. In all Northern regions, a high growth of agricultural production is observed in animal husbandry, which is closely connected with more favorable conditions for this sector of agriculture, with growth of investments and increase of the volume of subsidies in this segment. A significant decrease in crop production is associated not only with unfavorable natural and climatic conditions, but also with a reduction in cultivated land, as well as a decrease in investments. The institutional structure of agricultural production in terms of crop production is such that its significant share belongs to peasant (farm) households. For example, according to our calculations, in 2016, peasant farms produced 5% of the total volume of potatoes, economic organizations — 7%, and households — 88%. A similar situation is observed in the production of vegetables. In 2015, peasant farms produced 3% of the total volume of potatoes, economic organizations — 21%, and households — 88%.

Therefore, there are imbalances in the economic potential of the agro-industrial complex of the Northern regions, in particular between livestock and crop production in general. The weak development of crop production slows down the formation of a forage base in animal husbandry and hinders all possible options for developing the economic potential. It is important to observe more clearly the balanced chains of interdependence of crop production and animal husbandry within the framework of the economic potential of the agro-industrial complex of the Northern regions.

An important factor in the production of the physical volume of marketable products is the consumer potential of the regions of the North. Proceeding from the interrelation and interdependence of production and consumer potentials, we note that the main task of ensuring their effectiveness consists in the effective regulation of the ratio between capital, output and consumption in each specific sub-regional food market.

Particular attention in more complete use of the economic potential of the agro-industrial complex of the Northern regions requires the proportional development of production, social and market infrastructures, including information technology and infrastructure of sociological and marketing research. In the absence of modern information technologies as part of the economic potential of the regions of the North, it is impossible to meet the needs and expectations of consumers, improve the quality of services provided to the population in the field of agro-industrial complex [18, p. 148].

Consumer potential covers not only economic and social relations between consumers and existing consumer organizations, but also many stakeholder ties, expressed in close relations between manufacturers, suppliers, consumers, partners, customers, state, and public organizations. The relationship of interested individuals and legal entities in the sphere of food consumption forms a kind of interdependent system of stakeholders in both production and consumption. The problems of product sales impose increased requirements on sales and logistics departments, as well as on production divisions [19, p. 534].

Increasing the share of regional producers in the corresponding consumer potential, in our opinion, requires state support. It is reasonable for the state to develop and implement a policy of agrarian protectionism in order to protect regional producers from unfair competition from other regions (deliveries of goods at dumping prices or low quality).

An important direction for better use of the AIC potential of the Northern regions is the acceleration of food trade in the regional markets through local production. Organization of program-targeted purchase of necessary food products, works and services of local significance for state and municipal needs can play an important role. This would allow meeting the needs of institutions and organizations in local agro-food products in a timely manner [20, p. 70].

In 2010–2020, trade turnover increased significantly in almost all regions of the North, to a greater extent — due to imported goods. Our calculations show that during this period, the average retail trade turnover in the regions of the North (in actual prices) increased almost seven times, and per capita — only 5.3 times. During this period, the average index of physical volume of retail trade turnover (in % of the previous year) was 112.1%. According to our calculations based on the data of the State Statistics Committee, the ratio of the highest and lowest provision of food per capita (in kg per year) in the regions of the Far North and equivalent areas was the following: meat and meat products — 87:43, milk and dairy products — 374:153, potatoes — 230:83, fish and fish products — 29:10. Consequently, the fluctuation in the consumption of these products was 2.0, 2.4, 2.8 and 2.9 times, respectively.

Our calculations show that during the analyzed period, food consumption by the population in the regions of the North did not meet scientifically based nutritional standards. The scientifically based norm of consumption of meat and meat products per capita for the North is 90 kg; on average, during these years, it was 59.7 kg, which is almost 34% less. Similar indicators for milk and dairy products amounted to 425 and 230 kg, respectively, for eggs — 320 and 256 pieces, for potatoes — 120 and 89 kg, for vegetables and cucurbits — 105 and 79 kg, for fish and fish products — 40 and 15 kg.

According to our data, for 2011–2020, the percentage ratio between produced and imported products in the total volume of potatoes, including imports, was 58.3:6.1; vegetables and cucurbits — 23.1:67.3; meat and meat products — 24.2:68.7; milk and dairy products — 26.4:64.8; eggs and egg products — 71.3:38.1. A similar ratio between production and personal consumption in the total resources used was 18.1:39.4; 2.4:89.1; 0.2:95.7; 2.9:91.0 and 5.2:98.7.

As an example of significant differences in food consumption by subregions of the North, let us consider the structure of food resources by territories of the Komi Republic (Table 4).

Table 4

*The structure of food resources by territories of import in the Komi Republic, as a percentage of the total*⁴

Indicators	2005–2008	2009–2012	2013–2016	2017–2020
Potatoes: Stocks at the beginning of the year	39	34	42	31
Production	47	44	41	42
Import	14	22	17	27
Total resources	100	100	100	100
Vegetables and cucurbits: Stocks at the beginning of the year	14	16	11	17
Production	24	28	31	22
Import	62	56	58	61
Total resources	100	100	100	100
Meat and meat products: Stocks at the beginning of the year	7	5	4	6
Production	21	19	20	26
Import	72	76	76	68
Total resources	100	100	100	100
Milk and dairy products: Stocks at the beginning of the year	4	6	5	7
Production	32	27	28	29
Import	64	67	67	64
Total resources	100	100	100	100

As Table 4 shows, for 2005–2020, the share of own production in food resources is generally decreasing in the Komi Republic.

According to our calculations based on data from the State Statistics Committee of the Republic of Komi, dynamics of potato and vegetable production per capita in the Komi Republic for the period 2005–2020 remained at a low level. There was an increase in import from other regions not only of potatoes and vegetables, but also of sausages, whole milk products, and canned dairy products.

Over the past twenty years, there has been a convergence of actual and standard indicators in the Komi Republic, but differences in the consumption of basic foodstuffs per capita between the subregions remain significant. For example, the ratio of the average monthly accrued wages of employees of organizations and the subsistence minimum as a percentage in the Republic of Komi was 399% in 2019, in Vuktyl — 492%, in the Ust-Kulomskiy district — 256% (data from the State Statistics Committee of the Komi Republic). These differences are explained not only by the differentiation of incomes, but also by an underdeveloped network of market infrastructures, organization and management of retail networks.

⁴ Source: materials provided upon official request by the Federal State Statistics Service of Russia, authors' calculations.

Conclusions

Summarizing, it should be noted that the degree of functional utility of the economic potential of the agro-industrial complex is determined by the quantitative and qualitative parameters of the accumulated production capacities and consumer capabilities, the ability of regional producers of competitive goods, works, and services to meet consumer demand.

1. In the regions of the North, supplies of all types of agricultural equipment are declining, the degree of depreciation of fixed production assets is growing, and capital investments in agriculture are not stable.

2. The degree of use of the economic potential of the Northern regions is reduced due to the instability of proportions and investments in the agro-industrial complex there.

3. The authors of the article believe that for a more complete use of the economic potential of the agro-industrial complex of the regions of the North, the main emphasis should be placed on the formation of the infrastructure of the regional food market.

4. Primarily, it is necessary to improve the proportionality between the production of agricultural products, the processing of raw materials and elements of the trade infrastructure.

5. It is important to form trusting psychological attitudes in relations between regional agricultural producers, processors of raw materials, trade and consumers, which will not only contribute to the satisfaction of mutual interests, but also ensure the elimination of imbalances in the sources of food supplies to regional markets.

6. The degree of functional usefulness of the economic potential of the agro-industrial complex is determined by the quantitative and qualitative parameters of the accumulated production capacities and consumer capabilities, but an important role is played by the preservation and accumulation of the abilities and skills of regional producers of competitive goods (works, services) to meet consumer demand.

7. The lack of marketing services at the enterprises of the agro-industrial complex of the regions of the North hinders the increase in the level of use of their economic potential. This shortcoming in the work of their economic services must be eliminated.

8. It is advisable to unite the regions of the North into a special economic zone, where agribusiness enterprises will be provided with comprehensive state financial, economic, legal and other support, the methods of which should be brought into a clear and coordinated system.

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Assessment of Effectiveness of New Economic Growth Centers in the Arctic

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Abstract. In the current conditions of economic instability, the problem of regional space development in the Arctic zone, Eastern Siberia and the Far East, the regions where the main hydrocarbon and other mineral reserves are concentrated, is becoming more and more relevant. The main reserves of hydrocarbons and other minerals are concentrated in these regions. The integrated development of the mineral resource base on the principles of rational nature management, including the stages of exploration, production, processing, transportation, is the driver of the Russian regional economy development. The organization of raw materials centers (RMC) with regard to the development of energy resources and regional transport infrastructure, determines the effective development of the spatial economy. The aim of the study is to develop an integrated approach to the spatial development of the region by forming an RMC for achieving the national priority of efficient use of natural and economic resources. The achievement of the goal requires the solution of interrelated tasks, namely, the study of domestic experience in the spatial organization of regional economy; the analysis of the regulatory framework governing the functioning of specific industries in the Arctic zone, Eastern Siberia and the Far East in order to further socio-economic development of undeveloped regions, as well as the analysis of data on the current state of energy reserves in the Arctic. As a result, the study of the RMC organization indicates that their effectiveness is associated with the interaction of national and corporate interests and the development of a communication system. The interrelation of all components allows us to assess the multiplicative effect of the RMC organization on the economy of the region and the country as a whole, which determines the novelty of the work.

Keywords: raw materials center, Arctic Zone, socio-economic development, multiplicative effect

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Introduction

The choice of effective directions and mechanisms for stimulating the development of Russian regions is one of the most controversial issues in the scientific and professional communities. Recently, the spatial organization of underdeveloped regions of the Arctic zone, Eastern Siberia and the Far East has become increasingly important in order to achieve and improve their socio-economic level of development; this fact, combined with the presence of a large-scale resource base, is an essential prerequisite for organization of new mineral resource centers (MRCs) there.

Currently, a number of legal documents have been adopted at the state level, regulating operation of certain industries in the Arctic zone of Russia, Eastern Siberia and the Far East for the purpose of further socio-economic advancement of undeveloped regions. Thus, the Strategy for spatial development of the Russian Federation up to 2025 outlines the main goals and objectives aimed at the spatial development of Russian regions. The fundamental task is to reduce the level of inter-regional differentiation in the socio-economic development of the constituent entities of the Russian Federation, as well as to reduce intra-regional socio-economic differences. The solution to this problem lies in the introduction of new forms of organization of the regional economy into the conceptual apparatus. These forms include mineral resource and agro-industrial centers, identified in the Strategy as promising centers of economic growth.

The Energy Strategy of the Russian Federation up to 2035 also defines MRC along with oil-gas-chemical complexes, aimed at optimizing the spatial distribution of energy infrastructure in certain regions. The term MRC was first introduced in 2010 in the Strategy for the development of the geological industry for the period up to 2030. It was interpreted as a set of fields and promising areas being developed and planned for development, connected by a common existing and planned infrastructure and having a single point of shipment of the extracted raw materials or products of their enrichment into the federal or regional transport system. The isolation of the MRC is considered in terms of the object of joint management both at the regional and federal levels, which in turn allows combining national and regional tasks aimed at the socio-economic development of the regions, taking into account the infrastructure component.

This approach to state management of exploration and exploitation of hydrocarbon resources, taking into account the supporting infrastructure, has been developed in other documents of federal and regional significance: Program for the socio-economic development of the Arctic zone of the Russian Federation, Strategy for the development of the mineral resource base of the Russian Federation up to 2035, Fundamentals of the state policy of the Russian Federation in the Arctic up to 2035, Strategy for the development of the Arctic zone of the Russian Federation and ensuring national security for the period up to 2035, Resolution of the Government of the Russian Federation on the creation of the territory of advanced socio-economic development "The Capital of the Arctic", Strategies for socio-economic development of the Northwestern Federal District, etc.

According to the Transport strategy of the Russian Federation up to 2030 with a forecast for the period up to 2035, the so-called “Unified backbone network” is proposed, which combines the most important transport infrastructure facilities and ensures the functional unity of the transport system and the spatial development of MRCs and industrial zones, which are factors affecting the distribution of demand for transportation and its redistribution by modes of transport. The same document considers MRCs as types of macro-regional production clusters that include “points of cargo flows origin”, i.e. current and future freight demand generation centres.

In order to implement the development task “Preservation of the population, health and well-being of people”, according to the Unified Plan for achieving the national development goals of the Russian Federation for the period up to 2024 and for the planned period up to 2030, it is supposed to develop the social infrastructure of settlements, in which bodies, performing functions in the sphere of national security and functions of a base for MRC development, implementation of economic and infrastructure projects in the Arctic, are located.

Thus, the review of legal documents allows us to conclude that there is a fundamental need for the development of resource regions through the further growth of hydrocarbon reserves, rational subsoil use, and formation of new transport communications for the supply of raw materials to premium markets. In this regard, it is necessary to develop an integrated approach to the spatial development of the region through the formation of the MRC, taking into account the possible multiplier effect, and the combination of national and corporate interests is an urgent task.

Literature review

The topic of organization and development of new MRCs is relevant not only in state strategies and programs, but also in the works of modern scientists — economists and geographers, who study problem areas of this direction. The spatial organization consists in considering the country’s economy in terms of multi-regional unity, which implies the interaction of social and political components and the spread of this connection at the regional and international levels. Granberg A.G. [1, p. 58], Artobolevskiy S.S. [2, p. 102], Minakir P.A. [3, pp. 7–10], Tatarkin A.I. [4, pp. 10–15] made a special contribution to the development of this idea.

The mineral resource center is an example of the spatial organization of the economy of the Arctic region, when the formation process is based on a regional communications system, strengthening the geographical and economic connection of the Arctic space and sea communications, in particular the Northern Sea Route [5, p. 96].

It should be noted that the experience of the spatial organization of the MRCs of the Arctic and sub-Arctic countries is identical, especially in terms of limiting factors, namely:

- severe natural and climatic conditions;
- availability of the infrastructure necessary for all stages of development and production of raw materials.

Foreign researchers [6; 7] mention promising deposits in Norway in the Barents Sea and the need to create and develop infrastructure [8], for example, a railway in Finland for transportation of minerals, fish products, timber, and natural resources of the Barents Sea.

In Sweden, as experts note [9], there is not only a desire to ensure the exploration and extraction of resources in the region, but also to create conditions for innovative developments and their further commercialization; this would enable high value-added products to be produced.

Extreme natural conditions prevent successful exploration in Greenland (Denmark), despite the region's large resource potential [10].

Most foreign researchers believe that MRCs are directly related to the global resource market conditions, hydrocarbon prices, which is why there is an uneven development of the region [11; 6].

Domestic researchers [12, p. 24] consider MRC as a certain territorial entity that has the prerequisites for the formation of "cargo flows of products of the mineral raw material profile". "The main prerequisites for the MRC formation are in the "technological production centers", which include a complex, uniting a number of mineral deposits, infrastructure for the shipment of marketable products and hydrocarbon development facilities that have a common technological component" [13, pp. 30–31]. Thus, such production centers are a constituent element of the MRC.

Directions for the MRC development and the emerging effects of national importance, which manifest themselves in the implementation of such projects, are presented in [14, p. 30]. Questions of the expediency and problems of including the MRC of Russia in the system of territorial planning and management are considered in [15, p. 389]. Serious attention is paid to the role of mineral resource centers in ensuring environmental safety [16, p. 276].

Domestic research compares the definitions of "mineral resource center" and "industrial clusters with territorial-production complexes". However, the concept of the complex refers to the Soviet period, and this form of territorial organization of economic activity was most widespread in the post-war period. Territorial-production complexes were mainly used to describe the schemes of location and methods of organization of productions in the regions of new economic development. In the early 1970s, the new territorial production complexes included the national economic complex of the North of Western Siberia and the system of the Angaro-Yenisei complexes, the Timan-Pechora and South Yakutsk complexes, as well as industrial units and some agro-industrial complexes [2].

Since the transition to a market economy in Russia, new areas of regional policy have begun to appear. They identified and formed so-called regional clusters, including those regions where program-targeted territorial-production complexes, industrial and transport hubs were created in the USSR. Thus, territorial-production complexes, regional clusters and new MRCs contain features of different technological stages in the development of the Russian economy [2; 1]. As a result, the following forms of organization of economic activity have been formed in modern Russia (Table 1)

Table 1

Forms of territorial organization of economic activity¹

Form of organization	Definition	Form examples
Industrial hub	Combination of industrial enterprises, one or more settlements, together with common industrial and social infrastructure facilities, located in a compact area.	Angarskiy, Nizhnekamskiy, Nazarovskiy, Saratovskiy, etc.
Territorial-production complex	Combination of various technologically related industries with common production and social infrastructure facilities.	Bratsko-Ust'-Ilimskiy, Zapadno-Sibirskiy, Kansko-Achinskiy, Orenburgskiy, Timano-Pechorskiy, Yuzhno-Tadzhikskiy, etc.
Cluster	Geographically concentrated groups of interrelated objects of subsoil use (enterprises) integrated with the activities of related industries (most often transport, manufacturing, scientific and educational). Evolutionary stage of organization of socio-economic space with allocation of a new object of management and concentration of state support.	West Siberian Oil Technology Cluster, Petrochemical Cluster of the Tomsk Oblast, Petrochemical Territorial Cluster of the Republic of Bashkortostan, Oil Refining and Petrochemistry Cluster of the Omsk Oblast, etc.
Agglomeration	Territorial formation integrating industrial and transport hubs, communication systems, cities and towns.	Moscow, St. Petersburg, Samara-Togliatti, Yekaterinburg, Rostov, etc.
Geostrategic territory	Territory within the boundaries of one or more constituent entities of the Russian Federation, which is essential for ensuring sustainable socio-economic development, territorial integrity and security of the Russian Federation, characterized by specific living and economic conditions.	Republic of Crimea, Sevastopol, Kaliningrad Oblast, Karachay-Cherkes Republic, Kabardino-Balkar Republic, Republic of Dagestan, Republic of Ingushetia, Republic of North Ossetia - Alania, Chechen Republic, Stavropol Krai, Republic of Buryatia, Republic (Sakha) Yakutia, Zabaikalskiy Krai, Kamchatka Krai, Primorskiy Krai, Khabarovsk Krai, Amur Oblast, Jewish Autonomous Oblast, Magadan Oblast, Sakhalin Oblast, Subjects and parts of subjects of the Russian Federation included in the Arctic zone
Mineral resource center	Territory and (or) water area of one or more municipalities, containing a set of developed and planned for development deposits and promising areas, connected by a common existing and planned infrastructure and having a single point of shipment of extracted raw materials or products of its enrichment into the federal or	Karelo-Kolskiy, Arkhangelskiy, Vorkutinskiy, Norilsko-Turukhanskiy, Taymyrskiy, Tomtor-Ebelyakhskiy, Tsentralno-Chukotskiy, Bilibinskiy, Baimskiy, Kupolnyy, Valunistyy, Beringovskiy

¹ Source: compiled by the authors.

	regional transport system.	
Support zones	Parts of the Arctic territory with interrelated projects, aimed at the integrated development of the macro-region.	Kola, Arkhangelsk, Nenets, Vorkuta, Yamal-Nenets, Taimyr-Turukhansk, North Yakutsk, Chukotka

Since MRCs are associated with the oil and gas industry, this definition can be considered as a planning target for exploration and further development of the communications system on its basis. In the future, this can lead to the socio-economic development of the region as a whole. It is necessary to consider in detail the term MRC and its meaning in the spatial economy.

If we talk about the Arctic zone of Russia, then, according to the program for the socio-economic development of the Arctic zone of the Russian Federation for the period up to 2025, complex projects for the development of the Arctic regions are being formed, including 8 support zones, each of which is a regional project and includes a set of industries. Such concepts as supporting zones and MRCs should be considered in a complex, since they contain characteristics of similar objects, but are at different stages of study [17]. The organization of the MRC in the Arctic zone of Russia in the future may be a prerequisite for the formation of designated support zones due to the same territorial affiliation and infrastructural connectivity.

Research materials and methods

Theoretical constructions are based on a general scientific approach, reflecting the results of an expert assessment of domestic and foreign scientists and specialists in the field of spatial economics and organization of mineral resource centers in the Arctic.

When performing the study, a set of methods is used, including general methodological provisions, systemic and economic analyses, economic and mathematical forecasting, economic evaluation of the effectiveness of an investment project for the spatial organization of the Arctic MRC on the basis of the communication system that provides integrated development and diversification of directions of supply of energy resources in conditions of geopolitical instability.

Mechanisms and sources of the multiplier effect when organizing mineral resource centers

In order to form and develop new MRCs, significant investments are required; the sources of financing may be the own funds of subsoil users or other production organizations. One of the important directions in MRC organization is to attract support from the state in connection with the national significance of some projects along with the interests of subsoil users.

The formation of new MRCs is one of the strategic tasks for the state in terms of the development of underdeveloped territories, the construction of engineering and social infrastructure. At the same time, in order to obtain the greatest effects from MRCs organization, it is necessary to coordinate the interests of the state and companies that bear the corresponding costs. Under budget financing, the main task of the state is to meet the needs of the population, so it is important to consider the ability of a particular project to provide indirect social and economic ef-

fects. It should be noted that the consistency between investing parties is related to the final results of the evaluation of investment projects from the standpoint of the interests of each participant, as well as taking into account the indirect effects associated with other sectors of the economy.

Evaluation of the effectiveness of investment projects is associated with certain difficulties of quantitative analysis:

- external effects: the problem of quantifying external effects is to comply with a detailed presentation of project results through qualitative indicators;
- indirect effects, that is, benefits and costs of economic entities that are not direct participants of the project.

At the same time, the account of external and indirect effects is necessary because the decision about reasonability of the investment project depends on it. During estimation of economic effectiveness of investment projects, after obtaining commercial efficiency, an assessment of budgetary, sectoral, regional or national economic efficiency is made.

National and regional efficiency implies accounting the socio-economic consequences of the project, both in the form of direct benefits and costs, and indirect environmental, social and other external economic effects. If we talk about the regional effect, the effects from the implementation of the project within a particular region, coming from the external environment, are taken into account.

Analysis of multiplicative effects evaluation methods (Table 2) is necessary for choosing a method of investment project evaluation, including organization of new MRCs.

Table 2

Theoretical and methodological analysis of assessment of multiplicative effects of national projects²

Name of the theory	Scientific contribution to development	Main characteristics
Multiplier as a tool for economic growth	R.F. Kahn, J.M. Keynes, M.Yu. Ksenofontov, A.A. Shirov, D.A. Polzikov, A.A. Yantovskiy, O.A. Donichev, I.V. Tozhokin etc.	It is characterized by a wide variety of multipliers; Main methodology: • Economic-mathematical models that characterize intersectoral production relationships in the country ("input-output" model); • Multi-regional general equilibrium models (CGE models); • Econometric models (regression-correlation analysis)
Multiplier as a tool for making managerial decisions	A.V. Andreichikov, O.N. Andreychikova, V.P. Osipov, V.A. Sudakov, V.A. Shakirov, P.S. Pankratyev T.A. Luciana, B. Roy, P. Vincke, E. Beinat, P. Nijkamp, J.S. Dodgson,	It is used in making managerial decisions in the presence of quantitative and qualitative criteria; Methods: • Multicriteria analysis (MCA, MCDM); • Analytical hierarchy method

² Source: compiled by the authors.

	M. Spackman etc.	
Assessment of the social effectiveness of investment projects	Yu.A. Petrova, D.S. Aleksanov, E.A. Yashkova, V.N. Livshits, P.L. Vilenskiy, A.V. Brovkin, M.E. Razumovskaya, A.B. Kogan etc.	It takes into account mainly the indirect effects from the implementation of the project for the state, related industries and the population; corresponds to the classical theory of evaluating the effectiveness of investment projects; Main method: • Cash flow model (discounted)
Assessment of social efficiency of investment projects	A.V. Nogovitsyna, O.M. Fokina, L.N. Chudinova, E.I. Semenov, S.N. Naumov, A.G. Tyurikov etc.	Subsystem of the theory of social efficiency of investment projects; Methods: • Value for Money, • Social WelfareFunctional, • Cost-effectiveness analysis
Territorial impact assessment	E. Medeiros, M. Golobic, N. Marot, T.B. Fischer, O. Sykes, T. Gore, M. Golobič, W. Zonneveld, B. Waterhout etc.	Refers to the general direction of impact assessment (IA) and is an extension (combination) of IA approaches; • allows assessing economic, social, environmental, cultural and other impacts (taking into account development targets); • includes methods of the above theories and a wide range of other methods in the field of forecasting and evaluating structural interactions.

The study used methods of hydrocarbon production forecasting at MRC fields and assessing the effectiveness of investments in the spatial organization of MRC, which allowed quantitative and qualitative estimation of the effects of new Arctic MRC implementation at the national and corporate level. The assessments will reflect public, social and territorial effects and contribute to making decisions on investments and spatial development of the territory, which integrates previously developed theoretical and methodological approaches to assessing multiplier effects from the implementation of national projects into a single system.

The implementation of hydrocarbon profile projects in the Arctic zone makes it possible to clarify the importance of the development of energy resources as a factor in revitalizing business activity and investment attractiveness of the regional economy, as well as means of revival of the settlement system by overcoming the detrimental effects of depopulation; this together ensures the unity of spatial development and the territorial integrity of Russia. This effect is achieved through the formation of a large number of infrastructure units at the Arctic MRCs. Due to the chain of multiplicative effects, the infrastructure of the oil and gas sector creates and maintains a significant number of jobs [5].

Results and discussion

Within the framework of this study, the assessment of qualitative and quantitative effects was carried out on the example of two MRCs in the Arctic zone of Russia — the Yenisey MRC and the Kola MRC.

Yenisey Mineral Resource Center

The territorial boundaries of the Yenisey MRC are determined by the presence of a large-scale resource base and the anchor subsoil user — PJSC Rosneft Oil Company.

The promising center is characterized by the interrelation of localization of the largest deposits of strategic raw materials and the presence of potentially usable sea ports with access to the Arctic and the Pacific Oceans [17] (Fig. 1).

The Yenisey MRC is located within the Yenisey-Khatanga and Pur-Tazovsk oil and gas fields, which corresponds to the Vorkuta and Taimyr-Turukhansk support zones.

The total recoverable oil reserves of the Yenisey MRC, according to the IPGGG SB RAS, amount to 2.43 million tons, natural gas — 517 billion m³. Oil resources are estimated at 1.94 million tons, natural gas — 359 billion m³ [11, p. 32; 18, p. 2].

Among the main fields of the Yenisey-Khatanga OGF, which are part of the Yenisey MRC, a special place in terms of the raw material base is occupied by the Payakhskoe field (1341 tons of hydrocarbon equivalents), which in 2013 was transferred to the JSC Independent Oil and Gas Company, and in December 2020 — to PJSC Rosneft Oil Company, as well as the nearby Zapadno-Irkinskoe field (511 tons of hydrocarbon equivalents), discovered by the company in 2020 [19, Provornaya I.V., Filimonova I.V., Komarova A.V., Zemnukhova E.A., pp. 11–12].

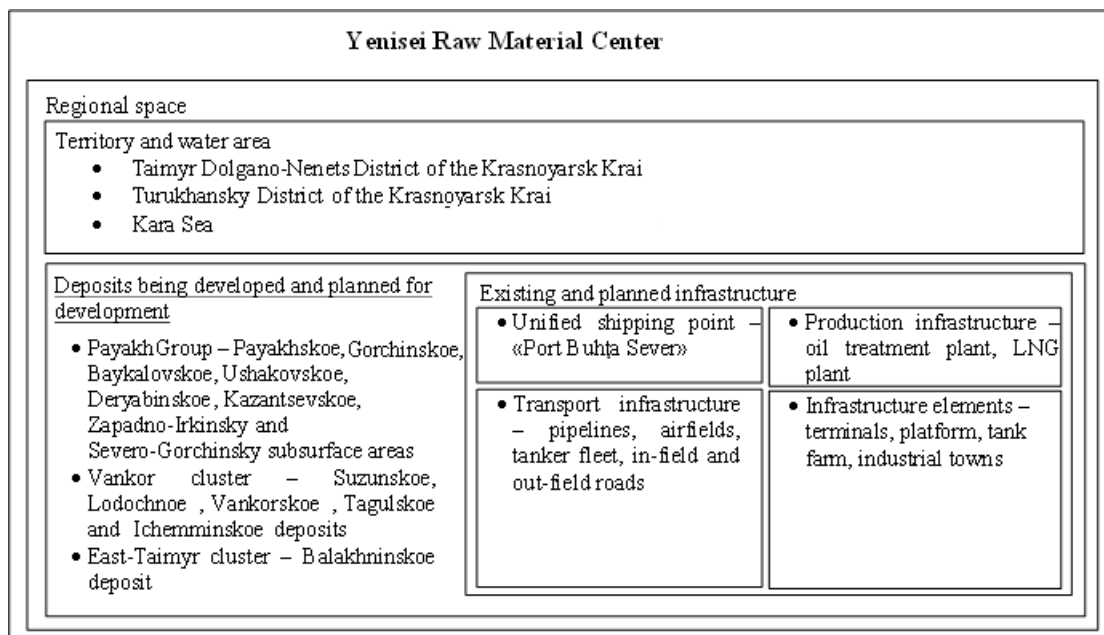


Fig. 1. Spatial structure of the Yenisey MRC³.

The option of creating a new oil export route through the NSR with access to the Atlantic and Pacific markets is considered as the main route for raw material sales from the fields of the Yenisey MRC. Oil sales through supplies require functioning main oil pipelines linking the fields of the Vankor cluster, the Payakh group and the East Taimyr cluster of fields. Implementation will require the construction of an oil loading terminal, to which oil will be delivered via the main oil

³ Source: compiled by the authors.

pipeline. The inclusion of the Vankor cluster in the oil pipeline system in the future will enable the use of high-quality oil for supplies through the ESPO system [19].

Kola Mineral Resource Center

For the purpose of strategic planning from the standpoint of the spatial economy in the Western Arctic, it is advisable to organize the Kola MRC on the basis of a single point of oil shipment to the federal transport system. A single point of shipment is located in the water area of the Kola Bay (Fig. 2).

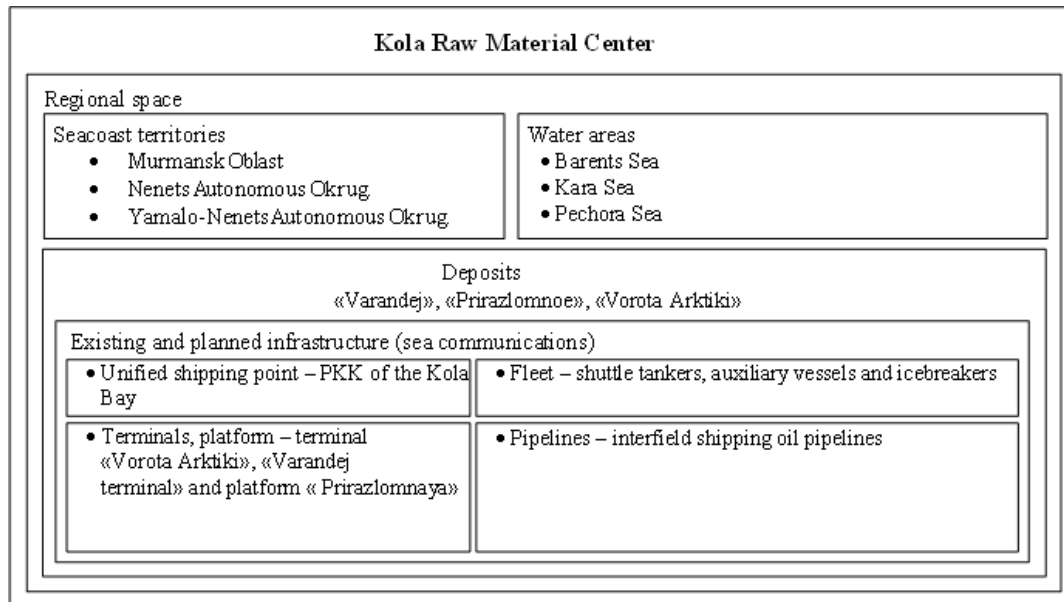


Fig. 2. Spatial structure of the Kola MRC⁴.

The terminal is designed to ship oil, which is produced at the oil fields of the Timan-Pechora OGF, the largest of which are R. Trebs (Varknavtskoe) and A. Titov. The deposits are located to the north-east of Naryan-Mar at a distance of 220 km (R. Trebs) and 238 km (A. Titov) in the zone of specially protected natural areas of district significance. As of December 31, 2015, proven oil reserves amounted to about 31 million tons. The peak load of 4.8 million tons was reached in 2020 [20].

The project includes the Varandeyevskoe OGF and the Toraveyskoe OF (licensed by LLC Naryanmarneftegaz), located 15 km north of the R. Trebs field in the area of the Varandey settlement and connected by oil pipelines to the Varandey terminal. The Medynskoe, Toboyskoe and Myadseyskoe oil fields are located near the Varandey shift camp.

The option of forming sea communications is being considered. The basis of the Arctic communication system is the NSR. Marine communications are laid along the traditional (southern) route in the latitude 70⁰–78⁰ N, bounded from the north by the parallels of the Vilkitskiy Strait (78⁰ N) and Cape Carlsen (77⁰ N) of the Novaya Zemlya archipelago, as well as in the middle (78⁰–82⁰ N) and high (82⁰–85⁰ N) latitudes along the northern (above the parallel of Cape Arkticheskiy (81⁰ N) of the Severnaya Zemlya archipelago) and pole (above the parallel of Rudolf Island (82⁰ N) of the Franz Josef Land archipelago) routes. The length of the route from the Providenie Bay to the

⁴ Source: compiled by the authors.

port of Murmansk along the three routes differs slightly, within no more than 50 miles. From the point of view of the spatial organization of the regional economy, the southern route is the main one, which connects the near sea zone with the Arctic coast and the waters of the great Siberian and large Arctic rivers [21].

Impact of the economic activities of the Arctic MRCs on the dynamics of regional development

The work uses a set of methods, including system analysis, geological and economic modeling and forecasting, assessment of the investment attractiveness of MRC. The authors have developed a methodology for a comprehensive assessment of the effects of development of the Arctic territories (Table 3).

Table 3
Methodology for a comprehensive assessment of the effects of the Arctic territories development⁵

<i>Investigated objects:</i> Yenisey MRC Kola MRC		
No.	Methodical section	Main characteristics
I.	Algorithm for forecasting the production of energy resources at the MRC fields for diversifying hydrocarbon supplies to premium markets	<p>The forecasting algorithm includes:</p> <ol style="list-style-type: none"> 1. Forming a forecast of oil and gas reserves at fields under development ($Q^d(t)$). 2. Forecast of oil and gas production at explored fields ($Q^s(t)$) and those projected to be discovered ($Q^f(t)$). 3. Forming the final forecast of oil and gas production at the MRC ($Q^*(t)$). <p>The level of oil and gas production at the MSC will be determined by:</p> $Q^*(t) = Q^d(t) + Q^s(t) + Q^f(t). \quad (1)$
<i>Investigated objects:</i> Yenisey MRC		
II.	Assessment of the investment attractiveness of the spatial organization of the MRC, including the forecast of the cost of creating a communication system and infrastructure elements	<p>The methodology for evaluating investment efficiency was applied in accordance with the Guidelines for evaluating the effectiveness of investment projects (approved by order of the Ministry of Economic Development of Russia, the Ministry of Finance of Russia and the State Construction Committee of Russia dated June 21, 1999 No. VK 477).</p> <p>The forecast of capital investments is detailed by groups of investments in geological exploration, drilling of wells, construction of field facilities, creation of transport and processing infrastructure, is calculated using aggregated standards.</p>
<i>Investigated objects:</i> Kola MRC		
III.	Constructing a latitudinal model of the spatial development of the Arctic MRC	Justification of the choice of principles of multi-layer rational planning of the regional economy, which consists in a combination of production, education, infrastructure elements, supplemented by the factor of defence capability, energy and economic security.
<i>Investigated objects:</i>		

⁵ Source: compiled by the authors.

	Yenisey MRC Kola MRC
IV.	Justification of the qualitative and quantitative effects of the spatial organization of the MRC at different levels

The oil production forecast is based on information on the volume and structure of the resource base by categories of reserves and resources. Simulation modeling is used as a method, which makes it possible to bring the production curves obtained by the authors closer to real data in retrospect and thereby improve the accuracy of the prediction. For forecasting oil production in fields under development, an important indicator is the degree of depletion and the design level of production laid down in the development documents. For forecasting oil production in fields that are being explored and forecast to be discovered, the degree of exploration is more informative, indicating the level of readiness of the field and the time of commissioning.

The production curve for the entire MRC is drawn up taking into account the oil production dynamics at each field and the year of putting the undiscovered fields into operation.

Yenisey Mineral Resource Center

Development of the Yenisey MRC involves large-scale capital investments. Investments include geological exploration, subsequent development and exploitation of the MRC, formation of production and transport infrastructure. The authors generated a model for assessing the economic efficiency of the spatial organization of the Yenisey MRC, including interconnection of geological exploration (GE), well drilling, field development, communication system, operating costs, tax deductions, financial and economic result. Based on the calculation of all production and financial and economic indicators, the dynamics and structure of their quantitative assessment were obtained [22].

The revenue structure is made up of income from the sale of oil — due to the export of oil through the NSR to the countries of the Asia-Pacific Region and Europe, as well as income from the sale of natural gas in the form of LNG (liquefied natural gas).

If we consider the cost structure, a significant share is allocated to capital investments related to communications. This section is the basis for ensuring the sale of both oil and LNG, as it involves primarily the construction of pipelines, a seaport, an LNG plant, tank farms, production camps, new power plants, purchase of tankers, gas carriers and other equipment.

In order to connect the fields of the East Taimyr cluster with the Payakhskaya group and the Vankor cluster, which, in turn, will be connected to a new oil loading terminal, as well as to connect the fields of all groups to the ESPO system (through the Vankor–Purpe oil pipeline), it is necessary to build infield (7 000 km) and trunking (800 km) oil pipelines. Oil pipeline construction costs account for 46% of communication costs [23].

The cost structure for the construction of port infrastructure includes: a seaport — 172 billion rubles, 2 airfields with a total cost of 300 million rubles, 1 heliport and 13 helipads worth 18 million rubles.

The construction of an LNG plant with a processing capacity of 48 billion m³ per year (the maximum level of gas production) requires investments corresponding to 3247 billion rubles; this indicator makes 48% in the cost structure of investments in communications. The indicator is calculated on the basis of construction parameters of the Yamal LNG plant — capacity 21.6 million tons per year, cost — 26.9 billion dollars, and Yakutsk LNG — capacity 12 million tons per year, cost — 10 billion dollars [22].

The structure of capital investments in the communications system includes: 3.5 thousand km of electric grid facilities, 2 thousand MW of power generation, 15 field camps (200 people), in-field and external-field roads with a total length of 4.5 thousand km, as well as three tank farms with a total cost of 34 billion rubles.

Comprehensive assessment of exploration work within the Yenisey MRC includes 2D and 3D seismic surveys and drilling of prospecting and appraisal and exploration wells. Geological exploration at developed (Vankor cluster) and explored (Payakhskaya group, East Taimyr cluster) deposits in the structure of capital investments in the spatial organization of the Yenisey MRC is 185 and 864 billion rubles, or 18% and 82%, respectively, in the structure of exploration costs [23].

Field development costs are calculated on the basis of industry standards, taking into account average indicators per a well, a cluster and 1 km of linear facilities. The costs of environmental protection work are calculated as 1.5% of the total capital investment for drilling and field development [24]. Thus, the main economic indicators of the organization of the Yenisey MRC were obtained (Table 4).

Table 4

*Final financial and economic indicators of the organization of the Yenisey MRC for the period up to 2050*⁶

Indicator	MRC
Oil production, mmt	2631
Projected oil production, mmt/year	115
Gas production, bcm	1 109
Projected gas production, bcm/year	48
Revenue, billion rubles	110 775
Capital investments, billion rubles	15 615
Geological prospecting and exploration	1049
Drilling of wells	4164
Field development	3674
Communication installation	6727
Operating costs, billion rubles	71 574
Taxes, billion rubles	50 841
Profit before income tax	23 062
Income tax	4612
Net profit, billion rubles	18 449
CF, billion rubles	18 449
NPV, billion rubles	-3142
IRR, %	6.5 %
Profitability index, units	0.7
Payback period without discounting	17
Payback period including discounting 10%	30

⁶ Source: compiled by the authors.

The project has a high multiplier effect on related industries and spatial development of the northern territory of the Krasnoyarsk Krai. The created communication system involves the participation of companies related to subsoil users in the field of energy and transport, as well as a wide range of specialists of various qualifications. Therefore, the authors systematized these effects with details at the national and corporate levels, some are presented in quantitative terms (Table 4), some of the effects are presented qualitatively due to the lack of information (Table 5).

Table 5

*List of key indicators of the multiplicative effect of spatial organizations of the Yenisey MRC*⁷

National level	Corporate level
<ul style="list-style-type: none"> – Growth of tax revenues to the federal budget (MET, export duty); – Increase in state revenues (dividends from state participation, international reserves, NWF); – Growth of macroeconomic indicators (GDP); – Ensuring the national security of the Arctic region and the country as a whole; – Territorial integrity, protection of state borders; – Trade load of the Northern Sea Route; – Population income growth, etc. 	<ul style="list-style-type: none"> – Growth of the company's capitalization; – Attracting foreign investors; – Public-private partnership; – Growth of fixed assets; – Possible tax incentives; – Company development through horizontal and vertical integration of production processes and assets; – Leading position as an oil and gas supplier in the domestic and foreign markets; – Entry into the promising market of liquefied natural gas (LNG); – Growth of labor productivity, etc.

For similar oil and gas projects, the effect at the national level can be manifested in the oil and gas revenues (MET, export duty) to the federal budget, which is calculated during investment design. Along with the main sources of federal budget revenues, revenues from hydrocarbon production are a significant component of the trade balance, as well as the basis of international reserves and funds [17].

The source of dividends is a part of the profit from the project; the value of this indicator can be calculated taking into account the dividend policy of the subsoil user company.

One of the main multiplier effects at the national level is the increase of population and quality of life in regions with low social and demographic indicators. Russia has a similar experience of oil and gas industry development through the formation of the MRC West Siberian petrochemical complex (on the example of the Khanty-Mansi Autonomous Okrug). This large-scale project was financially supported by the state and led to an increase in the population level, the formation of new cities, towns, enterprises, and the creation of a transport system integrated into international traffic flows. Population growth was ensured by the policy pursued by the state, focused on ensuring the population's settling in this territory [23].

The spatial organization of the MRC involves the interaction of national and corporate interests in the implementation of such large-scale projects, since without state support tools (public-private partnership, preferential loans, subsidizing part of the costs, targeted lending, land

⁷ Source: compiled by the authors.

lease benefits, attracting foreign investment, preferential taxation of profits when lending, etc.), this project will not be beneficial for the subsoil user.

Kola Mineral Resource Center

For the spatial organization of the Kola MRC, the development of oil reserves of two discovered oil fields on the continental shelf of the Pechora Sea in the zone of economic activity of the Kola MRC — Medynskoye-Sea and Varandey-Sea fields — is considered.

Maximum production of the first one (5.5 mmt) is achievable in 2024–2025 with a decrease to 3.2 million tons (2035) and less than 1.0 million tons in 2050. The maximum production of the second field (2.2 million tons) can be achieved by 2030–2032 with a decrease to 1.1 million tons (2035) and almost to zero in 2050 [5].

Thus, on the time lag of the current planning horizons, the total production of offshore fields in the transit zone of the Pechora Sea and the share of the use of sea communications of the NSR will be maintained at the level of 5.5–6.0 million tons in 2021.

As regards the modernization of sea communications, it is necessary to equip the service fleet (icebreaking, rescue and auxiliary vessels) to the level required to ensure safe year-round navigation in the Arctic seas and along the NSR routes. The structure of marine communications is organically complemented by a system of basing and terminals requiring reconstruction, as well as the creation (modernization, construction) of a network of seaports along the southern route of the NSR and logistics points on the islands and lands.

Various types of energy resources are located in the regions of the Arctic, Siberia and the Far East, but most of these regions are characterized by a significant lack of human resources and the availability of competencies in management of the regional economy, but, most importantly, by heterogeneity of socio-economic development and depopulation as its consequence [5].

The principles of multi-layer rational planning of the regional economy should be integrated into the basis of the spatial development of modern Russia. Thus, a transition is being made from a point (focal) model of spatial development to a strip (latitudinal) model. As one of the components of a multilayer latitudinal network, the regional space that ensures the functioning of the dominant activity, as well as infrastructure and other supporting industries is considered (Fig. 3).

ization of the national policy for the formation and development of centers of economic growth based on mineral resource centers is insufficiently covered, according to the Spatial Development Strategy of the Russian Federation for the period up to 2025.

For the effective development of economic growth centers of any type, it is necessary to have a system of strategic planning and management. A set of measures for the organization and further functioning of MRC as centers of regional development of the constituent entities of Russia requires further elaboration as best practices are accumulated and generalized in the regions of Russia and abroad. In addition, it is necessary to take into account the previous experience of our country in the formation and management of territorial production complexes, transport and industrial hubs in Siberia and the Far East.

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The Arctic with Chinese Characteristics

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Abstract. Year by year, the Arctic is becoming an increasingly complex geopolitical and geoeconomic epicenter of interaction and simultaneous confrontation between Arctic and non-Arctic actors in international relations. In particular, China has already “put its hands” (插手) to the Arctic region, being a non-Arctic state. Using diplomatic language, the PRC was able not only to conduct a number of scientific studies as an official observer at the Arctic Council, but also to build up economic ties with the Arctic countries over a relatively short period of time. The purpose of our study is to identify the institutional features of China’s emerging Arctic identity. The main methodological framework of the study is the analysis of regions through the prism of mega- and meso-areas (Osamu Ieda) and the concept of regional security complexes (B. Buzana and O. Vever). The author is also actively researching the main strategic document of the PRC (the White Paper on the Arctic), the UN Convention on the Law of the Sea, a number of relevant international, national conventions and agreements, regulatory legal acts, international reports, statements and media materials. The author considers the identification of institutional features of the Chinese Arctic identity to be the main result of the study. The article also forecasts China’s further geostrategic course towards the Arctic region.

Keywords: *Arctic, China, Russia, international relations, geopolitics, Ice Silk Road, international cooperation, Northern Sea Route, Arctic policy*

*“The Arctic belongs to all the people around the world
as no nation has sovereignty over it”.*

Yin Zhuo, Chinese Rear Admiral ¹

Introduction

The Arctic is one of the most interesting regions, transformed from the epicenter of natural and climatic challenges into a geopolitical space with a high degree of negotiations and discussions. Advantageous transit sea routes from Asia to Europe, rich natural resource complex, strategic importance and a huge “field” for scientific research — all this, as it turned out, can be promised by melting Arctic Sea ice. Cooperation, called for by the global and scientific community, has increasingly been replaced by geopolitical competition, and China has recently begun to set the pace for this.

Meanwhile, Russia considers China exclusively as a collaborator in the Far North. Perhaps, current strategic cooperation is beneficial for both countries, since the existing international situa-

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¹ Chang G. China’s Arctic Play. *Diplomat*. URL: <https://thediplomat.com/2010/03/chinas-arctic-play/> (accessed 01 June 2022).

tion requires certain diplomatic maneuvers and strengthening partnerships as opposed to a bloc coalition within the Arctic Council. In this article, the author intends to explore the emerging Chinese Arctic identity through a new methodological framework and identify the challenges and prospects of a Chinese presence in the Arctic.

In foreign literature, a lot of scientific papers are devoted to the analysis of China's strategic activities in the Arctic. Thus, Xu Zhenwei and Xu Yuanyuan in their work, using the theory and the prisoner's dilemma, pay attention to the problem of existing international legal problems between the United States, Canada and the Russian Federation on Arctic issues and offer a number of constructive actions that would allow China to gain a profitable strategic advantage in its struggle for Arctic rights [1]. Cheng Baozhi presents his own vision of solving the main contradictions in the Arctic for China [2]. Mei Hong and Wang Zengzhen substantiate China's Arctic aspirations [3]. Liu Huirong and Yang Fan delve into the reasons for the "fragmentation of international law" in the Arctic, highlight the contradictions in international and national regulations for this region and offer their vision of how to solve a number of Arctic problems [4]. Other Chinese scientists have explored the ontology of China's motives in an effort to keep the Chinese flag on the Arctic front [5; 6; 7; 8], and justified what is the strategic feature and importance of sea routes in northern latitudes for China [9, Xiao Y.; 10, Liu N.; 11, Sun K.; 12, Li Z., Tian Y.; 13, Guo P., Guan Q.]. Mark Lantaigne studied the evolution of China's strategies towards the Far North, and determined the prerequisites for analyzing the current state and future development of China's Arctic policy [14; 15; 16]. N. Joelsen dedicated his work to examining China's interaction with the Arctic Council [17]. The China-Arctic topic was also the subject of Russian works. Thus, Erokhin V., co-authored with Gao Tianmin and Zhang Xuhua, studied the critical points in implementing the Chinese paradigm in the Arctic and a series of other investment projects². Leonov S.N. explores the main reasons for the increased activity of the PRC in the Arctic and identifies a number of problems for the Russian Federation that could potentially arise with a weakening of positions in the Northern Sea Route [18]. However, despite the numerous advantages of the available scientific papers on this topic, they did not adequately reflect the latest processes. Moreover, our article proposes to look at the activities of the Celestial Empire in the Arctic in terms of the new methodological framework.

Methodology

The concept of mega- and meso-areas presented by Osamu Ieda is used as the basis of our study³. In our opinion, this concept can be fruitful for the analysis of spatial units created by geopolitical upheavals of the late 20th century.

² Erokhin V., Gao T., Zhang X. Arctic Blue Economic Corridor: China's Role in the Development of a New Connectivity Paradigm in the North, 2018. URL: https://www.researchgate.net/publication/328758312_Arctic_Blue_Economic_Corridor_China%27s_Role_in_the_Development_of_a_New_Connectivity_Paradigm_in_the_North (accessed 01 June 2022).

³ Osamu I. Regional Identities and Meso-Mega Area Dynamics in Slavic Eurasia: Focused on Eastern Europe, 2004. URL: <https://src-h.slav.hokudai.ac.jp/coe21/pdf01/ieda040302.pdf> (accessed 01 June 2022).

This methodology revises the current regional division, based on national-state boundaries, from a new perspective — the mega-area — and its constituent parts — the meso-areas. The new country vision allows for a better understanding of the ontological basis of the changing institutional identities of the world's regions. This conceptual framework significantly expands the angle of the political economy analytical review, allows a new assessment of upcoming trends on the world stage and undoubtedly has heuristic potential.

The meso-area represents a component part of the mega-area, which is in a balancing act between the centripetal force inherent in the mega-area (political-economic institutions, behavioral patterns, ecosystems, etc.) and external factors. The imbalance, in turn, is not only related to the weakening of centripetal forces within the mega-area, but can also be caused by encountering external globalization effects in the form of regional trade and economic integration, cultural influences from outside, etc. In other words, the consequences of globalization can cause the fragmentation of a mega-area together with meso-areas, connecting meso-areas within another mega-area with a new regional boundary. In this context, we note that a mezo-area may have access to two mega-areas: an entry mega-area and an exit mega-area.

It is also important that the meso-area is “the interaction of external factors, institutional identity and the self-identity of the meso-area itself”⁴. The dynamics of all three components determine the type of the meso-area movement: evolutionary, reverse, transformational and transitional. According to Osamu Ieda, the more a meso-area is vulnerable to external impulses, the higher the risk that it will transform and move into a new mega-region; and if a meso-area is burdened by institutionalization, it will end up in a “reverse reaction mode”^{5,6}. In terms of meso-area self-identification, it is remarkable that a high self-identification score for a meso-level area may provoke a transformation in both mega-level (entry and exit) areas⁷.

In the context of our study, the Arctic is a meso-area surrounded by mega-areas: for example, Magomedov A.K.⁸ refers to “post-Soviet Northern Eurasia” as a complex mega-area, and Vello Pettai defines the mega-areas of China, the Russian Federation and the USA as mega-areas⁹. The Arctic meso-area can be “outlined” by the political and economic influence, expressed in the concentration of business structures, huge investments, research interest, etc. on the part of the above-mentioned group of countries. However, one of the study's aims is to identify the dynamics of the Arctic's movement as a meso-area (using the above construction as an example).

⁴Ibid.

⁵Ibid.

⁶Pettai V. The study of Meso- and Mega-Area dynamics: methodological and empirical considerations. URL: https://src-h.slav.hokudai.ac.jp/coe21/publish/no7_ses/chapter03.pdf (accessed 01 June 2022).

⁷Ibid.

⁸Magomedov A.K. Energeticheskie mezo-regiony Severnoy Evrazii: menyayushchayasya rol' Kaspiyskogo basseyna i Vostochnoy Sibiri na rubezhe 20-21 stoletiy [Energy Meso-Regions of Northern Eurasia: The Changing Role of the Caspian Basin and Eastern Siberia at the Turn of the 20th-21st Centuries]. URL: <http://lib.ulstu.ru/venec/disk/2017/321.pdf> (accessed 23 July 2022).

⁹Pettai V. The study of Meso- and Mega-Area dynamics: methodological and empirical considerations. URL: https://src-h.slav.hokudai.ac.jp/coe21/publish/no7_ses/chapter03.pdf (accessed 01 July 2022).

The next concept for the analysis of the regional dimension of world politics is the regional security complex by B. Buzan and O. Wæver¹⁰. The basis of this concept is the theory of securitization. This theory is a study devoted to the inter-subjective perception of any processes or even actors that pose a “threat to the referent object”, in connection with which the need to reflect this threat is constructed. Not only the state itself, but also ecosystems, religious and dogmatic trends, human rights, etc. can be represented as an object. In particular, this concept allows us to understand how and why a particular subjective problem has been securitized.

Problem securitization

China has succeeded in politicizing (securitizing) the problem to the level of an existential threat. On the one hand, indeed, as China claims, the natural and climatic problem is real and the entire world community has to reckon with it. In particular, China asserts that global warming leads to melting of the Arctic glaciers, which in turn causes rise of the sea level. Indeed, most provinces and urban districts with major financial and economic centers are located precisely in the eastern coastal area of mainland China. Moreover, Arctic climate changes affect the state of the climate in China through air currents, which explains PRC’s concerns.

It is worth noting that the Arctic has been of academic interest to the Chinese scientific community since 1988: scientific articles and journals on the topic of polar research began to be published, the Polar Research Institute of China was opened (1989)¹¹. Nevertheless, the PRC strengthened its Arctic agenda only “after 2012, having invested more than \$90 billion in Arctic infrastructure and assets”¹². In fact, China expresses the most concern among the non-Arctic countries. The subsequent inclusion of the Arctic region in the Ice Silk Road program and the publication of China’s Arctic Policy (2018) (hereinafter referred to as the White Paper) is not just the securitization of the natural and climatic issue. This is China’s purposeful, strategic approach to entering the northern latitudes, to a region that only at first glance does not have a geographical affiliation to it.

Thus, China’s linguistic tricks to justify its Arctic aspirations still have geographical grounds: China considers it quite reasonable to classify itself as a “subarctic country”, since its northeastern part reaches 50° north latitude¹³. It has also been argued that, since a quarter of the world population lives in China, then a quarter of the reserves of the Arctic hydrocarbon potential should be

¹⁰ Buzan B., Wæver O. Security — A New Framework For Analysis. URL: https://www.academia.edu/39047709/Buzan_Waever_and_De_Wilde_1998_Security_A_New_Framework_For_Analysis (accessed 01 July 2022).

¹¹ Alexeeva O., Lasserre F. China and the Arctic. URL: https://www.researchgate.net/profile/P-Lackenbauer-2/publication/352165129_China%27s_Arctic_Engagement_Following_the_Polar_Silk_Road_to_Greenland_and_Russia/links/60bc3599299bf10dff9c7e80/Chinas-Arctic-Engagement-Following-the-Polar-Silk-Road-to-Greenland-and-Russia.pdf?origin=publication_detail (accessed 01 June 2022).

¹² Morello C. Pompeo warns of the dangers of Russian and Chinese activities in the Arctic. URL: https://www.washingtonpost.com/world/national-security/pompeo-warns-of-dangers-of-russian-and-chinese-activities-in-the-arctic/2019/05/06/e2e99690-7001-11e9-9eb4-0828f5389013_story.html (accessed 01 June 2022).

¹³ Seidler v. C. China Dips Toes in Arctic Waters. URL: Growing Chinese Interest in the Arctic Worries International Community — DER SPIEGEL (accessed 01 June 2022).

long to China [19, Dong Yue, Chen Yitong, Li Shengcheng, pp. 17–22; 20, Jia Yu, pp. 6–10; 21, Liu Huirong, Liu Xiu, pp. 1–5; 4, Liu Huirong, Yang Fan, pp. 1–5; 3, Mei Hong, Wang Zengzhen, pp. 23–27]. China's rapid entry into the composition of Arctic Council observers is emotionally justified by historical experience: the Arctic Council is a union of 8 subarctic states, which resonates for China historically with the 19th–20th centuries — also an alliance of 8 states and simultaneously a period of imperialist mockery of the once closed, but self-sufficient Chinese empire¹⁴.

Graduality as one of the advantages of Chinese geopolitics

It is also worth paying attention to the fact that China, apart from securitization of problems, is quite successful in promoting its traditional cultural values around the world. Basic geopolitical, cultural and even economic concepts are sometimes derived from the oldest philosophical and religious canonical texts. The wisdom of the ancestors is not forgotten, but goes to the “benefit of modernity”¹⁵.

As we have argued before, the historical experience of China did not allow the Arctic to become a new symbol of the “Union of Eight”, but, on the contrary, turned it into an indicator of China's involvement in a decisive struggle for its rights in this region. However, this “determined struggle” can be described as a planned and coherent strategy, consistent with the Chinese concept of “gradualism” or trial and error (摸着石头过河). More often, “gradualism” in Chinese literature correlates with the concepts of “reform”, but in the Arctic context, “gradualism” has made a significant contribution. From the recognition of the sovereign rights of the Arctic countries to the inclusion of China in the observer council, the Celestial Empire gradually moved into the Arctic. Purposeful and strategically adjusted steps to the Arctic were very consistent. It is hard to disagree with this. Deng Xiaoping's principle of “hiding one's power and waiting for a favorable moment” (隐蔽力量等待时机) is inappropriate here, as is the desire of world hegemony¹⁶. At the same time, China simply cannot lose its position as a global geopolitical actor — a strong economy does not allow it to “hide its power”. It turns out that China is forced to “put its hands” (插手) to the Arctic affairs. But how can this be done and for what purpose?

Is the Arctic a region of China?

China is a mega-area with a high level of GDP, a strong soft power influence; it is an actor with a high level of military power. China's geopolitical interests extend far beyond its demarcation lines. As the most populous country in the world, China needs not only new markets and integration ties, but also the diversification of energy sources. The Arctic could provide all of this.

¹⁴ Guo P., quoted in Xie Kaihua The Future Influence of the Polar Regions on China Will Be Great: A Visit with Arctic Issues Expert Guo Peiqing of Ocean University of China. URL: express.cetin.net.cn (accessed 01 June 2022).

¹⁵ Reference to Chinese expression: “To put the ancient at the service of the modern” (古为今用).

¹⁶ Xi Jinping: Speech at the China International Friendship Conference and the 60th Anniversary of the founding of the Chinese People's Association for Friendship with Foreign Countries. URL: http://news.xinhuanet.com/politics/2014-05/15/c_1110712488.htm (accessed 01 June 2022).

First of all, China needs to maintain its energy balance. According to forecasts, energy consumption in China will increase, as well as hydrocarbon import [22, Shan B., Xu M., Zhu F., Zhang C.; 23, Liu J., Chen W., Liu D.]. Moreover, China needs to achieve its goals by 2049, and for this purpose it will only strengthen its energy security¹⁷ by searching for new sources of energy resources. In addition to black gold and blue fuel, China needs “strategic” resources in the form of minerals¹⁸. The Arctic is a region rich in hydrocarbons and minerals.

Secondly, China is dependent on the supply of hydrocarbons through maritime transport. Most of the energy resources are transported to China through the Strait of Malacca, which, although it is of great economic importance for China, is still potentially conflictogenic¹⁹. China is therefore aware of the need to find other maritime routes for energy supplies. The Arctic region represents this alternative.

Thirdly, according to Li Xing and Rasmus Jedsso Bertelsen, strong economic performance, political stability and preservation of China’s territorial integrity are the main tasks of the Chinese leadership to ensure “the legitimacy of their power”²⁰. Scientists, continuing this idea, postulate that (since China has no sovereign rights over the Arctic region) entering the Far North should have been ensured by the need for scientific research, since climate change has a direct impact not only on the climate of the country itself but also on “agriculture and food security”, and, consequently, on the socio-economic and political stability²¹. In this context, China’s research on natural and climatic changes in the Arctic region is a “justified” way to securitize the problem and thereby to get closer to the Arctic.

Indeed, climate change in the Arctic is more of an economic opportunity for China than an environmental crisis. The issue of environmental security is of little concern to a country that is one of the world leaders in terms of carbon dioxide emissions and is also a major source of black carbon²². Balancing of these indicators would determine the success of further efforts to save the Arctic region. However, while there is an international legal mechanism for influencing China on

¹⁷ Kuhn R.L. Xi Jinping’s Chinese Dream. New York Times. URL: http://www.nytimes.com/2013/06/05/opinion/global/xi-jinpings-chinese-dream.html?pagewanted=all&_r=0 (accessed 10 July 2022).

¹⁸ Andersson P., Kalvig P., Gad U.P. Chinese companies in Arctic mining are gaming the master plan. URL: <https://www.diis.dk/en/research/chinese-companies-in-arctic-mining-are-gaming-the-master-plan> (accessed 18 July 2022).

¹⁹ Seyedi S. Strategicheskoe znachenie Malakskogo proliva v Yugo-Vostochnoy Azii [The strategic importance of the Strait of Malacca in Southeast Asia]. URL: https://www.ankasam.org/author/seyedmohammad_seyedi_asl/?lang=ru (accessed 10 July 2022).

²⁰ Li X., Bertelsen R.G. The Drivers of Chinese Arctic Interests: Political Stability and Energy and Transportation Security. URL: https://www.researchgate.net/profile/P-Lackenbauer-2/publication/352165129_China%27s_Arctic_Engagement_Following_the_Polar_Silk_Road_to_Greenland_and_Russia/links/60bc3599299bf10dff9c7e80/Chinas-Arctic-Engagement-Following-the-Polar-Silk-Road-to-Greenland-and-Russia.pdf?origin=publication_detail (accessed 03 July 2022).

²¹ Ibid.

²² Yamineva Y. China in the Arctic: climate agenda as a space for multilateral cooperation amidst great power competition. URL: https://www.researchgate.net/publication/351746375_China_in_the_Arctic_Climate_agenda_as_a_space_for_multilateral_cooperation_amidst_great_power_competition (accessed 07 June 2022).

greenhouse gas issues, the problem of reducing black carbon emissions remains unresolved. Greenhouse effect issues are regulated by the Paris Agreement until 2030²³. At the same time, there is also an Arctic strategy of China [14; 15; 16, Lanteigne M.]. The Paris Agreement calls for reduction of greenhouse gases by all countries of the world, while China's strategy does not provide for additional measures to level greenhouse gas indicators, since the country does not consider its impact on the Arctic extensive and destructive²⁴. In this case, it is reasonable to believe that the Arctic's natural-climatic problem is a successful securitization, because China invests heavily in a region that provokes natural challenges, but at the same time (albeit partially) provokes these problems in this region itself.

Thus, as we see once again, the goals of China's "entry" to the Arctic region are clear: securitizing of the natural-climatic component brought China closer to substantiating its interest and the need to participate in circumpolar cooperation. However, how did China act to get closer to the Arctic?

Firstly, through international political instruments. China recognized the problems in the Arctic as generally regional, but rapidly trying to expand their international dimension. In particular, China managed to securitize this aspect through the prism of the natural resource potential of the Arctic and its sea routes.

In a relatively recent published White Paper, China describes itself as a "country close to the Arctic"²⁵ (in Russian-language literature, the translation "sub-Arctic country" is more common). China positions itself as a country that has legitimate rights in the Arctic region, since the Arctic is included in the space "community of destiny"²⁶. Accordingly, the Arctic is a shared global space. The legitimate rights to conduct various kinds of research and other practices should be respected not only by the Arctic states to each other, but also to China [4, Liu Huirong, Yang Fan].

China understands that the Arctic is more of an ocean, and accordingly, issues in the international legal field should be resolved through the UN Convention on the Law of the Sea. The problem is that this Convention itself is a stumbling block, since it contains "flaws" that allow territorial countries to interpret the articles of the document in their own way (in accordance with their national rights and interests). In this context, the words of Li Zhenfu are interesting: "China should at the national level rely on real strengths in the formulation of international law, scientific research and jurisdiction over resources and sea routes and do its best in the Arctic to make its own voice heard and strengthen its right to speak out. Only those, who become owners of re-

²³ Paris Agreement. URL: https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_russian_.pdf (accessed 10 July 2022).

²⁴ Yamineva Y. China in the Arctic: climate agenda as a space for multilateral cooperation amidst great power competition. URL: https://www.researchgate.net/publication/351746375_China_in_the_Arctic_Climate_agenda_as_a_space_for_multilateral_cooperation_amidst_great_power_competition (accessed 10 July 2022).

²⁵ China's Arctic policy (In Chinese). URL: <http://www.scio.gov.cn/zfbps/32832/Document/1618203/1618203.htm> (accessed 01 June 2022).

²⁶ Ibid.

sources, will be able to receive their legitimate value” [5; 24, Li Zhenfu]. The author argues that the Arctic countries are still struggling to develop sustainable international mechanisms that would resolve conflicts over Arctic issues internationally; it would be to China’s advantage to become actively involved in these matters, rather than to be a passive observer. Otherwise, the strategic value of this region will slip out from the Celestial Empire’s grasp, depriving it of “legitimate rights and interests”²⁷.

Xu Zhenwei and Xu Yuanyuan argue that the three Arctic countries — the United States, the Russian Federation and Canada — do not use a cooperative approach to resolving the problems of the Arctic region [1]. The authors compare the approaches of these countries with the stage, when one side gives its arguments, and the other side refutes them and says: “when you finish singing, I will go up to the stage”. In this context, the authors believe that it is necessary to adopt a multilateral national strategy for the Arctic Sea passages.

Moreover, China emphasizes that it guarantees and in no way disputes the rights to the Arctic of adjacent territorial countries. It was this rhetoric that enabled the Celestial Empire to approach the Arctic Council [17, Joelsen N.]. In a relatively short period of time, China managed to form its “Arctic identity” [14; 15; 16, Lanteigne M.] and become an Arctic Council observer (2013), having convinced the main body of the council of its “legitimate” interest. China supports the legitimate rights to “presence” in the Arctic Council by joining international agreements and organizations. Thus, Beijing supported the provisions of the UN Convention on the Law of the Sea²⁸, joined the Treaty on the Svalbard Islands²⁹, the Agreement on the Prevention of Unregulated Fishing in the High Seas in the Central Arctic Ocean³⁰, as well as the Polar Code³¹. The latter is one of the most important documents for China, since its articles unambiguously postulate a globalist vision of the Arctic region, which facilitates the official statements of the Chinese government regarding the Arctic agenda. Moreover, China is an active player in such organizations as the International Maritime Organization, the International Arctic Science Committee; China was one of the first countries to organize the Week of the Arctic Science Summit of the High-Level Conference on Arctic Issues (2005). In this context, it seems relevant to remind the international community that China is a permanent member of the UN Security Council, and therefore issues in the Arctic region are the same prerogative for the PRC, whose activities represent an important mission “to ensure peace and security” in the region³².

²⁷ Ibid.

²⁸ United Nations Convention on the Law of the Sea. URL: https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_r.pdf (accessed 10 July 2022).

²⁹ Treaty of Svalbard dated February 9, 1920. URL: <https://base.garant.ru/2540212/> (accessed 10 July 2022).

³⁰ Agreement on the Prevention of Unregulated Fishing in the High Seas in the Central Arctic Ocean. URL: <http://publication.pravo.gov.ru/Document/View/0001202106280035> (accessed 10 July 2022).

³¹ Polar Code. URL: <https://docs.cntd.ru/document/420376046> (accessed 10 July 2022).

³² China’s Arctic policy (In Chinese). URL: <http://www.scio.gov.cn/zfbps/32832/Document/1618203/1618203.htm> (accessed 10 July 2022).

Such a great track record is a good tool for China to strengthen its international political positions on the Arctic agenda. For China, membership in various kinds of associations and organizations is not a goal in itself, but rather a compliance with the rules in international relations and a kind of tribute to trends. In this context, it would be appropriate to cite the theory of hegemonic stability of C.P. Kindleberger, according to which the hegemon, as a global actor, “promotes and implements the creation of a common good through the observance of general rules” [25, Kindleberger C.P.].

Secondly, through economic influence. It is no secret that one of the reasons for China to become an Arctic Council observer was dictated by the need to find profitable investors^{33, 34}. Moreover, the official recognition of China’s observer status coincides with the launch of the Belt and Road Initiative, a large-scale global investment project to develop infrastructure, oil and gas, industrial and other components on the territory of other countries. The initiative is aimed at expanding China’s economic opportunities and aims to redirect its domestic excess capacity and capital towards regional infrastructure development in partner countries. The Chinese project does not represent gratuitous financial assistance. On the contrary, it has long been dubbed China’s “Marshall Plan”. The format of this Plan is in line with the idea of developing “South-South” dialogue and cooperation, and is also “inspired by the principles of openness, inclusiveness and common win”³⁵.

However, in practice the situation may look slightly different. Thus, in one of The Economist articles it was suggested that there are not only “secondary motivations” behind the Initiative, but the ultimate goal of this mega-project is to transform the Eurasian region into a trade and economic environment competitive to areas of American influence: “from the placement of foreign exchange reserves to the creation of new markets”³⁶. The article declares that China, through the expansion of the Belt and Road, is strengthening its position in various regions, including in the South China Sea and in Central Asia, etc. Fears that such a “construct” will be successfully continued and implemented in the Far North will not be unfounded, especially since this “construct” has already received its name — “Ice Silk Road”. Moreover, if we take into account that “The World

³³ Chalenko A. Daniya teryaet Grenlandiyu? Ekonomika Kitaya igraet v protivoves militaristskim ambitsiyam SShA [Is Denmark losing Greenland? The Chinese economy is playing against the militaristic ambitions of the United States]. URL: <https://goarctic.ru/politics/daniya-teryayet-grenlandiyu-ekonomika-kitaya-igraet-v-protivoves-militaristskim-ambitsiyam-ssha/> (accessed 12 July 2022).

³⁴ Erokhin V., Gao T., Zhang X. Arctic Blue Economic Corridor: China’s Role in the Development of a New Connectivity Paradigm in the North, 2018. URL: https://www.researchgate.net/publication/328758312_Arctic_Blue_Economic_Corridor_China%27s_Role_in_the_Development_of_a_New_Connectivity_Paradigm_in_the_North (accessed 01 July 2022).

³⁵ Denisov I.E. Vneshnyaya politika Kitaya pri Si Tszin'pine: preemstvennost' i novatorstvo [Denisov I.E. Chinese foreign policy under Xi Jinping: continuity and innovation]. URL: https://mgimo.ru/upload/iblock/bbd/Outlines%20of%20Global%20Transformations_5_2017-Denisov.pdf?ysclid=I5zhh1v86s410693633 (accessed 23 July 2022).

³⁶ What is China’s belt and road initiative? URL: <https://www.economist.com/the-economist-explains/2017/05/14/what-is-chinas-belt-and-road-initiative> (accessed 10 July 2022).

Bank, based on political considerations, lends to (US-friendly) countries”³⁷, then why is the activity of the “Belt and Road” to approve loans to countries loyal to Chinese policy (albeit with some differences in application) perceived as something “unsafe” by the collective West ³⁸?

The Belt and Road Initiative has two dissimilar aspects to analyze. The first aspect is that the Initiative itself is a new platform for successful interaction with China in order to implement large-scale infrastructure, industrial and oil and gas projects. The northern direction is no exception. China has been very successful in building up its zone of economic influence in the Arctic region. This can be expressed not only in the creation of infrastructure capital, but also in the acquisition of controlling stakes in large companies in the Arctic countries. For example, the Chinese corporation CNOOC Ltd. acquired the Canadian company Nexen Inc.³⁹ Leone Aglukkak, Canada’s former health minister, Nunavut Inuk leader and former chair of the Arctic Council, said that “the benefits (from Chinese projects in the Arctic) are too great to pass up”⁴⁰. China is interested in mining in the Canadian part of the Arctic — about \$19 billion was invested by China in this direction⁴¹. Moreover, “the Chinese company Jilin Jien Nickel Industry Co., Ltd. owns Canadian Royalty Inc., a Canadian mining company; the Chinese company Jinduicheng Molybdenum Group Co., Ltd. (JDC) acquired Yukon Zinc for US\$113 million; Yunnan Metallurgical Group Co., Ltd, a Chinese company, invested US\$100 million in a zinc and lead mining joint venture with Selwyn Resources in 2010 (50/50) and then invested additional US\$50 million in 2013 to take full control of the Yukon project⁴².

The PRC is also successfully pursuing its policy in the oil and gas sector. Australia (Greenland Minerals) transferred the “leading role” to China (Shenghe Resources Ltd.) in the processing and marketing of rare earth metals and uranium mining⁴³. Shenghe Resources Ltd., together with Ironbark (Australia) mines zinc, etc.⁴⁴ This also includes Iceland as well as Svalbard, where China acquired certain rights under the 1920 Treaty⁴⁵.

China is indeed investing heavily in the Arctic region. Thus, according to CNA Analysis, in the period 2005–2017, “cumulative Chinese investments in the Arctic countries amounted to more

³⁷ Devonshire-Ellis C. China’s Overseas Sovereign Debt Financing Is Built On Sound Financial Principles & Debt Repackaging Strategies. URL: <https://www.ft.com/content/f78ebff8-a4d9-419c-9a76-dcf6cddb3ad9> (accessed 10 July 2022).

³⁸ Ibid.

³⁹ Vlasti SShA odobrili sdelku po pokupke Nexen kitayskoy Cnooc [US approves deal to buy Nexen from China's Cnooc]. URL: <https://globalstocks.ru/vlasti-ssha-odobrili-sdelku-po-pokupke-nexen-kitayskoy-cnooc/> (accessed 19 July 2022).

⁴⁰ Oddleifson E., Alton T., Romaniuk S.N. China in the Canadian Arctic: Context, Issues, and Considerations for 2021 and Beyond. URL: https://www.ualberta.ca/china-institute/research/analysis-briefs/2021/arctic_analysis_brief.html (accessed 10 July 2022).

⁴¹ Ibid.

⁴² Ibid.

⁴³ Chalenko A. Daniya teryaet Grenlandiyu? Ekonomika Kitaya igraet v protivoves militaristskim ambitsiyam SShA [Is Denmark losing Greenland? The Chinese economy is playing against the militaristic ambitions of the United States]. URL: <https://goarctic.ru/politics/daniya-teryaet-grenlandiyu-ekonomika-kitaya-igraet-v-protivoves-militaristskim-ambitsiyam-ssha/> (accessed 12 July 2022).

⁴⁴ Ibid.

⁴⁵ Treaty of Svalbard dated February 9, 1920 URL: <https://base.garant.ru/2540212/> (accessed 10 July 2022).

than \$1.4 trillion”, most of which was invested in “mining, infrastructure and energy projects”⁴⁶. According to TASS, the Chinese corporation CNPC will import 3 million tons of LNG annually⁴⁷. China is also investing heavily in the oil and gas sector. For example, it invests in the development of “the Payaha oil field, which is worth more than US\$5 billion, and two large Arctic ports”⁴⁸. It should also be said that the Arctic seems to be a profitable region for China in the development of its own shipping, as well as in the expansion of mining in order to strengthen its energy component and economic opportunities⁴⁹.

Such a policy would allow the Celestial Empire to strengthen its own institutional identity in the region. This, in turn, leads to an increase in centripetal forces that form a unique meso-area (according to Osamu Ieda). In other words, the above examples demonstrate China’s expanding economic interaction with the Arctic countries within the framework of project activities, which, according to China, cannot contain “destructive” imperatives for regional countries, since the Initiative is full of ideas of promoting dialogue and cooperation⁵⁰. However, more and more countries are beginning to doubt this.

Thus, the second aspect for analysis could be the thesis that the “Ice Silk Road” is a tool to strengthen China’s geo-economic influence and hegemon status. This thesis is actively promoted by the collective West, in particular the United States, which is not surprising in the context of the active geopolitical rivalry between the US and the PRC. As Mike Pompeo, now a former US Secretary of State, stated, Chinese companies are implementing the directives of the CPC Central Committee or, in other words, using a “coordinated” strategic approach in the (Arctic) region⁵¹. This approach undoubtedly provokes thorough “checks on the security of investments in various infrastructure facilities”, which may ultimately lead to the obstruction of various projects⁵². It is not surprising that European countries have created a special Committee on Foreign Investment in the EU (CFIEU), the main purpose of which is “screening of investments by third countries in the stra-

⁴⁶ Rosen M.E., Thuringer C.B. Unconstrained Foreign Direct Investment: An Emerging Challenge to Arctic Security. URL: https://www.cna.org/archive/CNA_Files/pdf/cop-2017-u-015944-1rev.pdf (accessed 10 July 2022).

⁴⁷ NOVATEK podpisal kontrakt s kitayskoy CNPC na postavku 3 mln tonn SPG v god [NOVATEK signed a contract with Chinese CNPC for the supply of 3 million tons of LNG per year] URL: https://tass.ru/ekonomika/1198575?utm_source=google.com&utm_medium=organic&utm_campaign=google.com&utm_referrer=google.com (accessed 10 July 2022).

⁴⁸ China’s ‘Arctic Silk Road’ projects. URL: <https://chinadialogueocean.net/en/climate/12569-chinas-arctic-silk-road-projects/> (accessed 10 July 2022).

⁴⁹ China’s Arctic policy (In Chinese). URL: <http://www.scio.gov.cn/zfbps/32832/Document/1618203/1618203.htm> (accessed 10 July 2022).

⁵⁰ Denisov I.E. Vneshnyaya politika Kitaya pri Si Tszin'pine: preemstvennost' i novatorstvo [Denisov I.E. Chinese foreign policy under Xi Jinping: continuity and innovation]. URL: https://mgimo.ru/upload/iblock/bbd/Outlines%20of%20Global%20Transformations_5_2017-Denisov.pdf?ysclid=I5zhh1v86s410693633 (accessed 23 July 2022).

⁵¹ Andersson P., Kalvig P., Gad U.P. Chinese companies in Arctic mining are gaming the master plan. URL: <https://www.diis.dk/en/research/chinese-companies-in-arctic-mining-are-gaming-the-master-plan> (accessed 18 July 2022).

⁵² Ibid.

tegic sectors of European states”⁵³. The reasons for this could be, above all, national security concerns. For example, the construction of airports in Greenland by the Chinese or the purchase of a naval base in Greenland has been blocked by the United States^{54,55}. At first glance, this example illustrates the confrontation between the PRC and the US. In reality, the reasons for the refusal may have been much deeper: most Greenlandic parties were against the Chinese presence (although Chinese investments are more profitable and have a long-term perspective, unlike those of Denmark and the US)⁵⁶. The case with Finnpulp is almost similar⁵⁷ (it is noteworthy that the Chinese company Hengan International holds a 36.5% stake in Finnpulp). However, Chinese analysts voiced a different idea. Thus, the US withdrawal from the IRNF Treaty and attempts to acquire Greenland (under President Donald Trump) are anti-Chinese in nature: the Arctic is not only turning into a strategic front to counter Chinese (and Russian) activities, but is also beginning to be considered as “part of a wider US strategy to strengthen nuclear deterrence (of China and Russia), which may include the installation of a missile defense network”⁵⁸.

Perhaps the concerns of the Arctic countries regarding the “Ice Silk Road” are well-founded, because, as noted earlier, China is actively investing in “Arctic capital” and buying controlling stakes in large companies. Such Chinese penetration into the Arctic could provide a platform for lobbying Chinese interests, as well as a legal precedent for a completely legitimate justification for conducting a military campaign to protect its capital in the event of martial law or war with another state. In other words, China’s entry into the High North has a “dual purpose” — securitized by scientific research, but in fact, according to the report of the US Department of Defense to Congress “Military and Security Developments Involving the People’s Republic of China, 2019”, serves as a pretext for China’s military infrastructure (remarkably, Denmark came to the same opinion)⁵⁹.

Regarding interaction with Russia, China benefits only from cooperation, not rivalry. This is due to the fact that, as we have previously stated, international political problems are primarily on the “Arctic” agenda, in particular the issues of geological belonging to sovereign territories, the expansion of the Arctic shelves and a number of other issues. Another “stumbling block” is the problem related to the significant natural-resource potential located in the exclusive economic

⁵³ Poyas, put', proekty i problemy [Belt, Road, Projects and Problems]. URL: https://atomicexpert.com/silkway_belt_and_path (accessed 12 July 2022).

⁵⁴ Chalenko A. Daniya teryaet Grenlandiyu? Ekonomika Kitaya igraet v protivoves militaristskim ambitsiyam SShA [Is Denmark losing Greenland? The Chinese economy is playing against the militaristic ambitions of the United States]. URL: <https://goarctic.ru/politics/daniya-teryayet-grenlandiyu-ekonomika-kitaya-igraet-v-protivoves-militaristskim-ambitsiyam-ssha/> (accessed 12 July 2022).

⁵⁵ Mamchits R. Kitay i SShA boryutsya za Grenlandiyu [China and the US fight over Greenland]. URL: https://news.rambler.ru/other/41625648/?utm_content=news_media&utm_medium=read_more&utm_source=copy_link (accessed 18 July 2022).

⁵⁶ Ibid.

⁵⁷ Finnpulp otkazalas' ot stroitel'stva tsellyuloznogo zavoda v Finlyandii [Finnpulp refuses to build a pulp mill in Finland]. URL: <https://lesprominform.ru/news.html?id=17378> (accessed 23 July 2022).

⁵⁸ China’s strategic interest in the Arctic goes beyond economics. URL: <https://www.defensenews.com/opinion/commentary/2020/05/11/chinas-strategic-interest-in-the-arctic-goes-beyond-economics/> (accessed 10 July 2022).

⁵⁹ Ibid.

zones [26, Komissina I.N.]. When resolving international legal disputes, it significantly reduces China's ability to claim Arctic energy resources, as the international Arctic waters are limited. Of course, China benefits from the withdrawal of the Northern Sea Route from the national jurisdiction of the Russian Federation and permission for free navigation. The problem of this sea route is that the NSR passes through a large number of international straits. In fact, there are many other problems. For example, there is still no clearly defined international legal regime for Arctic maritime spaces, and there is no concept accepted by all actors in the High North regarding the delimitation of Arctic spaces. The lack of a single universally accepted concept has provoked China to put forward its concept of inclusive Arctic rights (or internationalization). In this context, it is not surprising that China has rapidly begun to assert itself as a new standard-setter and initiator of a revision of the existing provisions of the regulations on the Arctic.

It should also be noted that cooperation between the PRC and the Russian Federation in the Arctic is beneficial to both countries, since although Russia is potentially in a good position to exercise its rights to the underwater part of the Northern Sea Route, this issue is unlikely to be resolved in coming decades due to the Commission's procedure to resolve legal disputes in the Arctic territories⁶⁰ [27, Moroz E.N.]. In contrast to the Suez Strait, the Northern Sea Route is the most profitable transport artery for shipping cargo to Europe, because the Northwest Passage and the Transpolar Sea Route seem to be very expensive to sail and navigate and because of the potential for rescue efforts [18, Leonov S.N.]. It is also worth bearing in mind that China's interest in the Northern Sea Route is to establish the delivery of gas, natural resources, as well as to accumulate and consolidate experience in navigation, train crews (who will then move to new Chinese ice-breakers) and conduct transport exploration of those routes that constitute an alternative to the Russian NSR. Perhaps one should not ignore the fact that China is interested in political economy access to regions that have rich natural resources and are cut off from the Russia by land.

However, despite the above, relations between China and Russia in the Arctic region should be considered in the context of strategic cooperation, especially now. This is due to the fact that the next sanctions package against the Russian Federation affected the logistics component of tankers transporting Russian oil⁶¹. Perhaps, in this situation, China could become an alternative to Europe for Russia in the future, although the PRC is already successfully implementing its Arctic cooperation with the Russian Federation today. This is reflected in China's presence in Russia's major Yamal LNG project (where Chinese CNPC and the Silk Road Fund own almost a third of the

⁶⁰ Submissions, through the Secretary-General of the United Nations, to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea of 10 December 1982. URL: https://www.un.org/Depts/los/clcs_new/commission_submissions.htm (accessed 10 July 2022).

⁶¹ Ivanovskiy D. Evropa ukhodit, Kitay prikhodit — zarubezhnye SMI ob Arktike [Europe is leaving, China is coming - foreign media about the Arctic]. URL: <https://goarctic.ru/politics/evropa-ukhodit-kitay-prikhodit-zarubezhnye-smi-ob-arktike/> (accessed 23 July 2022).

project)⁶². China produced the Boris Sokolov oil tanker⁶³. China took part in joint work with the Russian Federation in the construction of a port in Arkhangelsk [28, Morozov Yu.V., Klimenko A.F.]. Indeed, the Far North has lately become a theatre of military operations⁶⁴. At the time of writing this paper, Finland and Sweden were in the process of joining NATO, and thus the number of NATO member states in the Arctic Council will increase by two countries, which will ultimately create a strong anti-Russian coalition on the Arctic front. The President of the Russian Federation V.V. Putin told his Finnish colleague: “abandoning the traditional policy of military neutrality would be a mistake”⁶⁵. The Kremlin says that although the entry of Finland and Sweden does not pose an “existential threat” to Russia⁶⁶, the deployment of the alliance’s military infrastructure will create a trigger for a “mirror response” from the Russian Federation⁶⁷.

In fact, the collective West views “China and Russia as a threat to the world order”⁶⁸. When it comes to the Arctic space, Russia, as a country with enormous military-strategic potential, may indeed cause serious concerns for the seven NATO member states (as part of the Arctic Council). Regarding China’s military and strategic involvement in the Arctic, there are several opinions. Thus, Li Zhenfu stated that the complete resolution of all Arctic problems “will be directly related to world security” [5; 24, Li Zhenfu]. The probability of a military resolution of the Arctic issues was also presented in one of the military surveys in China [29, Li D.]. Therefore, it is impossible to exclude this way of resolution of the Arctic problems⁶⁹. Another interesting question remains: would Russia and China engage in military confrontation with each other on the Arctic front?

Until recently, it was widely believed that such fears were not misguided. Thus, Mei Hong and Wang Zengzhen stated that Russia would defend its interests from the PRC by increasing its military potential [3]. Russia’s position was similar, stating that it would not “concede a span” to

⁶² Yamal SPG [Yamal LNG] URL: <https://www.vedomosti.ru/business/news/2015/12/17/621420-fond-shelkovogo-putiyamal-spg> (accessed 10 July 2022).

⁶³ Poyas, put', proekty i problemy [Belt, Road, Projects and Problems]. URL: https://atomicexpert.com/silkway_belt_and_path (accessed 10.07.2022).

⁶⁴ Arktika prevrashchaetsya v teatr voennykh deystviy, zayavili v MID [The Arctic is turning into a theater of war, the Foreign Ministry said]. URL: <https://ria.ru/20220522/arktika-1789986809.html> (accessed 13 July 2022).

⁶⁵ Ibid.

⁶⁶ Arktika prevrashchaetsya v teatr voennykh deystviy, zayavili v MID [The Arctic is turning into a theater of war, the Foreign Ministry said]. URL: <https://ria.ru/20220522/arktika-1789986809.html> (accessed 12 July 2022).

Medvedev schel, chto Shvetsiya i Finlyandiya v sostave NATO ne ugrozhayut Rossii [Medvedev considered that Sweden and Finland as part of NATO do not threaten Russia]. URL: <https://www.rbc.ru/politics/28/06/2022/62ba38149a79475ce97dfc7b> (accessed 10 July 2022).

⁶⁷ Putin poobeshchal «zerkal'nyy otvet» na vstuplenie Shvetsii i Finlyandii v NATO [Putin promised a "mirror response" to the entry of Sweden and Finland into NATO]. URL: <https://www.fontanka.ru/2022/06/29/71449883/> (accessed 19 July 2022).

⁶⁸ Blinken nazval Rossiyu i Kitay ugrozoy sushchestvuyushchemu miroporiyadku [Blinken called Russia and China a threat to the existing world order]. URL: <https://kommersant-ru.turbopages.org/kommersant.ru/s/doc/5458511> (accessed 10 July 2022).

⁶⁹ Hinshaw D., Page J. How the Pentagon Countered China’s Designs on Greenland. Wall Street Journal, 2019. URL: <https://www.wsj.com/articles/how-the-pentagon-countered-chinas-designs-on-greenland-11549812296> (accessed 04 July 2022).

China⁷⁰. Despite the statements presented, a military confrontation between the Russian Federation and China in the Arctic is poorly represented, since there are no good reasons for this, even if the Northern Sea Route would hypothetically be a stumbling block. Moreover, the concentration of Chinese military infrastructure in the Arctic seems inappropriate to some scientists⁷¹.

It would remain advantageous and acceptable for China to build up economic ties with the Arctic countries as opposed to military and strategic mobilization. This is consistent not only with the narrative of the White Paper, the strategic vision of the Chinese party under the Belt and Road Initiative, but also with the logic of the behavior of the “Asian dragon” on the world stage. Of course, it is not a question of China ceasing to build up its military capacity or abandoning militarized rhetoric (as the case with Taiwan calls for). However, the Beijing consensus with ambitious goal-setting creates fundamentally new political and economic incentives that provoke the formation of a new paradigm structure of the world order.

In other words, China’s gradual build-up of economic ties in the Arctic region will not only bring more economic dividends, but will probably strengthen the formation of the Chinese mega-area. We cannot exclude that in the future, China and the Arctic region will establish their institutional ties through trade, economic, oil and gas, infrastructure and other projects, as is currently the case. Thus, the Arctic region, being a meso-area, becomes vulnerable to external impulses (represented by the PRC), which will ultimately turn the Arctic meso-area into a Chinese mega-area, which corresponds to the transitional type according to the Osamu Ieda model⁷². It will not be a question of violating the sovereign rights or territorial integrity of the Arctic countries. China is a peaceful actor in international relations: observing the UN Charter, it will rapidly increase its geopolitical influence — and in such a struggle it cannot be said that someone will lose, because then it will not correspond to the declared Chinese principles of equality, “common win” or “South–South” dialogue. On the contrary, all the countries joined in the Chinese initiatives are expected to receive economic dividends from the partnership with the PRC and thus enter the Chinese mega-area “umbrella”.

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⁷⁰ Faulconbridge G. Russian Navy Boss Warns of China’s Race for Arctic. Reuters Africa, 2010. URL: af.reuters.com/ (accessed 10 July 2022).

⁷¹ Alexeeva O., Lasserre F. China and the Arctic. URL: https://www.researchgate.net/profile/P-Lackenbauer-2/publication/352165129_China%27s_Arctic_Engagement_Following_the_Polar_Silk_Road_to_Greenland_and_Russia/links/60bc3599299bf10dff9c7e80/Chinas-Arctic-Engagement-Following-the-Polar-Silk-Road-to-Greenland-and-Russia.pdf?origin=publication_detail (accessed 01 July 2022).

⁷² Osamu I. Regional Identities and Meso-Mega Area Dynamics in Slavic Eurasia: Focused on Eastern Europe, 2004. URL: <https://src-h.slav.hokudai.ac.jp/coe21/pdf01/ieda040302.pdf> (accessed 10 July 2022).

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Maritime Shipping in the Arctic: Challenges and Opportunities to Improve Safety Must Be Reflected in the State's Transport Policy

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Abstract. The opening of the Arctic Sea routes ushers in many opportunities due to the melting of the Arctic Sea ice. The International Maritime Organization has introduced the Polar Code for shipping and training of seafarers. Follow up by regulatory authorities of incidents along with the Northern Sea Route and increasing ship casualties in the Arctic region have been analyzed, including the adequacy of existing regulations. The author's opinion is that the inadequate oversight mechanism brings out a need for governments of the Arctic, especially in Russia, to examine the adequacy of measures undertaken, including regulation to implement the Polar code, associated infrastructure in the Arctic for safe navigation and the current state of search and rescue. The challenges in implementing the Polar Code and the necessity for independent maritime regulatory authorities and sharing information relating to the analysis of incidents are discussed. The practical significance of the article is in its use by policymakers and researchers working on transport policy and safety of Arctic navigation, and also for educational use at universities.

Keywords: *transport policy, Arctic shipping, Northern Sea Route, maritime safety, search and rescue, Polar Code*

Introduction

The opening of the Arctic Sea routes ushers in many opportunities due to the melting of the Arctic Sea ice. The International Maritime Organization (IMO) has introduced the Polar Code (PC) for shipping and the training of seafarers. Most Arctic governments have initiated measures to implement the PC. The Northern Sea Route (NSR), the key section of the Northeast Passage between northwest Europe and northeast Asia, is the primary focus of the international community. However, the Northwest Passage has also seen a modest increase in interest. There have been increasing voyages in Arctic waters and a steady rise in the number of ship casualties. The Protection of the Arctic Marine Environment (PAME) Working Group remarked in its report that shipping activity in the Arctic has increased by 25% in 2013–2019 (PAME, 2020).

Tourism in the Arctic has also increased. The Arctic is a fragile environment, and any accident will have serious consequences. The United Nations Intergovernmental Panel on Climate Change (IPCC) noted that *“Greater levels of Arctic ship-based transportation and tourism have socio-economic and political implications for global trade, northern nations, and economies linked to traditional shipping corridors; they will also exacerbate region-specific risks for marine ecosystems*

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and coastal communities if further action to develop and adequately implement regulations does not keep pace with increased shipping (high confidence)" (IPCC, 2019). State transport policy has the responsibility for ensuring safety of the transportation process and the equipment (means of transport and infrastructure) involved in such a process [1, Gorbunov A.A., pp. 2–49]. This article will analyse the extent to which the PC may be adequate in meeting the challenges of shipping safety in the Arctic, given the limitations of search and rescue (SAR) assets. It suggests what lessons could be drawn from the experience of the last decade of heightened activity by Arctic states in the formulation of transport policy and regulation, especially by Russia.

Research on Arctic shipping has mainly deliberated on the NSR for trans-Arctic transit between the Pacific and the Atlantic. The NSR is a potential maritime trade route between ports in northwest Europe and northeast Asia due to shorter transport distance (30%–50% less) and reduced sailing time (14–20 days) compared to the Suez route, assuming the same speed. Over the past decade, several studies have evaluated shipping on the NSR and related infrastructure: for 2011–2013 [2, Moe A., pp. 784–802]; for 2013 [3, Humpert M., pp. 1–20], [4, Marchenko N., pp. 1–10]); transit-trend analysis for both the NSR and the Canadian Northwest Passage for 2007–2012 [5, Lasserre F., Alexeeva O., pp. 180–192]; analysis of transit data on the NSR [6, Zhang, Y., Meng, Q., & Zhang, L., pp. 53–60]; analysis of NSR shipping from 2011–2020 [7, Gunnarsson B., Moe A., pp. 4–30], the overall impact of Arctic shipping [8, Chircop A. et al., pp. 1–319], [9, Lasserre F., Faury O. pp. 1–250], an overview of the legal search and rescue framework and infrastructure [10, pp. 1–9] These studies indicate that Arctic transit shipping has grown modestly, primarily along the NSR. Current shipping is mostly destination-oriented, which is related to natural resource extraction centres.

Many studies have analysed various issues concerning the implementation of the PC and Port State Control (PSC) by Arctic countries: Regulation of merchant shipping [11, pp. 225–257]; [12, pp. 272–298]; Article 234 of UNCLOS and the PC [13, pp. 1–71]; Analysis of the PC from a legal perspective [14, Vylegzhanin A.N., pp. 43–60]; regarding implementation of the PC [15, Grant A.N., pp. 190–205], [16, Zagorski A., pp. 292–305]; International code for operating in polar waters and legal implications [17, Jensen O., pp. 60–82]; critical assessment of the PC from a Russian perspective¹, regarding the role of the PC in Arctic Maritime Governance [18, Hindley, pp. 182–192]; enhanced port control in Arctic waters [19, Bai J., Wang C., pp. 1–21]; cooperation in the area of port control in the Arctic [20, pp. 160–176]; deficiencies in the PC from a Russian perspective [21, pp. 322–333]; implementation of the PC on the NSR [22, pp. 30–42] and discussion on the implementation of the PC and the STCW's convention's training requirements for ice navigation in polar waters [23, pp. 160–176].

¹ Mednikov V.A. Polyarnyy kodeks. Popytka kriticheskogo osmysleniya [Polar Code. An attempt of critical reflection]. URL: http://russiancouncil.ru/common/upload/6_Mednikov.pdf (accessed 31 July 2022).

The research mentioned above also highlights the weak infrastructure and inadequate SAR assets. The theoretical studies on the PC indicate certain limitations of goal-based standards of the PC. Some researchers have also indicated the need for greater control of the operation of vessels with flags of convenience (FOC). This research attempts to analyse the issue by representing two case studies and suggesting a way ahead.

Section 2 of the article presents data sources and methodology. Section 3 examines Arctic shipping; Section 4 covers the follow-up analysis of two accidents and the adequacy of the oversight mechanism for incident analysis in Russia and Norway. Section 5 gives an overview of the current state of Search and Rescue, and Section 6 includes an analysis of the issue of FOC. Finally, Section 7 puts forward recommendations to improve the safety of Arctic shipping.

Research methodology

The article first presents data sources, methodology, analysis of two accidents and overview of mechanism to disseminate lessons learnt in Russia and Norway, state of search and rescue, and recommendations to improve the safety of Arctic shipping. The study greatly benefitted from the study by Gunnarson and Moe on ten years of international shipping on the NSR, assessment of Arctic shipping by the PAME Working Group, official transit statistics 2013–2019 and information on accidents available on the website of the Northern Sea Route Administration (NSRA). In addition, information on vessel characteristics and shipping companies/operators was found on marinetraffic.com. Internet sources were used to check the characteristics of various shipping activities, especially accidents, since not enough research has been done in this area.

The significance of the research can be found in the risks associated with shipping in the Arctic, the regulatory framework of the PC and the increasing accidents in the Arctic. This accentuates the need for greater cooperation between the Arctic and the non-Arctic states. The article aims to draw attention to the challenges and suggest measures to enhance the safety of Arctic shipping. The methodological basis of the research is analysis and synthesis, description and explanation, dialectical approach, systemic and comparative analysis. Systemic analysis of Arctic shipping is relevant because of linkages between the system or policy choices made by the IMO and Arctic governments and the Arctic environment. Comparative analysis was used to compare the approach to incidents by the Norwegian and Russian authorities. The dialectical approach is most relevant as it assists in analysing the problem of Arctic shipping from different perspectives and then getting a suggested solution.

Shipping in Arctic waters

The shipping in Arctic waters is slowly and steadily growing, primarily along the NSR. The commercial potential is likely to be most important for countries of North-East Asia, namely Japan, South Korea and China, since their goods could become potentially cheaper to other manufacturing hubs in South-East Asia and India if transported via the North-East passage parallel to Russia's northern border, or the Northern Sea Route. Most cargo shipments along the NSR are related to

supplies of natural resources from the Arctic or supplies of equipment and cargo to resource extraction facilities. There were only 51 international transits in 2016–2019. Most of the cargo are from Asia (28 voyages or 60%) and primarily from China (19 voyages) [7, Gunnarsson B., Moe A., pp. 4–30]. The North-West passage through the Canadian Arctic islands would potentially apply to trade between North-East America and North-East Asia (north of Shanghai). However, this route is less commercially attractive as the direct route is more prone to ice blockage, and the circuitous route, constrained by draught limitations, is mostly frequented by research vessels and cruise ships². There is also a possibility of a third route over the North Pole, and this has been given the designation of the Polar Silk Road since it is being researched primarily by China.

Ship accidents in Arctic waters – dissemination and regulatory mechanism
Ship casualties in Arctic waters

The number of ship casualties in Arctic water is depicted in Table 1, and they vary from 40 to 70 in the period 2010–2020³. Analysis of this table reveals that the total number of incidents showed a rising trend till 2017, a decline in 2018 and 2019, and again a rise in 2020 due to the inclusion of incidents related to COVID-19 in the miscellaneous category. However, thereafter it shows a falling trend. It may be noted that the accuracy of this table depends upon the accuracy of reporting by various countries. Hence, this decreasing trend, while giving a cause for optimism, may also be due to non-reporting of incidents as brought out above. Unless there is mandatory reporting and common standards across Arctic countries, such a table will only be a broad indicator of ship casualties. However, the table brings out the need for continued vigilance considering the harsh Arctic environment and the limited reach of search and rescue assets [8, Chircop A., pp. 229–232].

Table 1

*Ship casualties — Arctic Circle waters, 2010–2020 (ships of 100 gross tons or more)*⁴

Type of Casualty	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Machinery damage/ failure	16	12	13	20	27	44	32	46	23	14	18
Wrecked/ Stranded	9	9	8	10	14	6	11	9	8	6	8
Fire/explosion	6	6	2	4	2	4	1	3	6	1	8
Collision involving vessels	10	4	4	2	0	3	2	4	2	3	6

² Rourke R. Changes in the Arctic: Background and Issues for Congress, US Congressional Record Service. March 24, 2022. URL: <https://sgp.fas.org/crs/misc/R41153.pdf> (accessed 31 July 2022).

³ Allianz Global Corporate & Specialty. Safety and Shipping Review 2021. URL: <https://www.agcs.allianz.com/content/dam/onemarketing/agcs/agcs/reports/AGCS-Safety-Shipping-Review-2021.pdf> (accessed 31 July 2022).

⁴ Allianz Global Corporate & Specialty. Safety and Shipping Review 2015-2021. Munich: Allianz Global Corporate & Specialty. 2021. URL: <https://www.agcs.allianz.com/content/dam/onemarketing/agcs/agcs/reports/AGCS-Safety-Shipping-Review-2021.pdf> (accessed 31 July 2022).

Contact (e.g. harbour wall)	4	1	3	6	4	5	1	1	0	0	1
Foundered (i.e. sunk or submerged)	0	3	1	1	2	0	1	0	1	0	2
Hull Damage (holed, cracks, etc.)	2	2	1	2	1	1	2	2	1	1	0
Labor dispute	0	3	1	1	2	0	1	0	0	8	0
Miscellaneous	4	2	6	5	5	6	4	6	0	8	15
Total	50	39	38	50	55	69	55	71	44	41	58



Fig. 1. Ship casualties — Arctic Circle waters, 2020 (ships of 100 gross tons or more) ⁵

Arctic tourism and associated hazards

The Arctic Shipping Status Report stated that 73 cruise ships sailed in the Arctic PC area in 2019 compared to 65 in 2018, following the overall increase in Arctic tourism. However, experts have noted the vulnerability of cruise ships carrying large numbers of passengers that may experience problems and need assistance ⁶.

Two incidents in 2018 and 2019 associated with the increased number of cruise ships in the Arctic are worthy of attention. On August 24, 2018, a Russian-flagged passenger ship with 162

⁵ Allianz Global Corporate & Specialty. Safety and Shipping Review 2021. Munich: Allianz Global Corporate & Specialty. URL: <https://www.agcs.allianz.com/content/dam/onemarketing/agcs/agcs/reports/AGCS-Safety-Shipping-Review-2021.pdf> (accessed 31 July 2022).

⁶ Fountain H. With More Ships in the Arctic, Fears of Disaster Rise. *New York Times*, July 23, 2017; George J. Exercise Held to Prepare for Arctic Cruise Ship Mishap. *Nunatsiaq News*, April 15, 2019; Potter K. Passenger Vessels and the Canadian Arctic: A Risky Combination? *Maritime Executive*, June 9, 2021.

people was cruising on Canada's Northwest Passage⁷. In March 2019, the Viking Sky cruise ship suffered engine failure with 1373 people on board when sailing from Tromsø to Stavanger in Norway. When it encountered bad weather, the ship sailed despite a weather warning. The vessel, which avoided grounding, was left without power or propulsion and had to rely on rescue helicopters to evacuate passengers as sea conditions did not allow for the use of lifeboats or tugs⁸.

The 2019 engine failure incident involving the cruise ship demonstrates how such events could quickly turn into a major disaster, mainly in remote waters such as the Arctic, where a growing number of such vessels are expected to operate in the future. Two accidents will be analysed because they highlight the concerns reflected above.

Analysis of the action taken on Incident 1 – Viking Sky

The ship was two years old, and there were 915 passengers and 415 crew members onboard "*in search of the Northern lights*"⁹. Viking Sky sailed from Tromsø on March 21, 2019, and was supposed to arrive in Tilbury, Essex, despite the shipping forecast of rough seas and stormy weather. The emergency alert was announced at 14.00 on March 23 after the ship lost its running gear and began to drift to land, about 200 miles south of the region, where compliance with the norms of the PC published by the IMO is mandatory. 479 passengers were evacuated by helicopter to Molde in groups of 15–20 people by 10.30 on March 24, 2019¹⁰. Three years after the incident, no information regarding the lesson learnt and near-miss analysis could be found on the websites of The Norwegian Maritime Administration or the Accident Information Board (AIBN) (Figure 2) linked to the former website (Norwegian Maritime Administration, 2021)¹¹. The AIBN is legally authorised to analyse all incidents, including near misses. According to the Norwegian Safety Investigation Authority website (Figure 3), the incident is still being investigated (Norwegian Safety Investigation Authority, 2021)¹².

⁷ Humpert M. A Cruise Ship Runs Aground in Canada's Arctic Waters; The Akademik Ioffe's Sister Ship Was Nearby, and Together with Canadian Coast guard Ships, Was Able to Rescue All Passengers. ArcticToday, August 28, 2018. URL: <https://www.arctictoday.com/cruise-ship-runs-aground-canadas-arctic-waters/> (accessed 31 July 2022).

⁸ Allianz Global Corporate & Specialty. Safety and Shipping Review 2020. Munich: Allianz Global Corporate & Specialty. URL: <https://www.agcs.allianz.com/content/dam/onemarketing/agcs/agcs/reports/AGCS-Safety-Shipping-Review-2020.pdf> (accessed 31 July 2022).

⁹ Calder S. Viking Sky: Why Things Went Wrong, What Happened and What's Next. Independent, 24 March 2019. URL: <https://www.independent.co.uk/travel/news-and-advice/viking-sky-what-happened-storm-norway-emergency-evacuation-coast-a8837371.html> (accessed 31 July 2022).

¹⁰ Ibid.

¹¹ The Norwegian Maritime Administration. The Accident Information Board. URL: <https://www.sdir.no/en/shipping/accidents-and-safety/investigation-of-accidents/> (accessed 31 July 2022).

¹² The Norwegian Safety Investigation Authority. Current Investigations. URL: <https://havarikommisjonen.no/Marine/Current-investigations> (accessed 31 July 2022).

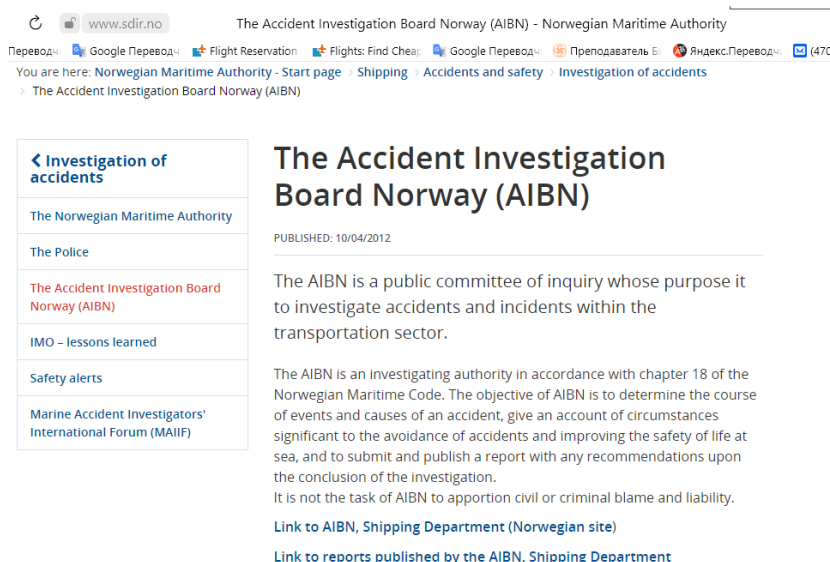


Fig. 2. Screenshot of The Accident Investigation Board-Norway website¹³.

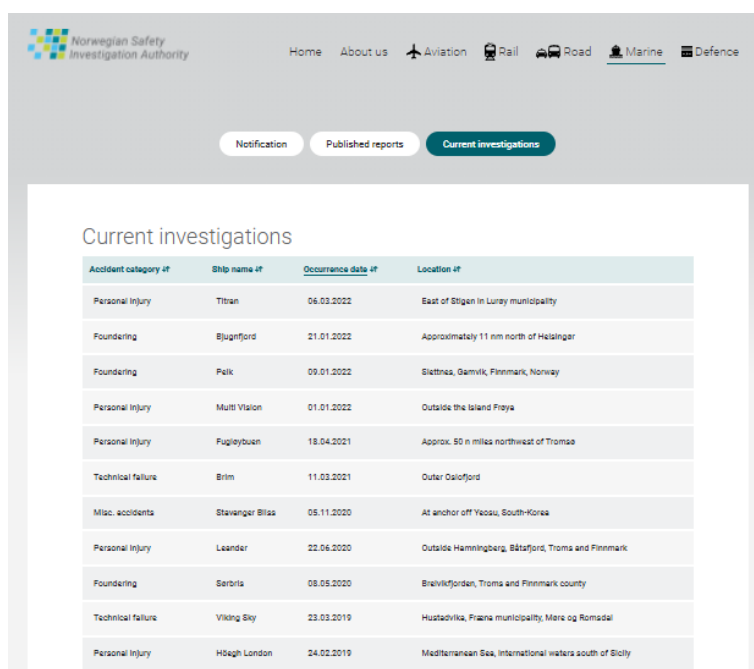


Fig. 3. Screenshot of the Norwegian Safety Investigation Authority¹⁴.

Analysis of the action taken on Incident 2 – Boris Vilkitsky incident

In April 2018, the liquefied natural gas (LNG) carrier Boris Vilkitsky (operated by the Cyprus company Dynagas, a flag of convenience vessel) entered the NSR waters violating the NSR navigation rules, when damage to one of its three engines reduced its ice capabilities from Arc 7 to Arc 4 (Northern Sea Route Authority, 2021). The LNG carrier Boris Vilkitsky entered Sabetta (Northern Sea Route Authority, 2021). Other violations noticed by the authorities included: the lack of suffi-

¹³ The Accident Investigation Board-Norway, 2022. URL: <https://www.sdir.no/en/shipping/accidents-and-safety/investigation-of-accidents/the-accident-investigation-board-norway-aibn/> (accessed 31 July 2022).

¹⁴ Norwegian Safety Investigation Authority, 2022 URL: <https://www.sdir.no/en/shipping/accidents-and-safety/investigation-of-accidents/the-accident-investigation-board-norway-aibn/>; <https://havarikommissjonen.no/Marine/Current-investigations> (accessed 31 July 2022).

cient ice experience of the captain and his crew and the lack of accurate ice charts. He was allowed to leave at the request of the Federal Government¹⁵. The Northern Sea Route Administration website does not contain information about the actions taken against the company that concluded the contract with the vessel, as well as the owner or captain of the vessel¹⁶. After the incident with Boris Vilkitsky in April 2018, there is still no information (see Figure 4) about action taken, and other subsequent incidents reported in the Russian media on the administration of the Northern Sea Route website¹⁷. The Federal Service for Supervision of Transport (Rostransnadzor) publishes typical violations on its website. However, there are no incident analysis or action taken reports related specifically to the NSR^{18, 19}. In 2021, there was a widely reported case of 20 vessels being stuck in ice along the NSR²⁰. This issue has no mention on both websites. Reportedly, in response to this incident largely attributed to unexpected bad weather, Rosatom has been given more powers to control shipping along the NSR and the earlier organisation of Glavsevmorput (1932–1965) has been resurrected, albeit in a new form within the framework of Rosatom²¹. It may be noted that a similar accident had taken place in 1983 [24, Bhagwat J., pp. 72–73]. However, there is apparently no campaign to increase safety culture and risk understanding as a follow-up action to these incidents.

¹⁵ Humpert M. Economic interests may trump shipping safety as Russia seeks to reduce ice class requirements, 12 November 2018. URL: <https://www.highnorthnews.com/en/economic-interests-may-trump-shipping-safety-russia-seeks-reduce-ice-class-requirements> (accessed 31 July 2022).

¹⁶ Administration of the Northern Sea Route, 2022. URL: http://www.nsra.ru/ru/archive_non_compliant_vessels_2018.html (accessed 11 July 2022).

¹⁷ Ibid.

¹⁸ Rostransnadzor. Prevention of violations 2018–2020, 2022. URL: <https://rostransnadzor.gov.ru/deyatelnost/38> (accessed 31 July 2022).

¹⁹ Rostransnadzor. Prevention of violations 2021, 2022. URL: <https://rostransnadzor.gov.ru/deyatelnost/37> (accessed 31 July 2022).

²⁰ Ekologiya Rossii. Rosatom: Do Novogo goda vse suda budut osvobozhdeny iz ledovogo plena [Ecology of Russia. Rosatom: By the New Year, all ships will be released from ice captivity]. URL: <https://ecologyofrussia.ru/rosatom-do-novogo-goda-vse-suda-budut-osvobozhdeny-iz-ledovogo-plena/> (accessed 31 July 2022).

²¹ Russian Government. Operational meeting with Deputy Prime Ministers, August 1, 2022. URL: <http://government.ru/news/46150/#pp1310> (accessed 01 August 2022).

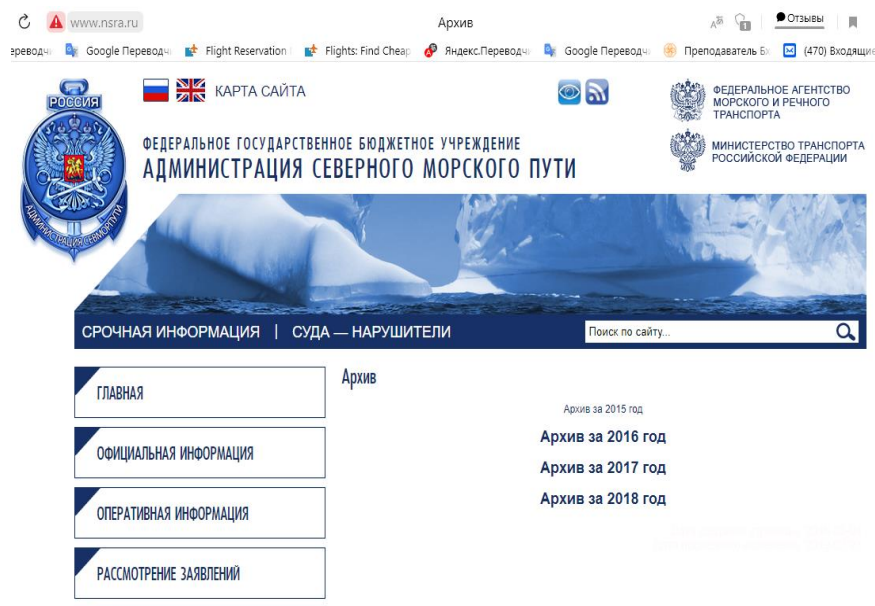


Fig. 4. Screenshot of the Northern Sea Route Administration website (in Russian)²².

Inference – role of Arctic maritime regulatory authorities

The analysis of the two accidents above indicates that maritime authorities in both Norway and Russia have not been diligent about analysing the accidents and near misses. Norway has an established publically declared procedure, but in this case, implementation has been clearly tardy. This disturbing trend is noticed in both countries and it needs to be curbed. This could also lead to the non-reporting of near misses and incidents by ship owners. Research of various regulatory mechanisms for reporting and analysis of such occurrences prevalent in various countries reveals that the British law may be useful as a guideline for all Arctic states and non-Arctic states interested in using the Arctic.

According to the United Kingdom (UK) Merchant Shipping (Accident Reporting and Investigation) Regulations 2012, *“The sole objective of the investigation of an accident under shall be the prevention of future accidents through the ascertainment of its causes and circumstances. It shall not be the purpose of an investigation to determine liability nor, except so far as is necessary to achieve its objective, to apportion blame”*²³. All reports are available on the website for dissemination to all concerned, and this includes incidents involving civilian and naval vessels. We are of the opinion that this regulation and the website with its compilation of reports could be a model to be followed by all Arctic Council countries in letter and in spirit.

Search and Rescue – The Achilles heel of Arctic shipping

The above-mentioned incidents accentuate the criticality of search and rescue (SAR) assets and the need for mutual cooperation. There is an agreement that was signed in 2011 to delineate

²² Northern Sea Route Administration, 2022.op.cit.

²³ United Kingdom Government. The Merchant Shipping (Accident and Reporting Investigation) Regulations 2012. URL: <https://www.legislation.gov.uk/ukxi/2012/1743/regulation/14/made> (accessed 31 July 2022).

areas of responsibility (Fig. 5) for search and rescue²⁴. However, Article 12 of the agreement noted that implementation is subject to availability of resources.



Fig. 5. Arctic SAR areas in Arctic SAR agreement²⁵.

Six years later, in 2017, a survey was carried out by the Finish Border Guard amongst the Arctic Coast Guard Forum, and it highlighted key challenges for Arctic search and rescue. These included long distances, severe weather, ice and cold conditions, a poor communications network, a lack of infrastructure, and deficiency of SAR assets in the North. Use of unmanned aerial vehicles for various purposes, including ice monitoring, navigation, geophysical and meteorological surveys is still at a nascent stage in the Russian Arctic. In the last decades, emergency preparedness resources in the Arctic have been significantly strengthened through the addition of available vessels and helicopters by Arctic states²⁶. However, the response time may still be long and the capacity may be limited if major incidents occur [25, Marchenko et al., pp. 107–114]. Moreover, there is unreliable communication above 70 degrees North latitude. Table-top exercises are being carried out periodically, but these are no substitute for regular live exercises where actual capabilities in real weather and sea conditions will be tested. A positive step in this regard was the first ever international search and rescue exercise in the Arctic Circle that took place in December 2021. It tested the ability of a group of people to survive a 24 hour period in the severe cold²⁷. However, no mobilisation of SAR assets took place.

²⁴ Arctic Council. Agreement on Aeronautical and Maritime Search and Rescue in the Arctic, 2009. URL: <https://oarchive.arctic-council.org/handle/11374/531> (accessed 31 July 202).

²⁵ US State department. Arctic SAR agreement. URL: <https://www.state.gov/key-topics-office-of-ocean-and-polar-affairs/arctic/> (accessed 31 July 202). Arctic Council. (2011). Agreement on Aeronautical and Maritime Search and Rescue in the Arctic, 2009. URL: <https://oarchive.arctic-council.org/handle/11374/531> (accessed 31 July 202).

²⁶ Leblanc P. (2021). Arctic SAR is improving. URL: <https://vanguardcanada.com/arctic-sar-is-improving/> (accessed 31 July 2022).

²⁷ Safety4Sea. World's first international rescue exercise in a Polar zone takes place. URL: <https://safety4sea.com/worlds-first-international-rescue-exercise-in-a-polar-zone-takes-place/> (accessed 31 July 202).

Flags of Convenience

Meanwhile, there is a particular risk that the shortcomings of the Polar Code in the Arctic region could be worsened by flags of convenience (FOCs). According to the most widely accepted criteria for defining FOCs, one of the main features of such states is that they do not have the power to effectively impose domestic or international regulations. Similarly, they are not interested in exercising control over shipping companies [26, pp. 1–31]. Therefore, ships registered under FOCs have a relatively worse safety record than non-FOC vessels [26, pp. 1–31]. According to estimates, the average share of voyages related to FOC through the NSR for 2017–2019 amounted to 7–8% (47 out of total 664 voyages in the NSR in 2017, 46 out of 792 in 2018, 55 out of 799 in 2019) [21, Todorov A., pp. 322–333]. Similar percentages are indicated for 2020 and 2021 (77 out of 1014 in 2020, 80 out of 1235 in 2021) with a lesser percentage until 01 December 2022 (53 out of total 1104 voyages), possibly due to the current geopolitical crisis (see Figure 6)²⁸. This research indicates that vessels under FOCs are present in the Arctic, and the average share of all foreign vessels, except 2022, is about 50%. Boris Vilkitsy was a vessel registered under a FOC (Cyprus). One researcher has stated that some of these FOCs have authorised the Russian shipping registry to conduct surveys on their vessels for compliance with the Polar Code [21, Todorov A., pp. 322–333]. This is indeed a step forward. However, the extent of the inspection is unknown since no details can be found on the website²⁹.

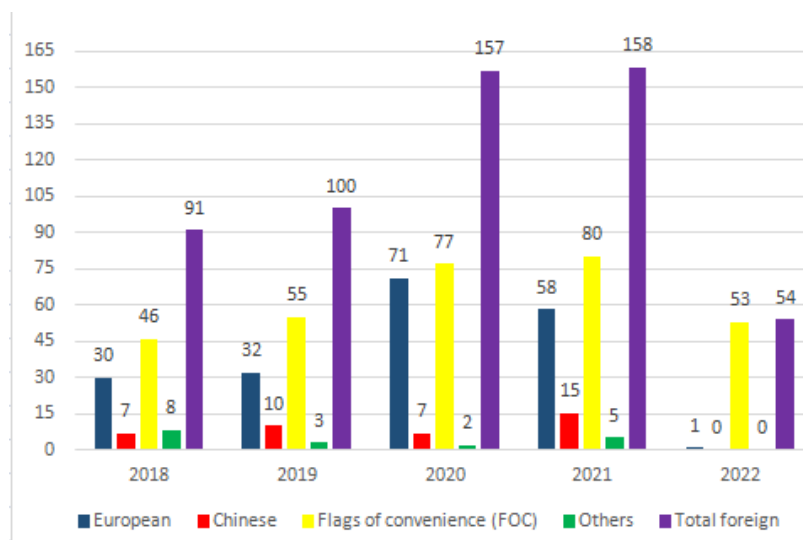


Fig.6. Foreign vessels on the NSR: permits issued by NSRA / Glavsevmorput 2018-2022³⁰.

NSR inspection regime

Most of the Arctic states follow an inspection regime based upon documentation. For example, according to Russian national legislation, the mandate of the earlier NSR Administration,

²⁸ Northern Sea Route Administration. Permissions for navigation in the water area of the NSR. December 01, 2022. URL: http://www.nsr.ru/en/rassmotrenie_zayavleniy/razresheniya.html (accessed 01 December 2022).

²⁹ Russian Maritime Register of Shipping. 2021. Issues First Polar Certificate. URL: <https://rs-class.org/en/news/general/rs-issues-the-first-polar-ship-certificate/> (accessed 31 July 2022).

³⁰ Northern Sea Route Administration. Permissions for navigation in the water area of the NSR. December 01, 2022. URL: http://www.nsr.ru/en/rassmotrenie_zayavleniy/razresheniya.html (accessed 01 December 2022).

now – the Glavsevmorput³¹, is restricted to the scrutiny of documents. Decisions on whether to grant/restrict/revoke permission to enter the NSR do not mandate inspection of a vessel³². Apart from the documentation submitted by the ship-owner, the NSR Administration is dependent upon port authorities and reports of violations to maritime administrations of flag states [16, Zagorski A., pp. 292–305]. Since 2016, the Federal Security Service of Russia (FSB) has been vested with investigating cases of violation of navigation rules within the area of the NSR³³. However, according to Russian researcher A. Todorov, the extent of the FSB's mandate remains ambiguous, and this also pertains to the detention of non-compliant vessels in the NSR and other on-site enforcement activities [21, Todorov A., p. 326].

Discussion

The research indicates what lessons could be drawn by Arctic states from the experience of the last decade of heightened activity. The research highlights a weak mechanism for incident analysis and action taken; fledgling infrastructure and inadequate SAR assets. The Polar Code has been a significant step towards the safety of shipping in Polar waters, especially the Arctic. However, implementation depends upon the Arctic states, and there are deficiencies with the goal-based standards. The study indicates the need for greater cooperation between Arctic states and the possibility of greater control on the operation of vessels with flags of convenience (FOC).

Considering the above, we enunciate the main recommendations for the future development of Arctic shipping. Firstly, the Arctic Council needs to initiate a comprehensive updated shipping assessment. Secondly, the transport policies of both Arctic and non-Arctic states interested in navigating in these waters should include a policy to increase the safety of navigation in the Arctic, specifically by implementing a non-negotiable safety culture. Russia has to be the driver for such policies. The Russian government needs to contribute to ensuring safety to achieve the goal of safe Arctic shipping and of turning the NSR into an internationally competitive shipping transport corridor, even if this means sacrificing short-term and commercial interests, to pursue a policy of restricting the passage of ships under flags of convenience. Thirdly, Arctic governments could implement a policy on the basis of the British law on the dissemination of incident analysis affecting safety within a reasonable time-bound period. These need to be published and disseminated to the merchant shipping crew responsible for safe operation and the politicians and bureaucrats concerned with Arctic shipping policy. All governments could ensure that they have independent organisations certifying the Polar Code and carrying out incident analysis. Similarly, there could be

³¹ GlavSevmorput' budet upravlyat' sudokhodstvom na etom napravlenii [GlavSevmorput will manage shipping in this direction]. URL: <https://www.kamgov.ru/news/glavsevmorput-budet-upravlat-sudokhodstvom-na-etom-napravlenii-53500> (accessed 01 December 2022).

³² Northern Sea Route Administration. Application for admission. December 01, 2022. URL: <https://nsr.rosatom.ru/en/consideration-of-applications/application-for-admission-and-enclosure-to-application-to-navigate-in-the-northern-sea-route-area/> (accessed 31 July 2022).

³³ Rules of Navigation on the Water Area of the Northern Sea Route, approved by the Ministry of Transport of Russia, September, 18, 2020. URL: http://www.nsra.ru/files/fileslist/137-en5894-2020-11-19_rules.pdf (accessed 31 July 2022).

an independent Agency for periodic (annual) certification of seafarers sailing, certified according to the Polar Code. Finally, the state transport policies of all Arctic states should include a policy of cooperation with other States of the Arctic Council to strengthen navigation support, communications and search and rescue (SAR) operations.

Conclusion

Independent regulatory bodies are necessary for all the Arctic states to ensure that the broad safety guidelines are adhered to. Follow-up analysis of incidents indicates a need for state transport policy to include safety aspects and reflect the requirements of an adequate oversight mechanism that takes into account safety culture and risk understanding. Arctic Council states could agree on banning ships with flags of convenience in Arctic waters, considering the incredibly fragile environment. Implementation of an Arctic specific PSC could enhance cooperation between Arctic states and ensure compliance by non-Arctic states interested in using Arctic waters. The Arctic shipping assessment needs to be made as a regular feature of the activities of the Arctic Council. There is also a need for analysis and follow-up action on shipping accidents in the Arctic to prevent future recurrence, for which Arctic governments may consider regulatory action. More significant cooperative efforts in all these areas, including search and rescue, could improve navigation safety and environmental protection.

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Prevention and Resolution of Constitutional Conflicts in the Arctic Zone of the Russian Federation

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Abstract. Stable development and security of the Arctic zone of Russia demand effective resolution and prevention of conflicts. The purpose of this study is to determine the main parameters of the legal model for the prevention and resolution of conflicts, including the development of methodological foundations and the elaboration of the terminological field. The main research methods are legal modeling and special methods of conflict research conducted by general, legal and constitutional conflictology. The main conclusions of the study are that stable peace and civil harmony are the result of the processes of managing, preventing and resolving conflicts. The role of law is manifested in the fact that it not only resolves the conflict, but also performs an integrative, conciliatory and stimulating function. Due to the scale and public nature of the possible consequences, special attention should be paid to the prevention and resolution of constitutional conflicts, which predetermines the increasing role of constitutional law in ensuring peace in the Arctic zone. The results of the research indicate the presence of five interrelated levels, structural and direct conflict prevention should be carried out at every level. Conflict resolution is also a complex process, the methods and mechanisms of resolution need to be supplemented and adapted, taking into account the peculiarities of conflict in the Arctic zone. The author demonstrates the interrelation between the processes of socio-economic development and ensuring peace and civil harmony, presents recommendations for improving the existing legal model.

Keywords: *conflict prevention, conflict resolution, Arctic zone, constitutional conflict, stable peace, legal model, culture of peace*

Introduction

The Arctic zone of Russia is of key importance for ensuring national security. At the same time, national security should be considered not only as “the state of protection of national interests from internal and external threats, which ensures the realization of rights, decent quality and standard of living, civil peace and harmony, protection of sovereignty and socio-economic development of the country”¹, but also as process, that is, it is important to take into account the changing state, the emergence of new threats and challenges. The Arctic is fully characterized by the tendencies of increasing instability and the growth of geopolitical tension, conflicts and, as a result, militarization, noted in strategic planning acts. In scientific studies, the Arctic space is quite

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¹ Ukaz Prezidenta RF ot 2 iyulya 2021 g. № 400 «O Strategii natsional'noy bezopasnosti Rossiyskoy Federatsii» [Decree of the President of the Russian Federation of July 2, 2021 No. 400 “On the National Security Strategy of the Russian Federation”] // *Sobranie zakonodatel'stva Rossiyskoy Federatsii*. 2021. № 27. St. 5351 [Collection of Legislation of the Russian Federation. 2021. No. 27. Art. 5351]. URL: http://www.consultant.ru/document/cons_doc_LAW_389271 (accessed 26 July 2022).

reasonably called a conflict space [1, Lukin Yu.F., pp. 32–33]. The studies focus primarily on the issues of geopolitical rivalry and clash of interests in the Arctic [2, Raikov Yu.A., p. 148], territorial disputes at the regional and international level [3, Xhelilaj E., Kristofor L., pp. 278–280], certain aspects of ensuring civil peace and harmony [4, Crawford B.K., pp. 469–471], militarization of the macroregion and the risks of armed conflict [5, Gricius G., pp. 13–19], problems of ensuring certain types of security, certain causes and types of conflicts [6, Khramchikhin A.A.] and other indicators that characterize the Arctic as a territory of conflict. At present, however, there are no comprehensive scientific works devoted to substantiating the methodology and building a unified model for the prevention and resolution of conflicts in the territory of the Arctic zone of Russia. In order to fill the existing gap, it is necessary to solve a number of tasks: to conduct a terminological analysis of the basic categories in the field of ensuring peace and stable development of the Arctic zone, the main parameters of conflict; to develop a conflict research methodology; to build a legal model for resolving and preventing constitutional conflicts in the Arctic zone.

Ensuring security and stable development of the Arctic Zone: concept and threats

In order to ensure security, it is crucial not only to understand and achieve the goals, objectives and basic principles of the process, but also to take into account the main categories. The category “stable development of the Arctic zone” is directly linked to the category “socio-economic development”. Socio-economic development creates conditions for ensuring security, reducing the degree of conflict in public relations. People must, if necessary, yield their power to a means of coercion, such as the state, for the legitimate use of violence, or they may come to cooperate using decentralized means, such as the market [7, De Paramo J.R., p. 17].

The interdependence of the processes of ensuring peace, stable development, security and socio-economic development is reflected in the threats and the main causes of conflict. The acts of strategic planning state the increase in conflict potential in the region, the preservation of the Arctic as a territory of peace and stability and sustainable development of the Arctic zone are mentioned as national priorities². The geopolitical situation and internal threats predetermine the presence of a separate direction of ensuring national security, aimed to increase internal stability and build up Russia’s potential.

Threats to national security include the incitement of inter-national and inter-confessional conflicts, appropriate information campaigns, attempts to destroy internal unity by third countries, radicalizing protest movement, and “indirect methods” aimed at provoking long-term instability within the Russian Federation. The security process itself is defined as “achieving goals and solving problems within the framework of strategic national priorities”. The development and

² Ukaz Prezidenta RF ot 5 marta 2020 g. № 164 «Ob Osnovakh gosudarstvennoy politiki Rossiyskoy Federatsii v Arktike na period do 2035 goda» [Decree of the President of the Russian Federation of March 5, 2020 No. 164 "On the Fundamentals of the State Policy of the Russian Federation in the Arctic for the period up to 2035"] // Sobranie zakonodatel'stva Rossiyskoy Federatsii. 2020. № 10. St. 1317 [Collection of Legislation of the Russian Federation. 2020. No. 10. Art. 1317]. URL: <http://publication.pravo.gov.ru/Document/View/0001202003050019> (accessed 27 July 2022).

improvement of the system of prevention and resolution of conflicts by legal means directly correlates with such strategic priorities as state and public security, protection of traditional Russian spiritual and moral values, culture and historical memory, strategic stability and mutually beneficial international cooperation³.

The probability of realization of threats and the main parameters of conflicts in the Arctic zone are determined by the following:

- Contradictions between the consolidation of a set of social and economic rights of the population (including the special rights of indigenous peoples) and the problems of ensuring their implementation. The Russian Arctic is characterized by lagging behind the national quality of life indicators, low level of accessibility of services, problems of northern delivery, low level of infrastructure development, increase in unemployment, etc. For example, accumulated and unresolved socio-economic problems led to the emergence of the “Voice of Tundra” protest movement in the Yamalo-Nenets Autonomous Okrug in 2016. Public discussion of the socio-economic problems of reindeer herders, criticism of the state policy measures confirmed the public importance of supporting the population in difficult natural, climatic and economic conditions.
- Lack of balance between economic, social and environmental aspects of the development of the Arctic zone. The measures and mechanisms to stimulate economic activity are often not accompanied by the management of emerging environmental risks. A striking example is the provisions of the Program of state support for the traditional economic activities of indigenous minorities⁴. High sensitivity of the traditional way of life to external influences, intensive climate change and accelerated economic development of the territories are noted as risks. The main support mechanisms are subsidizing part of the costs of small and medium-sized businesses, developing a standard for nomadic housing and a trading post project, analytical, consulting, administrative and scientific support in the field of promoting goods, works and services. The program does not provide for mechanisms for managing risks arising from increased anthropogenic activity. A prominent example of conflicts that involve the enforcement of the right to a healthy environment and the right to traditional economic activities are the protests in Chukotka against the construction of the Nagleynyn sea port. The construction of the

³ Ukaz Prezidenta RF ot 02 iyulya 2021 g. № 400 «O Strategii natsional'noy bezopasnosti Rossiyskoy Federatsii» [Decree of the President of the Russian Federation of July 02, 2021 No. 400 “On the National Security Strategy of the Russian Federation”] // Sobranie zakonodatel'stva Rossiyskoy Federatsii. 2021. № 27. St. 5351 [Collection of Legislation of the Russian Federation. 2021. No. 27. Art. 5351]. URL: <http://publication.pravo.gov.ru/Document/View/0001202107030001> (accessed 27 July 2022).

⁴ Rasporyazhenie Pravitel'stva RF ot 15 aprelya 2021 goda № 978-r «Ob utverzhdenii programmy gosudarstvennoy podderzhki traditsionnoy khozyaystvennoy deyatel'nosti korennykh malochislennykh narodov Rossiyskoy Federatsii, osushchestvlyаемoy v Arkticheskoy zone Rossiyskoy Federatsii» [Decree of the Government of the Russian Federation of April 15, 2021 No. 978-r “On approval of the program of state support for the traditional economic activities of indigenous peoples of the Russian Federation carried out in the Arctic zone of the Russian Federation”] // Sobranie zakonodatel'stva Rossiyskoy Federatsii. 2021. № 17. St. 3007 [Collection of Legislation of the Russian Federation. 2021. No. 17. Art. 3007]. URL: <https://base.garant.ru/400660896/> (accessed 12 October 2022).

port in this example threatened reindeer pastures and disrupted traditional economic activities (fishing); the public hearings on the issue of environmental impact were appointed only after conflict interaction in 2020–2022. Introduction of special economic regimes (for example, the regime of the Arctic zone, territories of advanced socio-economic development) is also not accompanied by the development of “compensatory measures” in the field of environmental protection and traditional living conditions of indigenous peoples.

- Presence of territorial disputes and militarization of the Arctic space. The international legal relations in the region are characterized by a shift from cooperation to a model of rivalry and confrontation. In scientific research, it is rightly noted that the change in the regulatory framework is not declarative, it creates the basis for expanding the military presence, conducting exercises, creating military infrastructure [8, Byurno K.S., p. 85]. The reasons for “increasing degree” of conflict in the Arctic are political, military, informational pressure on the Russian Federation in order to weaken control over the Northern Sea Route, attempts to change the current legal regimes of maritime spaces. Since the Arctic zone is an area of vital importance for Russia in the World Ocean, it is reasonable to use the entire range of methods of influence in case of conflict — from diplomatic to force. The probability of the implementation of threats is characterized by the emergence of new conflictogens. In 2022, the NATO Cold response exercises were held in the Norwegian Sea, practicing an amphibious landing. The risks of deliberate maritime collisions in the region increase with the change in the model of interaction between the Arctic states from cooperation to confrontation.
- Territorial claims and issues of ensuring sovereignty are another constant source of conflict. Taking into account the natural resource and strategic potential, the issues of spatial limits for ensuring unity, supremacy and completeness of state power give rise to contradictions. Thus, the United States advocates the internationalization of the maritime Arctic spaces, and the long-term dispute between Russia, Norway and Denmark over the boundaries of the continental shelf continues. In the context of the current political situation, there is an obvious imbalance between law and politics, which makes it difficult to resolve conflicts in a timely manner and increases the likelihood of conflict. Academic papers rightly note that the importance of the macroregion for the national development of states stimulates the struggle for spheres of influence and control [9, Raikov Yu., p. 153].

The current situation in the Arctic can be characterized as a “negative peace”. Unstable, or, according to another frequently used version, negative peace is a situation where the contradictions and tensions between the parties increase, and the continuation of a peaceful state is no longer guaranteed. The results of the analysis indicate that the strategic planning acts of Russia and other Arctic states (USA, Canada, etc.) reflect a conflict paradigm of interaction, with new con-

flictogens emerging, increasing the likelihood of threats and indicating the need to build an effective system of conflict prevention and resolution in the Arctic.

Methodology for conflict research in the Arctic zone

The study of the main parameters of conflict, forms of manifestation and ways of resolving conflicts requires the application of a special methodology and reliance on scientific approaches proposed by conflictology as a separate interdisciplinary field of scientific knowledge, as well as special methods of legal conflictology and, finally, constitutional conflictology as an independent direction of the science of constitutional law.

First of all, the study of conflict in the Arctic zone can be based on the universal provisions of the theory of contemporary social conflict.

Firstly, it is worth proceeding from the premise of the dual role of conflict: we cannot talk about conflict phenomena as exclusively negative. A regulated conflict is freedom, since no one can turn their position into a dogma [10, Dahrendorf R., p. 41]. The second methodological premise of the study of conflict is that conflict is a necessary element of social life. Thirdly, conflicts can serve as a way to relieve tension, stabilize the social system, serve to “stitch” it and prevent disintegration. Fourthly, social conflict supports and promotes change and is the creative power of societies. Conflicts can become developments where they are recognized and managed. Fifthly, the phenomenon of social conflict emphasizes the interconnection and interdependence of the processes of socio-economic development and security in the Arctic zone. In addition, it is necessary to take into account the interdisciplinary nature of conflictology, which is rightly characterized by a number of researchers as “a very complex multidisciplinary developing scientific field with a great difference in theoretical approaches and sources” [11, Redota J.].

Understanding of the dual role of conflicts is necessary to approach the problem of their resolution by legal means and ensuring security.

The implementation of the positive functions of the conflict — stimulation of development, integration of subjects, improvement of communication of conflict parties, ensuring sustainable development — predetermines the fact that the constructed legal model includes a normative and institutional system of conflict prevention and resolution.

The second methodological basis for studying the parameters of the conflict in the Arctic zone is the method of legal modeling. Modeling as a method of scientific research makes it possible to use already built models for demonstration, interpretation and forecasting of conflict phenomena on the territory of the Russian Arctic zone. One of the successful and practically applicable examples is the model developed by C.R. Mitchell: taking into account the characteristics of the conflict as a phenomenon with a complex structure, as well as a process that needs to be changed, three main dimensions for prevention are proposed.

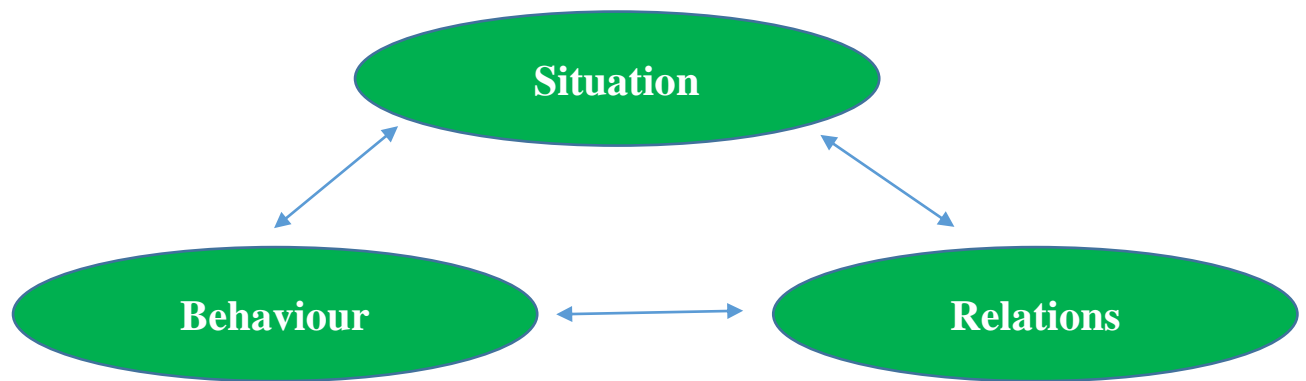


Fig. 1. Conflict process parameters.

However, changing one of the main parameters of the conflict process, for example, the behavior of the parties, cannot be the only goal of prevention and resolution: it is necessary to deal with the whole complex of attitudes, perceptions, factors and problems in order to avoid a repetition of the conflict cycle [12, Mitchell C.R., p. 7]. This model undoubtedly simplifies conflict relations and does not reflect the development of the process. However, it achieves the goal perfectly — it demonstrates the advantages of modeling structural and procedural aspects.

An important role in ensuring the stable development of the Arctic zone is played by the “legalization of the conflict”, that is, its legal transformation, bringing it into a “legal framework”, and proposing optimal legal methods for resolving it.

The role of law in the management, resolution and prevention of conflicts in the Arctic zone from the perspective of legal conflictology is characterized by the frequency of conflict processes and their universality. The importance of law and the construction of an effective legal model can be represented as a set of the following functions: establishing methods and mechanisms for their resolution and prevention in the legal field, forming a legal culture of subjects/potential subjects of a conflict, regulating the legal status of subjects, minimizing the negative consequences of a conflict (for example, due to securing effective mechanisms for the protection of violated rights), etc.

In works on the sociology of law, a number of additional functions, characterizing the importance of law and legal conflictology, are distinguished: integrative function, function of social orientation, function of distributing rights and obligations, as well as distributing economic benefits; repressive function; legal incentive function [13, Martínez J., p. 97]. The global trend is the development of alternative resolution mechanisms, understood as “alternative opportunities for subjects involved in conflict interaction to resolve contradictions directly in a fast and efficient way in a favorable atmosphere with giving the decision legal force” [14, Santos I.M., p. 108]. Empirical experience confirms the systemic nature of the system of conflict resolution in general and the subsystem of alternative ways, their interconnection [15, Santos I.M.]. Thus, the available scientific results and empirical data testify to the variability, systemic nature and public significance of

the ways and mechanisms of conflict resolution. These requirements are fully applicable to the relevant legal regulation on the territory of the Arctic zone of Russia.

The role of law is most clearly manifested in the sphere of prevention and resolution of constitutional conflicts in the Arctic zone. Accordingly, the methods and principles of constitutional conflictology serve as the third methodological basis for the legal model. Constitutional conflictology is an independent, actively developing section of the science of constitutional law. Ideas about the necessity of formation constitutional conflictology, taking into account the results of scientific research, empirical experience of state building, achievements of other sciences (political science, sociology, etc.), were expressed about two decades ago; however, complex research dedicated to theoretical and practical issues have appeared in Russia and foreign countries quite recently: thus, a theory of constitutional conflict is being developed [16, Levinson S., Balkin J.; 17, Teterin A.V.], certain types of constitutional conflicts and ways of their prevention and resolution are studied. Separate mention should be made of the complex study of I.A. Tretiak, who developed the theoretical concept of constitutional conflictology, considered as “a section, a separate block in the system of science of constitutional law, the selection of which is due to the peculiarity of the subject and object, as well as taking into account the approaches of legal conflictology to the study of constitutional conflict”. In relation to legal, constitutional conflictology is a research conceptual and branch level [18, Tretiak I.A., pp. 64–70]. Fully supporting the opinion of the author, it should be emphasized that the applied significance of constitutional conflictology as an actively developing branch of science is manifested at different levels: we can talk about global trends in the development of scientific knowledge of constitutional conflicts, ways to manage them, a system of prevention and permissions; this is followed by the intrastate (national level), and, finally, the local level (the scale may be different) ⁵.

The importance of constitutional conflictology for this study is determined by the public and social significance, the magnitude of the possible consequences of constitutional conflict. We are also more interested in the constitutional conflict because it is a state-legal phenomenon, and the construction of a legal model is an appropriate way to study it. Without going deep into a discussion about the essence, definition and differentiation from related concepts ⁶, we will define the constitutional conflict as a type of interaction of subjects of constitutional-legal relations, which is based on the contradiction of the parties in relation to the constitutional value (values).

The inclusion of the so-called “complex constituent entities of the Russian Federation” in the Arctic zone, the presence of a number of acute socio-economic and environmental problems, the complexity and contradictions in the system of public administration of a vast macro-region

⁵ It is possible to study the parameters and specifics of constitutional conflict at the macro-region level (in our case, the focus is on the Arctic zone of Russia), at the level of territorial units of the state.

⁶ Within the framework of constitutional conflictology as a new, “young” section of constitutional law, the terminological field is in the process of formation, it is absolutely normal for the scientific process to use a number of terms “constitutional-legal conflict”, “state-legal conflict”, “constitutional-legal dispute”, etc. However, the study of the essence and systemic connections of the constitutional conflict with related categories is a separate scientific task that is beyond the scope of this work.

determine the conflicts in the public sphere. At the same time, constitutional conflictology has the necessary methodological potential for studying constitutional conflicts, taking into account the specifics of the macroregion. In particular, the constitutional conflict in the Arctic zone has the following specific features:

1. The object of the constitutional conflict, to which the interaction of the parties is directed, is the constitutional value. In the Arctic conditions, the following constitutional values come to the fore: the right to a favorable environment (Article 42), the right to health protection and medical care (Article 41), the right to work in conditions that meet safety requirements (Article 37), the right of the peoples of Russia to preserve their native language, its conservation and development (Article 68), the rights of indigenous peoples, cultural identity and ethno-cultural diversity (Article 69), civil peace and harmony (Article 80), a special constitutional and legal regime of traditional economic activity⁷. Thus, in the legal positions of the Constitutional Court of Russia, developed in the process of resolving constitutional and legal disputes, the features of the legal regime of the traditional way of life and economic activity are emphasized as the basis for the existence and identity of peoples.

2. The subject composition of the constitutional conflict in the Arctic zone has its own specifics. In addition to such potential participants as public authorities, citizens, constituent entities of the Russian Federation, etc., the involvement of special subjects of constitutional law in conflict processes is of particular importance: indigenous peoples, communities of indigenous peoples, public associations (for example, the Association of Indigenous Peoples of the North of the Yamalo-Nenets Autonomous Okrug “Yamal for Descendants!”). A special subject is a citizen belonging to an indigenous small people, since he/she has special rights and guarantees, and the lack of their proper provision leads to conflict. Thus, “the implementation of the right to hunt in places of traditional residence should be ensured by public authorities and should not lead to conflict with other representatives of the indigenous people, for whom hunting is the main source of livelihood”⁸. People living in the regions of the Far North also have a special legal status; there-

⁷ Konstitutsiya Rossiyskoy Federatsii (prinyata vsenarodnym golosovaniem 12.12.1993 s izmeneniyami, odobrennymi v khode obshcherossiyskogo golosovaniya 01.07.2020) [The Constitution of the Russian Federation (adopted by popular vote on December 12, 1993 with amendments approved during the all-Russian vote on July 1, 2020)] // Ofitsial'nyy internet-portal pravovoy informatsii [Official Internet portal of legal information]. URL: <http://pravo.gov.ru> (accessed 16 October 2022).

⁸ Postanovlenie Konstitutsionnogo Suda RF ot 05.07.2021 g. № 32-P «Po delu o proverke konstitutsionnosti chasti 1 stat'i 3 Federal'nogo zakona «O garantiyakh prav korennykh malochislennykh narodov Rossiyskoy Federatsii» i chasti 1 stat'i 19 Federal'nogo zakona «Ob okhote i o sokhranenii okhotnich'ikh resursov i o vnesenii izmeneniy v otdel'nye zakonodatel'nye akty Rossiyskoy Federatsii» v svyazi s zhaloboy grazhdanina A.F. Danilova» [Decree of the Constitutional Court of the Russian Federation of July 5, 2021 No. 32-P “On the case of checking the constitutionality of Part 1 of Article 3 of the Federal Law “On Guarantees of the Rights of Indigenous Minorities of the Russian Federation” and Part 1 of Article 19 of the Federal Law “On Hunting and the Preservation of Hunting resources and on amendments to certain legislative acts of the Russian Federation” in connection with the complaint of citizen A.F. Danilov]. URL: http://www.consultant.ru/document/cons_doc_LAW_389678/ (accessed 13 October 2022).

fore, violation of special rights and the lack of their guarantee (including financial) leads to a conflict and suggests the possibility of its resolution by constitutional and legal means⁹.

3. Finally, the implementation of constitutional and legal procedures cannot be carried out without taking into account the socio-economic characteristics of the subjects of the Arctic zone. While the unification process was successfully completed in a number of subjects in 2003–2008, attempts to “enlarge” the complex subjects¹⁰ of the Arctic zone led to mass protests. The absence of specific constitutional and legal provisions on an administrative unit with a special status, into which the autonomous okrugs were to be transformed, became a conflict generator in the Arctic zone, since it caused reasonable questions from indigenous peoples about ensuring special rights and guarantees, representation their interests in the public authorities of the new entity. Improper information, lack of elaboration of unification projects, ignoring the specifics of the implementation of rights in the Arctic conditions led to the rejection of unification procedures. The above provisions confirm the need to take into account the peculiarities of the Arctic zone in the process of preventing and resolving constitutional conflicts.

Conflict management and resolution: content and system of methods

Changes in conflict interaction, communication of the parties require efforts and imply the necessity of conflict management, that is, the process leads to the end of the conflict, assuming the aspiration of the subjects (subject) of the conflict to control the dynamics, determine the applied mechanisms and the desired results, and appropriate actions. The value of conflict management is manifested in the reduction of negative and destructive potential through certain measures and work with all parties involved in the conflict [19, Best S.G., p. 95]. By definition, management implies the ability to influence conflict interaction, the characteristics of the impact are “limitation, mitigation, containment of the conflict” [20, Tanner F., p. 541].

It should be clarified that the conflict management process should not be interrupted at the stage of its completion: in each case, it is necessary to analyze the post-conflict situation, take measures to prevent the conflict from recurring, that is, the management process in this sense includes the application of preventive measures.

Conflictology studies have proposed a number of approaches to understanding conflict resolution:

⁹ Postanovlenie Konstitutsionnogo Suda RF ot 01.03.2022 № 9-P «Po delu o proverke konstitutsionnosti sta-t'i 2 Federal'nogo zakona ot 20 iyulya 2020 g. № 228-FZ «O vnesenii izmeneniy v Federal'nyy zakon "O zhilishchnykh subsidiyakh grazhdanam, vyezzhayushchim iz rayonov Kraynego Severa i priravnennykh k nim mestnostey" v svyazi s zhaloboy grazhdanina A.V. Okulova» [Decree of the Constitutional Court of the Russian Federation of March 1, 2022 No. 9-P “On the case of checking the constitutionality of Article 2 of the Federal Law of July 20, 2020 No. 228-FZ “On Amending the Federal Law “On Housing Subsidies to Citizens Leaving the Districts Far North and equated areas” in connection with the complaint of citizen A.V. Okulov]. URL: http://www.consultant.ru/document/cons_doc_LAW_410780/ (accessed 13 October 2022).

¹⁰ Arkhangelsk Oblast and Nenets Autonomous Okrug; 2. Yamalo-Nenets Autonomous Okrug; Tyumen Oblast, Khanty-Mansi Autonomous Okrug, which are not part of the Arctic zone.

- “a variety of approaches aimed at ending conflicts through constructive problem solving”, “the result, which satisfactorily resolves problems in the existing conflict, the solution is mutually acceptable to the parties, long-term and creates new, positive relationships between the parties, previously hostile to each other, as well as the process and procedures for achieving such a result”, “the resolution of the conflict has a connotation with completeness”¹¹;
- “a situation in which the conflicting parties come to an agreement and regulate the main differences, recognize the existence of each other as parties and stop all hostile actions against each other”, when resolving the conflict, its cause is eliminated to prevent its recurrence, “there is a reassessment of the conditions which initially led to hostile attitudes and destructive behavior, the parties of the conflict take a fresh look at the situation” [21, Mahendra M.D., p. 5].

Taking into account the possible “replicability” of conflicts, it is important to note that the role of constitutional conflictology should not be limited to suggesting approaches, studying the conflict process at the resolution stage: the problem is much deeper. However, in this particular case, given the scope of the research article, we will focus on the term and possible ways of “conflict resolution”.

Methods for resolving the conflict, reaching agreement between the parties form a single system. Let us look at some specific examples of how conflicts can be resolved in the Arctic zone:

1) First of all, the role of the judiciary in resolving emerging conflicts should be noted. Thus, the constitutional dispute between the Tyumen Oblast, the Yamalo-Nenets Autonomous Okrug and the Khanty-Mansi Autonomous Okrug over the status of the Autonomous Okrug as part of a “complex subject” was resolved by the Constitutional Court of the Russian Federation in 1997. The Court revealed the features of the constitutional and legal status of the Autonomous Okrug, which is an independent subject of the Russian Federation, established the meaning and significance of the “inclusion” of the okrug in the oblast or krai, and coordination mechanisms — the existence of a general obligation of the authorities of the subjects to maintain territorial integrity and unity in the interests of the population; the possibility of transferring part of the powers to each other on a voluntary basis; the possibility of contractual regulation of the distribution of powers¹².

¹¹ Udezo B.S. Concepts and Methods of Conflict Resolution and Peace-Building: Imperatives for Religious Leaders in Nigeria. URL: <https://www.ajol.info/index.php/jrhr/article/view/87329> (accessed 28 July 2022).

¹² Postanovlenie Konstitutsionnogo Suda RF ot 14 iyulya 1997 g. № 12-P «Po delu o tolkovanii soderzhashchegosya v chasti 4 stat'i 66 Konstitutsii Rossiyskoy Federatsii polozheniya o vkhozhdenii avtonomnogo okruga v sostav kraya, oblasti» [Decree of the Constitutional Court of the Russian Federation of July 14, 1997 No. 12-P “On the case of the interpretation of the provision contained in part 4 of article 66 of the Constitution of the Russian Federation on the inclusion of an autonomous okrug into a territory, region”] // *Sobranie zakonodatel'stva Rossiyskoy Federatsii*. 1997. № 29. St. 3581 [Collection of legislation of the Russian Federation. 1997. No. 29. Art. 3581]. URL: <http://www.constitution.ru/decisions/65786/65786.htm> (accessed 29 July 2022).

2) Political-legal means (consultations, negotiations, creation of conciliation groups and commissions, etc.) are also used to resolve constitutional conflicts in the Arctic zone. Thus, in the context of administrative reform and unification of subjects, conflicts have arisen in some cases due to the uncertainty of the future status of the autonomous okrug included in the oblast, the lack of guarantees for indigenous rights, information conflicts, etc. In such difficult conditions, negotiations between the state authorities of the Tyumen Oblast, the Yamalo-Nenets Autonomous Okrug and the Khanty-Mansi Autonomous Okrug were held, resulted in the Agreement on cooperation and interaction between state authorities (currently the Agreement has been extended until December 31, 2025)¹³. In order to prevent the recurrence of conflicts, the Cooperation program was developed and approved, which provides for socio-economic measures in a number of areas: construction and repair of roads of regional significance, social facilities, implementation of projects in the field of environmental protection, support for agricultural production, implementation projects in the field of physical culture and sports, emergency prevention, etc. The source of financing is the part of the corporate income tax paid by the autonomous okrugs to the budget of the Tyumen Oblast¹⁴. Today, the most actively implemented project is the one for providing subsidies for resettlement from the territory of the autonomous okrugs to Tyumen or to the south of the Tyumen Oblast. Thus, the cause of the conflict was eliminated, and the goals of the unification were replaced by socio-economic integration.

3) A number of constitutional and legal procedures can be used to resolve the conflict. In 2007, one of the largest unification processes was launched — the Taimyr (Dolgano-Nenets) and Evenk autonomous okrugs became part of the Krasnoyarsk Krai. Prior to the unification, the interaction between the Krai and the Autonomous okrugs was conflictual. Among the reasons for the conflict were different positions of the Krai and the Taimyr (Dolgano-Nenets) Autonomous Okrug on the issue of the territorial affiliation of the city of Norilsk and its satellite towns¹⁵, the problems

¹³ Dogovor mezhdu organami gosudarstvennoy vlasti Tyumenskoy oblasti, Khanty-Mansiyskogo avtonomnogo okruga — Yugry i Yamalo-Nenetskogo avtonomnogo okruga o prodlenii (prolongatsii) deystviya dogovora mezhdu organami gosudarstvennoy vlasti Tyumenskoy oblasti, Khanty-Mansiyskogo avtonomnogo okruga — Yugry. Ofitsial'nyy portal organov gosudarstvennoy vlasti [Agreement between the state authorities of the Tyumen Oblast, the Khanty-Mansi Autonomous Okrug - Yugra and the Yamalo-Nenets Autonomous Okrug on the extension (prolongation) of the agreement between the state authorities of the Tyumen Oblast, the Khanty-Mansi Autonomous Okrug - Yugra. Official portal of public authorities]. URL: [http://tyumen.gov.ru/ogv2013\[X\]/block/important/dogovor/more.htm?id=11562427@cmsArticle](http://tyumen.gov.ru/ogv2013[X]/block/important/dogovor/more.htm?id=11562427@cmsArticle) (accessed 22 August 2022).

¹⁴ Postanovlenie Pravitel'stva Tyumenskoy oblasti ot 30 dekabrya 2014 goda № 705-P «Ob utverzhdenii gosudarstvennoy programmy po realizatsii Dogovora mezhdu organami gosudarstvennoy vlasti Tyumenskoy oblasti, Khanty-Mansiyskogo avtonomnogo okruga — Yugry i Yamalo-Nenetskogo avtonomnogo okruga «Sotrudnichestvo» [Decree of the Government of the Tyumen Oblast dated December 30, 2014 No. 705-P "On approval of the state program for the implementation of the Agreement between the state authorities of the Tyumen Oblast, the Khanty-Mansiysk Autonomous Okrug - Yugra and the Yamalo-Nenets Autonomous Okrug "Cooperation"]. URL: https://admtyumen.ru/ogv_ru/finance/more_program.htm?id=1087@egTargetGrant (accessed 22 August 2022).

¹⁵ Zayavlenie Dumy Taymyrskogo (Dolgano-Nenetskogo) avtonomnogo okruga «O narushenii Zakonodatel'nym Sobranie Krasnoyarskogo kraya predusmotrennoy Konstitutsiei Rossiyskoy Federatsii kompetentsii Dumy Taymyrskogo (Dolgano-Nenetskogo) avtonomnogo okruga» [Statement of the Duma of the Taimyr (Dolgano-Nenets) Autonomous Okrug "On Violation by the Legislative Assembly of the Krasnoyarsk Krai of the Competence of the Duma of the

of northern delivery to the Evenk Autonomous Okrug and repeated violation of financial discipline by the public officials of the okrug, etc. To eliminate the causes of conflicts and to accelerate socio-economic development, it was proposed to use constitutional and legal procedures as part of the process of unification of the entities. In referendums, 92.44% of voters in the Krasnoyarsk Krai, 69.95% in the Taimyr Autonomous Okrug, and 79.87% in the Evenk Autonomous Okrug voted for the creation of a single entity. The key issues of integration, the status of the abolished autonomous okrugs, the distribution of budgetary funds were reflected in the relevant federal constitutional law¹⁶.

4) Federal intervention measures. Since 2021, the list of federal intervention measures has been enshrined in the Federal Law “On the general principles of organization of public power in the subjects of the Russian Federation”¹⁷. The provisions of this law not only create a normative basis for the application of federal intervention measures to resolve a potential conflict, but also play a preventive role to a certain extent. The presence of quite extensive possibilities for intervention, together with the possibility of discretion of the subject using them, makes it necessary to correct the behavior, take into account the possible consequences, and acts as a kind of “stimulating prevention”. Here is a particular example. Article 29, among the measures of responsibility applied to the highest official of the subject, describes the dismissal of the highest official by the President of Russia. At the same time, dismissal from office due to loss of trust, in fact, depends on the will of the President; the reasons for it are not specified in any way. Leaving the discussion of the negative consequences of such a provision beyond the scope of the article, it is worth mentioning the potential of this measure in resolving possible conflicts between the head of the state and the head of the subject: eliminating one of the parties is one of the fairly common ways of resolution. Previously, due to the loss of trust, the President terminated the powers of the heads of two subjects that are part of the Arctic zone (in 2006, the head of the administration of the NAO was dismissed, in 2015 — the head of the Komi Republic).

5) Mechanisms of “feedback” from citizens and public authorities play an important role in conflict prevention and resolution and in reducing social tensions. Here is an example. To resolve the conflict between the residents of the Leninskiy district of the Republic of Sakha (Yakutia) and

Taimyr (Dolgano-Nenets) Autonomous Okrug Provided by the Constitution of the Russian Federation”] // *Zapolyarnaya Pravda*, 2002, no. 30.

¹⁶ Federal'nyy konstitutsionnyy zakon ot 14.10.2005 № 6-FKZ «Ob obrazovanii v sostave Rossiyskoy Federatsii novogo sub'ekta Rossiyskoy Federatsii v rezul'tate ob"edineniya Krasnoyarskogo kraya, Taymyrskogo (Dolgano-Nenetskogo) avtonomnogo okruga i Evenkiyskogo avtonomnogo okruga» [Federal Constitutional Law of October 14, 2005 No. 6-FKZ “On the formation of a new constituent entity of the Russian Federation as part of the Russian Federation as a result of the unification of the Krasnoyarsk Krai, the Taimyr (Dolgano-Nenets) Autonomous Okrug and the Evenk Autonomous Okrug”] // *Sobranie zakonodatel'stva Rossiyskoy Federatsii*. 2005. № 42. St. 4212 [Collection of Legislation of the Russian Federation. 2005. No. 42. Art. 4212]. URL: http://www.consultant.ru/document/cons_doc_LAW_56027/ (accessed 01 August 2022).

¹⁷ Federal'nyy zakon ot 21 dekabrya 2021 g. № 414-FZ «Ob obshchikh printsipakh organizatsii publichnoy vlasti v sub'ektakh Rossiyskoy Federatsii» [Federal Law of December 21, 2021 No. 414-FZ “On the General Principles of Organization of Public Power in the Subjects of the Russian Federation”] // *Sobranie zakonodatel'stva Rossiyskoy Federatsii*. 2021. № 52 (chast' I). St. 8973 [Collected Legislation of the Russian Federation. 2021. No. 52 (Part I). Art. 8973]. URL: http://www.consultant.ru/document/cons_doc_LAW_404070/ (accessed 01 August 2022).

the Surgutneftegaz company regarding the restriction of the use of the highway, the constitutional right to appeal, freedom of expression, and freedom of the press were exercised. Citizens sent a collective appeal to the Commissioner for Human Rights of Russia, the highest official of the subject. The Presidential Council for Civil Society and Human Rights also sent an appeal to the head of the subject¹⁸. As a result of the approval of organizational measures at a field meeting of representatives of public authorities, citizens and companies, the conflict was resolved.

6) In order to resolve the conflict and eliminate its causes, an important role can be played by the introduction of amendments to the Constitution (Charter) of the subject, constitutional legal acts. In 2009, at a working meeting, the President of Russia urged to complete the process of bringing the constituent entities' legislation in line with the Constitution and federal legislation. A number of republics refused to amend their constitutions¹⁹. A working group was created in the Federation Council to discuss the measures of responsibility of state authorities of the constituent entities of the Russian Federation for non-compliance with decisions of the Constitutional Court of Russia, and the information on non-compliance with the decisions of the republics of Tatarstan, Bashkortostan, Sakha (Yakutia) and Tuva on inadmissibility of inclusion of norms about the sovereignty and citizenship of the republics in constitutions was placed on the website of the Court. As a result, the legislative body of the Republic of Sakha, Il Tumen, excluded the provisions on sovereignty, citizenship and "the people of the republic as a source of power", ensuring the unity of the legal space and eliminating the cause of conflict.

The list of methods can be supplemented, however, the examples given are sufficient to verify the hypothesis about the need to develop and improve the system of methods for resolving constitutional conflict at the national level and its supplementation, "adaptation", based on the parameters of conflict at the level of territorial units and macroregions. Special characteristics of the Arctic zone as a special subject of public administration, a conglomerate of entities and municipalities that differ in territorial parameters and level of socio-economic development determine the need for a full range of conflict resolution methods, from conciliation and coordination mechanisms to state coercion measures.

Conflict management and resolution are directly related to the socio-economic development of the Arctic zone: it is a necessary element of security and the basis of socio-economic development. Socio-economic costs (the so-called "cost of conflict") depend on the effectiveness of management and the specific option for resolving the conflict. For example, if the right moment was missed, militarization of the conflict occurred, an increase in economic and political costs for managing and resolving it is inevitable [22, Swanström N. L., Weissmann M.S., p. 15], while the social component is no less important — the consequences of the conflict for the population. For

¹⁸ Council under the President of the Russian Federation for the development of civil society and human rights. URL: http://www.presidentsovet.ru/docs/requests_responses/obrashchenie_k_glave_yakutii_po_povodu_konflikta_zhiteley_lenskogo_rayona_i_surgutneftegaz_iz_za_avt/ (accessed 23 August 2022).

¹⁹ In the Republic of Sakha (Yakutia), for example, the argument was made that sovereignty "within the jurisdiction of the Republic of Sakha 'does not impose restrictions on the sovereignty of the Russian Federation'".

example, a conflict between representatives of an indigenous people and an industrial company engaged in nature management can lead to the development of cooperation, the solution of socio-economic problems, or, in case of negative development, to the loss of traditional management with all the ensuing social, cultural, and psychological consequences. To ensure a balance of economic interests of mining companies and the local population, before the start of economic activity, it is necessary to develop a system of guarantees for ensuring rational nature management, compensating for negative consequences. Projects aimed at ensuring the socio-economic development of the region and managing the risks arising from economic activities should be implemented taking into account the opinion of the population. Compensation projects should be selected and implemented on the basis of the priority principle [23, Novoselov A.L., p. 84].

The high cost of potential conflicts naturally raises the question of developing a system of conflict prevention measures.

Conflict prevention: levels and system of measures

In all cases, it is not only a question of conflict management and resolution, but also of conflict prevention, without which a balance in the social and legal model is impossible. Most legal conflict studies treat the terms prevention and conflict avoidance interchangeably²⁰. In special legal studies, prevention is considered as a complex multi-level process, as “the necessary activity of state bodies, organizations, public associations using certain means and methods, aimed at carrying out measures to prevent, avoid and eliminate conflict behavior in the legal sphere, identifying and eliminating conflictogenic factors, as well as active influence on people with stable conflict antisocial, illegal orientation in order to prevent them from committing destructive conflict actions” [24, Vasyagina M.M., p. 9]. The above definition can be significantly refined both in terms of the indicated subjects of prevention and in understanding the process²¹; however, it reflects the essence and dynamic nature of prevention.

In a situation of a stable (positive) peace, long-term structural measures aimed at solving common problematic issues and protecting the rights of certain social groups are appropriate. Such general issues include ensuring economic development, political participation, realization of rights of particular groups, etc. Such structural measures represent in essence early conflict prevention with a number of advantages: there is sufficient time for necessary institutional reforms in the early stages, more opportunities for effective communication and for finding ways and mechanisms for cooperation, higher readiness for interaction to reduce existing risks and solve problems.

²⁰ In a number of cases, the authors emphasize some semantic nuances of concepts (for example, prevention is defined as a set of measures ..., while conflict avoidance as a set of measures aimed at ...), but their interchangeability is emphasized. Since the focus of this work is on ensuring security in the Arctic zone, conducting a separate study on conflict avoidance is beyond the scope of the tasks set, the terms will be considered as complementary.

²¹ Thus, one cannot agree with the limitation of the range of subjects of prevention, as well as with exclusively negative connotations of conflict behavior (“conflict antisocial illegal orientation”, “destructive conflict actions”).

In a situation of negative peace on the territory of the Arctic zone, immediate preventive measures are more appropriate to address specific issues that increase the risks of conflict and tensions, which destabilize the situation. Such measures are short-term, and accordingly, the space of opportunity for the parties is also narrowing, as well as the time for taking the necessary measures, which may include negotiations and agreeing on an action plan to solve a specific problem, establishing communication in specific areas (special investigation, consultations, etc.)²².

In the context of our study, measures that stimulate the socio-economic development of the Arctic zone belong to the general social level of conflict prevention. The structural long-term prevention begins at the general social level.

The direct correlation between socio-economic development and stability is fully confirmed by empirical data: if current trends of economic development and instability continue, two-thirds of people living in poverty will live in unstable states suffering from conflicts. Weak economic development, in turn, impedes production and the search for resources for long-term investment in human capital, which can reduce social tension and interrupt the conflict cycle [25, Corral P., Irvin A., p. 67]. This correlation also demonstrates that the existing problems of socio-economic development and preservation of human capital in the Arctic zone of the Russian Federation directly indicate the need for general social prevention of conflicts.

In addition to the general social level, attention should be paid to specific legal levels of prevention, and the list proposed in available studies should be supplemented by universal (international) prevention. At the international level, basic universal definitions, norms and principles of conflict prevention are being formed and consolidated. The formation and development of a culture of peace, the prevention and resolution of conflicts are closely related to the following socio-economic measures: eradication of poverty and the reduction of inequality, promotion of sustainable social and economic development, elimination of all forms of discrimination, promotion of the ideals of mutual understanding, tolerance and solidarity, engaging civil society in building peace, involving children in activities that instill the values and ideals of peace, ensuring sustainable food security, stimulating recovery, reconciliation and reintegration processes in post-conflict situations, ensuring environmental sustainability. It can be seen that the measures outlined in the resolution are also relevant to the current legal model and can be used as a basis for ensuring the security of the Arctic zone.

At the international level, own legal and institutional framework for conflict resolution is also developing. We can give the following brief description of the existing international prevention mechanism:

1. The Secretary General and the Council play a leading role in identifying threats to peace and security, recommending methods and conditions for their resolution. Chapters V–VIII of the UN Charter are directly devoted to the issues of maintaining international peace and security, reg-

²² The distinction of prevention measures into structural and direct ones in the scientific literature is most often revealed on the example of international conflicts, but it may well be extrapolated to intrastate conflicts.

ulating the possibilities of prevention subjects, including through regional agreements²³. The UN Human Rights Council has an expert mechanism on the rights of indigenous peoples. The Arctic is one of the seven socio-cultural regions where information, advice and other support is provided²⁴.

2. Regional organizations (for example, the Arctic Council, the Organization for Security and Cooperation in Europe, etc.) can arrange long-term missions in problem areas, conduct more complex work on structural conflict causes (rights issues, civil society development, etc.). The main subject of cooperation and conflict prevention in the Arctic is the Arctic Council, which has the status of an international intergovernmental organization. Until 2022, the Arctic Council was a platform for coordination of state policies, assessment of environmental and military-political risks, and the Arctic was characterized in scientific works as a territory of peace and stability [26, Zhuravel V.P., p. 230]. On March 3, 2022, the Arctic states, except for Russia, refused to participate in the meetings of the Council as a protest against a special military operation; in June, Denmark, Iceland, Canada, Norway, the USA, Finland and Sweden announced their limited participation in the work of the organization (projects were supposed to be implemented without the participation of the Russian Federation). Such a decision confirms the hypothesis that the Arctic is currently characterized by a situation of "negative" peace. The adopted decision is conflict-generating; it contradicts the norms of law and the objective interest of all Arctic countries in multilateral cooperation. Since the sustainable development of the Arctic requires the coordination of public policies, this decision is temporary.

3. The establishment of international contact groups to prevent or resolve a conflict may be driven by geopolitical reasons, or by the "cost of the conflict" for the states (economic, political, social and other costs); the advantage of such groups is a smaller number of participants, which potentially simplifies the settlement processes, but raises questions about the legitimacy of the decisions made. Thus, in 2022, within the framework of the Inuit Circular Council, representatives of Russia, the United States, Canada and Denmark discussed the geopolitical causes of conflict, the problem of Arctic polarization and discrimination.

4. Non-profit organizations can act as a transitional, often "mediating" link between the national and international levels. They can effectively identify the causes and assess the potential risks of the conflict, since they are closely familiar with the real situation, provide necessary social and humanitarian assistance, participate in restoration of communication and trust between citizens and the state, and disseminate information about the conflict. The Arctic Council of Athabaskans, the International Gwich'in Council, the Inuit Circumpolar Council, the International Aleut Association, the Saami Council, the Russian Association of Indigenous Peoples of the North, Siberia and the Far East play an important role in providing feedback and representation of indigenous interests.

²³ UN Charter. United Nations. URL: <https://www.un.org/ru/about-us/un-charter/full-text> (accessed 11 August 2022).

²⁴ Resolution adopted by the Human Rights Council on September 30, 2016 "Expert mechanism on the rights of Indigenous Peoples". URL: <https://daccess-ods.un.org/tmp/7499431.37168884.html> (accessed 11 October 2022).

One of the global sustainable development goals is the creation of a peaceful and inclusive society, ensuring access to justice for everyone, and effective, responsive and accountable institutions at all levels (goal 16). In the context of this goal, the relationship between international and general legal conflict prevention is most clearly manifested. Within the framework of and taking into account the peculiarities of the national legal framework, the tasks of reducing all manifestations of cruelty and violence, ensuring the rule of law, inclusive, representative participation of citizens in decision-making at all levels, combating corruption in all its forms, ensuring access to information and protection rights for everyone, etc.²⁵

The general legal prevention of conflicts at the domestic level will directly relate to regulatory support, building an institutional system of bodies and officials whose competence includes security and conflict prevention, legal education, raising legal culture, strengthening the rule of law, etc. The results of preventive activities are also reflected in socio-economic sphere in the form of economic stability, constructive interaction of social groups, etc.

The list of general legal prevention measures can be supplemented by a preventive conversation, announcement of an official warning against conflictogenic or other anti-social behavior, predicting the effectiveness of projected acts and increasing their balance in the legal system, helping people, teams, organizations affected by conflict legal activities [27, Kartashov V.N., pp. 42–43]. The multiplicity of factors that make up the system of general legal conflict prevention characterizes in this case the complexity of the category “civil peace and harmony”: one cannot speak only about the presence or absence of peace, it is necessary to evaluate its quality, and, accordingly, the effectiveness of conflict prevention on a number of parameters.

Measures to prevent constitutional conflict can be attributed to the specialized level. Constitutional conflictology plays a significant role in ensuring security: when constitutional values are the object of the conflict, and the consequences are public and large-scale, the role and necessity of prevention are undeniable. I.A. Tretyak developed the concept of constitutional conflict diagnostics as a research method of constitutional conflictology: “it is a system of measures aimed at identifying the risks of the constitutional-legal conflicts, conflictogens, their monitoring in order to effectively prevent constitutional and legal conflicts”. This system includes identification and assessment of risks, monitoring of conflicts, conflictogens and risks, forecasting the emergence and development of conflicts, measures to reduce the risk of conflict, documental recording and reporting. The scientist considers constitutional-legal coercion, the system of checks and balances, and coordination mechanisms as legal measures of conflict prevention [28, Tretyak I.A.]. One can fully agree with the author’s reasonable proposals both in terms of the development of scientific approaches to diagnosing and predicting constitutional conflicts, and in terms of proposals for the development of a system of legal preventive measures.

²⁵ Goal 16. Peace, justice and strong institutions. United Nations development program. URL: <https://www.undp.org/sustainable-development-goals#peace-justice-and-strong-institutions> (accessed 18 August 2022).

The list of coordination mechanisms is variable and can be supplemented in the event of a corresponding state-legal need, public request. An example of successful cooperation and coordination is the activities of the Council of Legislators of the Tyumen Oblast, the Yamalo-Nenets Autonomous Okrug and the Khanty-Mansi Autonomous Okrug–Yugra: through contractual and conciliation procedures, cooperation and prevention of conflicts at various levels is being developed. The forms of coordination activities include joint meetings of deputies of the authorities of the subjects, adoption of consent protocols, exchange of experience and coordination of implementation and projects on the territory of the subjects ²⁶.

It is necessary to note the role of public control in reducing the level of conflict, informing citizens about the ongoing state policy and decisions, increasing the level of citizens' trust in the state, ensuring the realization of the right of citizens to participate in the management of state affairs.

The implementation of the so-called complex “right to disagree” also plays a significant role in ensuring stable state development (the forms of implementation of this right are, for example, holding public events, using the opportunities of the parliamentary opposition, etc.) [29, Salikhov D.R.; 30, Teterin A.V.]. Given the wide range of socio-economic problems, the negative anthropogenic impact on the environment in the Arctic, the destruction of the traditional living environment of the population, the role of mechanisms for expressing the opinion of citizens (including protests) is increasing. A striking example is the public events through which the citizens of the Arkhangelsk Oblast expressed their disagreement with the decision to build a landfill for solid domestic and industrial waste removed from Moscow in the Lensky district, near the Shies railway station (2018–2021). Citizens sought to publicly express their disagreement and defend their right to a healthy environment. As a result of a wide public response, mass protest events were held not only in the Arkhangelsk Oblast, but also on the territory of other regions. The President of the Russian Federation instructed the highest officials of Moscow and the Arkhangelsk Oblast to take into account the opinion of citizens when resolving the issue, and in 2020 the Arkhangelsk Oblast Arbitration Court satisfied the claim to recognize the capital buildings erected by the landfill operator as illegal and subject to demolition. The ruling of the appellate and cassation instances upheld the decision ²⁷.

Finally, the “grassroots” level of prevention is individual. We are talking about individual prevention when measures are taken to avoid an individual legal conflict in the Arctic zone. The term “individual prevention” can also be considered from another perspective: an analysis of an individual's conflict strategy, the psychological and behavioral characteristics of the conflict parties

²⁶ O Plane raboty Soveta Zakonodateley Tyumenskoy oblasti, Khanty-Mansiyskogo avtonomnogo okruga — Yugry i Yamalo-Nenetskogo avtonomnogo okruga na 2022 god. Zakonodatel'noe Sobranie YaNAO [On the work plan of the Council of legislators of the Tyumen Oblast, the Khanty-Mansi Autonomous Okrug - Yugra and the Yamalo-Nenets Autonomous Okrug for 2022. Legislative assembly of YNAO]. URL: <https://zs.yanao.ru/documents/active/139833/> (accessed 22 August 2022).

²⁷ Arbitration Court of the Northwestern District. Decree on case No. A05-2324/2019 of February 04, 2021. URL: <http://fasszo.arbitr.ru/cases/ccase?nd=839668582> (accessed 22 August 2022).

(for example, an analysis of the behavior that led to a labor dispute in an organization), the necessary educational measures applied to a specific person, compiling a victimological characteristic of a citizen. Another important form is the “self-prevention” of the conflict, which is expressed in raising the level of knowledge and legal culture, self-control and self-criticism in a conflict situation, etc. It is also worth agreeing with the author's conclusions that a person's self-prevention largely depends on the atmosphere in society: “a civilized society with its culture, traditions, mentality, morality ... has a positive effect on the personality and its consciousness”. Graphically, the multi-level process of preventing constitutional conflict can be represented as follows:

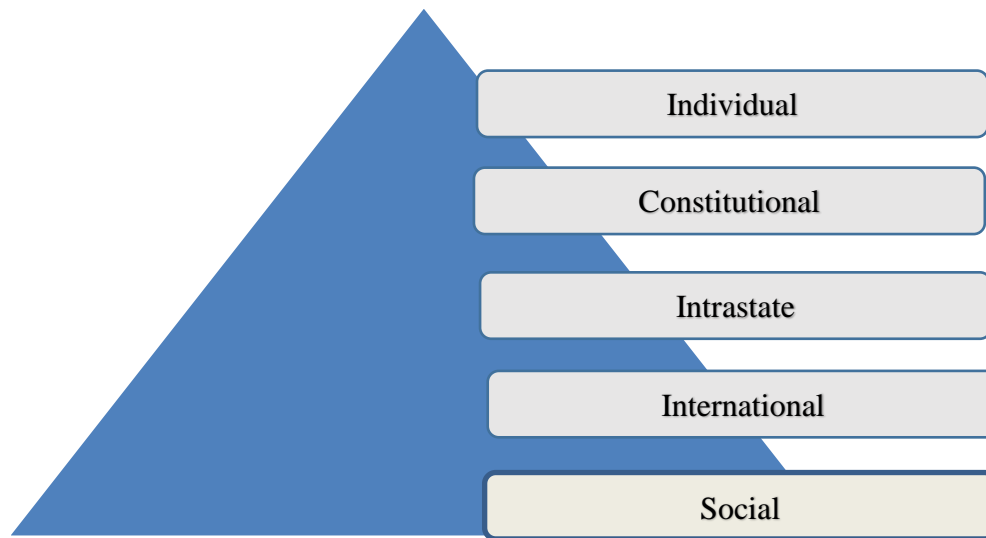


Fig. 2. Levels of conflict prevention.

Solving the complex task of ensuring security and preventing conflicts in the Arctic zone requires the integration of scientific knowledge to address problematic issues at all levels:

- ensuring the socio-economic development and quality of life of the population;
- developing mechanisms for guaranteeing the right to peace and security, fostering a culture of peace, mutual responsibility of the state, society and the individual in the field of peacebuilding;
- improving the quality of regulatory support, legal culture, and the effectiveness of the institutional system of bodies and officials whose competence includes ensuring security and conflict prevention;
- improving the constitutional and legal means of cooperation and coordination in the system of public authority, the mechanisms of “feedback” of society and the state, developing the institution of public control and the provision of a comprehensive right to disagree;
- raising the level of awareness of the strategies of behavior in a conflict situation, developing educational programs in the field of legal conflictology, exchanging experience and best practices.

Conclusion

Stable development, peace and civil harmony in Russia's Arctic zone can only be ensured if conflicts are resolved and prevented in an effective and timely manner within a unified legal framework. Modeling as a method of research, reflection and transformation of existing relations makes it possible to demonstrate the interrelation and interdependence of socio-economic development and the provision of stable peace. Development in the unity of the three components — social, economic and environmental — creates conditions for ensuring security, reducing the level of conflict in public relations.

The legal model of socio-economic development, conflict prevention and resolution in the territory of the Arctic zone should be built taking into account the following main provisions:

1. Conflict plays a dual role in the development of the Arctic: on the one hand, each conflict has a certain "price" (costs, negative consequences, etc.); on the other hand, it performs a number of positive functions, stimulates development, integration and effective communication, subject to management and timely resolution.

2. From the standpoint of legal conflictology and the sociology of law, not only the basic regulatory and protective functions of law can be discussed, but also the stimulating, integrative and conciliatory functions in the area of conflict prevention and resolution come to the fore. In addition to formal procedures, the law establishes the possibility of using various alternative conflict resolution mechanisms ("applying to a third party", mediation, the creation of special conciliation bodies, etc.).

3. Constitutional conflictology as a "young" and actively developing branch of constitutional law is designed to make a significant contribution to the study of conflict in the Arctic zone. The need to study the constitutional conflict as a type of interaction between the subjects of constitutional and legal relations, which is based on the contradiction of the parties about the constitutional value (values), is due to both the scale of its consequences and the poor knowledge of the causes, mechanisms for its prevention and resolution at the level individual subjects, macroregions of Russia. The constitutional conflict on the territory of the Arctic zone is characterized by a special subject composition, a potential object, and types of conflictogens. The results of the study show that the most frequent object of conflict in the Arctic zone is the realization of socio-economic rights and their guaranteeing.

4. The process of management leads to the end of the conflict, which implies the desire to control the dynamics, determine the mechanisms used and the desired results, appropriate actions in order to limit, mitigate, restrain the conflict. Conflict resolution as a result of a change in the nature of the interaction of the parties, the situation, the elimination of the causes of the conflict presupposes the existence of a system of complementary methods. The study made it possible to demonstrate the importance of improving the system of ways to resolve constitutional conflicts that arise in the Arctic zone, taking into account their subject composition and development features.

5. Conflict prevention reduces the number of emerging conflicts and the scale of negative consequences, stimulates problem solving. There are two basic types of prevention: structural long-term prevention in a situation of stable peace; direct prevention aimed at solving specific problems that increase the risk of a conflict and increase tension, destabilizing the situation. Structural prevention creates general conditions and prerequisites for reducing the level of conflict in the macroregion; such conditions include socio-economic development, education of a culture of peace, raising the level of legal awareness of citizens, etc. Taking into account the characteristics of the Arctic zone, a system of measures of direct prevention should be built. The systemic characteristic of the process of prevention of constitutional conflict is reflected in the presence of complementary levels, each of which is characterized by its own list of methods and mechanisms of prevention. These include general social prevention and special legal levels (international legal, general legal, constitutional legal and individual).

The development of constitutional conflictology, the reflection of the values of civil peace and harmony in the text of the Constitution of Russia in 2020, the conduct of special studies of conflict determine the development of new approaches and an increase in the role of constitutional law not only in determining the main values, priorities, but also mechanisms for stable development of the Arctic zone of the Russian Federation.

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Features of Digitalization of the Arctic Regions of Russia

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Abstract. Digital space allows connecting people without regard to physical space and makes many social services available, which is especially relevant for the Arctic territories. The aim of the study is to analyze the features of the digital space of the Russian Arctic regions. Research objectives: building a database of series of variables in the context of the Russian Arctic regions for the period 2014–2020, making a retrospective analysis of the dynamics of their digitalization, ranking the Russian Arctic regions by the level of digitalization based on the construction of an integral index. The objects of the study are nine Arctic regions of Russia. The results of the study provide recommendations for further digitalization of the Arctic regions. The scientific novelty of the study is determined by the application of the index method for ranking the Russian Arctic regions by the level of digitalization for the period 2014–2020 according to four sub-indices: activities of households, population, authorities, organizations, which made it possible to trace the dynamics of indicators, evaluate the effectiveness of measures to develop the digital space of the regions. The methodology makes it possible to carry out calculations based on publicly available statistical data and can be used for territories of various levels when conducting retrospective analysis and strategic forecasting procedures. The practical significance of the study lies in the fact that the results obtained may be in demand when assessing the effectiveness of digitalization in the course of developing strategies and programs for digitalization of the regional space. The prospects for further research are determined by a deeper analysis of the degree of influence of variables on the level of digitalization of regions and the formation of proposals and recommendations for adapting digitalization processes, taking into account the current international situation.

Keywords: *digitalization index, information and communication technologies, digital divide, Arctic region*

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Introduction

Digital space connects people without regard to physical geography and represents the accumulation of all information in digital form [1, Killan A.; 2, Kukul T., Coşkun E.A., pp. 951–959]. However, the limitations of access to modern means of communication in different social groups lead to digital inequality or digital barrier. Cyberspace enables the dissemination of messages and

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content [3, Castells M.], while a culture based on digital information processing can create a gap between those generations who were born before the introduction of the Internet and those who grew up in a digital environment [4, Castells M., p. 8].

It is worth noting that digitalization is understood both as the application of digital technologies in business to generate income ¹ and as a way of restructuring many areas of social life related to digital communications and media infrastructures ². A secure, sustainable digital infrastructure with telecommunications connectivity is one of the main components of digitalization ³. The diffusion of information and communication technologies (hereinafter referred to as ICT) is the main driver of digitalization [5, Heeks R., pp. 16–33]. The intensive application of ICT improves existing economic activities, while the extensive application expands economic activities [6, Bukht R., Heeks R., pp. 143–172]. Information and communication infrastructure is necessary for the creation, distribution, search, preservation of information and knowledge in society [7, Hardy A., pp. 278–286; 8, Stanley T.D., Doucouliagos C., Steel P., pp. 705–726; 9, Hanseth O., pp. 122–156; 10, Pironti J.P., pp. 1–5]. The introduction of ICT is inextricably linked to the effective socio-economic development of the territory [11, Thapa D., Sæbø Ø., pp. 1–15; 12, Palviaa P., Baqir N., Nemat H., pp. 160–176], productivity growth [13, Liao H., Wang B., Li B., Weyman-Jones T., pp. 10–25], GDP increase [14, Moulton B.R., pp. 34–48], creation of institutional infrastructure, social justice, support for economic activity [15, Walsham G., pp. 18–41].

The digital economy is impossible without investment in information infrastructure, including IT equipment, fiber optic lines, wireless and local networks, software [16, Haltiwanger J., Jarmin R.S., pp. 13–33]. In 2022, a Decree of the President of the Russian Federation was signed ⁴ on measures to accelerate the development of the IT industry in Russia.

At the same time, according to a number of Presidential Decrees ⁵, the low level of development of the information infrastructure of the Russian Arctic territories is recognized as one of the main threats to national security, and its improvement is one of the priority tasks.

¹ Gartner Glossary. URL: <https://www.gartner.com/en/information-technology/glossary/digitalization> (accessed 11 June 2022).

² Brennen S., Kreiss D. Digitalization and Digitization. URL: <https://culturedigitally.org/2014/09/digitalization-and-digitization> (accessed 11 June 2022).

³ Tholons Global Innovation Index. URL: https://www.tholons.com/_files/ugd/f2ce04_aae668d076c549849bca99acc08cd82d.pdf (accessed 11 June 2022).

⁴ O merakh po obespecheniyu uskorenogo razvitiya otrasli informatsionnykh tekhnologiy v Rossiyskoy Federatsii: Ukaz Prezidenta Rossiyskoy Federatsii ot 02.03.2022 goda № 83 [On measures to ensure the accelerated development of the information technology industry in the Russian Federation: Decree of the President of the Russian Federation dated March 2, 2022 No. 83]. URL: <http://publication.pravo.gov.ru/Document/View/0001202203020001> (accessed 28 May 2022).

⁵ Ob Osnovakh gosudarstvennoy politiki Rossiyskoy Federatsii v Arktike na period do 2035 goda: Ukaz Prezidenta Rossiyskoy Federatsii ot 05.03.2020 goda № 164 [On the Fundamentals of the State Policy of the Russian Federation in the Arctic for the period up to 2035: Decree of the President of the Russian Federation dated 05.03.2020 No. 164]. URL: <https://base.garant.ru/73706526/> (accessed 28 May 2022); O Strategii razvitiya Arkticheskoy zony Rossiyskoy Federatsii i obespecheniya natsional'noy bezopasnosti na period do 2035 goda: Ukaz Prezidenta Rossiyskoy Federatsii ot 26.10.2020 goda № 645 [On the Strategy for the development of the Arctic Zone of the Russian Federation and ensuring national security for the period up to 2035: Decree of the President of the Russian Federation dated 26.10.2020 No. 645]. URL: <http://www.kremlin.ru/acts/bank/45972> (accessed 28 May 2022).

Therefore, studies on the digitalization of the AZRF regions are relevant.

Research methodology

Researchers make attempts to rank regions and countries by the level of digitalization by means of integral indices, using such indicators as: the human potential of the region and the degree of use of external conditions in organizations [17, Kozlov A.V., Teslya A.B., Ivashchenko A.A., pp. 21–31], material indicators and indicators characterizing the information and communication subsystem [18, Kozlov A.V.; 19, Kozlov A.V., pp. 106–117], the use by organizations of broadband access (hereinafter referred to as BBA) to the Internet, cloud services, special software and electronic data exchange [20, Sadyrtidinov R.R., pp. 230–235], indicators of the external environment, the availability of digital technologies and their use by the state, business and society [21, Kamneva V.V., Baeva D.A., pp. 37–44], accessibility, infrastructure investment, network access, capacity, usage, human capital [22, Katz R., Koutrompis P., Callorda F.M., pp. 32–44], digital infrastructure, ability to digital innovation, the scale of digital industry and the use of digital technologies [23, Tang L., Lu B., Tian T.]. However, a number of variables used for calculations according to these methods are not available in open statistical sources for the regions of the Russian Arctic. At the state level, digitalization by region can be assessed through a number of ratings, such as “Rating of regions for the development of the information society”, “Rating of digital maturity of Russian regions”, which are not calculated annually (some of them even once), so it is impossible to conduct a full retrospective analysis.

Thus, the purpose of the study was to analyze the features of the digital space of the Arctic regions of Russia. To achieve the goal, it was necessary to solve the following tasks: to build a database of series of variables in the context of the Arctic regions of Russia for the period 2014–2020, to conduct a retrospective analysis of the dynamics of their digitalization, to calculate the integral index of digitalization of the Russian Arctic regions, to rank the AZRF regions by the level of digitalization, to give recommendations. The object of the study is the AZRF regions. The Russian Arctic as an object of statistical observation has some features that are primarily related to its administrative structure. The Russian Arctic includes the entire territory of four regions of the Russian Federation and a number of administrative units (cities, urban districts, municipal districts, uluses) of five more regions, which leads to the complexity of collecting statistical data. Most often, statistics related to digitalization are published for the whole subject of the Russian Federation, without a breakdown by administrative units.

General scientific methods were used as the methodological basis of the study: cause-and-effect and logical-structural analysis and synthesis; applied economic and statistical methods: systematization of statistical information, compilation of information and analytical database. Data processing was carried out using MS Excel.

This study was conducted in stages. The first stage involved the collection of statistical data and the construction of a database of series of variables by regions of the AZRF for the period

2014–2020 according to the data of the Federal State Statistics Service ⁶ (Figures 1–3; 5–8, Tables 2–5 were based on this data). The information base was also the data of the Ratings of ICT costs of the Russian regions for the period 2014–2021 (Figures 9 and 10), digitalization ratings (Table 1).

The variables for analysis were selected due to the fact that they are used as target indicators in a number of legislative acts of the Russian Federation, and are also contained in the Federal Statistical Work Plan ⁷, which has been supplemented with official information characterizing the socio-economic development of the Russian Arctic since 2016.

At the next stage, a retrospective analysis of the dynamics of digitalization of the Russian Arctic subjects for the period 2014–2021 was carried out.

Then the AZRF regions were ranked by the level of digitalization based on the construction of the index. The ranking of regions by the level of digitalization was carried out according to four sub-indices, consisting of a number of variables:

1. Sub-index “Digitalization of households” (SI_{DH}):

- share of households with a computer, X_1 ;
- share of households with access to the Internet, X_2 ;
- share of households with broadband access to the Internet, X_3 ;
- share of households not using the Internet due to high connection costs, X_4 ;
- share of households using Internet access to search for information on goods, services, order goods, X_5 ;
- number of mobile phones per 100 households, X_6 .

2. Sub-index “Digitalization of population” (SI_{DP}):

- share of population using personal computers, X_7 ;
- share of population using the Internet, X_8 ;
- share of population using the Internet to order goods and/or services, X_9 ;
- share of population not using the Internet for security reasons, X_{10} ;
- share of population using the Internet to receive state and municipal services, X_{11} ;
- share of population using a mobile phone or smartphone in the last 3 months, X_{12} .

3. Sub-index “Digitalization of government activities” (SI_{DG}):

- share of public authorities and local governments using the Internet, X_{13} ;
- share of public authorities and local governments using the Internet at a speed of 256 Kbps or higher, X_{14} ;

⁶ Monitoring razvitiya informatsionnogo obshchestva v Rossiyskoy Federatsii [Monitoring the development of the information society in the Russian Federation]. URL: <https://rosstat.gov.ru/statistics/infocommunity> (accessed 05 May 2022); Itogi federal'nogo statisticheskogo nablyudeniya po voprosam ispol'zovaniya naseleniem informatsionnykh tekhnologiy i informatsionno-telekommunikatsionnykh setey [Results of the federal statistical observation on the use of information technologies and information and telecommunication networks by the population]. URL: <https://rosstat.gov.ru/statistics/infocommunity> (accessed 05 May 2022).

⁷ Federal'nyy plan statisticheskikh rabot: rasporyazhenie Pravitel'stva Rossiyskoy Federatsii ot 6 maya 2008 goda № 671-r [Federal plan for statistical work: Decree of the Government of the Russian Federation dated May 6, 2008 No. 671-r]. URL: <https://rosstat.gov.ru/folder/462> (accessed 28 May 2022).

- share of public authorities and local governments using the Internet at a speed of at least 2 Mbit/sec, X_{15} ;
- share of electronic document flow between public authorities in the total volume of interdepartmental document flow, X_{16} ;
- share of population who encountered problems in obtaining state and municipal services through official websites and portals, X_{17} ;
- share of population satisfied with the quality of electronic public services, X_{18} .

4. Sub-index “Digitalization of organizations” (SI_{DO}):

- number of personal computers in organizations, X_{19} ;
- number of personal computers with Internet access, X_{20} ;
- share of organizations using broadband access to the Internet, X_{21} ;
- share of organizations that had a website, X_{22} ;
- share of organizations that used the Internet to place orders for goods (works, services), X_{23} ;
- share of employees of organizations using personal computers at least once a week, X_{24} .

The variables were normalized by converting them into dimensionless values in the range from 0 to 1. For this purpose, the current value of the variable for each of the AZRF regions was divided by the maximum possible value for this variable according to the formula:

$$N_j = \frac{x_{ij}}{\max_j(x_i)} (1)$$

where x_{ij} — the value of the i -th variable in the j -th region, and $\max_j(x_i)$ — the normalizing (“reference”) value of the variable.

The normalized values of the variables are in the range from 0 to 1, respectively, if the region of the Russian Arctic has a “reference” value of the variable, then its score for this indicator is 1, therefore, the region’s lag behind the “reference” value is determined by the value of the normalized value.

The final value of each variable was found as the arithmetic mean of the normalized indicators of this variable for the period 2014–2020. The sub-indices values were calculated as the sum of the final values of the variables.

The final digitalization index for each region of the Russian Arctic (I_{DR}) is calculated as the arithmetic average of four sub-indices. The AZRF regions were ranked on the basis of the obtained value of the final digitalization index.

Results

The level of ICT inflow in the regions of the Russian Arctic can be judged by various ratings of digitalization of regions. The Yamalo-Nenets Autonomous Okrug is the leader in almost every of the five ratings reviewed, while the Chukotka Autonomous Okrug is among the outsiders. The

remaining regions of the Russian Arctic occupy average places.

Table 1

Positions of the Russian Arctic regions in the Russian digitalization ratings

	1	2	3	4	5
Leading regions (top 10 places)	Yamalo-Nenets AO	Yamalo-Nenets AO	None of the AZRF regions	Yamalo-Nenets AO	None of the AZRF regions
Mid-level regions	All other regions of AZRF	All other regions of AZRF	All other regions of AZRF	All other regions of AZRF	All regions of AZRF
Lagging regions (last 10 places)	Chukotka AO	Chukotka AO	Chukotka AO	Chukotka AO	None of the AZRF regions
where, 1 — Index “Digital Russia” ⁸ (2017–2018), 2 — Rating for the development of the information society ⁹ (2016–2017), 3 — Rating for the quality of public services in electronic form ¹⁰ (2020), 4 — Digital maturity rating of Russian regions ¹¹ (2021), 5 — Digital maturity rating of Russian regions in the healthcare sector ¹² (2021)					

Table 2 shows the average values of the normalized variables and the average value of the “Digitalization of population” (SI_{DP}) sub-index for the period 2014–2022 in the regions that are part of the Russian Arctic. In five regions, the Russian Arctic does not include the entire territory, but only a few municipalities, but due to the lack of statistical data, the analysis was carried out for the whole region, so they are highlighted in tables 2–5 as a separate block. The Yamalo-Nenets Autonomous Okrug leads in terms of the “Digitalization of Population” sub-index, lagging behind only one indicator — share of population not using the Internet for security reasons — from the Nenets Autonomous Okrug, the Krasnoyarsk Krai and the Chukotka Autonomous Okrug.

Table 2

Average values of normalized variables and values of the sub-index “Digitalization of population” (SI_{DP}) in the regions of the Russian Arctic for the period 2014–2020

Region	X_1	X_2	X_3	X_4	X_5	X_6	SI_{DP}
Included in AZRF throughout the region							
Murmansk Oblast	0.89	0.88	0.70	0.66	0.37	0.97	4.47
Nenets Autonomous Okrug	0.86	0.49	0.74	0.46	0.20	0.95	3.70
Chukotka	0.98	0.88	0.57	0.28	0.05	1.00	3.75
Yamalo-Nenets Autonomous Okrug	1.00	1.00	0.92	0.99	0.23	1.00	5.14
Included in AZRF by some municipalities of the region							
Arkhangelsk Oblast	0.79	0.81	0.64	0.56	0.53	0.90	4.23
Krasnoyarsk Krai	0.81	0.82	0.40	0.67	0.14	0.91	3.75
Republic of Karelia	0.82	0.85	0.58	0.53	0.56	0.98	4.32
Komi Republic	0.81	0.84	0.60	0.50	0.50	0.94	4.20
Saha Republic	0.82	0.84	0.46	0.48	0.34	0.96	3.89

⁸ Index “Digital Russia”. URL: <https://www.skolkovo.ru/researches/index-cifrovaya-rossiya/> (accessed 05 May 2022).

⁹ Minkomsvyaz' predstavila reyting informatizatsii regionov-2017 [The Ministry of Telecom and Mass Communications presented the rating of informatization of regions-2017]. URL: <https://d-russia.ru/minkomsvyaz-predstavila-rejting-informatizatsii-regionov-2017.html> (accessed 05 May 2022).

¹⁰ The rating of regions on the quality of the provision of electronic public services-2020 has been published. URL: https://d-russia.ru/wp-content/uploads/2021/01/gos_regulirovanie_v_usloviyah_covid19_itogi_2020.pdf (accessed 05 May 2022).

¹¹ Digital maturity rating of Russian regions. URL: https://www.tadviser.ru/index.php/Статья:Цифровизация_регионов_России (accessed 05 May 2022).

¹² 2020: Digital maturity rating of Russian regions in the healthcare sector. URL: https://zdrav.expert/index.php/Статья:Рейтинг_цифровой_зрелости_регионов_России_в_сфере_здравоохранения (accessed 05 May 2022).

During the analyzed period, the digitalization of population increased in all regions, except for the Yamalo-Nenets Autonomous Okrug, but the largest growth took place in the Murmansk Oblast and Chukotka Autonomous Okrug (Fig. 1).

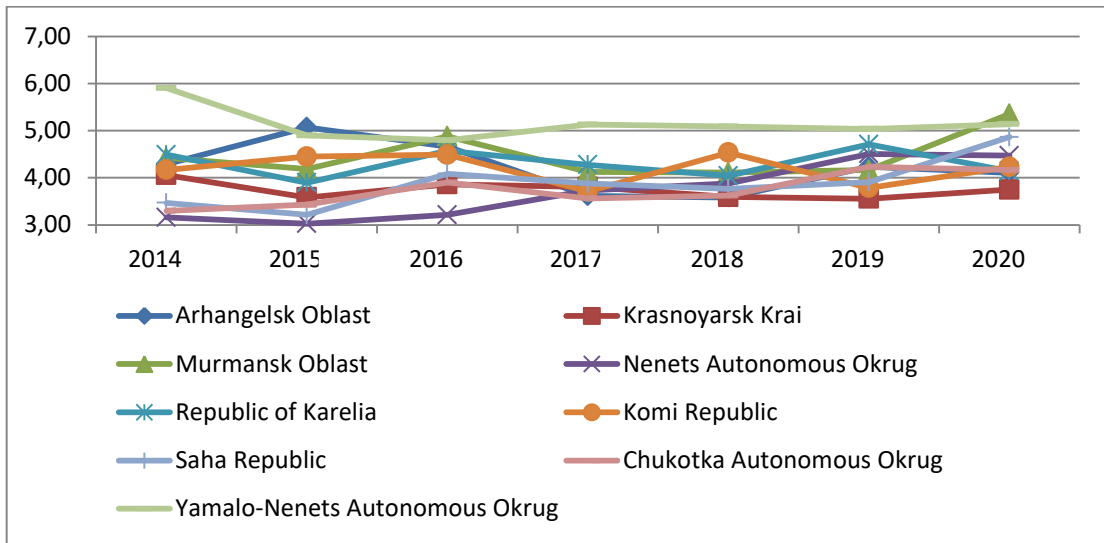


Fig. 1. Values of the sub-index “Digitalization of population” (SIDP) in the regions of the Russian Arctic in 2014–2020¹³.

The population of the Russian Arctic using the Internet has doubled: from 3.3 million people in 2014 to 6.6 million people in 2020. The share of the population that is active Internet users is 88.6%, which is higher the all-Russian indicator by 4.5% (Fig. 2).

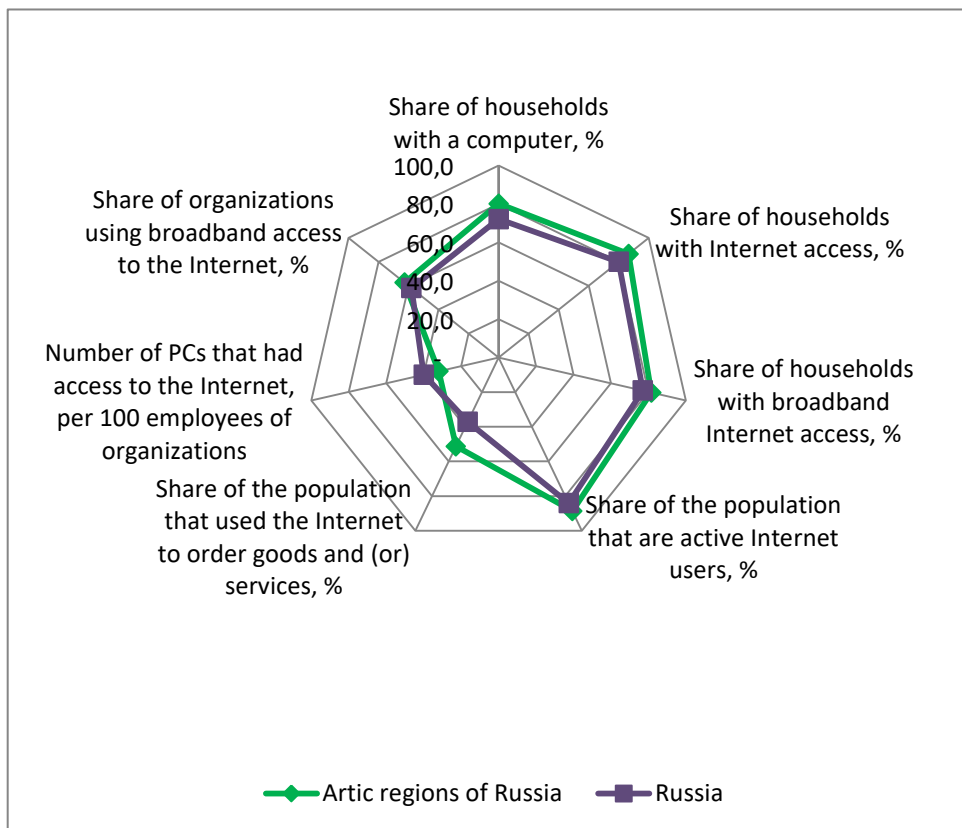


Fig. 2. Indicators of ICT development in the Russian Arctic for 2021¹⁴

¹³ Source: calculated by the author.

¹⁴ Source: calculated by the author.

In 2020, the population of the AZRF actively used various mobile devices to access the Internet, in particular tablets, mobile phones and smartphones. The share of households using personal computers to access the Internet in a number of regions decreased from 8% (Republic of Sakha) to 36.5% (Komi Republic). The largest decrease in the use of laptops and netbooks to access the Internet, by 26.8%, was observed in the Republic of Sakha. The number of mobile broadband Internet subscribers has grown significantly, the largest increase in 2020 compared to 2010 occurred in the Chukotka Autonomous Okrug (by 247%), the Komi Republic (by 189%) and the Arkhangelsk Oblast (by 165%).

For the period 2014–2020, the Yamalo-Nenets Autonomous Okrug was the leader in terms of the share of the population that prefers to receive public services via the Internet almost every year, although the largest increase in this indicator was observed in the Nenets Autonomous Okrug and the Republic of Sakha. The Republic of Komi, which in 2021 ranked first in the North-Western Federal District and 11th in Russia in terms of the number of registered users on the Gosuslugi portal, can also be singled out.

Among all the regions in the sub-index “Digitalization of households” (SIDH), the Yamalo-Nenets Autonomous Okrug stands out, whose leadership has been confirmed earlier in the analysis by its high positions in various federal rankings. This region is the leader due to the large proportion of households that had a personal computer, access to the Internet, including BBA, in comparison with other regions.

Table 3

Average values of normalized variables and values of the sub-index “Digitalization of households” (SIDH) in the regions of the Russian Arctic over the period 2014–2020

Region	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	SI _{DH}
Included in AZRF throughout the region							
Murmansk Oblast	0.93	0.89	0.91	0.46	0.81	0.86	4.85
Nenets Autonomous Okrug	0.82	0.75	0.67	0.10	0.80	0.80	3.93
Chukotka	0.94	0.89	0.48	0.51	0.88	0.75	4.45
Yamalo-Nenets Autonomous Okrug	1.04	1.00	1.00	0.49	0.88	0.88	5.29
Included in AZRF by some municipalities of the region							
Arkhangelsk Oblast	0.85	0.80	0.80	0.38	0.52	0.82	4.17
Krasnoyarsk Krai	0.79	0.76	0.72	0.16	0.51	0.83	3.77
Republic of Karelia	0.83	0.81	0.82	0.47	0.50	0.80	4.24
Komi Republic	0.86	0.83	0.86	0.23	0.48	0.80	4.07
Saha Republic	0.75	0.86	0.76	0.13	0.33	1.00	3.83

Over the entire period analyzed, in almost all the regions included in the AZRF, the most active digitalization of households was observed during 2016–2018 (Fig. 3).

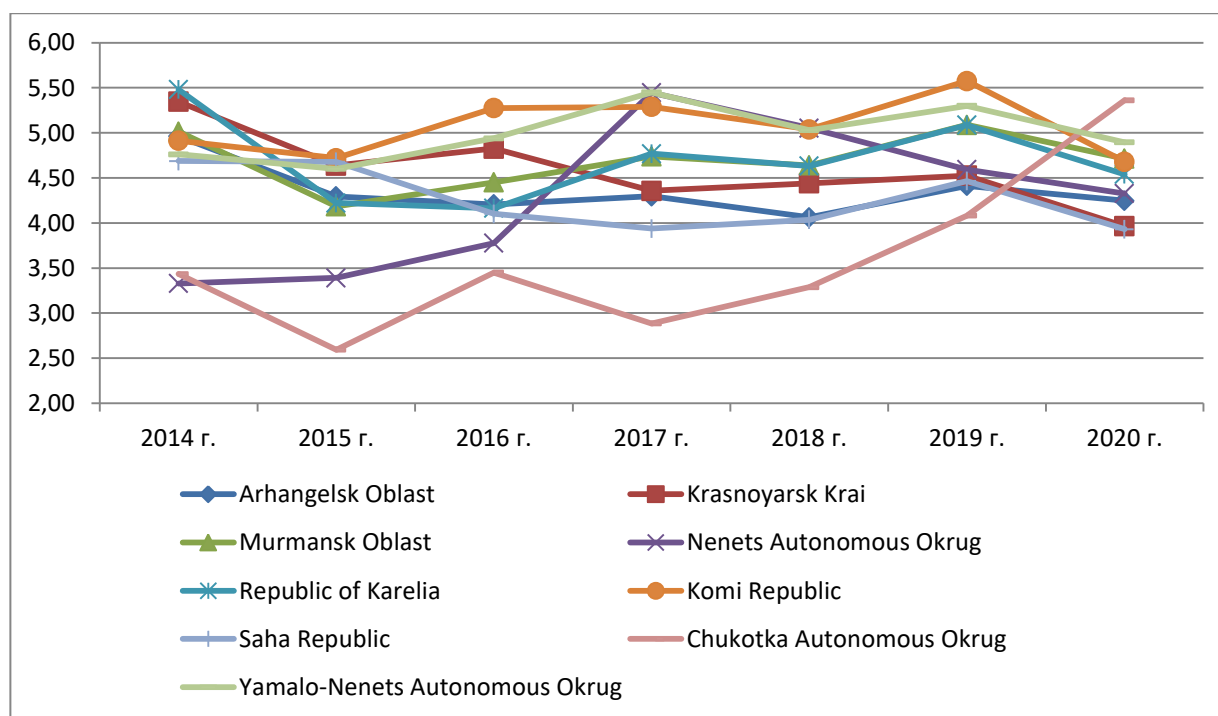


Fig. 3. Values of the sub-index "Digitalization of households" (SIDH) in the regions of the Russian Arctic in 2014–2020¹⁵

While in 2010 the average number of personal computers in the AZRF regions was 88 PC per 100 households, in 2020 it reached an average ratio of 140 computers per 100 households, for Russia as a whole — 129 computers per 100 households.

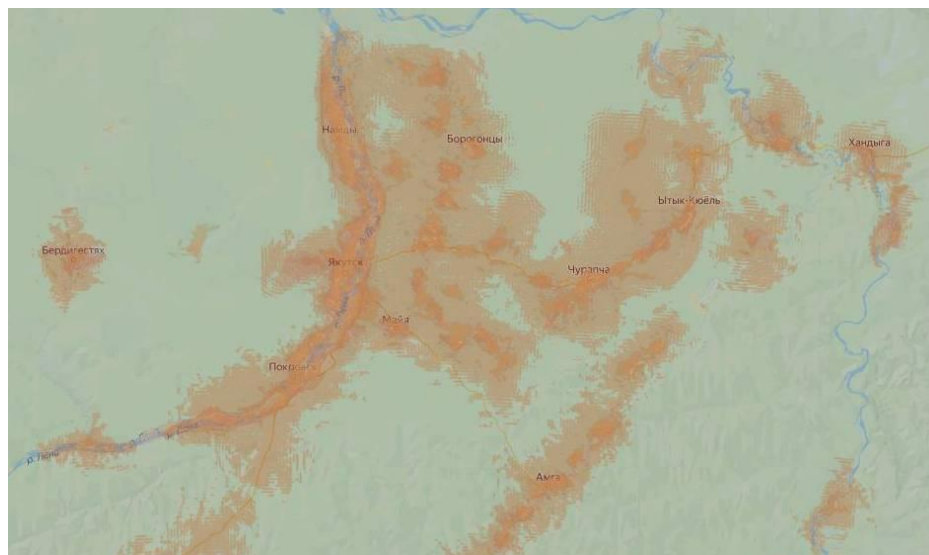
Since 2010, the density of fixed communication in the Russian Arctic has been decreasing, while the density of cellular communication was actively growing until 2015. While in 2004, there were from 4 (Chukotka Autonomous Okrug) to 123 (Nenets Autonomous Okrug) mobile phones per 100 households, in 2020 there were 213 (Chukotka AO) to 302 (Sakha Republic) mobile phones per 100 households.

Despite such technological changes, the share of households with broadband access to the Internet in most regions of the AZRF does not reach the Russian average, although the overall share of households with BBA to the Internet in the AZRF is above 4.6% compared to the Russian Federation. Broadband access to the Internet provides higher connection speeds and, accordingly, more opportunities. This indicator in 2020 was lower than the all-Russian one in Chukotka Autonomous Okrug by 30.7 p.p., in Krasnoyarsk Krai — by 6.9 p.p., in Nenets Autonomous Okrug — by 4.5 p.p., in Arkhangelsk Oblast — by 1.6 p.p., in Republic of Karelia — by 0.5 p.p.

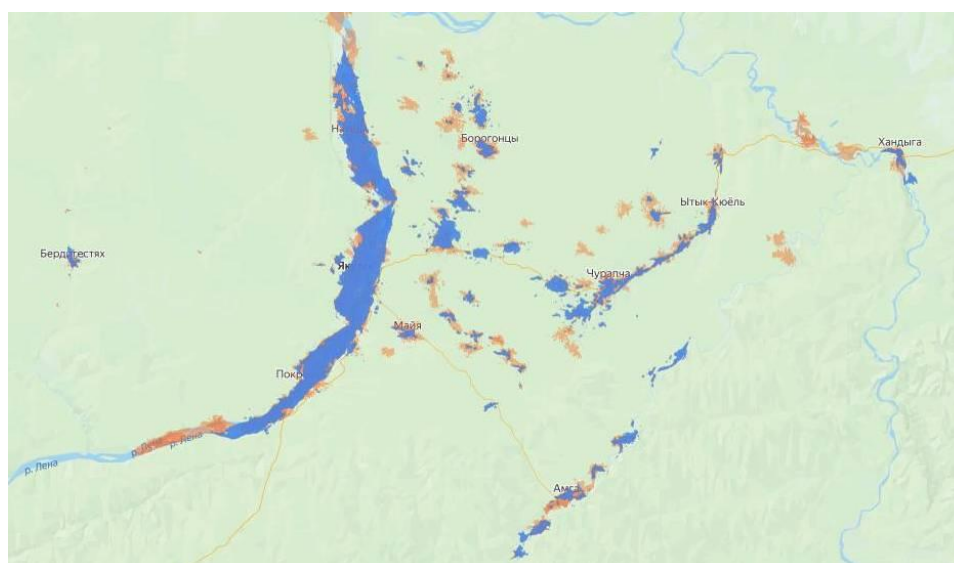
The main reasons for the limitations of the digitalization of the regions' infrastructure in the Arctic are the geographical factor and the concentration of potential consumers in cities. In the AZRF regions, the share of urban residents in the total population ranges from 68% (Sakha Republic) to 92% (Murmansk Oblast). The number of federal or regional organizations is also many times greater in cities. Difficult geographical terrain and harsh climatic conditions mean that mobile operators and Internet providers need large capital expenses to build communication

¹⁵ Source: calculated by the author.

facilities in rural and hard-to-reach areas, and the economic efficiency of operations in such settlements is low. Therefore, the lower the population density, the lower the level of competition among operators and the less clear the signal. There are also rural localities with no mobile phone or Internet coverage at all. In the total number of settlements in the AZRF regions, such settlements account for 36.9%. maps of mobile network coverage in Sakha Republic with 2G network coverage by major Russian mobile operators Beeline, Megafon, MTS, Tele2, Yota (Fig. 4a) and 4G coverage (Fig. 4b) marked in color.



(a)



(b)

Fig. 4. Mobile coverage area in Sakha Republic in July 2022 — 2G network (a) and 4G network (b)¹⁶

The maps show that 4G networks are available in a smaller area than 2G networks. 4G networks allow for faster data transfer speeds (up to 100 Mbps), which means that consumers will be able to use various public and social services online. For example, in a number of regions, the rural population is less likely to use the Internet to order goods, works, and services. In the Chukotka Autonomous Okrug, the rural population using the Internet to order goods accounts for

¹⁶ Source: Yota coverage map. URL: <https://yota-faq.ru/yota-zone-map/> (accessed 05 September 2022).

only 6% of the total population (Fig. 5).

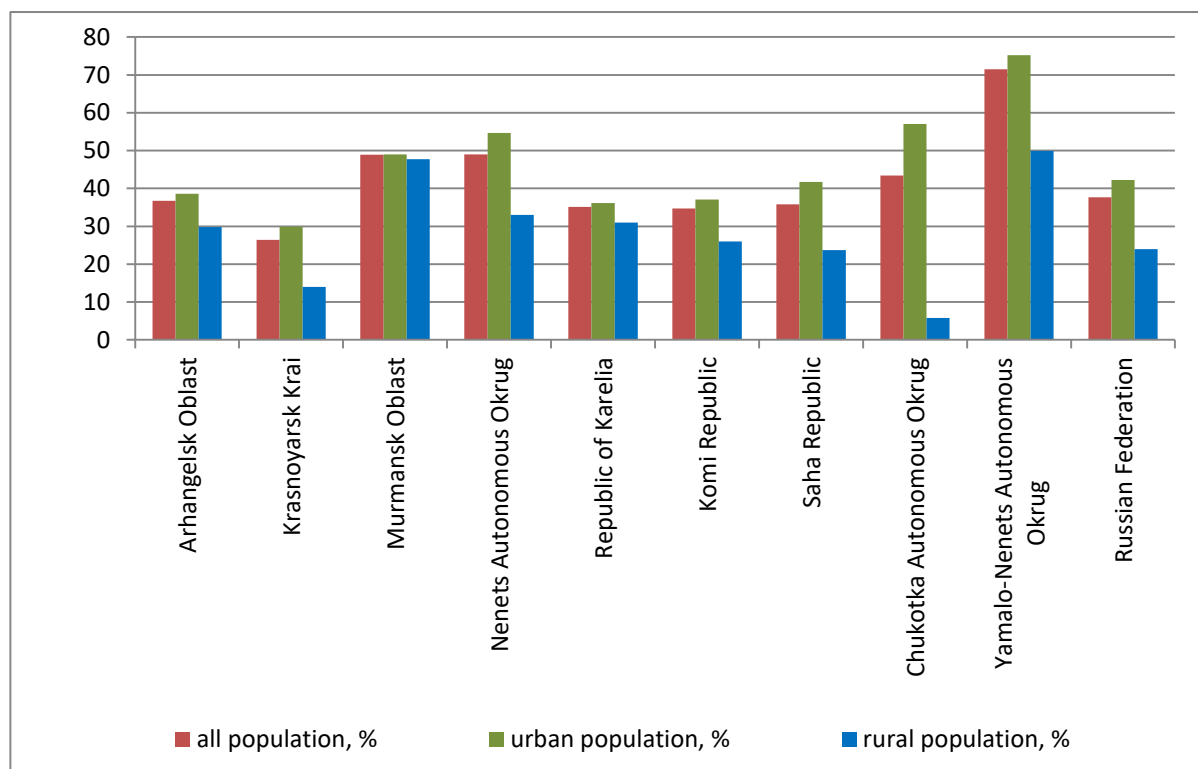


Fig. 5. The share of population using the Internet to order goods, works, services in the regions of the Russian Arctic in 2020¹⁷.

At the same time, even in urban settlements of the Russian Arctic, there are a number of restrictions on information and communication services. The urban settlements of the Russian Arctic were divided into groups. The number of urban settlements covered by 4G, 3G and 2G networks, as well as the number of mobile operators providing services in each city were determined using a cellular coverage map. Data from the largest mobile operators in the Russian Federation — Beeline, Megafon, MTS, Tele2, Yota — were analyzed. The analysis shows that there are limitations to the availability of mobile phones in small urban areas: while four operators provide 2G network in 79 out of 82 urban areas of the AZRF, 3G networks are not available in 17 towns and 23 small urban areas, with an average of three operators providing mobile phone services in small towns. In the urban settlements of the Russian Arctic with a population of more than 50 thousand people, there is no differentiation in access to information and communication services by the number of service providers and coverage by networks of different generations.

It can be argued that the current configuration of information and communication networks contributes to the development of digital inequality in the regions of the Russian Arctic, and the high level of digitalization is largely due to urbanization.

It should be noted that this problem is solved at the federal level. Since March 2014, Rostelecom has been obliged¹⁸ to provide universal communication services and public Wi-Fi

¹⁷ Source: calculated by the author.

¹⁸ О возложении на ОАО «Ростелеком» обязанности по оказанию универсальных услуг связи на всей территории Российской Федерации: распоряжение Правительства Российской Федерации от 26 марта 2014 г. № 437-р [On imposing obligations on OJSC Rostelecom to provide universal communication services throughout the entire territory of the Rus-

access point with a data transfer rate of at least 10 Mbps in settlements with a population of 250 to 500 people. From 2021, according to the second stage, Rostelecom is to connect settlements with a population of 100 to 250 people to high-speed Internet and provide residents of settlements with a population of 100 to 500 people with mobile communications. At the same time, all base stations assume the availability of communication and 4G mobile Internet. Femtocells are installed in remote small settlements with up to 100 people. However, residents note that the signal reception from femtocells is low — 100-150 meters, there is a partial coverage of the signal, signal indoors weakens significantly or is lost completely¹⁹. Monitoring by activists of the All-Russian People's Front in 2021 in a number of areas of the Komi Republic revealed that in most villages people were not connected to the Internet because they did not know about this possibility or due to faulty equipment²⁰. In a significant part of the territory of the Komi Republic, there is no Internet coverage or its speed does not allow using Internet resources²¹.

The Komi Republic and the Yamalo-Nenets Autonomous Okrug are leaders in the sub-index "Digitalization of government activities" (Table 4).

Table 4

Average values of normalized variables and values of the sub-index "Digitalization of government activities" (SI_{DG}) in the regions of the Russian Arctic for the period 2014–2020

Region	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	SI _{DG}
Included in AZRF throughout the region							
Murmansk Oblast	0,94	0,93	0,77	0,86	0,40	0,79	4,69
Nenets Autonomous Okrug	0,98	0,92	0,54	0,50	0,63	0,70	4,27
Chukotka	0,97	0,85	0,27	0,41	0,55	0,54	3,59
Yamalo-Nenets Autonomous Okrug	0,98	0,95	0,69	0,97	0,50	0,91	5,00
Included in AZRF by some municipalities of the region							
Arkhangelsk Oblast	0,98	0,92	0,66	0,57	0,44	0,79	4,35
Krasnoyarsk Krai	0,97	0,88	0,61	0,41	0,75	0,95	4,59
Republic of Karelia	0,99	0,96	0,84	0,57	0,52	0,81	4,70
Komi Republic	1,00	0,99	0,90	0,72	0,62	0,85	5,07
Saha Republic	0,97	0,77	0,51	0,56	0,62	0,84	4,26

Almost all regions demonstrated an increase in the values of this sub-index during 2015–2017. In all regions, except for the Krasnoyarsk Krai and the Republic of Sakha, the share of the population experiencing problems in obtaining state and municipal services via the Internet has decreased in 2021 compared to 2014.

sian Federation: Decree of the Government of the Russian Federation dated March 26, 2014 No. 437-r]. URL: <http://static.government.ru/media/files/41d4cd0bd84a277c3c35.pdf> (accessed 27 May 2022).

¹⁹ Mikhail Poryadin otvetil na pretenzii zhitel'ey Komi k kachestvu svyazi v otdalennykh poseleniyakh [Mikhail Poryadin responded to the claims of Komi residents to the quality of communication in remote settlements]. URL: <https://www.bnkomi.ru/data/news/56680/> (accessed 11 May 2022).

²⁰ Chereneva V. V Komi vyberut sela dlya provedeniya internet [Villages to be selected for internet connection in Komi] // Rossiyskaya gazeta — Nedelya — Severo-Zapad № 255(8606) [Rossiyskaya Gazeta — Nedelya — North-West No. 255 (8606)]. 2021. URL: <https://rg.ru/2021/11/10/reg-szfo/v-komi-vyberut-sela-dlia-provedeniia-interneta.html> (accessed 11 May 2022).

²¹ V Komi analizy na antitela sdelayut besplatnymi [In Komi, antibody tests will be free of charge]. URL: <https://rg.ru/2021/11/22/reg-szfo/v-komi-analizy-na-antitela-sdelayut-besplatnymi.html> (accessed 11 May 2022).

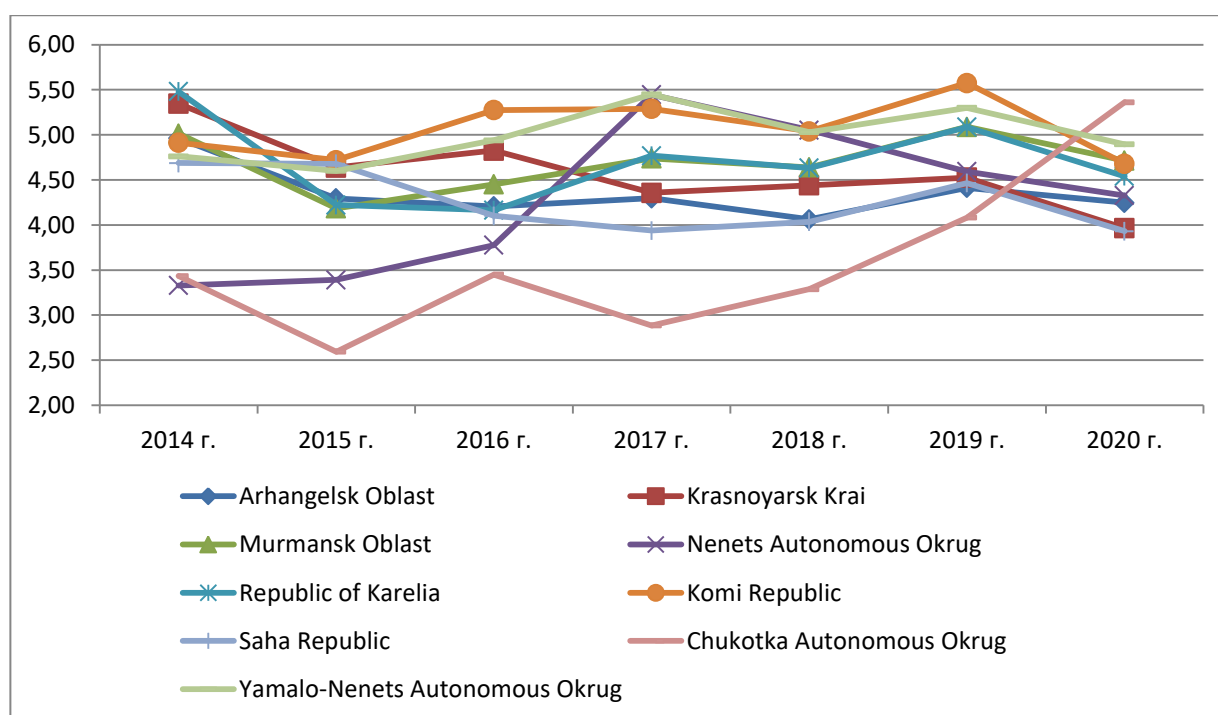


Fig. 6. Values of the sub-index "Digitalization of government activities" (SI_{DG}) in the regions of the Russian Arctic in 2014–2020²².

Organizations in the Republic of Karelia, Murmansk Oblast and Krasnoyarsk Krai were the most digitalized, as evidenced by the average values of the sub-indices "Digitalization of organizations" (SI_{DO}).

Table 5

Average values of normalized variables and values of the sub-index "Digitalization of organizations" (SI_{DO}) and the Digitalization Index (I_{DR}) in the regions of the Russian Arctic for the period 2014–2020

Region	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	SI _{DO}	I _{DR}
Included in AZRF throughout the region								
Murmansk Oblast	0,86	0,87	0,98	0,93	0,86	0,87	5,37	4,85
Nenets AO	0,77	0,86	0,94	0,85	0,93	0,68	5,04	4,24
Chukotka	0,86	0,79	0,87	0,80	0,92	0,83	5,07	4,22
Yamalo-Nenets AO	0,71	0,74	0,95	0,86	0,96	0,68	4,89	5,08
Included in AZRF by some municipalities of the region								
Arkhangel'sk Oblast	0,83	0,74	0,91	0,79	0,80	0,81	4,88	4,40
Krasnoyarsk Krai	0,85	0,90	0,91	0,84	0,80	0,86	5,17	4,32
Republic of Karelia	1,00	1,00	0,98	0,97	0,89	1,00	5,84	4,77
Komi Republic	0,84	0,82	0,96	0,80	0,80	0,83	5,05	4,60
Saha Republic	0,81	0,89	0,76	0,68	0,83	0,76	4,74	4,18

In 2020, compared to 2014, the digitalization of organizations increased in all regions, except for the Nenets Autonomous Okrug and the Republic of Karelia (Fig. 7), where the share of organizations using the Internet to place orders for goods, works, and services decreased. In addition, the number of personal computers in organizations decreased in the Nenets Autonomous Okrug, while the share of organizations with a website declined in the Republic of Karelia. The number of personal computers with Internet access in the organizations of Russian Arctic is 8% lower compared to the all-Russian indicator (Fig. 2).

²² Source: calculated by the author.

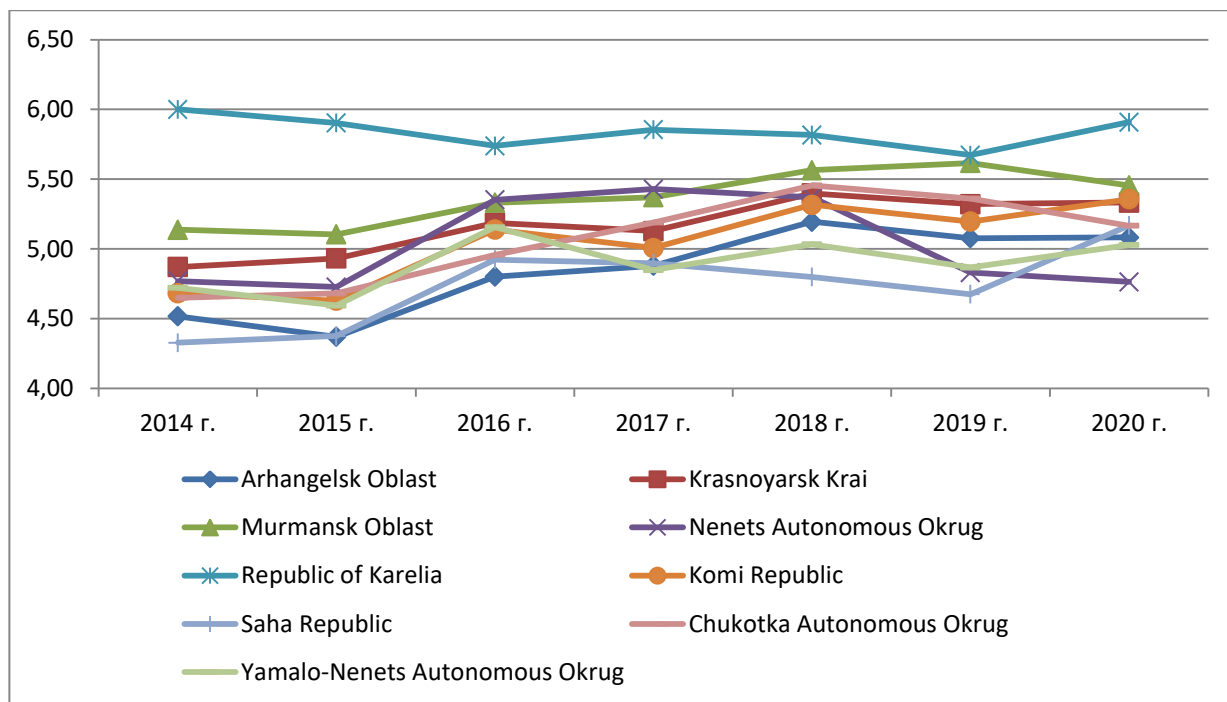


Fig. 7. Values of the sub-index “Digitalization of organizations” (SI_{DO}) in the regions of the Russian Arctic in 2014–2020²³.

The most digitalized regions of the Russian Arctic for the period 2014–2020 were the Yamalo-Nenets Autonomous Okrug, the Murmansk Oblast, the Republic of Karelia and the Republic of Komi (Table 5, Fig. 8).

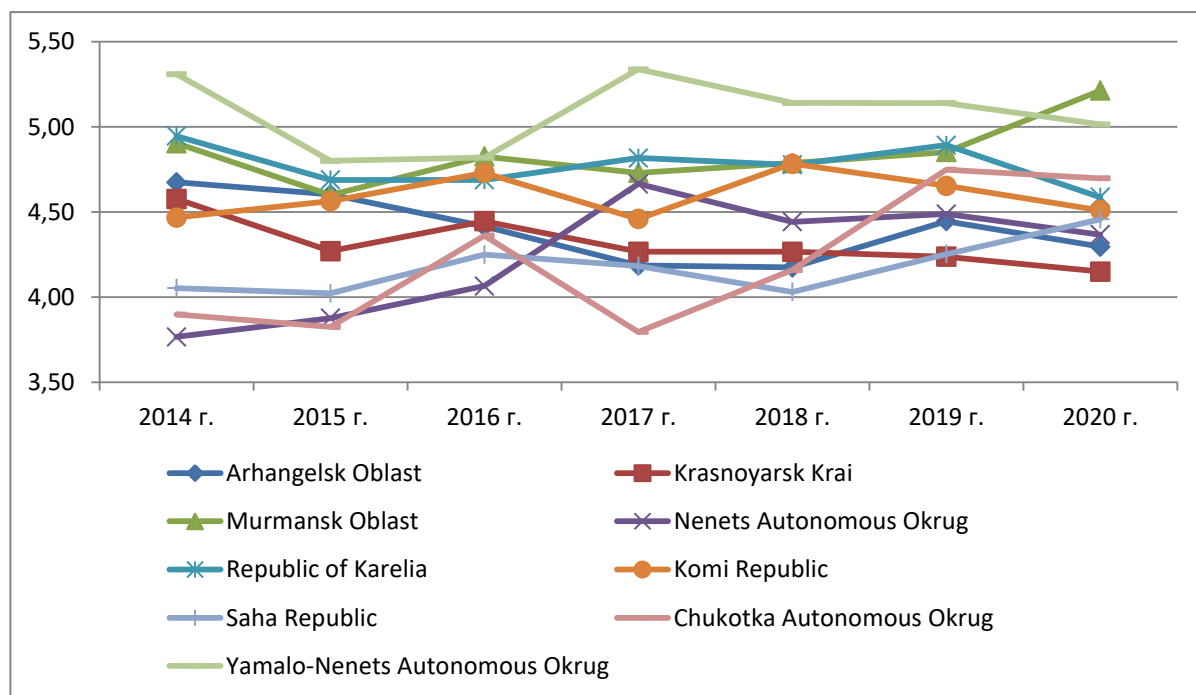


Fig. 8. Values of the Digitalization Index (I_{DR}) in the regions of the Russian Arctic in 2014–2020²⁴.

At the same time, if we analyze the annual “Rating of ICT costs of regions”²⁵, in 2021, the Yamalo-Nenets Autonomous Okrug was in the seventh place among all regions of Russia in terms

²³ Source: calculated by the author.

²⁴ Source: calculated by the author.

²⁵ CNews: Rating of ICT costs of regions 2021. URL: <https://www.cnews.ru/tables/57cb8824909eb971407392b0a36bf75211b38123> (accessed 11 May 2022).

of ICT spending; the Republic of Sakha was in the ninth place. Other AZRF regions rank twenty-fourth place and below (Fig. 9). If ICT spending is ranked on a per capita basis, the Nenets Autonomous Okrug and the Yamalo-Nenets Autonomous Okrug would be in first and second place, respectively. All regions of the Russian Arctic in the ranking of ICT spending per capita improved their positions from 1 to 66 points, except for the Krasnoyarsk Krai (Fig. 9).

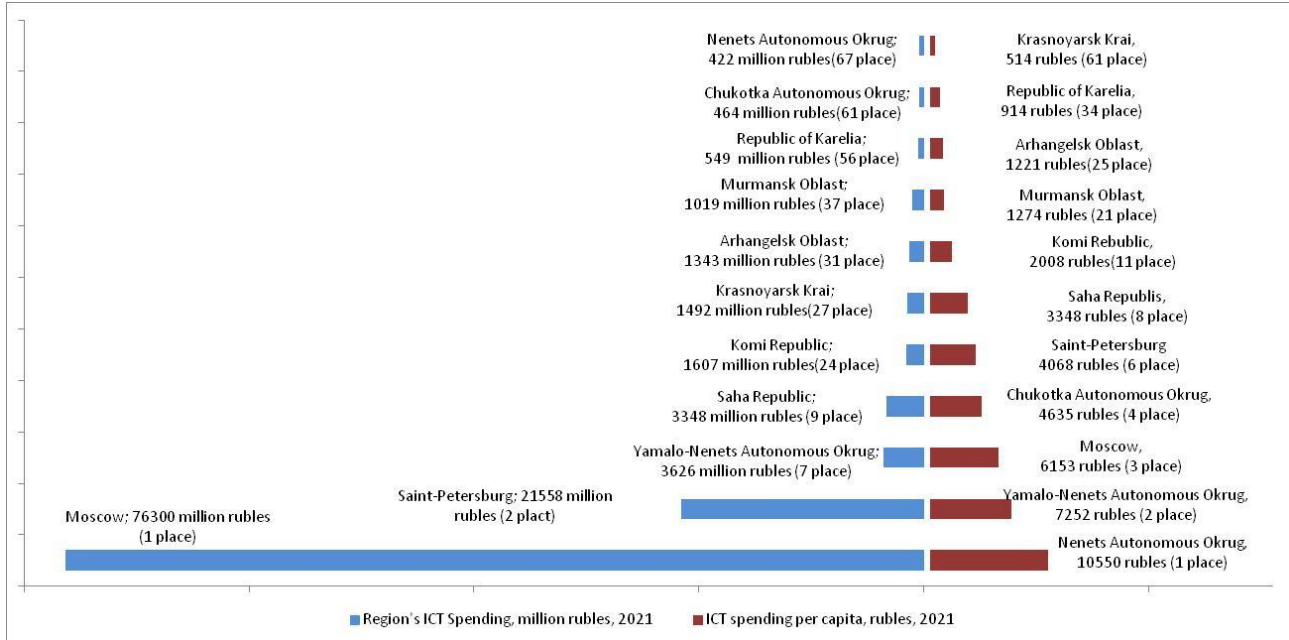


Fig. 9. Expenditure on ICT in absolute terms and per capita in the regions of the Russian Arctic, Moscow and St. Petersburg in 2021 ²⁶

In 2021, only 24 regions of the Russian Federation had a positive increase in ICT spending, including 5 regions of the Russian Arctic. The leader among all regions of the Russian Federation and the regions of the Russian Arctic in terms of growth in spending on ICT is the Republic of Komi (+99.6%). The seventh place among all Russian regions and the second place among regions of AZRF is occupied by the Yamalo-Nenets Autonomous Okrug (Fig. 10).

²⁶ Source: calculated by the author.

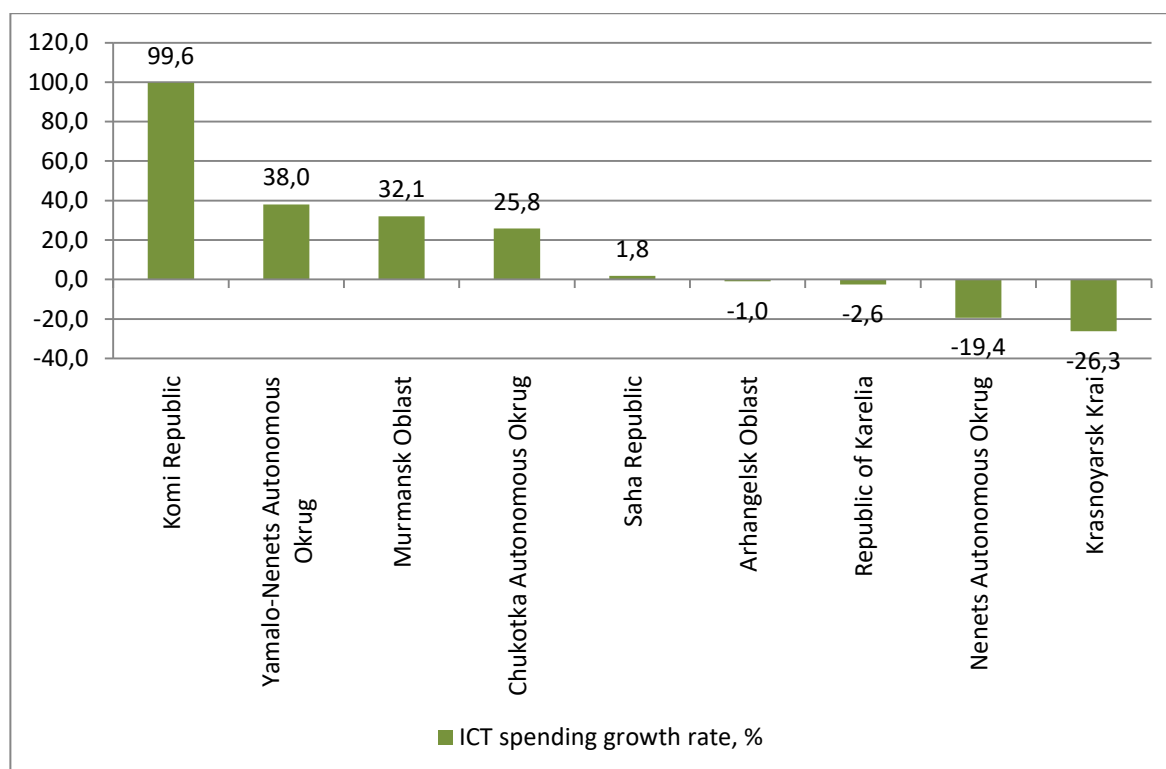


Fig. 10. Growth rate of ICT spending in the regions of the Russian Arctic in 2021 ²⁷

Discussion

The lack of publicly available statistics for individual municipalities makes it difficult to analyze the digitalization of the Arctic regions. It is possible that the level of digitalization in five of the nine regions of the Russian Arctic may even be lower than that obtained in the analysis, since the calculations were influenced by the indicators of more southern regions, which are presumably higher than in the regions included in the Russian Arctic. More objective studies require statistical data by municipalities included in the Russian Arctic. Based on the analysis, high ICT costs per capita in the regions of the Russian Arctic do not always lead to high digitalization of the region, as is the case with the Chukotka Autonomous Okrug. This may be due to some problems in the economy of a particular region, which do not allow efficient use of investments in the development of ICT. Subsequent studies should be directed to more detailed research of the causes of this phenomenon.

Conclusion

It can be stated that during the analyzed period, the regions of the Russian Arctic have undergone technological changes: on average, one household has 2–3 mobile phones and one personal computer. In addition to computers, the population of the Russian Arctic actively uses other devices to access the Internet, in particular tablets, laptops and netbooks. However, the share of households with broadband access to the Internet does not reach the average Russian level in five of the nine regions of the Russian Arctic. This forces the population to use mobile

²⁷ Source: calculated by the author.

broadband access to the Internet. Even with an increase in the number of people using public services online, only the Yamalo-Nenets Autonomous Okrug has a higher rate than the national average, and the population of the Russian Arctic ordering goods, works, and services via the Internet is lower than the average for Russia in five regions of the Russian Arctic. The main limitations of infrastructure digitalization in the Arctic regions arise under the influence of the geographical factor (difficult terrain, harsh climate) and the concentration of potential consumers in cities. Even in small urban settlements there are restrictions on the availability of mobile communications. Remote rural settlements are characterized by a low communication signal, low speed of Internet access, faulty equipment, and lack of knowledge among the population about the available technical capabilities. The widening gap in the development of digitalization in urban and rural areas in the regions of the Russian Arctic will lead to the fact that more and more factors of production will move from less digitalized areas to more digitalized ones.

Rather low levels of digitalization of the population and households are observed in the Nenets Autonomous Okrug, Chukotka Autonomous Okrug, as well as in the Republic of Sakha. Due to the social importance of digital infrastructure in the AZRF space, the main role in increasing the level of digitalization of these regions remains with the state: in the form of preferential loans and subsidies for telecommunications operators, ensuring equal access to digital infrastructure not only in urban, but also the countryside. The main attention should be paid to the development of newer generations of information and communication types of communication. In the Chukotka Autonomous Okrug, due to the low data transfer rate and the low share of electronic document management, the digitalization of the activities of the authorities is weak, which means that measures are required to further digitalize the activities of the regional authorities. The Yamalo-Nenets Autonomous Okrug, the Arkhangelsk Oblast and the Republic of Sakha have the lowest rates of digitalization of organizations, which makes it relevant to support entrepreneurial initiatives aimed at developing digital technologies and encouraging organizations to introduce digital technologies. The methodology presented in the article is based on publicly available statistical data and can be used for territories of various levels when conducting retrospective analysis and strategic forecasting procedures. The practical significance of the study lies in the fact that the methodology can be in demand when assessing the digitalization of the space of the region by regional and municipal authorities when developing a strategy for socio-economic development and programs for the digitalization of regions, and its results can be used as the basis for teaching materials in the framework of higher education institutions. The prospects for further research are determined by a deeper analysis of the degree of influence of variables on the level of digitalization of the Russian Arctic regions and the formation of relevant proposals and recommendations for adapting digitalization processes, taking into account current exacerbations of the international situation.

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Differentiation of the Northern Regions of Russia in Terms of Labor Potential

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Abstract. The purpose of the study is to determine significant, sustainable differences between the northern regions of Russia in terms of labor potential of the population. The object of the study is the labor potential of the population of the northern regions of Russia. In order to develop the typology of regions, 22 indicators were selected for the period 2014–2020, characterizing the labor potential of the population and the conditions for its implementation. The correlation analysis has resulted in the formation of a feature space based on eight indicators that determine four blocks of labor potential components: a) demographic, b) health component, c) education, d) economic indicators reflecting interaction in the labor market. The typology has resulted in the identification of six stable types of regions that are characterized by specific inert processes due to cultural-historical and natural-climatic factors. It is revealed that during the COVID-19 pandemic, the gap between regions in terms of labor potential increased, leaving the same ratio of regions. The proposed typology can be used for scientific research in the field of labor potential management the regional level. From a practical point of view, the work may be of interest to state authorities when developing managerial decisions in the field of implementing investment projects, especially within the framework of implementing the state program of socio-economic development of the Arctic zone of the Russian Federation. In addition, the recovery of the economy of certain Russian regions after the severe crisis caused by the pandemic is possible due to the increase in the labor potential of the population. The presented typology makes it possible to identify the priority areas, allows increasing the comprehensive indicator of labor potential, which is most relevant for the northern regions.

Keywords: *labor potential, regional differentiation, typology, northern regions of Russia, Arctic, demographic process, population quality*

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Introduction

The Russian space is highly heterogeneous. At the same time, climatic differences between the south and the north of the country determine the economic, social, and cultural development of these territories. These differences are obvious at first glance. The diversity of the North is of particular interest due to a number of factors — climatic differences between East and West, the degree of their development, economic sustainability, natural and mineral resources. In addition,

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the territories differ significantly in terms of population size, density and qualitative characteristics. The totality of qualitative and quantitative characteristics determines the population's ability to work, its labor potential.

Labor potential is of special interest for Northern and Arctic territories, since the tasks set in the Strategy for the Development of the Arctic Zone¹ require significant human resources and high rates of labor potential. As researchers note, the current dynamics of migration processes and general negative demographic trends do not allow reaching the required level of labor potential [1, Fauzer V.V., Smirnov A.V.]. However, these trends differ among northern regions. In addition, differences are observed in the qualitative component of the labor potential. Increased attention not only to the Arctic, but also to the rest of the northern regions, is due to the need to assess the labor potential of regions located in close proximity to the Arctic in order to identify migration reserves in the implementation of large infrastructure projects. In addition to the obvious savings in transport costs, the use of local labor resources is preferable due to easier adaptation to climate change [2, Tatarkin A.I., Zakharchuk E.A., Loginov V.G.].

The reduction of the gap between regions in the qualitative characteristics of the population, the growth of the overall indicator of labor potential is possible due to the identification of common patterns and differences in the formation of the labor potential of the northern regions of Russia. Therefore, the purpose of this study is to develop a typology of the northern regions, identifying differences in social, economic, demographic processes between regions, necessary to determine the reserves for growth of labor potential.

The subject of the study is a set of socio-demographic and economic indicators of the population — people living and working mainly in the northern regions of Russia. The northern regions include the subjects of the Russian Federation, the territories of which are fully or partially referred to the Far North and equated areas². Hereinafter, the region is understood as a subject of the Russian Federation. In this study, the object is the labor potential of the population of the northern regions of Russia. Labor potential is understood as a generalizing characteristic of the measure and quality of the set of abilities for socially useful activities, which determines the capabilities of an individual, groups of people, the entire working population in terms of their participation in labor [3, Maslova I.S.].

¹ Ukaz Prezidenta Rossiyskoy Federatsii ot 26.10.2020 № 645 «O Strategii razvitiya Arkticheskoy zony Rossiyskoy Federatsii i obespecheniya natsional'noy bezopasnosti na period do 2035 goda» [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 up to 2035"].

² Postanovlenie Pravitel'stva RF ot 16.11.2021 № 1946 «Ob utverzhdenii perechnya rayonov Kraynego Severa i mestnostey, priravnennykh k rayonam Kraynego Severa, v tselyakh predostavleniya gosudarstvennykh garantiy i kompensatsiy dlya lits, rabotayushchikh i prozhivayushchikh v etikh rayonakh i mestnostyakh, priznanii utrativshimi silu nekotorykh aktov Pravitel'stva Rossiyskoy Federatsii o priznanii nedeystvuyushchimi na territorii Rossiyskoy Federatsii nekotorykh aktov Soveta Ministrov SSSR» [Decree of the Government of the Russian Federation of November 16, 2021 No. 1946 "On approval of the list of regions of the Far North and localities equated to regions of the Far North, in order to provide state guarantees and compensations for persons working and living in these regions and localities, invalidating certain acts of the Government of the Russian Federation on the recognition of certain acts of the Council of Ministers of the USSR as invalid on the territory of the Russian Federation].

Theoretical foundations of regional differentiation

Research on the labor potential of the population has been of interest to scientists for the past 40 years. It is the basis for economic development of the territories and growth of the welfare of society. Its assessment and measurement are still debatable issues due to the qualitative and quantitative nature of the object.

The Institute of Socio-Economic Problems of Population of RAS developed a methodology for assessing the integral indicator of labor potential using the index method under the leadership of N.M. Rimashevskaya [4, Rimashevskaya N.M., Bochkareva V.K., Volkova G.N., Migranova L.A.; 5, Rimashevskaya N.M., Migranova L.A., Toksanbaeva M.S.]. This indicator includes demographic component, indicators of health, education, well-being, educational and qualification level, psychophysical state, social and personal component. In addition, this methodology has been used to analyze the characteristics of labor potential of Russian regions and to compile their ranking.

A group of researchers from the Vologda Scientific Center RAS has developed a similar methodology for calculating the integral indicator of the labor potential of an organization, based on qualitative and quantitative indicators, including physiological, educational, professional, innovative, social and economic potentials [6, Ilyin V.A.].

In recent years, attention to the North and the Arctic has increased, in particular to their labor potential. A team of scientists from the Kola Scientific Center of RAS substantiated the role of labor potential in the development of the Arctic and in the implementation of national interests on its territory [7, Korchak E.A.; 8, Korchak E.A., Skufina T.P.]. In addition, the labor potential of the Northern regions was assessed using the Labor Potential Development Index (LPDI) [9, Popova L.A., Terentyeva M.A.; 10, Popova L.A., Terentyeva M.A.]. The study was conducted on the basis of the All-Russian Population Census data for the period 2002–2010. Five basic indicators were used for the calculation: the share of the able-bodied population, the level of education, vocational training and retraining, qualification and work experience, contributing to increasing the employee's capacity, the level of wages, the armament of labor with means and tools, and the employment rate. It should be noted that the measurement of labor potential and its individual components is usually accompanied by the compilation of ratings, typologies or classifications that reflect regional differentiation.

Researchers pay special attention to the differentiation of regions due to the specifics of the Russian space [11, Mareeva S.V., Voron O.V., pp. 44–50]. A country with such a huge area a priori cannot be homogeneous, and understanding the peculiarities of development of each individual territory is a crucial task for implementing national projects and achieving global goals. In this paper, typology as a method of scientific knowledge is used for the differentiation of regions, which is a process of dividing a set of objects into homogeneous groups for ordering and further description of the properties of objects belonging to a particular type. In social sciences, typologies are used to differentiate a variety of objects, analyze situations, and apply managerial decisions to different types and groups of objects. Typology refers to the formation of time-stable groups of

regions with similar socio-economic and demographic processes that determine the formation and development of the characteristics of the labor potential. It is of great scientific and applied importance [12, Glavatskaya N.]. The development of a typology of Russian regions in general, and of the northern regions in particular, was previously carried out for various reasons [13, Ivashkova T.K., Morozova N.V.; 14, Starikova T.V.; 15, Makarova T.V.; 16, Ignatev V.G., Nurtdinov I.I., Zhilina N.N.; 17, Fedorov G., Korneevets V.]. Foreign studies also resort to the development of the typology of regions. Particular attention is paid to socio-demographic processes as the basis for the development of territories [18, Kladivo P., Ptáček P., Roubinek P., Ziener K.; 19, Topaloglou L., Kallioras D., Manetos P., Petrakos G.; 20, Woods M.]. A team of researchers from the Institute of Socio-Economic Problems of Population and the Higher School of Economics developed a typology of Russian regions based on indicators characterizing human potential [21, Lokosov V.V., Ryumina E.V., Ulyanov V.V.].

The present study develops a typology of the northern regions of Russia according to certain indicators that characterize the labor potential of the region's population and the efficiency of its use.

Analysis of works in the field of labor potential measurement at the regional level has allowed to define theoretical ideas about the structure of labor potential and to formulate a hypothesis about the existence of time-stable types of northern regions with similar trends in qualitative and quantitative characteristics of labor potential of the population.

Methods

A variety of mathematical methods and tools can be used to develop a typology. In the process of typology, the problem of choosing the initial indicators that form the feature space acquires a special role. Relative indicators are used for comparability of objects. Compliance with the condition of the necessity and sufficiency of the number of features in the formation of a feature space is ensured by the selection of indicators that correspond to the task. Moreover, the correlation analysis eliminates one of two indicators that have high level of interrelation between them. The correlation analysis conducted by the author assumed the exclusion of one of the pair of indicators with high correlation values (more than 0.7 modulo).

The sources of information at the stage of collecting indicators corresponding to theoretical ideas about the labor potential of the population of the northern regions were the statistical collections and reference books of Rosstat, as well as the results of the annual survey of the labor force, statistical data from various departments. The selection of indicators was carried out on the basis of the purpose of the study by analyzing the data of statistical reference books and literature on the measurement and differentiation of labor potential. As a result, 22 indicators determining the sign space for four groups of indicators, representing a characteristic of the main components of labor potential, were identified:

- Demographic component of the labor potential shows the main quantitative characteristics of the labor potential: a) natural population growth, per 1000 people; b) total fertility rate, per 1000 people; c) total fertility rate; d) mortality from external causes, per 1000 people; e) crude mortality rate, per 10000 people; f) coefficient of migration growth, per 10000 people; g) share of the urban population in the total population, %; h) share of the population of working age, %;
- Physical health component includes four indicators: a) life expectancy, years; b) healthy life expectancy, years; c) mortality at working age, per 10000 people; d) morbidity, per 10000 people;
- Educational component: a) number of students enrolled in bachelor's, specialist's, and master's programs, per 10000 people; b) number of students enrolled in mid-level specialists training programs, per 10000 people; c) share of labor force with higher education, %;
- Indicators characterizing the labor market: a) unemployment rate, %; b) GRP per capita, rub.; c) median per capita income, rub.; d) average monthly nominal wages of employees of organizations, rub.; e) average age of employees, years; f) share of economically active population, %; g) share of gross value added of mining in GRP, %.

The following is the reasoning behind the selection of indicators.

The demographic component included 8 indicators, among which the indicators with high value of Pearson's pair correlation stand out. For this reason, the following indicators were excluded from the analysis and the final matrix of the feature space: total fertility rate, summary fertility rate, mortality from external causes, total mortality rate, and the share of the population of working age. In addition, the indicator of migration growth was excluded from the analysis, since it was not possible to identify a stable dynamics of this indicator in the regional context: in different years it varied both positively and negatively. The excluded indicators in the correlated pair made a smaller contribution to the intergroup variance. This became decisive in the choice of indicators included in the analysis. As a result, after the preliminary analysis, two indicators from the demographic component used for further analysis were left — natural population growth and share of the urban population in the total number.

The physical health component included 4 indicators, two of which — life expectancy at birth, mortality at working age — have high correlation values. The indicator of life expectancy at birth was excluded from the analysis due to a strong correlation, as well as healthy life expectancy due to the lack of data for the entire study period.

Three indicators were selected for the educational component, two of which have a high level of correlation: number of students enrolled in bachelor's, specialist's, and master's programs and number of students enrolled in mid-level specialist training programs. The indicator of the number of students enrolled in mid-level specialist training programs was excluded from the analysis.

At the stage of labor potential distribution and its further development, the labor market and its structure, which determines the demand on labor potential, plays an important role. The key characteristic, reflecting the efficiency of the labor market, is the unemployment rate. In addition, a number of cost indicators — GRP per capita, median average per capita income, average monthly salary — indirectly reflect living standards of the population, region's attractiveness and production structure. Of the 7 indicators, characterizing the labor market, two are involved in further analysis — the unemployment rate and the average monthly nominal wage of employees of organizations.

The choice of mathematical tools is determined on the basis of the problem statement, the scale of measurement and the amount of data. The regions were grouped through the use of multidimensional statistical classification methods, the main of which was the hierarchical clustering method. Cluster hierarchical analysis as a method of multidimensional classification meets all the requirements and tasks.

Within the framework of cluster analysis, the Ward's method [22, Ward J.H.] was used — a method for measuring distances using the square of the Euclidean distance. The stability of the typology was verified by repeating the clustering procedure for data collected over 7 years, from 2014 to 2020.

Results and conclusions

According to the results of the cluster analysis, 22 out of 24 regions showed stable dynamics in the studied time period. The Primorskiy and Zabaikalskiy krajs are excluded from the typology, since they belonged to different clusters from year to year. The results of the final typology are given in Table 1.

Table 1

Distribution of regions by types

I type "Educational"	Republic of Buryatia, Republic of Sakha (Yakutia), Tomsk Oblast, Tyumen Oblast without autonomies
II type "Underexamined"	Kamchatka Krai, Magadan Oblast, Murmansk Oblast, Sakhalin Oblast, Khabarovsk Krai
III type "Rapidly aging"	Amur Oblast, Arkhangelsk Oblast without Autonomous Okrug, Irkutsk Oblast, Krasnoyarsk Krai, Perm Krai, Republic of Karelia, Republic of Komi
IV type "Urbanized"	Khanty-Mansi Autonomous Okrug, Yamalo-Nenets Autonomous Okrug
V type "Profitable"	Nenets Autonomous Okrug, Chukotka Autonomous Okrug
VI type "Poor"	Republic of Tyva, Republic of Altai

In characterizing each type of region, it is important to compare data for 2020 with data for previous years, before the COVID-19 pandemic. It is worth noting that in 2020, the main socio-demographic trends inherent to each type of region remained, although the differences became more pronounced, revealing the strengths and weaknesses in the accumulation and use of various components of labor potential. In 2020, compared to 2019, the year before the pandemic, the total mortality and mortality of the population of working age increased in all the studied regions,

which was reflected in the vital rate of the population; the unemployment rate also increased. In addition, the morbidity rate has decreased, apparently due to the reduction in routine medical examinations of the population.

More detailed description of each type of region is presented below.

I. Regions with a high proportion of students, “educational” - Republic of Buryatia, Republic of Sakha (Yakutia), Tomsk Oblast, Tyumen Oblast without autonomies. Regions of this type are characterized by high rates of the number of university students — in 2020, the average value for the cluster was 327.8 people per 10000 population. The mortality rate of the population of working age in these regions is one of the lowest. One of the negative trends is that while the educational level of the population is high, unemployment is relatively high and the share of unemployed with higher education is the highest among other regions, which suggests that the regions are experiencing an acute problem of “over-education”. Among the regions belonging to the first type, a special place is occupied by the Tomsk Oblast, where the number of students is maximum in relation to the total population among the northern regions. Being a “talent foundry”, the region provides qualified workforce to nearby regions, including the Arctic ones, where there is a shortage of qualified labor.

II. Regions with insufficient coverage of the population with medical diagnostics, “underexamined” — Kamchatka Krai, Magadan Oblast, Murmansk Oblast, Sakhalin Oblast, Khabarovsk Krai. A feature of this type of regions is the low morbidity rate combined with high mortality rates, which may indicate a problem in the field of public health. However, this fact cannot unambiguously reflect the quality of work of medical organizations in these regions. Russian and foreign scientists in their studies note the regional features of the self-preservation behavior of the population [23, Korolenko A.V.; 24, Petrovic D., de Mestral C., Bochud M.], which can also be considered as a qualitative characteristic of labor potential and affect morbidity and mortality rates. A feature of the territorial location of regions of this type is their border position with access to the northern seas.

III. “Rapidly aging” type includes Amur Oblast, Arkhangelsk Oblast without Autonomous Okrug, Irkutsk Oblast, Krasnoyarsk Krai, Perm Krai, Republic of Karelia, Republic of Komi. In these regions, throughout the entire study period, the total mortality rate remained the highest among all types of regions, and in 2020, it increased by 15 p.p. compared to 2019. In addition, regions belonging to this type have the lowest birth rates. Thus, the regions are rapidly losing population due to natural movement. The age structure of the population imposes its limitations and makes adjustments to the structure of the labor potential and features of its management.

IV. “Urbanized” — Khanty-Mansi Autonomous Okrug, Yamalo-Nenets Autonomous Okrug. The economy of these regions is based on the extraction and processing of oil and gas. Rich deposits provide a high level of income for the population and the availability of medical services. These regions are characterized by the lowest mortality rates combined with high morbidity rates. Due to low mortality rates and a fairly high birth rate in these regions, a large natural population

growth is observed. In addition, the population of these regions is the most urbanized and the average unemployment rate is at a record low (2.7% in 2020). With a small number of university students, these regions have the highest proportion of employees with higher education. In some years, the natural population growth in these regions was the highest among the studied regions. Despite the high indicators of qualitative and quantitative characteristics of the labor potential, the regions are constantly experiencing its shortage due to the migration movement of the population.

V. “Profitable” — *Nenets Autonomous Okrug, Chukotka Autonomous Okrug* — are distinguished by high rates of morbidity, mortality in working age and mortality from external causes. Natural population growth is predominantly positive. In these regions, the share of mining in the structure of GRP is high, the unemployment rate is higher than the average for Russia. The maximum migration outflow of population was observed in these territories during the period under study, with the highest per capita median income and GRP per capita indicators. A high proportion of the workforce with higher education is provided through temporary migration — workers on a rotational basis.

Type VI “poor” includes mountainous border regions — *the Republics of Tyva and Altai*. The poverty of these regions determines the whole range of qualitative characteristics of the labor potential of the population living in these territories. Unlike other regions of the Far North and equivalent areas, these regions are located in more southern latitudes, but due to the mountainous terrain, the climate corresponds to the indicators of the northern regions. Industry specialization and natural resource potential of these regions determine the overall well-being of the population. Among the specific features of these regions, it is worth noting the structure of the population — the age-sex pyramid of a progressive type — with a high birth rate, the predominance of children and youth, the rural population; there is a high level of poverty and unemployment. Improving the qualitative characteristics of the labor potential in these regions requires significant financial investments. The combination of factors of poverty, unemployment, unavailability of medical services and other negative processes contributes to the outflow of active youth to other more prosperous regions, where there is an opportunity to develop and realize labor potential.

Table 2

Average cluster indicators in 2020

	I	II	III	IV	V	VI
Morbidity per 1000 people	723.1	694.8	896.3	1 047.6	1 180.6	763.4
Mortality at working age (per 100 000 people of working age)	520.0	643.6	656.6	416.3	718.2	630.0
Number of students enrolled in bachelor’s, specialist’s, and master’s programs per 10000 population;	327.8	148.4	202.0	67.0	14.0	138.5
Share of labor force with higher education	35.0	35.5	29.5	38.7	34.5	33.8

Natural population growth, per 1000 people	-0.1	-3.5	-5.5	5.8	1.9	6.4
Share of urban population in total population, %	66.3	86.3	76.8	88.3	72.7	41.8
Unemployment rate, %	7.8	5.3	7.0	2.7	6.6	16.0
Median per capita income, rub.	33 322.0	55 106.4	32 904.9	72 359.0	86 859.5	20 329.0

Table 3

Average cluster indicators in 2019

	I	II	III	IV	V	VI
Morbidity per 1000 people	756.7	729.5	961.3	1096.3	1267.7	744.9
Mortality at working age (per 100 000 people of working age)	489.2	608.9	607.6	363.5	689.8	592.9
Number of students enrolled in bachelor's, specialist's, and master's programs per 10000 population;	332.5	176.4	204.3	72.5	13.5	136.0
Share of labor force with higher education	32.3	34.6	27.6	41.9	35.3	29.9
Natural population growth, per 1000 people	1.6	-1.7	-3.2	7.2	3.1	6.9
Share of urban population in total population, %	66.3	86.2	76.7	88.3	72.7	41.8
Unemployment rate, %	6.4	4.6	6.0	2.2	5.9	11.7
Median per capita income, rub.	32651	52555.6	31745.9	68883.0	82213.0	18437.0

According to the results of the study, various types of regions with special characteristics and stable trends in the accumulation, distribution and use of labor potential were identified. This typology will make it possible to take into account the regional characteristics of the labor potential for the development of management decisions at various levels.

Conclusion

Summarizing the results of the cluster analysis, it should be noted that the hypothesis of significant sustainable differences among the northern regions of Russia in the accumulation and use of labor potential has been confirmed. In addition, regions with similar socio-economic and demographic trends that form stable types over time were identified. Most of the studied regions (22 out of 24) have a stable ratio of the considered indicators for 7 years.

Analysis of the situation for the period 2014–2020 showed how inert the processes of formation and use of labor potential are. The most significant role in the formation of labor potential is played by those factors that Paul Krugman called “factors of the first nature” [25, Krugman P.] — geographical location, climate, availability of minerals and natural resources. These are the resources that make it possible to create socially significant facilities, ultimately forming quality labor potential. However, not all regions with such advantages use them to improve living standards and quality of life of the local population, which is particularly evident in times of crisis.

In the pandemic crisis year of 2020, there was divergence between the different types of regions: the processes previously observed accelerated. This was especially reflected in demographic processes: in regions with unfavorable situation in the field of public health protection — a key indicator of labor potential — during the crisis period, the mortality rate of the population increased significantly compared to other, more prosperous regions. Changes in other indicators of labor potential also depended on regional characteristics and reserves that were in the regions by the beginning of the pandemic. In addition, in 2020, the heads of the regions were forced to make decisions regarding measures to control the spread of the virus, and the “margin of safety” of the regional economy played an important role in making certain decisions.

Economic recovery of the northern regions will depend on the qualitative and quantitative characteristics of the labor potential of the population. It is especially important to learn the lessons of the pandemic and, taking into account the existing socio-demographic trends for each type of region, make decisions to improve individual indicators of labor potential and its use.

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Preservation of the Nenets Language in the Nenets Autonomous Okrug: Based on Sociological Survey

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Abstract. The article presents the results of a sociological study conducted in 2022 in the city of Naryan-Mar, as well as in the villages of Nelmin Nos and Krasnoe of the Nenets Autonomous Okrug. Based on the results of interviews with specialists and experts in the field of the Nenets language, working in education and culture, as well as in the relevant executive authorities of the Okrug, conclusions about the preservation of the Nenets language in the region were made. Particular attention is paid to the respondents' perceptions of such aspects of the language situation as the use of the Nenets language by different population groups in various spheres of life, intergenerational transmission, the presence of the language in public space and on the Internet, and the motivation of the population to learn and use the language. The study resulted in recommendations for the preservation of the Nenets language in the Nenets Autonomous Okrug, taking into account the linguistic situation in the region, as well as Russian and foreign practices for the preservation of small languages. The following are proposed as priority areas of work: (1) organizing systematic work to preserve and improve the status of the Nenets language in the Okrug; (2) supporting workplaces, initiatives, organizations and individuals involved in the preservation of language and culture; (3) creating an attractive language environment, especially in the digital sphere (the Internet), with a focus on primary school children; (4) supporting communities, especially reindeer herding communities and agricultural production cooperatives, where the language is used and its intergenerational transmission is maintained.

Keywords: *Nenets language, language preservation and revitalization, Nenets Autonomous Okrug, Russian Arctic, indigenous peoples, language vitality*

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Introduction

Today there are more than 7 000 languages in the world¹. Approximately 85% of them are “small” languages with less than 100 thousand speakers [1, Zamyatin K., Pasanen A., Saarikivi Y., p. 24]. At the same time, according to the Ethnologue directory, 3 045 languages or 43% of all languages in the world are in danger of extinction² and, according to the most pessimistic forecasts, up to 95% of languages may disappear by the end of this century. The urgency of the problem is emphasized by the fact that the UN has declared a decade from 2022 to 2032 to be the “Indigenous Languages Decade”, and the year 2022 officially became the “Year of Folk Art and Intangible Cultural Heritage of the Peoples of Russia” in the Russian Federation.

This problem is also relevant for the Nenets language, despite the fact that it is better preserved than many other languages of the small indigenous peoples of the North, Siberia and the Far East of the Russian Federation. The number of speakers of the Nenets Tundra language is steadily declining. Thus, in the 1989 census, 79.5% of the Nenets indicated their knowledge of their ethnic language and 79.7% reported proficiency in Russian. In the 2002 census, these figures were already 75.8% and 88.8%³, in the 2010 census — 44% and 91.4%, respectively. The decrease in the number of native speakers is due to the gradual withdrawal of the Nenets language from the sphere of family communication and the destruction of the natural tradition of transmitting the language from parents to children. As S.I. Burkova notes: “Although the data of sociolinguistic surveys indicate a positive attitude of the Tundra Nenets towards their ethnic language, in fact, most parents prefer to speak Russian with their children, considering it more important, opening the way to education and career. The deeply rooted misconception that the functionally more powerful language of the majority of the population can only be mastered by abandoning one’s native language also plays a role here” [2].

The loss of their ethnic language by the Tundra Nenets is especially rapid in the Nenets Autonomous Okrug (NAO)⁴. The Tundra Nenets language is definitely endangered in NAO, except in the Yamb To community area. According to the 2010 All-Russian Population Census, only 750 people speak the Nenets language. According to a publication in the newspaper Naryan Vynder, in 2018, in fact, a significantly smaller number of Nenets in the NAO are fluent in the Nenets language⁵. According to preliminary data from the All-Russian Population Census for 2021, the number of Nenets people in the NAO amounted to 6713 people, and the number of those who speak

¹ How many languages are endangered? / Ethnologue: Languages of the World. URL: <https://ethnologue.com/guides/how-many-languages-endangered> (accessed 20 January 2023).

² Ibid.

³ Nenets language / Project of the Institute of Linguistics of the Russian Academy of Sciences "Minor Languages of Russia". URL: <https://minlang.iling-ran.ru/lang/neneckiy-yazyk> (accessed 20 January 2023).

⁴ Website "Small Languages of Russia" of the Institute of Linguistics of the Russian Academy of Sciences. URL: <https://minlang.iling-ran.ru/lang/neneckiy-yazyk> (accessed 20 January 2023).

⁵ *Kogda yazyk nem* [When the language is silent] // *Obshchestvenno-politicheskaya gazeta nenetskogo avtonomnogo okruga «Nar'yana Vynder»* [Socio-political newspaper of the Nenets Autonomous Okrug "Naryana Vynder"]. URL: <http://nvinder.ru/article/vypusk-no-139-20770-ot-18-dekabrya-2018-g/33922-kogda-yazyk-nem> (accessed 20 January 2023).

the Nenets language increased to 1 279 people⁶. At the same time, these data do not reflect such important aspects of assessing the language situation as the level of language proficiency, its use in various spheres of life, as well as intergenerational language transmission.

However, despite the relevance of the problem of preserving the Nenets language and its legislative protection, provided for by the Charter of the Nenets Autonomous Okrug⁷ and the Law “On the Nenets language on the territory of the Nenets Autonomous Okrug”⁸, there have been no studies of its preservation in recent years, which could form the basis for the elaboration of measures for its development.

Approaches to assessing the vitality of minor languages

According to the theory of vitality of an ethno-linguistic and social group, language is considered as one of the factors that determines the vitality of an ethno-linguistic group. The concept of vitality is used in various fields of science: in linguistics, in sociology (including social psychology) and in ethnology. Sociological and linguistic research studies the mechanisms of groups’ support of their integrity in the context of interaction with other groups, as well as tools for constructing a linguistic situation in the world.

Existing approaches to the definition of the concept of vitality and revitalization are determined by various models for measuring the state of the language, called vitality scales. An attempt of a comprehensive comparison of various scales of vitality on the empirical material of four minority languages of Russia was undertaken by the staff of the Institute of Linguistics of the Russian Academy of Sciences [3, Kazakevich O.A., Budyanskaya E.M., Evstigneeva A.P., Koryakov Yu.B., Mordashova D.D., Pokrovskaya S.V., Polivanov K.K., Renkovskaya E.A., Khalilova Z.M., Sheifer K.O.]. This work considers:

- UNESCO scale (six levels of vitality, based on 9 criteria, the most significant of which is intergenerational transmission);
- M. Krauss scale (seven levels of vitality, like UNESCO scale, with emphasis on the transfer of language from older generations to younger ones);
- EGIDS — Expanded Graded Intergenerational Disruption Scale (used in the Ethnologue, based on two criteria: areas of language use and language proficiency among representatives of different generations);
- ELCat — The Catalog of Endangered Languages (an integral scale that includes four parameters of language vitality: intergenerational transmission, absolute number of

⁶ All-Russian population census 2020. URL: https://rosstat.gov.ru/vpn_popul (accessed 20 January 2023).

⁷ Ustav Nenetskogo avtonomnogo okruga (s izmeneniyami i dopolneniyami) [Charter of the Nenets Autonomous Okrug (with amendments and additions)]. URL: https://constitution.garant.ru/region/ustav_nenetsk/ (accessed 20 January 2023).

⁸ Zakon Nenetskogo avtonomnogo okruga ot 18 marta 2013 g. N 4-OZ «O nenetskom yazyke na territorii Nenetskogo avtonomnogo okruga» (s izmeneniyami na 13 marta 2019 g.) [Law of the Nenets Autonomous Okrug of March 18, 2013 No. 4-OZ “On the Nenets language on the territory of the Nenets Autonomous Okrug” (as amended on March 13, 2019)]. URL: <https://docs.cntd.ru/document/553156630> (accessed 20 January 2023).

speakers, dynamics of the ratio of number of speakers and size of the ethnic group and sphere of use).

Contemporary research on the language situation studies the issues of the sociolinguistic state of individual languages^{9,10}, Contemporary research on the language situation studies the issues of the sociolinguistic state of individual languages¹¹ [8, Chambers N.A.; 9, Grenoble L.A.; 10, Hinton L., Huss L., Roche G.; 11, O'Dowd M.; 12, Hinton L., Hale K.; 13, Tarabukina U.P.], language policy at the regional level¹², as well as language documentation issues¹³.

Research materials and methods

During 2022, the authors of the article were involved in implementing the project “Possibilities for applying Russian and foreign experience in the preservation and revitalization of indigenous languages in the Nenets Autonomous Okrug” together with the Association of the Nenets People “Yasavey”. One of the objectives of the project was to analyze ideas about the state of preservation of the Nenets language on the territory of the Nenets Autonomous Okrug.

In order to fulfil this task, 39 semi-structured interviews were conducted in the period 19–25 September, 2022, with specialists and experts in the field of the Nenets language working in the following organizations: Ethnocultural Center of the Nenets Autonomous Okrug, Central Library named after A.I. Pichkov, Nenets Regional Center for the Development of Education, Naryan-Mar Social and Humanitarian College named after I.P. Vyucheisky, Department of Internal Policy of the Nenets Autonomous Okrug, Department of Education, Culture and Sports of the Nenets Autonomous Okrug, Nenets Secondary School named after A.P. Pyrerki, a branch of the Ethnocultural Center of the Nenets Autonomous Okrug in the village of Nelmin Nos, a

⁹ Kharitonov V.S., Ivanov V.V., Kade M.A. Itogovye dokumenty, podgotovlennye v khode nauchno-issledovatel'skoy raboty «Razrabotka plana i metodik sokhraneniya i vrozhdeniya yazykov Rossii. 2. Sostoyaniye yazykov Rossii» [Final documents prepared in the course of the research work “Development of a plan and methods for the preservation and revival of the languages of Russia. 2. The state of the languages of Russia]. URL: https://iling-ran.ru/languages_of_russia/2021_stage1/doc2.pdf (accessed 20 January 2023).

¹⁰ Pavlova O.M. Sovremennaya yazykovaya situatsiya v soobshchestve tverskikh karel: kak tak vyshlo i chto my mozhem sdelat' [The modern language situation in the Tver Karelian community: how it happened and what we can do]. URL: <https://rutube.ru/video/974d23105da2a3da882b1c1aaaf241b8/> (accessed 20 January 2023).

¹¹ Vinkler E.A., Pavlova O.M. Itogovye dokumenty, podgotovlennye v khode nauchno-issledovatel'skoy raboty «Razrabotka plana i metodik sokhraneniya i vrozhdeniya yazykov Rossii. 3. Rossiyskie praktiki sokhraneniya, vrozhdeniya i razvitiya yazykov» [Final documents prepared in the course of the research work “Development of a plan and methods for the preservation and revival of the languages of Russia. 3. Russian practices of preservation, revival and development of languages”]. URL: https://iling-ran.ru/languages_of_russia/2021_stage1/doc3.pdf (accessed 20 January 2023).

¹² Zamyatin K.Yu. Formirovaniye yazykovoy politiki RF i respublik: ot istorii k sovremennosti (ustnyy plenarnyy doklad [Formation of the language policy of the Russian Federation and the republics: from history to the present (oral plenary report)]) // Yazykovaya situatsiya i yazykovoy landschaft natsional'nykh regionov v KhKh — nachale XXI vv. [Language situation and language landscape of national regions in the XX - early XXI centuries]. Institute of History of the Academy of Sciences of the Republic of Tatarstan, Kazan, Russia, June 29, 2021.

¹³ Aralova N.B., Budyanskaya E.M., Syuryun A.A., Gruzdeva E.Yu. Kak dokumentirovat' yazyki, chtoby ikh sokhranit'. Metodicheskie rekomendatsii po sboru materiala dlya potentsial'noy podderzhki i revitalizatsii minoritarnykh yazykov [How to document languages in order to save them. Guidelines for collecting material for potential support and revitalization of minority languages]. URL: https://iling-ran.ru/languages_of_russia/2021_stage1/doc7_appendix2.pdf (accessed 20 January 2023).

kindergarten in the village of Nelmin Nos, a primary school in the village of Nelmin Nos and a secondary school in the village of Krasnoe. The sample also included 2 people who were associated with the Nenets language and culture as part of their professional activities in the past and who were active members of the Yasavey Association of the Nenets People at the time of the interview.

Due to time constraints, the authors of the article were unable to conduct field research in all settlements of the Okrug with a significant proportion of the Nenets population (Bugrino, Indiga, Oma, Nes, Khorey-Ver, Karatayka, Ust-Kara). The representativeness of the sample is ensured by the fact that the interviews were conducted in almost all district authorities and leading organizations engaged in activities in the field of the Nenets language and culture. In addition, the settlements where the interviews were conducted (Naryan-Mar, Nelmin Nos, Krasnoe) are home to a large share (about 45%) of the Nenets population of the NAO.

The interview guide included 3 groups of questions. The first group contained questions aimed at identifying respondents' perceptions of the preservation and development of the Nenets language in the Nenets Autonomous Okrug. In this block, the spheres and volumes of language use were identified (especially in education, mass media, the Internet, public administration), the level of its intergenerational transmission, the dynamics of these parameters over the past years. The choice of these aspects is due to their extremely high significance for the preservation of the language in accordance with the accepted scales of vitality [1, Zamyatin K., Pasanen A., Saarikivi J., p. 28].

The second group of questions was devoted to revealing the respondents' ideas about the factors influencing the motivation for learning and using the Nenets language by the population of the NAO. Due to the fact that the project was also aimed at formulating practical recommendations, the third group of questions in the guide was related to the study of respondents' perceptions of the implemented and realized measures to preserve the Nenets language in the Okrug as well as the possibilities to use Russian and foreign practices to preserve their native language.

Research results

Use of the Nenets language by various population groups

According to the results of the interview, all the respondents expressed serious concern about the preservation of the Nenets language on the territory of the NAO. Summarizing the interviews, it is possible to single out 3 groups of the Nenets population that use the Nenets language most actively. The first group includes nomadic reindeer herders; the second one — those, whose activities are directly related to the development of the Nenets language; the third group — the older generation of the Nenets.

1. As a language of everyday communication, the Nenets language is used among nomadic reindeer herders, primarily due to limited contacts with the Russian-speaking village environment and the lack of Russian-language vocabulary for denoting words related to reindeer herding. Re-

spondents unanimously agree that, first of all, the Nenets language was preserved in the Yamb To community. There is no consensus with regard to other communities and agricultural production cooperatives, with some respondents indicating that reindeer herders, especially the younger generation, speak Russian.

“Where the indigenous peoples live compactly (sparsely populated) — the Nenets. One can count on the fingers of one hand the settlements where there are still agricultural production cooperatives for reindeer herding. The children of reindeer herders who became sedentary tend to use their own Nenets language less frequently. Basically, this language is mixed with the Russian language. Yamb To speak their native language. They live in their own world, they didn't go to school, so they kept their native language” (respondent no. 19).

“The Nenets language is mostly used among reindeer herders, since the traditional way of life has been preserved and the environment itself suggests the use of the language” (respondent no. 9).

“As far as I know, the reindeer herders of the Yamb To community communicate freely. Other communities mix Nenets with Russian or use the Komi language” (respondent no. 5).

“Natives of the Yamb To community (speak Nenets). The use of Russian is extremely rare, as it is necessary due to the nature of their work and they lead a nomadic way of life” (respondent no. 39).

“It seems to me that lately Nenets has been used only in those settlements where there are speakers of their native Nenets, for example, the Yamb To community. It can be found in Nelmin Nose, in Krasnoe. And then, the guys from Bugrino who are my students, — there are no fluent speakers” (respondent no. 2).

“In the district, 7 000 out of 44 000 people are considered Nenets speakers, of which the Yamb To community speaks Nenets — about 100 people; people who roam nomadically speak Nenets; participants of the Ilebs theater teach young people along the way. Children practically do not speak Nenets” (respondent no. 36).

2. The Nenets language is used by those whose work is or has been related to the development of the Nenets language and culture. This group includes school teachers, educators, employees of specialized institutions: the Ethnocultural Center of the Nenets Autonomous Okrug, the Nenets Regional Center for the Development of Education, the Social and Humanitarian College named after I.P. Vyucheisky, Nenets Central Library named after A.I. Pichkov, Nenets Museum of Local Lore, representatives of state authorities. This category also includes members of various creative groups, such as the Ilebs theater, the Khayar, Khaniyko, Maimba-va (Nelmin Nos settlement), and Nenei Syo (Krasnoe settlement).

“The Nenets language is widespread... among educational institutions — teachers of the native language and students, cultural institutions — specialists who speak the language, and consumers — participants of events” (respondent no. 9).

“Before I came to this job, I had never even thought about it (Nenets language). My mother is fluent in the language, she was born in the Bolshezemelskaya tundra and knows it perfectly. In everyday life in the city, I did not hear the Nenets language. I hear Nenets speech only at work in

the office, when I talk to my mother, and I also have a teacher of the Nenets language She texts me in Nenets” (respondent no. 6).

“They don’t speak it all the time, sometimes. In theaters, they tell poems and stories” (respondent no. 20).

Among other population groups, only the older generation (according to various respondents, this age is over 50–60 years old) uses the Nenets language in everyday communication with each other or in situations where they do not want to be understood by others. This mainly concerns the “national” settlements (Nelmin Nos, Krasnoe, Bugrino, Karatayka, Indiga, Oma, Nes).

The “middle” generation (35–45 years old) heard the Nenets language (they are the so-called “sleeping speakers”), and their children do not speak Nenets in everyday life, using it only in school lessons. Several respondents noted that teachers often teach Nenets in Russian.

“The situation is sad. The use of language is minimal. In schools, the language is not freely practiced, only in the lessons of the Nenets language and literature (and even then the teachers speak Russian). The language is not used freely in the district” (respondent no. 5).

“The problem of language is acute. It is rarely used in everyday life. Children and youth do not use. Mostly only the older generation... There are few native speakers of the Nenets language among urban dwellers. The Nenets language is spoken by people who live in the villages Nelmin Nos, Krasnoe, Korotayka, Indiga, Oma, Nes. Some of them lead a nomadic way of life” (respondent no. 39).

“There are still native speakers in the city who are over 35-40 years old, who have heard their native language more often. But they do not use it in everyday life and at work. Grandchildren and children no longer hear the Nenets language. The language can be used at cultural events. In settlements, the language has been preserved, but it is spoken by those who are over 30 years old” (respondent no. 19).

“People aged 60 and over speak the language. Young people and the younger generation only understand it” (respondent no. 34).

“Parents and grandparents do not speak their native Nenets language, modern children do not know the Nenets language” (respondent no. 19).

“Children and grandchildren no longer speak Nenets. Parents in Naryan-Mar mostly use Russian in communication” (respondent no. 1).

“In my childhood, parents talked to children. Now it is mostly Russian speech” (respondent no. 3).

“Adults can speak Nenets with children, but they receive answers in Russian” (respondent no. 5).

“Young people already understand, but do not speak. The problem is already real. A generation will gone, and that's it” (respondent no. 34).

“In the city and in the countryside, they speak Russian. We tried to speak Nenets, but we switched to Russian imperceptibly” (respondent no. 6).

“No, only grandma or grandpa will rarely say something to argue” (respondent no. 34).

Most respondents note the negative dynamics regarding the number of Nenets language speakers in the okrug, connecting this primarily to the loss of the older generation (*“decreased”, “the number of speakers is decreasing”, “it has become less”, “a noticeable drop, the statistics are sad, unfortunately”, “the dynamics are decreasing as people die and the older generation leaves”, “the number has decreased significantly due to the disappearance of the older generation”, etc.*). We recorded the opposite opinion only in one interview: *“It seems to me that the number is increasing. If you look at social networks, you can see that the number of people who speak Nenets is growing. It is being used more often in public spaces and at different events. Even in the street you can hear Nenets more often now”* (respondent no. 9).

Nenets language in public space

In public space, the Nenets language is found on signs on school buildings, public authorities, and state institutions. A number of respondents noted signs in public transport (buses) with individual words and phrases in the Nenets language and their translation into Russian. The newspaper “Naryana Vynder” publishes a page in the Nenets language (“Yalumd”), but many respondents considered this to be of little use due to the fact that the same information is presented in a more understandable Russian language.

Nenets language on the Internet

The Nenets language is partially present in the Internet space. A number of respondents noted in an interview the recent increase in the use of the language on various Internet resources (*“The Nenets language has been on the Internet lately. There are wishes, congratulations in Nenets. The Internet is now helping to support the native language. Interest is growing”*) (respondent no. 9).

The largest volume of video content in the Nenets language is published in the mass media: projects of the TV company Yamal-Media (news program Yalem Dad Numgy, YouTube channel and vk.com community EthnoArctic), TV company Severnyy Gorod (news editions of the Television Service of Taimyr), the Krasnyy Sever newspaper — Nyaryana Erm (community vk.com, website with newspaper releases in the Nenets language), Nyaryana Vynder newspaper (Yalumd page).

The YouTube channel “Neney Vada” (Albert Okotetto) deserves special attention, as it contains a large amount of video recordings with native speakers of the Nenets language. There is also content in the Nenets language on the YouTube channels of Vladislav Vyucheykiy and Irina Kotkina.

A large amount of materials in the Nenets language is posted on the online resources of the Ethno-Cultural Center of the Nenets Autonomous Okrug, the Nenets Central Library named after A.I. Pichkov (project “Living book of the Nenets language”), the Nenets Regional Center for the Development of Education (project “Thanks to the teacher of the native language”), the website “Chumoteka”.

On youtube.com and vk.com sites there are videos with folklore compositions of ensembles from the NAO (Ilebs theater, ensembles Khayar, Khaniyko, Maymbava, Ne-ney Syo) and the Yamalo-Nenets Autonomous Okrug (Syra'sev, Shoyotey Yamal, Minley, You' Sey), as well as recordings of contemporary pop music (popular singers from the YNAO Nadezhda Serotetto and Nyamda Nyaruy). Videos prepared for the competition of covers in the folk languages of the indigenous peoples of the North "Singing Voices" have a high number of views.

The Nenets language is used in the thematic communities vk.com (Neney nenetsya il, Neney nenetsya "lahana") and profiles of social network users (for example, Olga Efremovna Latsheva). Nenets language lessons are posted on the youtube channels "Ethnographic expedition Real people" (9 lessons of basic Nenets language) and "Children of the Arctic" (5 lessons of Nenets language). At the time of preparation of this article, 6 cartoons were posted in the Nenets language ("At Lukomorye", "Winter Tale", "Two Bears", "Sparrow and Mouse", "Cuckoo", "A Red fox cub lived in the Tundra").

Nevertheless, there is little video content with high-quality images available on the Internet. There are practically no videos with subtitles that can be understood by both Russian and Nenets speakers.

Key problems hindering the preservation of the Nenets language in the NAO

The respondents were generally unanimous about the threatening language situation and its negative dynamics in recent decades. Based on the interviews, the authors of this study identified the main problems underlying the current situation with the Nenets language in the district.

1. The lack of demand for the Nenets language in most spheres of life, the lack of prestige of knowing the Nenets language, the absolute dominance of the Russian language. An exception is made by groups that use the Nenets language (see "Use of the Nenets language by various population groups"). Almost all respondents noted the low level of motivation among Nenets people to learn their native language.

"The feeling is that only we, the intelligentsia, need it, and the rest — only on holidays. The language is dying" (respondent no. 12).

"Young people do not see the practical use of the language. Families did not speak the Nenets language so that the children would know it well" (respondent no. 9).

"My mother has a big family. Brothers, sisters know the language, but they are forgetting it, and their children are not interested in the language. They even work in areas where language is not needed" (respondent no. 6).

"A young person, when he leaves his family, does not use his native language. He enjoys the benefits of civilization, where there is no Nenets language" (respondent no. 3).

"Parents do not always let their children study Nenets. Learning native Nenets is not necessary" (respondent no. 2).

“The older generation does not talk to us, and there is no point in teaching ourselves later in work, studies and career” (from an interview with a college student).

2. Weak development of the language environment, especially for young children. This is expressed, firstly, in the absence of intergenerational transmission (parents, grandparents most often speak Russian with their children). The generational gap in language proficiency is attributed by the majority of respondents to the fact that knowledge of the Russian language became the main social lift in the Soviet period. There was discrimination against speakers of the Nenets language and a de facto ban on language use; the system of boarding schools “cut off” children from parents leading a nomadic lifestyle. Most of the Nenets moved from a traditional nomadic way of life to a settled way of life, where the Russian-speaking language environment prevailed. Secondly, this problem is related to the lack of high-quality content (language environment) on the Internet and the digital sphere in general (see “Nenets language on the Internet”), as well as the limited number of hours of Nenets language teaching at school.

“They don’t speak, they don’t speak much, because now the Russian language is heard from everywhere: radio, TV. Grandmothers and parents mostly think in Nenets, but children do not. They study, read fairy tales — Russian is everywhere. When you rarely hear the Nenets language, and more often — Russian, you start thinking and speaking Russian” (respondent no. 19).

“Parents do not speak much Nenets with their children, which is why children laugh when they hear the Nenets language” (respondent no. 8).

“The main problem is that there is no use of language in the family, so the motivation is low” (respondent no. 39).

“It all depends on the family. If the parents want to teach the child, then the child will know the language” (respondent no. 2).

“There is no communication in the family, there is no desire of parents to communicate with their children. There is no system of continuity of language transmission” (respondent no. 39).

“The older generation does not transfer knowledge as much as it could” (respondent no. 8).

“There is no spoken environment, grandparents only speak Russian with their children and grandchildren” (respondent no. 25).

“Only now comes the realization that we should have spoken Nenets to the children. But usually the children are in kindergarten, and the parents are at work, in the evening there was no time to talk. Now children regret that they do not know their native language” (respondent no. 20).

“There is no media coverage of information, for example, children’s programs. It (the language) is not publicly available” (respondent no. 5).

3. In the Nenets Autonomous Okrug, there is such a phenomenon as the constraint of their own language and culture, which is not observed among the majority of the Nenets living in the Yamalo-Nenets Autonomous Okrug. This problem was highlighted in interviews by a large number of respondents. In addition, it was repeatedly noted that there is almost no promotion of knowledge of the Nenets language today.

"The situation is critical! Only the older generation (50+) speaks the Nenets language. Nenets children are ashamed of their origin, they are afraid to speak their native language" (respondent no. 8).

"Unlike Yamal, the Nenets in the Okrug are afraid to speak and be proud of being Nenets" (respondent no. 1).

"There is no intrinsic motivation, they are embarrassed, ashamed of the language" (respondent no. 5).

"Embarrassed to speak Nenets language. This is the influence of the Soviet period" (respondent no. 7).

"It's embarrassing to speak it in the city, it is bullying" (respondent no. 34).

4. Insufficient material and methodological support of educational and cultural workers. This problem was mentioned by many respondents, emphasizing the low level of salaries and high workload, including instructions from management to take part in unpaid projects and initiatives. In turn, many private projects aimed at the development of the Nenets language are voluntary, financially unsupported initiatives. In addition, a number of employees of the education system pointed to the lack of housing in Naryan-Mar for specialists from other cities, low salaries, and extremely limited support for their own initiatives. A separate problem is the lack of high-quality educational and methodological materials for teachers and learners of the Nenets language, especially in digital format.

"Nenets language teachers complain that they have nowhere to get information from, unlike Russian language teachers. Now everyone is asked to use the Children of the Arctic portal, but there are few materials there" (respondent no. 5).

5. Lack of systematic work on the preservation and development of the language. To date, there are no approved targets, a list of activities for the development of the Nenets language and the state authorities responsible for their implementation. The majority of culture and education workers have a general pessimistic attitude towards the preservation of the language. Moreover, some respondents expressed concern that their efforts are being criticized by other Nenets. Mistakes in language use are often the subject of criticism (including due to the difference between the Bolshezemelskiy dialect of the Nenets language, accepted as a literary norm, and other dialects): *"The Nenets language is dying out. Even if it is spoken, it is not in pure Nenets language. Either they pronounce and write words incorrectly. Or they mix it with Russian"* (respondents no. 20 and no. 21).

"We seem to be all together, but at the same time separately"

6. Reduction in the number of Nenets leading a traditional way of life.

Existing practices for the preservation of the Nenets language in the NAO

The interviews also highlighted key findings, experiences and practices that contribute to the development of the Nenets language and that can be used as a basis for planning language development in the Okrug.

1. Legislative protection of the Nenets language. Article 14 of the Charter of the Nenets Autonomous Okrug¹⁴ provides for recognition and guarantees by the state authorities of the Okrug of the right of the Nenets people to preserve and develop the way of life, culture, language, protection of the native habitat, traditional way of life, economic activity and crafts in accordance with generally recognized principles and norms of international law, and international treaties of the Russian Federation, federal and regional legislation. Article 3 of the Law of the NAO dated March 18, 2013 N 4-OZ "On the Nenets language in the Nenets Autonomous Okrug"¹⁵ provides for the preservation and development, as well as social, economic and legal protection of the Nenets language in the Nenets Autonomous Okrug.

2. Regular budget financing of workplaces (educational and cultural institutions), whose functions include preservation and development of the Nenets language (Nenets regional center for the development of education, the Ethnocultural center of the Nenets Autonomous Okrug, the Nenets central library named after A.I. Pichkov, city and village schools and cultural centers).

3. Teaching in schools in the Nenets language, availability of educational and methodological literature, holding a regional Olympiad for schoolchildren of the Okrug in their native language.

"Here Olga Ivanovna does her best. It's efficient! The children are very good, they open themselves up to the world. And you can see what kind of teachers work. It needs to be supported" (respondent no. 6).

"In our center we organise competitions and contests at regional level. Children take first place. If teachers didn't tell children about the Olympiads and competitions, the children wouldn't take part in them" (respondent No. 5).

4. The work of folklore groups — the theater Ilebts, the ensembles Khayar, Khaniy-ko, Maimbava (Nelmin Nos settlement), Neney Syo (Krasnoe settlement) and others — contributes greatly to the promotion of language and culture, encourages their participants to improve their language skills and unites interested citizens around them.

5. Publication of books in the Nenets language; the Nenets-language supplement "Yalumd" ("The Dawn") to the newspaper "Naryana Vynder"; magazines "Punushka" and "Sava Yun" with texts in the Nenets language.

¹⁴ Ustav Nenetskogo avtonomnogo okruga (s izmeneniyami i dopolneniyami) [Charter of the Nenets Autonomous Okrug (with amendments and additions)]. URL: https://constitution.garant.ru/region/ustav_nenetsk/ (accessed 20 January 2023).

¹⁵ Zakon Nenetskogo avtonomnogo okruga ot 18 marta 2013 g. N 4-OZ «O nenetskom yazyke na territorii Nenetskogo avtonomnogo okruga» (s izmeneniyami na 13 marta 2019 g.) [Law of the Nenets Autonomous Okrug of March 18, 2013 No. 4-OZ "On the Nenets language on the territory of the Nenets Autonomous Okrug" (as amended on March 13, 2019).]. URL: <https://docs.cntd.ru/document/553156630> (accessed 20 January 2023).

6. Implementation of individual projects and initiatives aimed at preserving the Nenets language (language documentation within the framework of the Ethnorakurs project, the information and educational resource Chumoteka, Nenets language courses for adults, the Kubik cartoon studio, etc.).

7. Public events and actions: Reindeer Day, Days of Nenets Literature, Nenets culture festival “Sava Syo”, poetry, song, costume competitions/activities, etc.

“I am glad that cultural institutions are trying to revive the language through some kind of events” (respondent no. 19).

“Ethnomusic concerts are held. Tim Dorofeev and his band came. Guys from Norway came and rapped. It was very good. There was a girl who sang Nenets songs” (respondent no. 19).

“I went to a dictation in the Nenets language, it's cool! People are interested, it brings them together” (respondent no. 8).

“There is interest and demand, but (guys) are shy to speak in front of the camera” (respondent no. 4).

“Children and adults are interested in attending these events” (respondent no. 34).

“The guys are good, they open themselves up” (about competitions for schoolchildren), (respondent no. 6).

“This is effective, children are also interested” (about competitions for schoolchildren), (respondents no. 25–29).

“The interest has increased over the last two years, but it is only within the framework of events” (respondents no. 10–11).

8. Proactive, interested people who are not indifferent to the preservation of the Nenets language. Almost all of the interviewed respondents are implementing their own language preservation projects, often going beyond their official workplace duties.

9. Growing interest in the Nenets language and culture in recent years, mainly through participation in public events and actions. In addition, many respondents noted that in adulthood (over 35–40 years), the Nenets have an awareness and acceptance of their Nenets identity and, as a result, an understanding of the need to preserve the language and culture.

“Now there is an interest in language, in culture. And when all this is present, it becomes habitual. We try to carry out a lot of activities aimed at maintaining the Nenets language. Adults began to show interest in learning their native language” (respondents no. 9–10).

Conclusion

Based on the conducted sociological research, as well as on Russian and foreign experience in the preservation of small languages, this article proposes recommendations, the implementation of which will improve the situation with the Nenets language in the Nenets Autonomous Okrug. The authors propose 4 priority (cross-cutting) directions for the preservation and development of the Nenets language in the Okrug:

- building up systematic regular work on preserving, developing and improving the status of the Nenets language;
- supporting and stimulating workplaces, initiatives, organizations and individuals who work to preserve the Nenets language and culture in the Okrug;
- creating an attractive language environment, especially in the digital sphere (the Internet), with a focus on primary school children, as the main information is in the Internet today.
- supporting those communities, especially reindeer herding communities and agricultural production cooperatives, where the language is used and its intergenerational transmission is preserved.

The specific recommendations below are grouped into three groups according to the key areas in which efforts to preserve the language have the greatest impact: public administration, education, and media ¹⁶.

¹⁶ The proposed recommendations are generally consistent with the recommendations presented at events dedicated to the preservation and development of Russian languages: Rezolyutsiya «Mezhdunarodnoy konferentsii «Lingvisticheskiiy forum 2021: yazykovaya politika i sokhranenie yazykov» [Resolution of the International Conference "Linguistic Forum 2021: Language Policy and the Preservation of Languages"]. URL: https://iling-ran.ru/web/index.php/ru/conferences/2021_lingforum/resolution (accessed 20 January 2023); Rezolyutsiya II Vserossiyskogo s"ezda uchiteley rodnykh yazykov, literatury i kul'tury korennykh malochislennykh narodov Severa, Sibiri i Dal'nego Vostoka Rossiyskoy Federatsii [Resolution of the II All-Russian Congress of Teachers of Native Languages, Literature and Culture of Indigenous Peoples of the North, Siberia and the Far East of the Russian Federation]. URL: <https://xn--80abbqipobve.xn--p1ai/novosti/ii-vserossiyskiy-sezd-uchiteley-rodnyh-yazykov-literatury-i-kul'tury-korennykh-malochislennykh-narodov-severa-sibiri-i-dalnego-vostoka-rossiyskoy-federatsii/> (accessed 20 January 2023); Postanovlenie Prezidiuma RAN ot 2 marta 2021 goda N 37 «Problemy izucheniya i sokhraneniya yazykov narodov Rossiyskoy Federatsii: nauchnye osnovy Kontseptsii gosudarstvennoy yazykovoy politiki» [Resolution of the Presidium of the Russian Academy of Sciences of March 2, 2021 N 37 "Problems of studying and preserving the languages of the peoples of the Russian Federation: the scientific foundations of the Concept of the state language policy"]. URL: https://www.ras.ru/news/news_release.aspx?ID=b2f6b9ce-285d-4b3f-9fe5-c9265c94199e (accessed 20 January 2023); Rezolyutsiya po itogam provedeniya v 2022 godu serii meropriyatiy «Yazyki narodov Rossii v sisteme obshchego obrazovaniya Rossiyskoy Federatsii» [Resolution on the results of the series of events held in 2022 "Languages of the peoples of Russia in the system of general education of the Russian Federation"]. URL: <https://nra-russia.ru/glavnaya/meropriyatiya/yazyki-narodov-rossii-itogovaya-rezolyucziya-2022.html> (accessed 20 January 2023); Protokol № 1 zasedaniya Rabochey gruppy Komiteta Gosudarstvennoy Dumy po delam natsional'nostey po zakonodatel'nomu obespecheniyu etnokul'turnogo razvitiya narodov Rossii i sovershenstvovaniyu yazykovoy politiki [Protocol No. 1 of the meeting of the working group of the State Duma Committee on nationalities on legislative support for the ethno-cultural development of the peoples of Russia and the improvement of language policy]; Itogovaya rezolyutsiya IX s"ezda Assotsiatsii korennykh malochislennykh narodov Severa, Sibiri i Dal'nego Vostoka Rossiyskoy Federatsii [Final resolution of the IX Congress of the Association of Indigenous Peoples of the North, Siberia and the Far East of the Russian Federation]. Salekhard, 04-08 april 2021. URL: <https://raipon.info/upload/iblock/ef3/ef3933afb4401958e2520842ef2dbc16.pdf> (accessed 20 January 2023); Rezolyutsiya S"ezda korennykh malochislennykh narodov Severa Nenetskogo avtonomnogo okruga v g. Nar'yan-Mar [Resolution of the Congress of Indigenous Minorities of the North of the Nenets Autonomous Okrug in Naryan-Mar], March 21-22, 2019. URL: <https://smi.adm-nao.ru/kmns/aktualnaya-informaciya-dlya-kmns/sezd-kmns-nao-2019/> (accessed 20 January 2023); Rezolyutsiya seminar-soveshchaniya «Yazyki korennykh narodov Kraynego Severa v sisteme obshchego obrazovaniya Rossiyskoy Federatsii» [Resolution of the seminar-meeting "Languages of the indigenous peoples of the Far North in the system of general education of the Russian Federation"], September 19-21, 2021; Rezolyutsiya po itogam zasedaniya Vserossiyskogo kruglogo stola «Perevod s ispol'zovaniem yazykov narodov Rossii. Nenetskiy yazyk» [Resolution on the results of the meeting of the All-Russian round table "Translation using the languages of the peoples of Russia. Nenets language"], June 14, 2022. URL: <https://narfu.ru/life/news/university/370602/> (accessed 20 January 2023).

Recommendations in the area of public administration

1. Drafting a strategic planning document (strategy, concept, state program) for the preservation and development of the Nenets language on the territory of the Nenets Autonomous Okrug. The adoption of a strategic planning document is extremely important for the concentration of limited resources to achieve the set goal. The strategy will allow building systematic work with the definition of priorities, targets, distribution of areas of responsibility, determination of sources and volumes of financial support. At the same time, it is crucial to identify the public authority responsible for the implementation of this document.

2. Regular monitoring of the preservation of the Nenets language on the territory of the Nenets Autonomous Okrug and assessment of the measures taken to preserve the language are important measures in order to build systematic work in this direction.

3. Systematic support for events, competitions and actions to promote the Nenets language and culture. This measure, according to the majority of respondents, makes it possible to attract and maintain attention of the general public to the preservation of the Nenets language. At the same time, holding one-time events does not replace full-fledged language training and immersion in the language environment.

4. Allowances and/or other forms of material support for teachers of the subject “Native (Nenets) Literature”, as well as conducting extracurricular work on the preservation and development of the Nenets language. Most educators interviewed noted that there is a 15% salary bonus for Nenets language lessons, but pointed out that there are no bonuses for teaching native literature or extracurricular activities. Many of them praised the further increase in allowances or the expansion of the circle of their recipients: specialists involved in the preservation of the Nenets language and culture, employees of educational organizations of secondary vocational education, cultural institutions, government bodies (*“No matter how mercantile it sounds, but a serious material support, almost at the salary level, is needed”*; *“The most important thing is the policy of introducing the language into the family by measures of material and financial support”*; *“If they did this to employees of the administration, it would be good”*). At the same time, it was noted that this might cause a negative reaction from representatives of other nationalities.

5. Development and implementation of a mechanism for providing housing for specialists working in the field of preservation and development of the Nenets language on the territory of the Nenets Autonomous Okrug.

“We need to competently attract specialists so that they are not disappointed, to provide good living conditions. It is necessary to be able to keep such people” (respondent no. 19).

6. Regular professional development for specialists in the field of preservation of the Nenets language and culture (including internships, exchange of experience with colleagues from the Yamalo-Nenets Autonomous Okrug).

“If our teachers were sent to the YNAO to adopt experience, it would be effective” (respondent no. 8).

7. Expansion of the use of the Nenets language in public space (signboards, social advertising, etc.), including in the context of tourism development. Most of the respondents had a positive attitude towards the duplication of signboards, road signs in Russian and Nenets (*“Recently, it has even become prestigious to name a company or organization with a Nenets name”* (respondent No. 2)). However, not all respondents were convinced that this would have a great effect on language preservation. It was also suggested that this measure would increase interest of tourists from other regions. A number of representatives of state authorities believe that this idea cannot be implemented (*“They won’t let it be done”; “It will be difficult to promote this initiative”*).

In general, the majority of respondents supported the idea of social advertising calling for the study of their native language. However, some respondents doubted the real effect of this measure and suggested that it could cause an ambiguous reaction from representatives of other nationalities. As with the duplication of signage, several respondents expressed the opinion that this measure could contribute to the development of tourism.

Recommendations in the area of education

1. Creation of a portal of the Nenets language, which includes online dictionaries, phrasebooks (useful words and expressions), language learning materials, methodological developments for teachers, information about the history and culture of the people and the region, a library with texts in the language. The vast majority of respondents noted that this measure is extremely necessary, due to the fragmentation and lack of quality materials for teachers and learners of the Nenets language.

“We have to develop our methodological materials. Therefore, there is a demand” (respondents no. 28–29).

“It would be great, since I do all the work myself and not on a computer” (respondent no. 22).

“If there is a good quality portal, it will really be in demand” (respondent no. 19).

“Of course it is necessary, and we could get involved in this idea. It is important to include the best practices in the Okrug, as well as to use the experience of the Yamalo-Nenets Autonomous Okrug” (respondent no. 39).

“It would be great, since there is no such platform” (respondents no. 11–12).

2. Development of online dictionary of the Nenets language, available on the Internet and as a mobile application.

“I am for modern technology. We should definitely try it. Because there is no such thing now! Few people use paper dictionaries” (respondent no. 19).

3. Development of an electronic study guide, including a high-quality mobile application for teaching the Nenets language in an interactive form. The majority of respondents believe that such an application with game-like tasks would be an effective tool for language learning, especially for school age children. However, some respondents noted that it is not clear who would be able to implement and, importantly, to support this project in future.

"This is useful! Children do not want to use textbooks" (respondent no. 8).

"Children have motivation before they go to school as they learn about the world, and then interest disappears due to the 'dryness' of teaching" (respondent no. 22).

"If there was a quality mobile application — why not. There is a mobile application with simple phrases in the Nenets language for non-native speakers to learn, but it is not of good quality" (respondent no. 5).

"There were those who wanted to do it. But they thought it was a one-time action. It needs to be constantly updated. I would be glad if there was a person who would do this" (respondent no. 19).

4. Continuation of Nenets language courses for adults. Some respondents expressed doubts about the effectiveness of this measure because a significant number of those who started the courses did not complete them: *"There were 25 people. After six months, about 10 people left"*, *"We have 20 people. A few months passed, the group began to decrease, because people did not understand why they needed it. Only 6 people remained for the second year"* (respondent no. 19). Despite the lack of consensus on the issue, we believe that this is a very important undertaking necessary for those who need the Nenets language to perform their job functions. One of the respondents noted that *"of course, especially (this is important) for a professional background"* (respondent no. 5), criticizing the results of the "Teacher of the Year" competition due to the fact that some winning teachers are not fluent in the Nenets language and can teach only "textbook conversation".

In addition, according to a number of respondents, the courses allow strengthening the Nenets identity of a person (*"people begin to understand who they are ... to preserve the way of life of their ancestors"* (respondent No. 8)), give confidence to those who are embarrassed to use the Nenets language (*"maybe they would not be so shy"* (respondent no. 19)).

5. Development of a project of ethno-cultural camps (schools) for children with immersion in the language environment and traditional economic activities. In general, the respondents positively assessed the possible implementation of this practice; however, many respondents noted the following obstacles that may arise. Firstly, these are organizational difficulties, in particular, registration of the departure of children in accordance with the law (including compliance with sanitary and epidemiological rules and norms of the camping ground). Secondly, there are currently limited opportunities for potential locations for these schools. The only community where the Nenets language is spoken is Yamb To, which can only be reached by helicopter; it requires large financial resources. Thirdly, the stay of children in the community will encroach upon time of its members, necessary for conducting economic activities. Finally, such an event should last long enough to ensure immersion in the environment of traditional life (*"You can't learn much in a week"* (respondent no. 3), *"Yes, but you need to be sent there for six months to be able to engage in traditional economic activities as soon as possible"* (respondent no. 5)).

"If you go to Yamb To, there might be a result, as the language is more or less preserved there. But getting into a different environment with strangers and experiencing daily life is very

difficult. If you start loading the children with the language, they will start whining. They are all on their phones all the time” (respondent no. 19).

“It's totally fine and is in Yamal! I would also like to set up a nomadic school and take children to Yamb To” (respondent no. 22).

“That's great! This is very good. Children need to be immersed in the interactive activities. Take them out of the city. There will be an effect!” (respondents no. 9–10).

“It will be a positive effect for children. Actually, children go to (some) reindeer herding teams every summer” (respondent no. 3).

“(This practice) is the most effective, as children are immersed in their true culture” (respondent no. 22).

6. Identification of talented students and further targeted training at the Institute of the Peoples of the North of the Herzen State Pedagogical University. Many respondents noted that, despite the difficult situation in providing the Okrug with teaching staff and specialists in the field of the Nenets language and culture, in recent years, applicants from the Nenets Autonomous Okrug were not sent to study at the Institute of the Peoples of the North for various reasons.

Recommendations in the area of media

1. Translation (dubbing and subtitles) of popular films and cartoons into the Nenets language is assessed by the majority of respondents as an effective measure to preserve the language. Some respondents indicated that there are cartoons filmed or translated into the Nenets language, however, the analysis of open sources revealed only 6 ones (see “Nenets language on the Internet”).

“It would be very good if there were such cartoons in the Nenets language as “Well, just you wait!”. Children are interested, they learn information” (respondent no. 8).

“I think it would be possible! I would like to watch some famous movie. And people would have come if there was an action related to watching the translated film” (respondent no. 6).

“The dubbing of popular films will probably also have positive effects on those who watch them. If children are shown such a familiar content, it is also possible to achieve some results. The child will make analogies, know the plot, the characters” (respondents no. 9–10).

“Yes, it is, but on the condition that they understand the language well” (respondent no. 13).

“There are cartoons, but they do not reflect the essence of the Nenets language much, and it's not bad for presentation and hearing, this practice could work” (respondents no. 28–29).

“There is such a practice, (cartoons) “Cuckoo” and “Sun”, for example. But foreign ones would be much more effective” (respondents no. 3, 22).

“They don't show it on the Sever TV channel, but with subtranslation, then most likely yes, they could watch it” (respondent no. 34).

2. Creation of TV shows and/or radio programs in the Nenets language. Taking into account the experience of the Yamalo-Nenets Autonomous Okrug and the Krasnoyarsk Krai, we recom-

mend developing a project for the creation of such programs. However, this measure requires large financial expenses and, probably, the involvement of personnel from the above-mentioned regions, since specialists who would be both native speakers and specialists in the field of television, radio and media production are needed.

3. Organizational and technical support for blogs about the Nenets language, culture and way of life. Many respondents noted that they watch or use video content created by residents of the Yamalo-Nenets Autonomous Okrug, and also know popularizers of the Nenets language from the YaNAO (Albert Okotetto, Khadri Okotetto). In the Nenets Autonomous Okrug, judging by the number of views, the YouTube channels of Vladislav Vyucheykiy and Irina Kotkina are quite popular. The prevailing opinion of the respondents is that it is possible to “grow up” bloggers, but technical support, training in filming, editing and promoting content is extremely important.

“There are definitely some in Yamal! If there were such bloggers, then the population would definitely watch them. I would take it on, but I don't know how to film or edit” (respondents no. 9–10).

“The guys are speakers from Herzen (Institute of the Peoples of the North). Vlad Vyucheykiy is doing a similar thing. There are many of them, they are in different ends. This work is not systemic. Everyone is trying to do it in their own way” (respondent no. 9–10).

“It is interesting! But it requires technical assistance and help of people who know the language” (respondent no. 36).

“Blogs would be interesting, to learn about life and everyday activities” (respondents no. 23–24).

A number of respondents noted that channels exclusively in the Nenets language would not be popular due to the practical absence of native speakers in the Okrug (*“It would not work for the general public — there are not so many native speakers”* (respondent No. 8); *“We saw it in Yamal, but it's easier to accept content in Russian”* (college students)).

4. Creation of the interface of the social network “VKontakte” in the Nenets language was considered an effective measure by about half of the respondents. We believe that this is a relatively affordable measure that will draw attention to the Nenets language and raise its status.

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A.S. Nikiforov — empirical and theoretical data collection, research methodology, writing the original text;
O.V. Minchuk — development of research tools, text editing.*

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Health as an Indicator of the Quality of Life and Subjective Well-Being of Children and Youth of Indigenous Peoples of the North, Siberia and the Far East of the Russian Federation *

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Abstract. The attention of Arctic researchers is increasingly turning to the people who inhabit it. One of the objects of such research is the quality of life and subjective well-being of the indigenous peoples of the North, Siberia and the Far East, traditionally determined by the degree of satisfaction of needs, interests and expectations, the level of comfort of the social and natural environment for human life, the degree of trust in social institutions, accessibility and quality of social services, which determine the level of well-being, social, spiritual and physical health of people. Health is one of the key indicators of the quality of life. The analysis of health of youth of the indigenous small-numbered peoples of the North, Siberia and the Far East (ISNPNS and FE) creates the basis for the development of comprehensive health-saving programs, forecasting and organizing effective measures to preserve and strengthen the health of people arriving in the Far North in the conditions of its active industrial development. Health indicators are determined by approaches to its assessment, which involve taking into account a variety of information. Empirical data on the health factors of the ISNPNS and FE have been accumulated in Russia, but there is a lack of knowledge about the degree of their influence on the quality of life of children and youth. Representative data on the peculiarities of the health of adolescents and youth of the ISNPNS and FE of the Russian Federation in various regions, its impact on subjective well-being and quality of life are presented. Behavioral patterns in relation to various aspects of health, experiences of interaction with and attitudes towards official and alternative medicine are analyzed; environmental factors significant in the context of health care are identified.

Keywords: *indigenous peoples, youth, health, well-being, quality of life*

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Introduction

The complication of the foreign policy and economic situation, the increasing sanctions pressure on the Russian Federation make research aimed at finding effective ways and means of sustainable development of Russia and an adequate response to new threats and challenges particularly relevant. The development of the circumpolar zone of the Russian Federation has been among the strategic priorities of state policy for several years. In 2020, the directions for its implementation up to 2035¹ were determined; the Strategy for the Development of the Arctic Zone of Russia was approved as the basis for ensuring national security².

The richest resources of the northern regions of Russia have always been of great importance for the development of the country. The natural riches of the Arctic are becoming not only a source of innovative development of these regions, but also a driver for the modernization of the Russian economy. But is the Russian Arctic rich only in natural resources?

In his address to the citizens of the country, the President of the Russian Federation V.V. Putin noted: "The territory of Russia and its mineral resources are one of its main wealth, but the 'main gold reserve' is people"³. According to the President, Russia has retained this value despite the losses incurred during the collapse of the Union of Soviet Socialist Republics.

In this situation, Arctic researchers increasingly turn their attention to the people inhabiting these territories, their original culture, traditional values, unique ability to live and work in the most difficult conditions, overcoming all difficulties and maintaining extraordinary fortitude and high moral qualities. One of the humanitarian, i.e. addressed to people, areas of scientific research is the study of the quality of life and the subjective well-being of the indigenous peoples of the North, Siberia and the Far East.

The quality of life is traditionally determined by the degree of satisfaction of needs, interests and expectations, the level of comfort of the social and natural environment for life in a certain territory, the degree of trust in social institutions, the availability and quality of social services that determine the level of well-being, social, spiritual and physical human health [1, Bazarova A.G., pp. 154–156]. Therefore, broadly understood, health is one of the key indicators of the quality of life and well-being. Health is one of the basic human values. At the same time, it is not only an invaluable resource and characteristic of a person, but also an asset of the whole society.

¹ Ukaz Prezidenta RF ot 5 marta 2020 g. №164 «Ob Osnovakh gosudarstvennoy politiki Rossiyskoy Federatsii v Arktike na period do 2035 goda» [Decree of the President of the Russian Federation of March 5, 2020 No. 164 "On the Fundamentals of the State Policy of the Russian Federation in the Arctic for the period up to 2035"]. URL: <http://www.kremlin.ru/acts/bank/45255> (accessed 23 August 2022).

² Ukaz Prezidenta RF ot 26 oktyabrya 2020 g. №645 «O Strategii razvitiya Arkticheskoy zony Rossiyskoy Federatsii i obespecheniya natsional'noy bezopasnosti na period do 2035 goda» [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 up to 2035"]. URL: <http://www.kremlin.ru/acts/bank/45972> (accessed 23 August 2022).

³ Direct line with Vladimir Putin. URL: <http://www.kremlin.ru/events/president/news/65973> (accessed 23 August 2022).

In this sense, the analysis of health characteristics of the Indigenous minorities of the North, Siberia and the Far East (IMNS and FE) provides invaluable material for studying the unique adaptive capabilities of a person, and is, to a certain extent, a reference model for the development of comprehensive health protection programs, including public ones, for forecasting and organizing effective measures to preserve and promote health of people arriving in the Far North in the conditions of its active industrial development [2, Abryutina L.I., p. 45; 3, Khasnulin V.I., pp. 138–145].

In this regard, the studies of health of the IMNS and FE of the Russian Federation and the factors influencing it as a significant indicator of the quality of life of the population of the northern territories acquire special meaning and significance today [4, Maksimova T.M., Belov V.B., Lushkina N.P., pp. 100–110].

At the same time, quantitative data and indicators characterizing the state and trends of development of the healthcare system in relation to the IMNS and FE of the Russian Federation are clearly insufficiently presented in the scientific literature. They are often fragmentary and represent the situation in certain regions, mainly in the Republic of Sakha (Yakutia), Krasnoyarsk Krai, Khanty-Mansi and Yamalo-Nenets Autonomous Okrug. There are very few works that explore the relationship between the health and quality of life of the indigenous peoples of the North and the Far East and the development of special health protection programs for these regions.

Materials and methods

The general scheme of the study included:

1. *Identification and assessment of factors* that have a significant impact on the health of children and youth of the IMNS and FE of the Russian Federation, based on monitoring studies, health statistics data, publications in the media, and studying the opinions of experts in the relevant field.

The group of experts (key informants) was formed by recruiting representatives of target groups through personal contacts and agreements with the regional coordinators of the study. The number of experts was 70 people (58 women and 12 men), representing 8 regions, including 38 people living in the city, and 42 — in villages and urban-type settlements.

2. *Conducting sociological surveys* in a number of northern regions of the Russian Federation (St. Petersburg city, Leningrad, Murmansk, Irkutsk, Tomsk oblasts, Kamchatka, Krasnoyarsk Krai, the Republic of Sakha (Yakutia), Yamalo-Nenets Autonomous Okrug).

The questionnaires included questions about the psychological characteristics, health status, family characteristics, etc. of children and young people living in these territories, and were based on adapted standardized scales: health symptoms in the last 6 months HSBC/CINDI (WHO); self-assessment of mental health and subjective well-being HBSC (WHO); addictive behavior ES-PAD (European School Survey Project on Alcohol and Drug Use).

The sample of the study included more than 1300 representatives of the IMNS and FE, 14–25 years old.

Data was processed using conventional and well-known methods of mathematical statistics, with generalized conclusions and interpretations based on regression and factor models.

Results

The scientific literature presents a sufficient variety of methods for measuring the state of health as a significant indicator of the quality of life of the population. An important element of their creation is the development of a criteria-evaluating system and corresponding measurable indicators that comprehensively characterize the state of health and reflect the influence of general and specific factors on its individual indicators. One of the key areas of such an assessment is a comparative analysis of statistical data and qualitative sociological research. The comparative analysis of data on selected groups of indicators shows general regularities and tendencies as well as specific factors (geographical, climatic, economic, ethnic, age, etc.), but most importantly, the effectiveness of measures taken by regional and local government bodies in relation to the preservation and improvement of health of the population of a given territory.

One of the most popular and important sources of information about the state of health of the IMNS and FE of the Russian Federation is departmental statistics. Its advantage is that each healthcare organization and executive authority is obliged to provide information on the state of public health in the prescribed form. This information makes it possible to obtain data in various aspects of interest to researchers. The most informative for data analysis in the context of interest are those data that include information on ethnicity in the relevant data collection forms. At the same time, the data of departmental statistics should be treated with a certain degree of skepticism, since information is often “smoothed out” and/or accounting and reporting forms are filled out formally. In addition, generalized reports, as a rule, are based on aggregated data, which do not allow the possibility of their subsequent differentiation on various grounds (gender, age, type of settlement, etc.).

As a rule, the statistics of the Ministry of Health of the Russian Federation includes data on public health (medical and demographic information, differentiated by disease classes, morbidity statistics, data on maternal and child health, level of injuries, proportion of disabled people, etc.) and characteristics of health systems (number of health facilities, hospital beds, medical staff; human resources, performance indicators, financing, etc.). At the same time, there is a certain possibility of grouping or differentiating data on various grounds: urban/rural population, children/adults/pensioners, men/women, etc.

However, the analysis of departmental statistics does not allow to obtain unambiguous correlations between health data and assessments of the quality of life and subjective well-being of the IMNS and FE, as well as to analyze the specifics of health care organization in individual regions [5, Khasnulin V.I., Khansulin P.V., Artamonova M.V., pp. 34–39].

Thus, the existing system of state statistics does not provide the necessary coverage, completeness and reliability of data on the health, quality of life and subjective well-being of children and youth of the Indigenous minorities of the North, Siberia and the Far East, it is impossible to build full-fledged analytical reviews and develop appropriate long-term programs. Based only on these data, the authorities are forced to use partially unreliable and substantially incomplete information [6, Shlapentokh V.E., p. 27].

It should be noted that this is not a characteristic of exclusively Russian monitoring programs; the situation is similar in foreign research practice, which, in particular, draws attention to the low level of public health, relying exclusively on generalized statistical data. Obviously, improving the quality of life of indigenous peoples can hardly be solved without serious reliance on specially organized research.

Numerous studies have been devoted to the identification of factors determining the health of the IMNS and FE [7, Kozlov A.I., Vershubskaya G.G., Kozlova M.A., p. 27; 8, Khaknazarov S.Kh., pp. 183–187; 9, Kharamzin T.G., Khairulina N.G., pp. 138–182; etc.], which proves the necessity of organizing systematic and goal-oriented work to improve the availability and quality of medical services. Analyzing the situation, the authors pay attention not only to the complexities of obtaining and analyzing relevant data on specific population groups, a significant and difficult to explain spread of indicators, inconsistencies and contradictions in the data provided by various departments, but also to the consequences of a passive position of state authorities and local self-government in these matters: high levels of infectious diseases, tuberculosis, respiratory diseases; the threat of increasing alcoholism and mental disorders; the problem of stress and its negative impact on health; low quality of medical care, etc. [10, Kharamzin T.G., pp. 92–94].

Another basis for studying the relationship between health, quality of life and subjective well-being of the Indigenous minorities of the North, Siberia and the Far East is understanding that the problems that exist in the healthcare system of the IMNS and FE can be divided into general and specific, characteristic only for a certain ethnic group and/or region. Identification of general trends, the specifics of their manifestation in a particular region and/or ethnic group, understanding the specific characteristics of health allows for a more differentiated and thorough approach to the analysis and interpretation of the data obtained, which means that more valid conclusions and the best decisions can be made in the given conditions.

The peculiarities of the health care system of the northern territories traditionally include limited communication opportunities, remoteness from medical centers, underdevelopment of transport infrastructure, unavailability of information sources, low level of knowledge on health preservation, significant differences in living conditions, features of psychophysiological development, shortage of highly qualified medical professionals, etc.

Thus, the existing system of state statistics does not provide the necessary coverage, completeness and reliability of data on the health of the Indigenous minorities of the North, Siberia

and the Far East, it is difficult to build full-fledged analytical reviews of their quality of life and develop appropriate long-term programs on its basis.

Nevertheless, it is unreasonable to ignore the considerable experience and undoubted achievements of the system of state statistics, so, the use of its data for analyzing and assessing the health of children and youth of the IMNS and FE at the initial stage of the study is undoubtedly essential.

One of the basic indicators of the quality of life is the demographic situation. Its change is traditionally determined by the value of natural and mechanical growth. The data presented in fig. 1 demonstrate the negative dynamics of natural growth. This trend began to form in 2015, when the peak value of this indicator was recorded [4, Maksimova T.M., Belov V.B., Lushkina N.P., pp. 100–110].

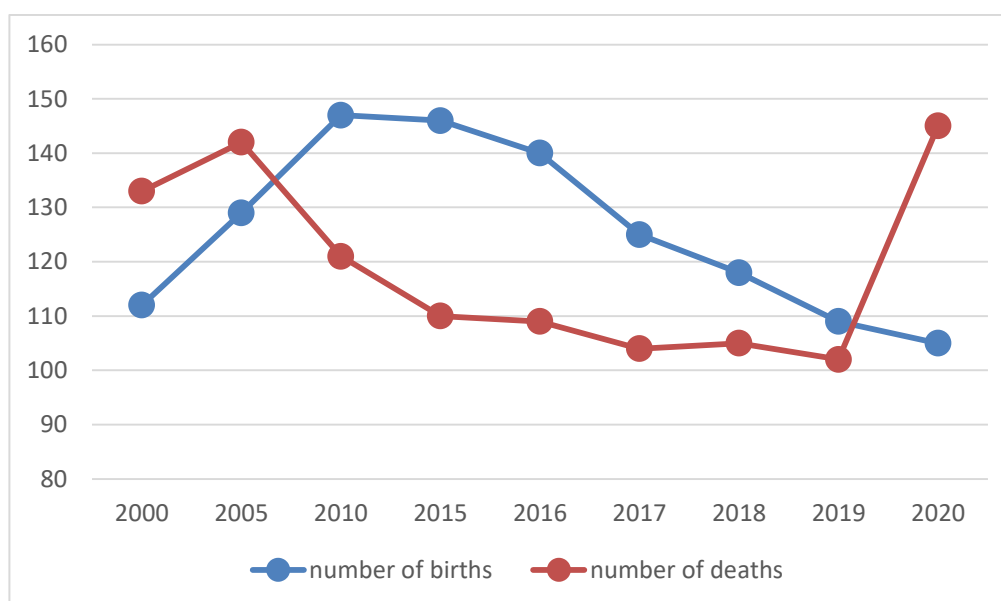


Fig. 1. Dynamics of fertility and mortality rates, 2000–2020.

Experts highlight the climatic and regional features of the areas of residence of the Indigenous minorities of the North, Siberia and the Far East, which affect the dynamics of birth and death rates. In particular, experts note a higher hardening and physical endurance of young people who were born and raised in places where frost reaches extreme levels. Experts also note the dependence of health indicators on the level of environmental problems in the places of traditional residence of any ethnic group.

Analysis of statistical data reveals a high level of mortality from alcoholism, infectious and oncological diseases, as well as a higher suicide rate compared to other regions of the Russian Federation (Fig. 2–3) [11, Kozlov A.I., Vershubskaya G.G., Kozlova M.A., p. 127]. When conducting a comparative analysis, it is also important to take into account the nature of the structure and forms of alcohol consumption: the predominance of strong alcoholic beverages, the usual “norms” and frequency of consumption, the quality of alcohol products, nutrition, etc. [12, Khaknazarov S.Kh., pp. 121–123].

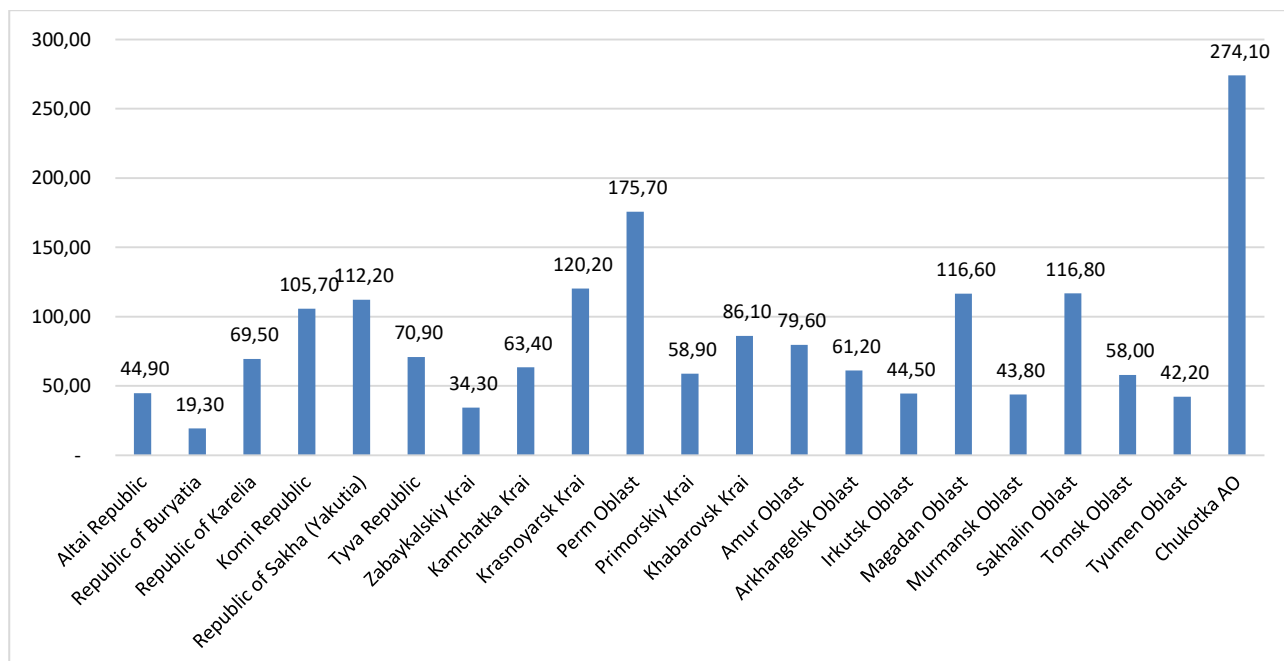


Fig. 2. Number of cases of alcoholism and alcoholic psychosis by region, 2020.

Most experts note that it is very difficult to conduct an objective, reliable, valid analysis of the problem of alcoholism in the regions of the Far North. The data obtained by different researchers and in different years can differ significantly even for the same territory [13, Kershen-golts B.M., Ilyina L.P., pp. 100–127]. Even greater discrepancies are revealed when comparing these data with official statistics.

Surveys of alcohol consumption also frequently fail to provide a reliable assessment [14, Ulijaszek S.J., Strickland S.S., pp. 108–139]. This is due to the tendency to distort the self-assessment of alcohol-related indicators caused by specific alcoholic behavior of certain social and/or ethnic groups and their culturally typical attitude to alcohol consumption [4, Maksimova T.M., Belov V.B., Lushkina N.P., pp. 100–110]. The same is noted by foreign authors, for example, researchers of alcoholic behavior of American Indians, who tend to overestimate the amount of alcohol consumed [15, Gomberg E.S., pp. 313–333; 16, Lemert E., pp. 49–71]. It is obvious that similar specificity can also be observed among ethnic groups of the IMNS and FE of the Russian Federation.

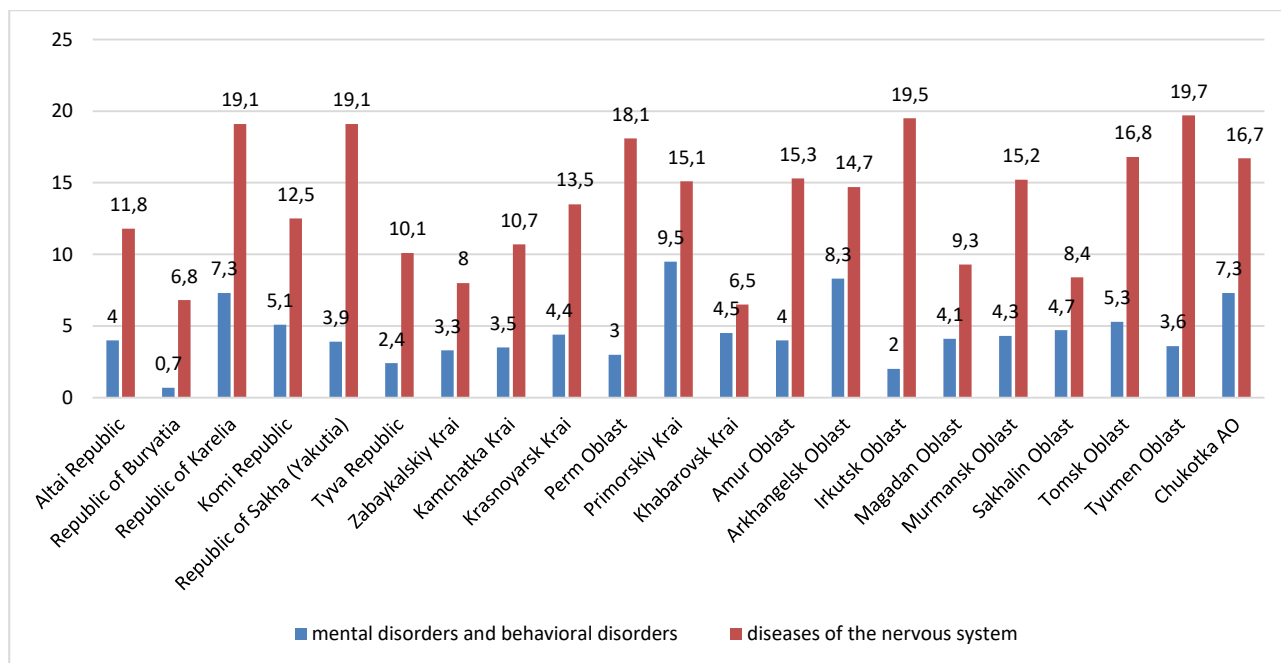


Fig. 3. Mental illnesses and nervous system diseases by territory, 2020.

The incidence of infectious diseases, tuberculosis, malignant neoplasms, etc., is higher (sometimes several times higher) for the IMNS and FE, which is confirmed, in particular, by the studies of V.I. Khasnulin [3, pp. 138–145].

According to experts, the main factor negatively affecting the health of the Indigenous minorities of the North, Siberia and the Far East is the limited availability of quality medical services in their densely populated areas, which is typical for all residents of these territories. This is also confirmed by the data of our surveys: the majority of respondents ranked the low level of medical care at the top of the list of the most pressing health-related problems.

Obviously, for a better understanding of the situation, the data on morbidity of the population should be correlated with the indicators of availability of medical personnel in the territories of their residence (Fig. 4).

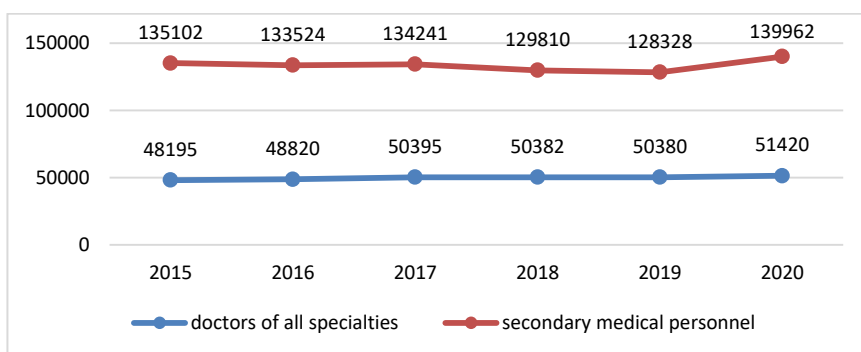


Fig. 4. Number of medical personnel, 2015–2020.

The availability of medical personnel in the northern regions of the Russian Federation is not lower (and in some cases even higher, for example, in comparison with Canada) than in other subarctic countries. Moreover, according to such indicators of the potential of medical institutions as, for example, the number of hospital beds per 10 000 population, the health care system of the Arctic zone exceeds the national indicators.

Nevertheless, there is a shortage of medical personnel, the number of hospitals and ambulatory clinics, first aid/obstetric stations, and consultations in areas with high concentrations of IMNS and FE (Fig. 5). The situation with the commissioning of hospital facilities is also unfavourable — the number of commissioned beds is rapidly declining.

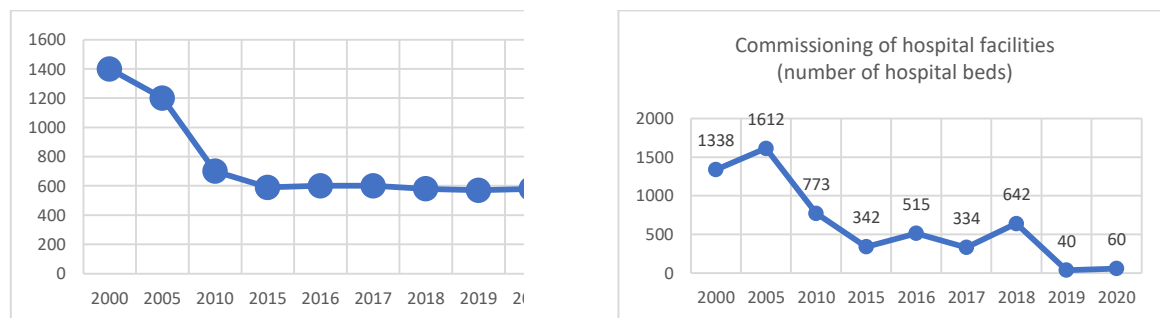


Fig. 5. Number of hospital organizations, 2000–2020.

Our study confirmed the hypothesis of a number of other researchers [11, Kozlov A.I., Vershubskaya G.G., Kozlova M.A., p. 27] that there is a significant correlation between the morbidity rate of the IMNS and FE and the number of doctors and nurses, but at the same time it revealed obvious imbalances and uneven distribution across territories.

The unequal availability of medical personnel in the regions is aggravated by very low assessment of the quality of medical services by respondents, which is confirmed by the results of T.G. Kharamzin's study [10, pp. 92–94]. As a rule, respondents pay attention to such shortcomings of medical care as low qualification of medical staff (20.1%), unavailability of a number of necessary medicines (38.3%), poor equipment of medical institutions (35.2%).

Besides, as the world experience shows, the increase in such an indicator as “the number of doctors per 10 000 population” affects the health status of the population only up to a certain point. After it reaches a certain optimum, this influence ceases to be significant; moreover, even worsening of the situation is often recorded. Therefore, we believe that an increase in the number of medical personnel alone will not and cannot solve the problem without a radical change in the attitude of the population towards their own health. First of all, it concerns children and young people: it should be positively noted that, according to T.M. Maksimova [4, Maksimova T.M., Belov V.B., Lushkina N.P., pp. 100–110], self-preserving patterns of behavior begin to form in the youth environment of the IMNS and FE, the desire to maintain a healthy lifestyle is more expressed.

However, it should be noted that there are very few studies on the attitude to a healthy lifestyle among the IMNS and FE in general and the youth in particular [17, Lebedeva N.M., Chirkov V.I., Tatarko A.N., pp. 100–186], and their data are often fragmentary. Obviously, they are clearly insufficient to assess the motivation of children and young people to preserve their health.

Therefore, the next part of our study is related to the respondents' self-assessment of their health level and their understanding of the importance of health promotion.

An important advantage of the sociological measurement of health indicators is the ability to fix the convergence and/or dispersion of the relevant indicators by region, ethnic group, gen-

der, age, etc., i.e., to detect statistically significant differences in the quality of life caused by factors of a different nature, including cultural norms, collective ideas and value orientations that dominate in a particular ethnic community. Therefore, in our study, the survey data was a necessary complement to the analysis of medical statistics.

The total sample of the study was 1343 young people aged 14 to 25, including 671 representatives of the Indigenous minorities of the North, Siberia and the Far East, two-thirds of whom were girls. Figure 6 reflects their ethnicity.

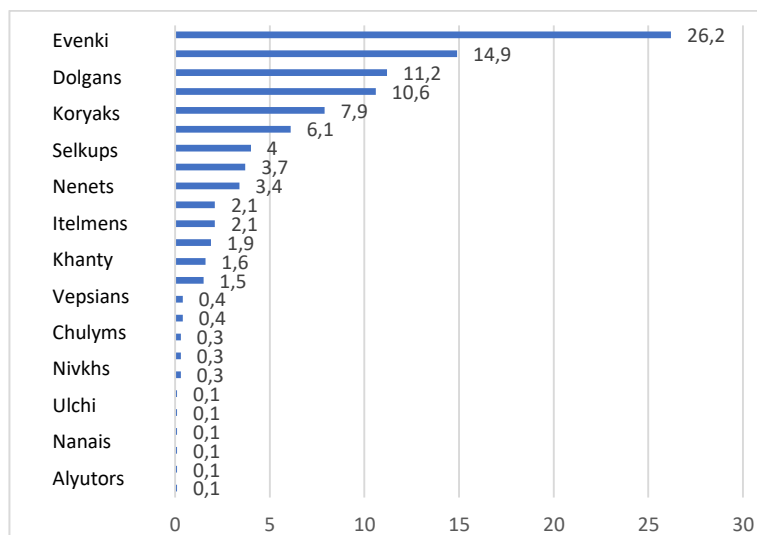


Fig. 6. Ethnicity of respondents, %.

13.6% of the respondents were students of secondary schools, 15.5% — of colleges, 66.2% are studying or have already graduated from universities, 4.7% — do not study anywhere.

11.9% of respondents were born in a city, 58.7% — in a village, 27.5% — in a small city or urban-type settlement, 1.9% — in nomadic areas. At the time of the survey, 30.8% of respondents lived in large cities and regional centers, 28.6% — in small towns and urban-type settlements, 40.6% — in rural areas and villages.

Young people of the IMNS and FE assess their physical health mostly positively (Table 1). The study revealed gender specificity: boys tend to assess their health more positively than girls ($\chi^2=22.026$; $p \leq 0.001$).

The data we obtained significantly differ from the results of the study of A.G. Bazarova [1, pp. 154–156], in which representatives of the IMNS and FE of older ages participated and according to which the state of health is considered good by only 10% of respondents, 60% find it satisfactory, about 17% — poor. At the same time, respondents justify the low assessment of their health by unfavorable environmental factors and mentioned the following reasons for its deterioration: poor quality of nutrition (27%), lack of opportunity to have a good rest (25%), poor living conditions (17.5%), poor heredity (15%). A significant place among the reasons for health problems is occupied by the limited access to qualified medical care and to necessary medicines and medical products at affordable prices. We explain this difference in the research results by the higher motivation of young people to preserve and improve their health compared to the older

generations, as well as the formation of patterns of health-preserving behavior due to the higher level of education they received.

Tables 2, 4, 6, 8 present the results of regression analysis (the backstep method), aimed at testing models that predict the level of various health characteristics of the youth of the IMNS and FE. The model predicts 28% of the variance of the dependent variable.

Table 1

Self-assessment of physical health

	Ethnicity (self-identification)				Total	
	IMNS and FE		Other ethnicity			
	Abs. val.	%	Abs. val.	%	Abs. val.	%
Do you feel that your health is generally						
Bad	25	3.7	24	4.1	49	3.9
Satisfactory	267	39.8	212	36.1	479	38.1
Good	321	47.8	274	46.7	595	47.3
Excellent	58	8.6	77	13.1	135	10.7
Total	671	100.0	587	100.0	1258	100.0
Criterion χ^2	7.145					
$p \leq$	n/d					
Physical health						
Average	9.3		9.9		9.6	
Median	9		10		9	
St. deviation	5.77		5.79		5.79	
Minimum	0		0		0	
Maximum	24		24		24	
Mann-Whitney test	186100.5					
$p \leq$	n/d					

Table 2

Linear regression model of negative physical health symptomatology among the youth of the IMNS and FE

	Negative symptoms in the area of physical health		
	Regression coefficient B	95% confidence interval B	Significance (Sig.)
Gender: female	1.72	0.89/2.54	0.000
Where do you live: Irkutsk Oblast	-2.02	-3.13/-0.92	0.000
What language(s) do you mostly use with friends and acquaintances: I equally use several languages	1.65	0.67/2.64	0.001
Have you ever been insulted, harassed because of your nationality or discriminated because of your nationality: Yes, I have	1.30	0.45/2.14	0.003
Do you think there are opportunities in Russia as a whole for people of your nationality to get a good job:	1.48	0.22/2.74	0.022
These difficulties were related to mood	2.79	1.91/3.68	0.000
These difficulties were related to romantic relationships.	1.03	-0.01/2.07	0.052
These difficulties were related to relationships with teachers	1.80	0.63/2.97	0.003
Social support scale	-0.28	-0.42/-0.14	0.000
Determination coefficient (R^2)	0.279		

Self-assessment of the availability of recreational activities for the youth of the IMNS and FE was comparable to the youth of another ethnicity ($p \leq n/d$). Every fifth respondent answered that he had never gone on vacation (21.5%), and every sixth one (15.1%) – only once. Most representatives of the youth of the IMNS and FE (47.5%) had the opportunity to go on vacation from 3 to 9 times during their lifetime, and only every sixth – more than 10 times.

Similarly to the self-assessment of physical health, girls are more critical in assessing their mental health (Table 3).

Table 3

Self-assessment of mental health

	Ethnicity (self-identification)				Total	
	IMNS and FE		Other ethnicity			
	Abs. val.	%	Abs. val.	%	Abs. val.	%
Do you feel that your mental health is						
Bad	33	4.9	32	5.5	65	5.2
Satisfactory	251	37.4	209	35.6	460	36.6
Good	293	43.7	256	43.6	549	43.6
Excellent	94	14.0	90	15.3	184	14.6
Total	671	100.0	587	100.0	1258	100.0
Criterion χ^2	0.826					
$p \leq$	n/d					

Table 4

Ordinal regression model of self-assessment of mental health among the youth of the IMNS and FE

		Regression coefficient B	95% confidence interval B	Significance (Sig.)
Mental health level	satisfactory	-2.18	-2.68/-1.67	0.000
	good	-0.34	-0.82/0.13	0.160
	excellent	1.20	0.71/1.68	0.000
Gender: female		-0.44	-0.63/-0.25	0.000
Which group of indigenous peoples of the North, Siberia and the Far East do you consider yourself to be? – Mixed nationality/I can't clearly attribute myself to one nationality		-0.41	-0.69/-0.13	0.005
What education did your mother (foster mother, stepmother) have? – She did not finish school		-0.76	-1.32/-0.2	0.008
Imagine a ladder, on the first step of which are people occupying the lowest position in society, and on the top (ninth) – people with the highest social position. Which step of this ladder are you on? Your family?		0.05	0/0.11	0.058
Have you ever been verbally abused, harassed or experienced discrimination or bullying because of your nationality?		-0.25	-0.44/-0.06	0.012
Social support scale		0.05	0.02/0.08	0.002
These difficulties were related to romantic relationships		-0.32	-0.56/-0.08	0.009
These difficulties were related to relationships with teachers		-0.33	-0.6/-0.06	0.015
These difficulties were related to health		-0.31	-0.54/-0.08	0.008

These difficulties were related to mood	-0.50	-0.72/-0.27	0.000
How many times have you consumed alcoholic beverages in the last 30 days (3 or more)	-0.42	-0.67/-0.16	0.001
Determination coefficient (R^2 Nagelkerke)	0.315		

Girls also have noted higher levels of depression than boys (Table 5, Patient Health Questionnaire — PHQ-9), which requires taking effective measures to prevent it, without waiting for this indicator to reach critical values.

Table 5

Assessment results on the scale "Depression"

DEPRESSION			
Average	9.1	9.4	9.3
Median	9	9	9
St. deviation	6.24	6.36	6.29
Minimum	0	0	0
Maximum	27	27	27
Mann-Whitney test	193641.5		
$p \leq$	n/d		

Table 6

Linear regression model of the level of depression among the youth of the IMNS and FE

	DEPRESSION		
	Regression coefficient B	95% confidence interval B	Significance (Sig.)
Gender: female	1.78	0.91/2.65	0.000
Where do you live: Irkutsk Oblast	-2.22	-3.42/-1.02	0.000
Saint Petersburg	2.37	1.09/3.65	0.000
Other (than Irkutsk Oblast, Kamchatka Krai, St. Petersburg and Yakutia)	-2.03	-3.1/-0.95	0.000
Which group of indigenous peoples of the North, Siberia and the Far East do you consider yourself to be? – Mixed nationality/I can't clearly attribute myself to one nationality	1.60	0.29/2.91	0.017
What education did your mother (foster mother, stepmother) have? – She did not finish school	4.08	1.56/6.6	0.002
These difficulties were related to relationships with teachers	2.29	1.11/3.48	0.000
These difficulties were related to mood	3.57	2.7/4.44	0.000
How many times have you consumed alcoholic beverages in the last 30 days (3 or more)	1.91	0.73/3.08	0.002
Social support scale	-0.43	-0.57/-0.28	0.000
Determination coefficient (R^2)	0.317		

A similar observation can be made based on the analysis of the level of anxiety (Table 7).

Table 7

Assessment results on the scale "Anxiety"

ANXIETY				
Average		6.1	6.4	6.2
Median		5	6	5.5
St. deviation		5.39	5.48	5.43
Minimum		0	0	0
Maximum		21	21	21
Mann-Whitney test		190664.5		
p ≤		n/d		

Table 8

Linear regression model of the level of anxiety among the youth of the IMNS and FE

	ANXIETY		
	Regression coefficient B	95% confidence interval B	Significance (Sig.)
Gender: female	1.54	0.79/2.28	0.000
Where do you live: Irkutsk Oblast	-1.30	-2.31/-0.29	0.012
Saint Petersburg	2.08	0.97/3.2	0.000
What education did your mother (foster mother, stepmother) have? – She graduated from a school or college	-1.09	-1.77/-0.4	0.002
What is your place of birth? – Village	-0.86	-1.56/-0.15	0.017
What language(s) do you mostly use with friends and acquaintances? – The language of another people of Russia (languages other than IMNS and FE, including Russian)	-1.02	-1.77/-0.26	0.008
These difficulties were related to family relationships	0.97	0.08/1.85	0.033
These difficulties were related to mood	3.04	2.24/3.84	0.000
These difficulties were related to nationality	2.95	1.5/4.4	0.000
Social support scale	-0.33	-0.45/-0.21	0.000
Determination coefficient (R ²)	0.327		

In general, the sample recorded moderate psychosomatic complaints according to the HSBC/CINDI scale, with an average score of 9.3 (where max=24). It should be noted that complaints or problems of a mental nature (low mood, anxiety, irritability) were more frequently reported than complaints of physical symptoms (pain of various localization, dizziness).

It is well known that alcohol abuse, tobacco smoking, drug use, etc., cause significant harm to health. In this regard, the study found out the attitude of the young people of the IMNS and FE and their susceptibility to bad habits.

The annual prevalence of alcohol consumption, i.e. the use of alcohol in the year preceding the survey was 50% for both male and female IMNS and FE youth, cigarette smoking — 48.1%, which is significantly higher compared to the same indicator for young people of other ethnic backgrounds, drug use — 3.1%, which corresponds to the average. No specificity in connection with ethnicity and gender was found.

Young people of IMNS and FE predominantly go to medical specialists by obligatory medical insurance: 60.6% of respondents have such experience, which is higher than the value of the same indicator for other ethnic groups.

More than a third of young people of IMNS and FE contacted medical specialists in commercial clinics, and 15.5% — within the last 12 months.

The experience of getting help from ministers of religion is 7.7% of respondents, from shamans — 7.5%, herbalists and healers — 6.4%, people with “extrasensory” abilities (fortunetellers, astrologers, etc.) — 3.1 %, homeopaths — 1.6%. 12.5% of respondents have ever contacted a professional psychologist, 5.8% — a psychiatrist, 4.3% — telephone emergency service, 7.9% — members of Internet groups where people with similar problems communicate, which is significantly less than among the youth outside the IMNS and FE. No gender differences were found in the experience of young people in seeking help.

Such a picture generally corresponds to the basic ideas of the youth of the IMNS and FE about the value of health and a healthy lifestyle.

The study showed that health occupies a significant second place (78%) in the structure of the basic values of the youth of the IMNS and FE, with health as the most important value highlighted by girls more often than boys. No statistically significant differences were found between assessments of the importance of health value and ethnicity.

This is quite consistent with the concept of R. Inglehart, who postulates the priority of “survival values” for the most vulnerable social groups [18, Inglehart R., Welzel K., pp. 74–96].

Discussion and conclusions

Studies of the health status of the youth of the Indigenous minorities of the North, Siberia and the Far East of the Russian Federation and the factors influencing it as a significant indicator of the quality of life and subjective well-being of the population are of particular relevance in conditions of intensive industrial development of the Arctic zone and the strengthening of its importance for the socio-economic development of the country.

Health indicators are determined by the approaches to its assessment, which involve a comprehensive accounting of statistical data, monitoring information, research results on the level of satisfaction with the availability and quality of medical services, peculiarities of behavioral patterns, specific characteristics of environmental factors, etc., as well as an analysis of the effectiveness of measures specially planned by the state and taken to improve the situation.

A significant amount of information on the health indicators of the youth of the IMNS and FE is provided by official health statistics, but they are not enough to conduct a full-fledged analysis and develop long-term policies. Reliance solely on quantitative approaches and methods for assessing the state of health does not allow establishing causal relationships, identifying factors of a subjective nature, predicting changes in youth behavior patterns as a result of the implemented

state youth policy and health policy, focusing efforts depending on the specific situation, specific territory and specific ethnic group.

This requires, on the one hand, making significant changes in the traditional models of statistical accounting and, on the other hand, supplementing the data obtained on its basis with the results of specially planned and purposefully organized comprehensive qualitative studies directly in the places of compact residence of the indigenous peoples.

An assessment of the health status of the IMNS and FE, based on the results of the analysis of statistical data, information sources and websites of regional and municipal administrations, as well as survey data and interviews with experts, made it possible to identify general problems, independent of the region of residence, the main of which are related to the availability and quality of medical services. At the same time, the scale and severity of these problems vary not only in the interregional aspect, but often within the same region, which indicates the different ability and capacity of local administrations to solve these problems.

The lack of targeted work on the formation of patterns of health-saving behavior, attitudes and motivation for a healthy lifestyle among the youth of the IMNS and FE can lead to negative consequences: chronic diseases, alcohol abuse, psychoactive substances, antisocial behavior, suicide risks.

Apart from the all-Russian ones, the healthcare system in the regions of the Far North, Siberia and the Far East is characterized by a number of specific problems that can be classified on various grounds:

- sources of origin (human resources, infrastructural, economic, legal, value-motivational, etc.);
- scale (global and local);
- time of origin (historical and new);
- consequences (threats, risks, challenges);
- objects of influence (territory, ethnic group);
- forecasting, prevention and resolution capabilities (predictable/unpredictable, manageable/unmanageable), etc.

The study showed that the demographic situation (birth and death rates) is directly correlated with the health status. Especially evident was the correlation between mental health and suicide statistics, which are significantly higher than in other regions of the Russian Federation.

The research data confirmed the widespread opinion about the high level of alcoholism among indigenous people: the annual and monthly prevalence of alcohol consumption among the youth of the IMNS and FE significantly exceeds similar indicators for young people of other ethnic groups. However, it remained unclear whether this corresponds to objective picture or is connected with the desire of the youth to support the existing stereotype.

Having confirmed to a certain extent the dependence of health status on the number of medical personnel and the availability of medical care in places of compact residence of the indig-

enous peoples of the IMNS and FE, the study showed that a much more significant impact on the state of health of the population of these territories is provided by the lack of specialists, facilities or medicines; the quality of medical services turned out to be not so high in many of the studied regions, which was noted by respondents in the course of surveys.

Self-assessment of the physical and mental health of the youth of the Indigenous minorities of the North, Siberia and the Far East is consistently negatively related to gender: girls have a more pronounced level of negative symptoms (depression, anxiety), as well as a lower self-assessment of their health. Ethnic affiliation to a particular IMNS and FE group did not show any significant association with physical or mental health characteristics, but being of mixed ethnicity and/or having difficulty identifying with a specific ethnicity increases the likelihood of more negative characteristics (depression and low self-esteem health indicators). Socialization among a predominantly Russian-speaking population or another non-indigenous linguistic culture is associated with lower rates of anxiety among young people, but is not associated with other health indicators.

Experiencing stigmatization and discrimination due to ethnicity is negatively related to self-assessment of health, but does not show a connection with the presence of specific symptoms.

Self-evaluative characteristics of the social status were found to have very little relationship with health indicators, while the objective criterion (the standard proxy indicator of the family's social capital — the educational status of mother) has a large predictive ability. Mothers' having any professional education is a protective factor in maintaining health in this group, while the lack of a complete school education, on the contrary, is a risk factor.

Perceived social support is a stable protective factor in the health of the youth of the IMNS and FE, which has shown its significance in all models.

Health indicators are influenced by current life experiences: negative events in family relationships, relations with teachers, inter-ethnic relations (national identity) and emotional distress are more strongly associated with anxiety-depressive symptoms. Self-assessment of health is also related to actual emotional experiences.

Young people with more negative health indicators are more likely to consume alcohol regularly.

The final set of physical health variables included in the model correlates well with the known health models: more favorable health characteristics of the youth of the IMNS and FE are related to high levels of social support, while negative health characteristics — to perceived social inequalities of ethnic groups and stigmatization.

This confirms the significant evolution of the concept of health in recent years: from its narrow view as the absence of disease to a broader understanding of health as a special condition, subjective perceived level of well-being and social security, the most important indicator of quality of life. This understanding of health should serve as the initial basis for its measurement and analysis.

Another important aspect, which is practically not mentioned in the specialized literature, is the health care economics of the IMNS and FE. Obviously, the analysis of both region- and ethnicity-specific health costs and the economic consequences of “average” financing cannot be approached by traditional methods. Understanding the specifics of financial and economic feasibility and provision of appropriate health-saving programs aimed at representatives of the Indigenous minorities of the North, Siberia and the Far East requires the development of a special methodology for economic analysis of the health care system of the northern territories at the macro, meso and micro levels.

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The North on the Pages of Encyclopedic Editions on the Civil War in Russia: Problems of Interpretation and Representation

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Abstract. The article characterizes the study of the Civil War in Russia at the present stage in connection with the centenary of this epoch. The author points out the most important research projects implemented in Russia and abroad. The article summarizes the research results and reviews the current state of historiography of the Civil War and intervention in the Russian North. The author presents an overview of the consideration of problems and events of this epoch in Northern Russia in the Russian encyclopedias about the Civil War. The article gives a detailed critical analysis of the key problems of the Civil War in the North of Russia and the life of this region, its population on the pages of 3-volumes encyclopedia "Russia in the Civil War", issued in Moscow in 2021. In contrast to simplistic representations and distortions of facts, the author reveals the real processes that took place on the northern territories of Russia during the dramatic era of Civil War, reflects on the prospects of further research.

Keywords: *history, historiography, Civil War, intervention, North of Russia, Russian North, Northern Region, Russia, Entente*

Introduction

The dramatic events of the Civil War in Russia, deep split in society, widespread foreign intervention, both armed intervention and its other forms, have always aroused great public interest and attention of historians. The centenary of the Civil War actualized this topic, caused a new round of public discussion and a lot of interest and comments from the media, which, unfortunately, did not always cover this complex issue correctly. About twenty scientific conferences were held in different parts of the country, from Arkhangelsk and St. Petersburg to Yalta, Blagoveshchensk and Vladivostok; their proceedings were published, thousands of articles and hundreds of books were issued.

Problems of historical memory of the Civil War were on the agenda and at the centre of discussions, resulting even in a kind of "memory wars".

The centenary of the Civil War and the intervention was characterized by the implementation of three large research projects: the encyclopedia "Russia in the Civil War. 1918–1922", Volume XII "The Civil War in Russia. 1917–1922" of the 20-volume academic "History of Russia" and

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the international project of the 11-volume publication “The Great War and the Revolution in Russia”, revealing the “crisis continuum” in Russia in 1914–1922¹. The author participates in the last two mentioned projects: as a leader in the first and as an author in the second one. In 2022, his large article describing the modern Russian and foreign historiography of the Civil War and intervention in Russia was published [1, Goldin V.I.].

The purpose of this article is to summarize the results of development and the current state of the historiography of the Civil War and intervention in the Russian North, as well as to critically analyze the consideration of this topic within the framework of encyclopedic projects, first of all, in the encyclopedia “Russia in the Civil War. 1918–1922”.

The results of development and the current state of the historiography of the Civil War in the Russian North

During the hundred years of investigations, about 200 books on this topic have been published, which is not a lot in comparison with more than 30 thousand volumes of books on the history of Russian Civil War and the country’s life in this epoch. Nevertheless, the research process was characterized by heated discussions and controversial opinions, for example, on the events in Murman in 1918, and the desire of historians to create a final and generalizing picture of the complex and contradictory era of intervention and the Civil War both in the Northern Russia as a whole, and in its separate regions.

The cooperation of researchers in the development of these topics within the northern and then northwestern sections of the Scientific Councils of the USSR Academy of Sciences and the Russian Academy of Sciences during their activity from 1989 to 2019 was productive. After the termination of the Scientific Council on the History of Social Reforms, Movements and Revolutions of the Russian Academy of Sciences in 2019, the coordination of the activities of historians dealing with the problems of the Civil War is carried out by the Association of Researchers of the Civil War in Russia, established in 2012. Its center is in Arkhangelsk, and the president is the author of this article. The Almanac of the Association is published; it covers scientific life, publishes discussion materials and articles on topical problems, and characterizes the latest publications².

The centenary of the Civil War in Russia and the Russian North was marked by the publication of a special issue of the journal “Historia Provinciae” in Cherepovets³, as well as by a series of scientific conferences, three of which were held in the Arkhangelsk Oblast. The most significant of them was the international scientific conference in Arkhangelsk in September 2020, held by the

¹ Russia’s Great War & Revolution Series. URL: https://slavica.indiana.edu/series/Russia_Great_War_Seriesabout.shtml (accessed 02 December 2022).

² Almanac of the Association of Researchers of the Civil War in Russia. Arkhangelsk, 2014–2021. 5 issues, the last of which is published in the electronic resource.

³ Historia Provinciae. Zhurnal regional'noy istorii. 2018. T. 2. № 4. Spetsvypusk: Grazhdanskaya voyna v Rossii: regional'noe izmerenie. K 100-letiyu nachala Grazhdanskoy voyny [Journal of Regional History. 2018. V. 2. No. 4. Special issue: The Civil War in Russia: a regional dimension. To the 100th anniversary of the start of the Civil War].

Association together with the Russian Military Historical Society, with the publication of its proceedings [2, Goldin V.I., Ragozin G.S.].

The collective monograph by Arkhangelsk historians [3, Goldin V.I., Zhuravlev P.S., Sokolova F.Kh.], the book by E.I. Ovsyankin [4, Ovsyankin E.I.], as well as the project “The Russian North in the era of great upheavals. 1900–1920”, implemented by the author of this article, within which the first two volumes have already been published [5, Goldin V.I., pp. 220–623; 6, Goldin V.I.], are among the generalizing publications of recent years on the history of the Civil War in the North of Russia. Monographs of Karelian researchers [7, Korablev N.A., pp. 381–440; 8, Vitukhnovskaya-Kauppalä M.A., Osipov A.Yu.] reveal the Karelian issue and relations with Finland, the features of military operations in the Murmansk–Olonets direction, social processes, life of the population and especially of the peasantry. Agrarian and peasant topics are fruitfully researched by representatives of the Vologda agrarian school [9, Sablin V.A.; 10, Sablin V.A.]. The studies of the Komi Republic highlight the peculiarities of the confrontation and the socio-political processes in the northeastern territories of the European part of Russia [11, Taskaev M.V., pp. 251–490; 12, Turubanov A.N., pp. 236–273].

Summarizing, it should be recognized that researchers, primarily northern historians, have done a lot of work to recreate the complex, controversial and deeply dramatic history of the Civil War and intervention in the North of Russia. However, it should be noted that the published literature, mostly by the colleagues not associated with the Russian North and having little knowledge of its history, contains serious distortions in the coverage of this epoch, which is reflected in the materials of the “round tables” and critical reviews [13, pp. 107–128; 14, Goldin V.I., Sokolova F.Kh., Shaparov A.E., pp. 265–272].

One should not idealize the degree of study of the problems of the Civil War in the North of Russia. Thus, the research of socio-economic processes, comparison of actions and effectiveness of policies of the opposing parties in this area, the study of wartime cultural processes, etc. should be clearly continued.

The North of Russia in encyclopedic editions about the Civil War

The first of the encyclopedias entitled “Civil War and Military Intervention in the USSR” [15] was published in 1983, and the second edition — in 1987. It was prepared by the considerable group of historians, which can be judged by the editorial board and published list of authors. This encyclopedia contained several dozens of articles related to the North of Russia: the Soviet Northern Front, armies, divisions, flotillas, military operations, the military and other figures of the Soviet camp. Their opponents were represented by a large article on Entente intervention in the North of Russia and few materials on counterrevolutionary governments and organizations, armies and their leaders, revolts, as well as some military operation.

The next encyclopedia, although it was published in 2008 in four volumes (including the topic of the revolution) [16], did not meet the expectations of specialists and readers as it included

many articles from the previous edition that were practically unchanged and only slightly expanded the idea of the anti-Soviet camp. It is difficult to understand from this edition what kind of authorial team prepared it, and the name of the editor-in-chief is not known to experts on this topic.

The last and already mentioned encyclopedia, which will be the subject of analysis in this article, was published in 2021. The editorial board by fame and prestige of its members was inferior to the editorial board of the 1980s edition, but the encyclopedia was published in 3 volumes [17].

Civil war and intervention in Russian North in a new encyclopedic project

Each new encyclopedia can be evaluated on its merits. First of all, let us note the large volume of the new edition — 319.5 conventional printed sheet, 2548 pages, more than 2900 articles. Looking through its pages, one can see that many authors are well-known experts on the subject. Getting acquainted with the introduction of the encyclopedia, one can assume that it reflects all aspects of the history of the Civil War and life of the country in this era. At first glance it seems that the regions are well represented. The publication contains a lot of biographical materials, especially about representatives of the anti-Bolshevist camp and the opposition.

However, the first glance at the encyclopedia reveals some shortcomings, or, rather, inconveniences in using it and finding the necessary material. It is arranged according to the traditional alphabetic principle. Its vast volume and absence of indexes to simplify the search for necessary thematic, problematic, territorial and other materials makes it extremely difficult to get acquainted with this edition and make an overall idea of it. It would be advisable, for example, to put a glossary at the end of the edition, or even better, at the end of each volume, so that it would be easier to search.

According to the purpose of the article, the author was interested in the breadth and depth of comprehension of processes of the Civil War and intervention in the North of Russia and in the coverage of the life of people of this macro-region in the investigated period. The absence of a list of authors at the end of the publication (as was done in the encyclopedia of the 1980s) does not allow us to fully assess the qualification level of the team of authors, to find specialists on the North, as the author, being a historiographer, knows all of them, as well as those historians who professionally deal with the problems of the Civil War.

The search was started with words and phrases that characterize the region: “North”, “Russian North”, “Northern region”, “European North of Russia” and further with derivatives (“northern”). But this is where the first major disappointment awaits. The assumption that the publication covers all regions, as it should be in order to analyze Russia in the Civil War as a whole, turns out to be false. The North as a vast Russian region is simply not presented in the encyclopedia, nor is the North-West (with the exception of two articles on the anti-Bolshevist movement) or the South. But the latter can also be explained by the fact that it is divided (given the density and diversity of the region, the multinational population, the abundance of a variety of processes and

events that took place here, the existence of various states and state formations) into separate large regions. But the absence of an independent summarizing article on Northern Russia in the encyclopedia is completely incomprehensible.

Considering that the encyclopedia contained only two word combinations derived from the word “North” — “Northern Front” and “Northern Sea Route”, we start with the first one, being well aware of its specificity, which we had to write a lot about earlier, characterizing it in all its components from the moment of formation and in the future. The author of the article A.V. Oleynikov interprets the Northern Front as the name for the operational-strategic formations of the troops of the White Movement and the Red Army during the war in the Northern strategic direction, which is an extremely narrow understanding of it. It results in the lack of a description of the battle ground in the North, its vast stretching from the borders with Norway and Finland to the Urals (with three main directions and almost ten sectors separated by dozens of kilometers, with a special course of the war on the Pechora River); the natural-climatic, topographic-geographical, military-political, social conditions of the Northern Front are not described, the features of the strategy and tactics of the warring parties, the main military operations are not explained.

The author's attempt to give a further description of the Northern Front of the Whites is non-professional and fragmentary; it fails to describe the system and state of formation of the troops, changes in their names and structure, population dynamics from August 1918 to February 1920, plans and realities of military operations etc. The ten lines of text provided do not give any insight into this front. We will further turn to the subsequent author's mythologization of the White armed forces in the Northern region in relation to another of his articles, as well as to the invading troops in the North, mentioned by him in one line.

The Northern Front of the Red Army is considered by the same author as applied to the period of its existence from September to February 1919, but this description is even worse and shorter than in the encyclopedia of the 1980s. As for the formations of the Red Army, created and fought in the North of Russia, i.e. the North-Eastern section of the troops, the 6th Army, and after the disbandment of the Northern Front — the 6th Detached Army, they are not discussed in the encyclopedia at all.

Now let us touch the already mentioned mythologization by A.V. Oleynikov — the structure of the White forces in the North of Russia, which is given in his article under the strange title “White Guard”, because experts always talk about the White Army or White Guard armies. He represents its evolution as follows: Northern Army — Troops of the Northern Region — Northern Front. But in reality the formation called “Northern Army” never existed in the Northern Region. In August 1918, they tried to introduce the term “People's Army” or “Russian People's Army” for the troops being formed, but it did not catch on, and from that time they were officially called “Armed Forces of the Northern Region”. The fiction of the mentioned author of the same article is that in May 1919, Admiral A.V. Kolchak appointed Lieutenant-General E.K. Miller as commander of all the

forces of the Northern Region, including the Northern Army. In fact, the Supreme Ruler Kolchak appointed Miller by his decree of June 10, 1919 as commander-in-chief of all land and naval forces operating against the Bolsheviks on the Northern Front. From this appointment, a formal basis for the use of the concept of “Northern Front” appeared, but it did not become widespread.

Another mythologeme, outlined by A.V. Oleynikov in the same article, concerns the White forces in the Murmansk–Olonets direction. It sounds as follows: “The Murmansk Volunteer Army — the Troops of the Murmansk Oblast (was operationally subordinate to the Northern Army; in June 1919, the Murmansk Volunteer Army was renamed to the Troops of the Murmansk Oblast and was soon united with the troops of the Olonetsk Volunteer Army under the general command of Lieutenant General V.S. Skobeltsyn); Olonetsk Volunteer Army (after its defeat by the Red Army in Karelia in July 1919, the Olonetsk Army was united with the Murmansk Volunteer Army) [17, Sorokin A.K., pp. 199–200].

In reality, there was neither the Northern Army, nor the Murmansk Volunteer Army, invented by A.V. Oleynikov and his associate O.V. Chistyakov, who wrote a completely untrue article called “Murmansk Volunteer Army”, which was allegedly formed on June 1, 1918 and was subordinate to the Northern Army (non-existing) and the commander of the British Expeditionary Force in Arkhangelsk. Further O.V. Chistyakov provides fantastic data on its size and structure in the summer of 1918 [17, p. 526].

Continuing to fantasize, Oleynikov claims that the commander of the Murmansk Volunteer Army N.I. Zvegintsov during the combat operations against the Soviet troops in July 1918 “liberated” Soroka, Kem, Onega and a number of other cities and villages [17, p. 811]. O.V. Chistyakov gives a slightly different interpretation, stating that this army, together with interventionists, captured Soroka, Solovetskiy islands and Onega in July [17, p. 526]. In fact, there was no such army under the command of Zvegintsov at that time. The mentioned settlements were occupied by the interventionists. Zvegintsov, appointed as commander of the armed forces of the Murmansk Krai on July 7 (after breaking with Moscow on June 30), actually had only a few dozen people in Murmansk. After an unsuccessful assassination attempt on July 12 on Veselago, an associate of Zvegintsev in the coup in Murmansk, both were taken under the protection of the interventionists. On July 14, a military operation was carried out here, which resulted in the interventionists capturing the flagship of the Flotilla of the Arctic Ocean, the cruiser Askold, whose crew was considered pro-Soviet. The sailors were disarmed and arrested. Interventionists disarmed and arrested a squad of railway guards in Murmansk. Those who were considered the most dangerous were thrown into prisons and concentration camps of the interventionists, some of whom died, and the rest were sent beyond the front line [5, Goldin V.I., pp. 439–442].

The order no. 8 of the Acting Commander of the Armed Forces of the Murmansk Krai, Staff Captain Gaponov on the formation of the Murmansk Army on a volunteer basis appeared only on August 1, 1918. But this plan failed. General V.V. Marushevskiy, who visited Murmansk in early November of the same year on his way to Arkhangelsk and who was appointed there to the post

of commander of the armed forces of the Northern Region, indicated with regard to this “army” that it hardly exceeded two infantry companies and “had barely managed to recruit personnel for separate platoons” [18, Marushevskiy V.V., p. 187]. Therefore, by the order of November 7, 1918, the soldiers of this failed army were reorganized to the 2nd Murmansk Infantry Regiment, transformed in 1919 into the 2nd Northern Rifle Regiment. Zvegintsov was dismissed from command in November 1918 and was brought to the White Guard investigation on charges of collaborating with the Soviet government, and spent the next year and a half under threat of arrest. On the eve of the fall of Murmansk, he managed to escape abroad.

The mentioned Olonets Volunteer Army was not part of the Russian army. It was created in Finland in the spring of 1919 from the so-called “volunteers” and launched an attack to Karelia/Olonets province in April 1919 — the Olonets campaign. Its Finnish command, which dreamed of implementing plans to create a “great Finland from sea to sea” with the inclusion of Russian Karelia, the Kola Peninsula, and, luckily, Petrograd, categorically refused to cooperate with the Russian White Guards. The White-Finnish Guards failed to establish mutual understanding with the commander of the Entente intervention troops on Murman, British General C. Maynard, for a joint attack on Petrozavodsk. Therefore, after the defeat in Karelia, the remnants of the troops of the Olonets Volunteer Army fled to Finland. It is worth noting that the encyclopedia includes a good article about this military formation by the St. Petersburg historian V.I. Musaev, although the literature of recent years is not used in it.

In relation to the foregoing, there is a reasonable question why Oleynikov and Chistyakov needed to falsify the history of the events of the Civil War in Murman and Karelia, which is well studied and described in the literature, so rudely. This is completely incomprehensible.

Continuing the topic of intervention in the North, it should be noted that the electronic version of the reviewed encyclopedia of 2021 did not contain materials on the history of the intervention. At the end of October 2022, at the plenary session of the All-Russian conference on the Civil War in Vladivostok, a report was made by the Moscow historian, Professor A.A. Chernobaev with a description of this encyclopedia. Assessing not only its advantages, but also its shortcomings, he drew attention to the lack of materials on this topic in it.

This made it clear that the subject, which is of great importance, was ignored for some reason. The article titled “Entente”, placed there, does not bear up under scrutiny, because the intervention of this coalition in Russia, as well as colossal damage, caused to the country and Russian North, were not disclosed. Meanwhile, the Arkhangelsk province, according to estimates made in the 1920s, was in third place in the country in terms of losses incurred.

It is reasonable to ask why such an important topic as the history of international intervention in Russia (the Quadruple Alliance, the Entente and some other states) is not covered in the encyclopedia. For both Russian and foreign historians who dealt with the Russian Civil War, it has always been inseparable from foreign intervention, not only military, but in variety of its other forms and types (political, economic, ideological, etc., as well as a trade blockade). The beginning,

the duration and the end of the Civil War in Russia are closely connected with the history of foreign intervention.

It should be emphasized that there has never been such a large-scale intervention (military, political, economic, etc.) of foreign powers in the history of Russia. The armies of some twenty countries (the Quadruple Alliance, the Entente, etc.) numbering over one and a half million soldiers were stationed on its territory. Not all of them were at the forefront, but their security and punitive functions in the rear, suppression of revolts and partisan movement are still preserved in the memory of Russians. Monuments to the victims of the intervention in many cities of the country still remind of this.

Moreover, during those years, Western countries tried to make Russia an outcast of the emerging system of international relations, seeking to decide its fate without it, to divide it into parts.

Over time, many representatives of the White movement, including those in the Northern region, started to understand that foreign troops were sent to Russia not so much to help them, but to realize their own goals. Thus, the already mentioned former commander of the armed forces and member of the anti-Bolshevist Northern Region government, General V.V. Marushevskiy frankly wrote: "In order to characterize the situation, it is easiest to consider it as an "occupation". Based on this term, all relations with foreigners become understandable and explainable" [18, p. 340].

The history of international intervention in the Russian Civil War is also the first large-scale example of the struggle of the citizens of our country against the "collective West", which Russia has again faced in recent years. Therefore, the absence of articles on the intervention in Russia of that time and its historical lessons in the reviewed encyclopedia is not just a mistake of the editorial board, but a defect of this edition, which nullifies its value.

As for the North itself, a blank space instead of intervention in this edition means that it is inferior to the encyclopedia of the 1980s, where this topic was covered in a large article. It should be emphasized that, according to the majority of Russian and foreign historians studying the intervention of the Entente countries in the North, it was the most important factor in the warmongering of the Civil War in this region. It should be noted that the encyclopedia underestimated the scale of the Entente intervention in Northern Russia and assessed the maximum number of foreign military presence at 10–12 thousand American, Italian, Serbian and English troops [17, pp. 199–200]. In fact, according to the official data of the British General Staff, 42440 military members were evacuated from Northern Russia from June 3 to October 12, 1919. At least more than 500 soldiers and military mission personnel were evacuated earlier. Several thousand sailors and marines who were on the ships of the Entente squadron in the North of Russia and in military flotillas on the Northern Dvina and Lake Onega, participating in military operations, should be added to this amount. About 1500 interventionist soldiers were killed in the North. The Entente Expeditionary Corps, which fought in the North, included citizens of more than 10 countries and national-

ities [19, pp. 460–465; 20, Goldin V.I., p. 314; 21, pp. 44–45].

It should be emphasized that the interventionists were the main combatants in the North of Russia in 1918–1919, given that the process of the White Guard units formation was delayed, and they became available only in the spring of 1919. At the same time, according to the high command of the interventionists, they were unreliable, as evidenced by the revolts, which ultimately accelerated the evacuation. It should be added that the interventionists, convinced of the inability of the White Army to fight the Red Army on its own, suggested their evacuation abroad. There was a refusal from the leadership of the Northern Region. But the interventionists were right, because 4 months after their departure, the White Northern Front collapsed as a result of soldiers' uprisings.

Another thing should be noted. From the spring of 1918, when the military raids of the White Finns started on the northern Russian territories, and throughout the entire Civil War, including the already mentioned Olonets military campaign against Karelia, Soviet Russia was under the constant threat of a big war with Finland. This country also supported the separatist movements in the Karelian territories. This topic was covered in several articles of the encyclopedia, but not sufficiently in relation to the northern territories and unsuccessful attempts of the anti-Bolshevist Northern region authorities to create a military alliance with Finland. There is no article in the encyclopedia about the Karelian revolt (late 1921–early 1922), which took place with the participation of Finland and Finnish “volunteers”. However, such articles were always available in previous encyclopedias, and this topic should be addressed, given the significant progress in its study in recent years.

Let us consider coverage of other issues of the Russian North in the Civil War on the pages of the encyclopedia. There is no special article on the Northern (anti-Bolshevist) region, but it contains small articles on its governmental bodies — the Supreme Administration of the Northern region (SANR) and the Provisional Government of the Northern region.

Reading the article about the SANR, one comes to the conclusion that it should not exist at all. The author reports, for example, that one of the first acts of the SANR was an invitation to the allies to enter Arkhangelsk. Apparently, he is unaware that such an “invitation” was nothing more than a demonstration and a pre-arranged action to cover up the armed invasion of the Entente forces. The intervention in Arkhangelsk, the seizure of Mudyug Island by the allied squadron on August 1, 1918 and the evacuation of Soviet forces and troops from the city, when the invaders were so close, became the signal for an anti-Soviet uprising. The leaders of the anti-Soviet conspiracy and their foreign curators admitted that in case of revolt without interventionist support, the conspirators would be able to hold the city for no more than 1–2 days.

The author of the article briefly retells the first ten resolutions of the SANR of August 2, 1918, reports on the arrest of its members as a result of a conspiracy in early September, their deportation to the Solovetskiy Islands and their returning with help of foreign diplomats, its mem-

bers resigning at the end of September of that year. No attempt to analyze, even briefly, these dramatic ups and downs and the reasons for the fleeting finale of the SANR is made in the article.

The article about the Provisional Government of the Northern Region does not differ in novelty, depth of presentation. This is not surprising, because the author of the articles on the SANR and PGNR, the candidate of historical sciences S.V. Kulikov from St. Petersburg, has never dealt with this topic before and is unaware of any contemporary literature on the subject.

Activities of the Soviet authorities in the North are not disclosed in the encyclopedia. Only the article entitled "Northern Commune (Union of Communes of the Northern Region)" mentions that from April 1918 to February 1919, it comprised Soviet Northern provinces (Arkhangelsk, Vologda, Olonets, as well as Severo-Dvinsk and Cherepovets provinces, which appeared in the summer of 1918). But the author of the article, A. Rabinovich, probably, does not know what happened there, how the Northern provinces fought for their independence and getting out of the power of Petrograd, appealing to Moscow, which ended in the dissolution of this association. We do not find biographical materials about the leaders of the Soviet government in the Northern provinces, with the exception of that small group of people who previously appeared in encyclopedias.

The reviewed edition makes an explicit emphasis on biographies of outstanding personalities of anti-Bolshevist movement in Russia, and, in particular, in Northern region, though the choice of personalities is not always clear. For example, there are articles, not very original or new to the source base, about A.M. Yuryev and N.I. Zvegintsev, the leaders of the Murmansk coup in June 1918, but no article about the third key figure in those events, G. M. Veselago. There are articles about members of the government of the Northern Region, but not about all of them.

It will be in vain for an interested reader to look for materials on the agrarian-peasant issue in Russia during the Civil War in the context of regions, in order to understand its specifics in the North, which also determined the behavior of the peasantry. The encyclopedia is full of descriptions of various peasant uprisings, but mostly of an anti-Bolshevist nature. As for the North, there is an article about the Velsk uprising, which is, in essence, a retelling of the article by T.I. Troshina. However, the Shenskursk uprising, better known and associated with the beginning of the Civil War in the North, was not reflected in the publication.

The encyclopedia ignores the uprisings that took place in the Northern region and in its armed forces, which also reflected the mood of the peasants of the North. For example, it would be worthy to describe the Onega uprising (July 1919), when the Onega White Front collapsed and the 5th Northern Rifle Regiment, having arrested its command, went over to the side of the Reds. As a result, the Northern Region was split in half for almost two months, the overland communication of the Arkhangelsk and Murmansk groups of interventionists and White Guards was interrupted. During the unsuccessful summer assault, half of the city of Onega was destroyed by artillery fire from the ships of the interventionists, which is still well remembered by its citizens. Only in September the Reds left Onega due to the situation at the front.

Previously, the article about the Northern Sea Route was mentioned. Its author is the Krasnoyarsk historian A.E. Goncharov. It is, perhaps, the only worthy and original article about the North in the encyclopedia. And this is no coincidence, because the author is a member of an international team of authors who published in 2022 (with the participation of the author of this article) a voluminous collective monograph dedicated to the history of the Northern Sea Route (NSR), brought to the present and with reflections on its future⁴.

The encyclopedia contains numerous factual errors. Let us point out some of them. The Arkhangelsk Whites collapsed not on February 21, but on February 19, 1920, and the leadership of the Northern region, fled on the icebreaker Kozma Minin, did not go to France but to Norway. The uprising in Murmansk took place on 21 February 1920, not 7 March. The list of such mistakes and inaccuracies can be continued.

Conclusion

Encyclopedias are considered to be a complete and carefully calibrated product of the scientific work of the best experts on the subject. This is how readers traditionally perceive them, believing that such publications can be trusted. Unfortunately, the reviewed encyclopedia, as shown by a critical analysis of its articles on the North of Russia, is the opposite. It remains only to turn readers to reading the scientific literature published earlier by northern historians, which is indicated in the article.

As a participant of the 11-volume international scientific publication indicated in the Introduction to this article, the author published there a large chapter devoted to the Civil War in the Russian North, objectively revealing the events that took place in that period [22, Goldin V.]. In addition, the author, being the executive editor of the XII volume of the 20-volume academic "History of Russia", wrote all the chapters related to Northern Russia. It remains to point out errors and unreliable information in the reviewed encyclopedia and consider the above mentioned volume as a kind of work on the mistakes made in it.

Summing up, we note that it is difficult to call the reviewed edition with respect to Northern Russia really an encyclopedia. It is rather a collection of superficial, fragmentary, largely unreliable information, frivolous and often erroneous judgments. It remains only to address those interested in this topic to that modern scientific literature on the Civil War and intervention in the North, which has already been published and continues to be published.

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⁴ From Northeast Passage to Northern Sea Route. A History of the Waterway North of Eurasia. Leiden 2021: Brill publishing house, 2022.

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2022: The Russian Arctic in Times of Change

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Abstract. The purpose of the article is to comprehend the problems of the Russian Arctic against the background of a special military operation in Ukraine in 2022. The research methodology is based on interdisciplinarity, general scientific methods, priority use of primary sources. The author investigates the current topics of determining the outer limits of the Russian continental shelf in the Arctic, Russia's participation in the Arctic Council, the US Arctic strategy in 2019, 2022 and the US Arctic strategy in 2022. The volume of freight traffic in the Northern Sea Route and the Arctic Basin over the past few years, the activities of the newly established in 2022 FSBI "Glavsevmorput", the creation of a single platform of digital services are analyzed. Due to Russia's ongoing Asian turn in international relations to the east, the increase in the volume of cargo transportation to Asia and the sanctions of the collective West, there is an urgent need to bring existing regulations, navigation rules in line with the current reality in the economy and politics, to ensure the security of the entire Russian Arctic. In perspective, the transformation of the NSR water area into the sea transport corridor from Murmansk in the west to Vladivostok in the east becomes quite possible. In 2022, a modified procedure for identifying existing names of geographical objects was approved. An important aspect is the appearance on the map of the names of the Russians participated in the study of the Arctic. The complex of external and internal challenges in the Russian Arctic is not limited to the problems mentioned in the article and requires further research.

Keywords: *Russian Arctic, continental shelf boundaries, Arctic Council, Arctic Strategy, Northern Sea Route, Arctic Basin, name of geographical object*

Introduction

The Russian Arctic is constantly changing: the climate, the economy, and the life of Arctic communities. Long-standing problems are being solved and new ones are emerging, updated development strategies and laws are being adopted. The crisis year of 2022 also contributed to the process of Arctic changes. The special military operation (SMO) in Ukraine has led to an increasing flow of sanctions by the European Union and the USA against Russia, which is directly related to the use of the oil and gas resources of the Arctic, the operation of the Northern Sea Route, and the life of Arctic communities. Climate change and the declared transition to a green economy are becoming an instrument of the domestic and foreign policy of the European Union (EU), including in the Arctic, even despite the energy crisis associated with the continuation of the SMO in Ukraine. Against the background of the ongoing revision of values in the European society, the permanent dissatisfaction of the vital needs of the population in the energy sector due to rising prices and inflation, a common European position of deprivation of the Russian Arctic, linked to

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the rejection of Russian oil and gas, is being formed. This is a new Arctic challenge for Russia, although Russia is gradually establishing hydrocarbon sales to new markets in Asia.

In addition to external challenges for our country in the Arctic, the internal issues that have existed for many years are also aggravating. In the 21st century, the Russian Arctic is adding new islands, capes, straits and bays in the Arctic Ocean. There is an objective need in specification of the list of all geographical objects and in regulation of the use of this state information resource, its digitization. The importance of oceanographic research and hydrographic activities in the Arctic Ocean is growing. In addition, the UN has not resolved the issue of the boundaries of Russia's continental shelf in the Arctic for more than twenty years.

Outer limits of the Russian continental shelf in the Arctic

One of the old challenges for Russia has been and still remains the issue of the outer limits of the Russian continental shelf in the Arctic Ocean beyond 200 nautical miles. Russia's multipurpose systematic studies in the Arctic began in 1961 and continued for 35 years. The entire water area of the Arctic Basin is covered by high-precision systematic depth measurements at a density of 5–15 km [1, Soboleva M.N., Kavrayskiy A.V., Kostenich A.V. et al.].

In 2001, Russia for the first time submitted to the UN Commission on the Limits of the Continental Shelf a proposal on the expansion of its external borders along the Arctic shelf. However, the first application to the UN was rejected. In 2015, Russia submitted to the UN Commission on the Limits of the Continental Shelf a new proposal on the expansion of the boundaries of its continental shelf in the Arctic. The discussion of this application at the UN began in August 2016. In 2019, the UN Sub-commission recognized the geological attribution of part of the Arctic territories included in the extended borders of 1.2 million km² to the Russian continental shelf ¹.

On March 31, 2021, the Russian Federation submitted two addenda to the partially revised 2015 Submission to the UN Commission on the Limits of the Continental Shelf in the Arctic Ocean². Additions contained all the necessary scientific data, diagrams and coordinates of research on the Gakkel, Alpha, Lomonosov ridges, the Nansen and Amundsen basins, the Mendeleev rise, the Amundsen and Makarov basins, the Canadian basin. The 2021 application was about an additional 700 thousand square kilometers to the previous application of 1.2 million km². The amended application did not include the water areas to the north of Alaska, USA.

The Government of the Russian Federation, by its Decree of December 25, 2021, determined the rules, objectives and procedure for providing subsidies to JSC Rosgeologiya from the

¹ Podkomissiya OON podtverdila prinadlezhnost' territoriy po zayavke Rossii na shel'f v Arktike [The UN subcommission confirmed the ownership of the territories on the Russian shelf in the Arctic]. URL: <https://tass.ru/mezhdunarodnaya-panorama/6290153> (accessed 10 January 2023).

² Rossiya rasshirila svoyu zayavku na chast' kontinental'nogo arkticheskogo shel'fa [Russia has expanded its claim to part of the Arctic continental shelf]. URL: <https://mirovoeobozrenie.mirtesen.ru/blog/43066133877/Rossiya-rasshirila-svoyu-zayavku-na-chast-kontinentalnogo-arkticheskogo-shel'fa> (accessed 10 January 2023).

federal budget for financial support to the preparation of additional materials to substantiate the application for establishing the outer limit of the continental shelf in the Arctic Ocean ³.

It is known that Denmark and its autonomous territory Greenland, Canada and Russia have claims to the Arctic continental shelf and have officially submitted applications to the UN Seabed Commission. In the period of the emerging multipolarity and transformation of the unipolar world, the overwhelming dominance of the United States and its allies in the UN in the context of the continuation of the special military operation in Ukraine leaves little chances for solving the problems of determining the boundaries of the Arctic continental shelf in favor of modern Russia.

On the issue of Russia's participation in the Arctic Council in 2022

In 2022, in the context of sanctions against Russia due to the SMO in Ukraine, the situation in the Arctic Council (AC) became acute. Russia has become a pariah in this most important international organization, even in the year of its chairmanship in the AC. The United States intends to keep the Arctic Council as the main multilateral forum, while noting that Russia's aggressive war against Ukraine has made cooperation with Russia in the Arctic nearly impossible.

Seven permanent member states of the Arctic Council announced in March 2022 that they refused to participate in meetings chaired by Russia because of the situation around Ukraine. The official website of the AC posted the following statement: "*The Arctic Council is pausing all official meetings of the Council and its subsidiary bodies until further notice*" ⁴. In June 2022, the seven states decided to resume the work of the AC, but without Russian participation. The United States, in order to maintain the effectiveness of the Arctic Council, intends to work primarily with its allies and partners. At the same time, the United States recognizes that, under certain conditions, it is possible to resume some cooperation with Russia. The AC work has been formally resumed without Russia's participation.

What is Russia to do in such a situation? There are several possible options for the future of Russia's involvement in the Arctic Council.

Firstly, Russia remains in the Arctic Council as an observer without the possibility of influencing emerging situations, since it is likely to be in the minority in key decisions. It is very important for the Russian Federation to maintain partnership relations with its allies, step by step promoting joint projects in ecology, economy, culture, education, international relations in the Arctic region, in which Russia, China, India will be interested.

Secondly, there is a question: does it make sense to create a parallel structure, for example, the "North Arctic Council", which may include Russia, China, India and other countries, while actually being in the Arctic Council and solving common problems together in some areas? What can such a split give? In any case, the withdrawal of Russia as the leading Arctic power from the Arctic

³ Postanovlenie Pravitel'stva RF ot 25 dekabrya 2021 g. № 2482 [Decree of the Government of the Russian Federation of December 25, 2021 No. 2482]. URL: <http://publication.pravo.gov.ru/Document/View/0001202112290030> (accessed 10 January 2023).

⁴ Arctic Council. URL: <https://www.arctic-council.org/> (accessed 03 January 2023).

Council is unacceptable. It would mean inevitable capitulation of Russia in the Arctic, its isolation in solving international issues of the Arctic region development, creating problems for the implementation of Russia's activities in the Arctic.

Thirdly, Hong Kong's oldest English-language newspaper "South China Morning Post" published an article "How a new Arctic League can save the post-coronavirus world" on May 11, 2020. Its author was Irvin Studin, Ph.D., editor-in-chief and publisher of the Global Brief magazine, president of the Institute for 21st century questions (Toronto). This new Arctic League should include Canada, the USA, Russia, Japan, several states of Northern Europe, if not the entire EU, and China, Japan and two Koreas from Northeast Asia. The point was to prevent the prospect of war between the US, China and Russia⁵. One of the main problems in the creation of the "Arctic League" was the question: does this correspond to the national interests of both the 8 Arctic countries and the 13 non-Arctic states-observers of the Arctic Council? Does the Arctic Council cease its activities or does it somehow interact with the new international structure that is being created on the problems of indigenous peoples, ecology, conservation of flora and fauna, and climate change?

Fourthly, Russia is using and will continue to accumulate its internal reserves, available scientific, technical, financial and economic resources to fulfill the tasks set in the *Strategy for the development of the Russian Arctic and ensuring national security for the period up to 2035*, approved by the Decree of the President of the Russian Federation dated October 26, 2020 No. 645⁶. The list of the main strategic dangers, challenges and threats that form risks for the internal development of the Arctic zone and ensuring national security indicates the growth of conflict potential in the Arctic, which requires a constant increase in the combat capabilities of troops (forces) of the Armed Forces of the Russian Federation, as well as other military formations and bodies in the Arctic zone of the Russian Federation. The multi-vector foreign policy activity of the Russian Federation is aimed at the implementation of tasks in the field of developing the infrastructure of the Russian Arctic.

US Arctic Strategies 2019 and 2022

A decade ago, it was said that Russia and the United States were competitors, but not enemies or antagonists. There is no fundamental difference in their political and economic systems, although they are not identical⁷. US Deputy Secretary of State David Hale in 2020 referred to Rus-

⁵ Irvin Studin. How a new Arctic League can save the post-coronavirus world. URL: <https://www.scmp.com/week-asia/opinion/article/3083605/how-new-arctic-league-can-save-post-coronavirus-world> (accessed 17 January 2023).

⁶ Ukaz Prezidenta RF ot 26 oktyabrya 2020 g. № 645 «O Strategii razvitiya Arkticheskoy zony Rossiyskoy Federatsii i obespecheniya natsional'noy bezopasnosti na period do 2035 goda» [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 up to 2035"]. URL: <https://www.garant.ru/products/ipo/prime/doc/74710556/> (accessed 05 January 2023).

⁷ Shakleina T.A. Rossiya — SShA: optimizm i pessimizm «perezagruzki» [Russia-USA: Optimism and Pessimism of the "Reset"]. URL: https://www.perspektivy.info/book/rossija__ssha_optimizm_i_pessimizm_perezagruzki_2012-02-03.htm (accessed 11 January 2023).

sia in 2020 as a tough, sometimes resourceful competitor to the US⁸. Changes in the global environment, qualitative complication of international interactions and domestic political dynamics both in Russia and Asian countries allow a new perspective on the process designated in Russian official and academic discourse as the “pivot to the East” [2, Torkunov A.V.]. In 2018–2022, the “pivot to the East” is associated with changes in the paradigm of relations between the US and Russia in the Arctic, which is clearly reflected in the US strategic documents.

The United States publicly accused Russia of militarizing the Arctic in May 2021. On May 18, 2021, US Secretary of State Anthony Blinken, during a press conference with Icelandic Foreign Minister Gudlaugur Thor Thordarson in Reykjavik, said that Russia had made illegal maritime claims. In particular, its regulation of foreign ships passing through the Northern Sea Route is incompatible with international law. Blinken also outlined “*concerns about intensified military activity in the Arctic that increases the risk or prospects for accidents, miscalculations, and undermines the overall goal of a peaceful and sustainable future for the region*”⁹. Minister of Foreign Affairs of Russia S.V. Lavrov promptly responded that everything that Russia does in the Arctic is legal and legitimate: “*The Russian military is responsible for ensuring that the Arctic coast of Russia is safe. However, when NATO tries to get in there, it’s a completely different situation. This is our land and our waters. But when NATO tries to justify its offensive in the Arctic, this is probably a slightly different situation*”¹⁰.

The 2019 DoD Arctic Strategy defined the strategic goals for the Arctic region considering an updated assessment of the changing security environment. The main pragmatic goal of the strategy of the US Department of Defense in 2019 was to obtain the financial resources necessary for the implementation of military tasks in the Arctic region within the US general planning and budgeting framework. The US Department of Defense has been strategically focused on identifying threats in the Arctic, responding quickly and effectively to them, and creating a security environment to mitigate the likelihood of these threats in the future. The implementation of such a strategic US approach in the Arctic required: a) increased Arctic awareness, b) intensified Arctic operations, and c) reinforced rule-based order in the Arctic¹¹.

It is very important to understand the implications of the permanent internationalization of the Arctic, based solely on US rules, appearing in various doctrines. For example, in order to raise awareness of the Arctic, to form a positive public opinion, the United States identified itself as the

⁸ «Zhestkiy konkurent»: v Gosdepe ne schitayut Rossiyu vragom [“Tough competitor”: the State Department does not consider Russia an enemy]. URL: https://www.gazeta.ru/politics/2020/01/11_a_12905744.shtml (accessed 11 January 2023).

⁹ Secretary Antony J. Blinken and Icelandic Foreign Minister Gudlaugur Thor Thordarson at a Joint Press Availability. May 18, 2021. URL: <https://www.state.gov/secretary-antony-j-blinken-and-icelandic-foreign-minister-gudlaugur-thor-thordarson-at-a-joint-press-availability/> (accessed 03 January 2023).

¹⁰ «Eto nasha zemlya i nashi vody»: Lavrov zadal NATO neudobnyy vopros po Arktike [“This is our land and our waters”: Lavrov asked NATO an uncomfortable question about the Arctic]. URL: <https://inforuss.info/eto-nasha-zemlya-i-nashi-vody/> (accessed 10 January 2023).

¹¹ Report to Congress Department of Defense Arctic Strategy. 2019 DoD Arctic Strategy. June 2019. Pp. 1-2. URL: <https://media.defense.gov/2019/Jun/06/2002141657/-1/-1/1/2019-DOD-ARCTICSTRATEGY.PDF> (accessed 11 January 2023).

“Arctic nation” in 2019. Geographically, the Arctic covers the northern periphery of the United States and, according to the developers of the strategy, represents a potential vector for both attacks on the homeland and for projecting US power. The approaches to the Arctic Ocean, both east and west of the United States, form strategic shipping corridors. The Arctic shipping lanes pass through the Bering Strait between the United States and Russia, while the Greenland–Iceland–United Kingdom–Norwegian Channel (GIUK-N) is a strategic corridor for naval operations between the Arctic and the North Atlantic¹². The Arctic was also strategically positioned in 2019 as “*The Arctic as the U.S. homeland*”, without good reason for this¹³. The ancient civilizations of America really appeared before Columbus. Well-designed museums of archaeological and cultural monuments of life of Indian tribes in the United States remind of that. According to one theory, ancient people came to the American continent from Northeast Asia through the Bering Strait.

The concept of “*The Frontier in American History*” by the famous historian Frederick Jackson Turner (1861–1932) is widely known in historical science. The book “*The Frontier in American History*”, published in 2009 in Russian, contains his main articles and speeches of 1893–1918, in which the concept of the “frontier” was formulated [3]. These essays of different years were concentrated on one main theme — the expansion of territorial boundaries in American history. The frontier was defined as a place of contact between savagery and civilization, the presence of free lands. The book analyzes the first official frontier of Massachusetts Bay, the Old and Midwest, the Ohio and Mississippi river valleys in American history, the dominant forces in the life of the West and its contribution to American democracy. According to the reasonable opinion of F.J. Turner, “American history up to the present day has largely been the history of the colonization of the Great West. The existence of a considerable area of free land, its constant recession and the advance of American settlements westwards are the explanations for the development of America” [3]. At the same time, F.J. Turner did not touch upon the problems of the frontier-borders of the Arctic exploration, Russian possessions in Alaska in 1781–1867, when Russia in fact laid the foundation for the economy and culture of Alaska.

Russia can reasonably be called the original Arctic nation in the world history. The process of formation of Russian statehood dates back to the 9th century, from Ladoga, Veliky Novgorod, the Novgorod Veche Republic in 1136–1478. The settlement of northern territories and their gradual transformation into the Russian North ecumene took place in the 10th–13th centuries, as evidenced by the well-known archaeological maps of 1986, 1993, and scientific works of Academician of the Russian Academy of Sciences N.A. Makarov [4, Makarov N.A.] and other domestic scientists. Novgorodians explored geographically the vast Arctic space of the Arkhangelsk and Kola North, Karelia, the coast and waters of the Arctic Ocean seas, and even travelled as far as the Ob River in Siberia. Historical data on the discovery by the Russians of the route to the White Sea can

¹² 2019 DoD Arctic Strategy. June 2019. C. 3. URL: <https://media.defense.gov/2019/Jun/06/2002141657/-1/-1/1/2019-DOD-ARCTICSTRATEGY.PDF> (accessed 10 January 2023).

¹³ 2019 DoD Arctic Strategy. June 2019. Pp. 5–6. Ibid.

also be found in the Icelandic sagas, the history of Saxon Grammar, the annals of Norway [5, Lukin Yu.F., pp. 81–115]. In those distant times, in fact, there was no such state as the United States, its “rules”, there was no American civilization.

The strategy of the US Department of Defense 2019 declared the Arctic to be a shared region and a potential corridor for strategic competition. The strategic territory was seen as a potential vector for an attack on the US, while China and Russia posed different challenges in their theaters of war. The task was to achieve the military advantage of the United States Joint Forces and their allies against China and Russia¹⁴. Thus, stability in the Arctic region, according to the logic outlined in the analyzed Arctic strategy 2019, is ensured primarily by the national interests of the USA and its allies.

The new US strategy — “National Strategy for the Arctic Region” — designed for 2022–2032, was approved by US President Joe Biden on October 7, 2022.¹⁵ It includes a vision of the changing Arctic conditions, strategic framework and guiding principles of US approach. The interests of the United States in the Arctic are indicated, including four main areas:

- *Security*. Containment of threats to the US and allies by building the capabilities necessary to defend their interests in the Arctic, while coordinating common approaches with allies and partners and reducing the risk of unintended escalation.
- *Climate change and environmental protection*. Collaborate with communities and the State of Alaska to build resilience to the impacts of climate change. Work to reduce emissions as part of a broader global mitigation effort to improve scientific understanding and conservation of the Arctic ecosystem.
- *Sustainable economic development*. Strive to improve living conditions in Alaska by investing in infrastructure, improving access to services, and supporting growing sectors of the economy. Work with allies and partners to expand high-quality investment and sustainable development throughout the Arctic region.
- *International cooperation and management*. Despite the challenges to Arctic cooperation, the US intends to work on maintaining Arctic cooperation institutions, including the Arctic Council. The US allegedly seeks to uphold international law, rules, norms and standards in the Arctic¹⁶.

In general, the US strategies for 2019, 2022 clearly aimed at protecting the national interests of the United States and its allies. The military-geo-economic confrontation in the Arctic is constantly growing. As early as 2019, the strategic goal was to achieve the US military advantage against China and Russia. In 2022, tensions in the Arctic are even greater. Russia, first of all, can rely only on its own resources and capabilities.

¹⁴ 2019 DoD Arctic Strategy. June 2019. Pp. 6–7. URL: <https://media.defense.gov/2019/Jun/06/2002141657/-1/-1/1/2019-DOD-ARCTICSTRATEGY.PDF> (accessed 10 January 2023).

¹⁵ National Strategy for the Arctic Region. October 2022. 15 p. URL: <https://www.whitehouse.gov/wp-content/uploads/2022/10/National-Strategy-for-the-Arctic-Region.pdf> (accessed 10 January 2023).

¹⁶ National Strategy for the Arctic Region. October 2022. p. 3.

Northern Sea Route: time of changes

In 2022, the 90th anniversary of the Northern Sea Route (NSR) was celebrated, one of the main sea routes in Russia, acquiring ever-increasing geopolitical and economic significance over time. The volume of cargoes transported along the NSR in the 20th–21st centuries is constantly increasing (Fig. 1).

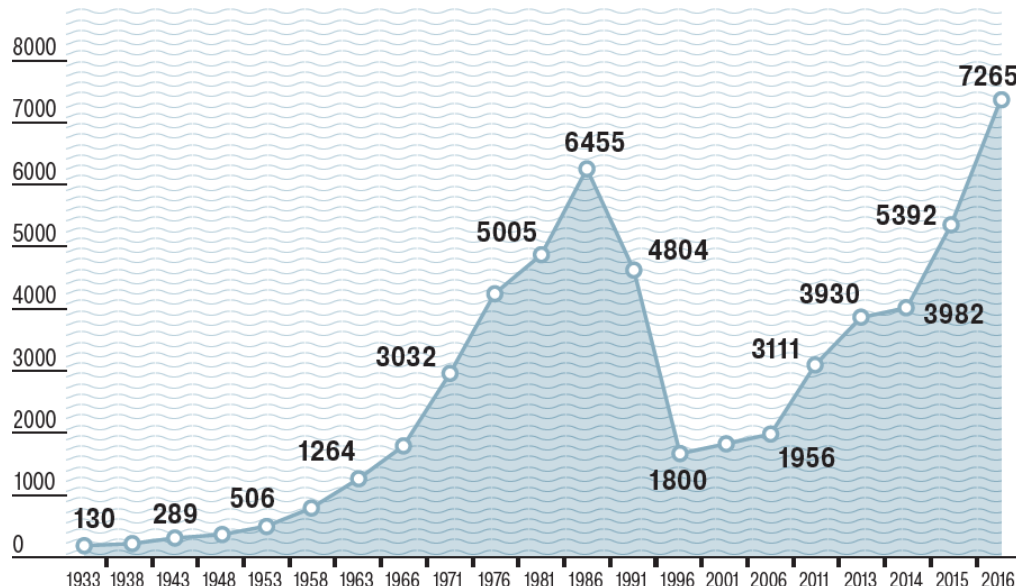


Fig. 1. The volume of traffic along the Northern Sea Route, taking into account transit cargo (thousand tons). FSI "Administration of the Northern Sea Route", FSUE "Atomflot"¹⁷.

The volumes of freight traffic along the NSR in 2017–2022 are as follows:

2017: 10.7 million tons, including 9.7 million tons (90.65%) by sea vessels, 797.2 thousand tons (7.45%) by river vessels, and 194.4 thousand tons (1.82%) by transit vessels¹⁸.

2018: 20.2 million tons, including transit — 491.2 thousand tons (2.43%). The NSR Administration issued 792 permits for navigation of vessels in the NSR water area, of which 91 permits (11.5%) were issued to foreign-flagged vessels¹⁹.

2019: 31.53 million tons, including 20.5 million tons (65.1% of the total volume) through the port Sabetta, 7.7 million tons (24.4%) through the terminal near Cape Kamenny, 1.5 million tons or (4.8%) through Dudinka. Transit amounted to 697.2 thousand tons (2.21%). In 2019, for the first time, the value of Russian cargo transported on the NSR increased by 25% compared to 2018 and exceeded one trillion rubles²⁰.

¹⁷ Shiroty vysokoy vazhnosti [Latitudes of high importance]. URL: <https://www.kommersant.ru/doc/3254502> (accessed 10 January 2023).

¹⁸ Ob'em perevozok po Sevmorputi v 2017 g. vyros na 42,6 %, do 10,7 mln t. [The volume of transportation along the Northern Sea Route in 2017 increased by 42.6%, to 10.7 million tons] URL: <https://mintrans.gov.ru/press-center/branch-news/176> (accessed 10 January 2023).

¹⁹ Ob'em perevozok gruzov po Sevmorputi v 2018 godu vyros vdvoe — do 20,2 mln t. [The volume of cargo transportation along the Northern Sea Route in 2018 doubled to 20.2 million tons] URL: <https://mintrans.gov.ru/press-center/branch-news/1240> (accessed 10 January 2023).

²⁰ Stoimost' perevezennykh gruzov v 2019 godu po SMP rossiyskikh gruzov prevysila 1 trln rubley — Rosatom [The cost of transported goods in 2019 along the NSR of Russian cargo exceeded 1 trillion rubles — Rosatom]. URL:

2020: 32.97 million tons, including liquefied natural gas (LNG) – 59%, oil – 24%, general cargo – 11%, gas condensate – 3%, oil products – 2%, coal – 1%; transit: 1.281 million tons (3.9%)²¹.

2021: 34.85 million tons, including 7.7 million tons of oil and oil products (22.1%), 19.6 million tons of LNG and gas condensate (56.3%), 221.5 thousand tons of coal, 47.7 thousand tons of ore concentrate and over 4 million tons of other cargo. Transit increased to 2.041 million tons²², which was the highest figure for 2017–2021.

2022: 34.034 million tons, including as of mid-December 2022: oil and oil products – 7.224 million tons, LNG and gas condensate – 20.489 million tons, coal – 295 thousand tons, ore concentrate – 43.5 thousand tons, general cargo – 4.248 million tons²³. The nuclear-powered lighter carrier *Sevmorput* made two state-subsidized coastal trips from European ports to Far East ports²⁴.

In 2022, amid a special military operation in Ukraine, the American oil service company Baker Hughes, British BP, Norwegian Equinor and Statoil, Danish Maersk, British-Dutch Shell, French Total Energies SE and others left projects in Russia²⁵. Due to US and EU economic sanctions, shipments of oil, gas and other cargo to Western countries from the Russian Arctic and Far East are decreasing.

The demand for cargo transport in the Arctic depends on a variety of factors, including economic conditions, but also global climate change, the transition to a green economy and the West's refusal to exploit the oil and gas resources of the Russian Arctic. Climate change risks in the Russian North are associated with melting permafrost and the resulting threat to buildings and structures; with forest fires, floods, drought, and other natural disasters. The growth in the capacity of shipbuilding and ship repair enterprises, the creation of the latest icebreaking fleet vessels for efficient use of the capabilities of the Northern Sea Route in the most difficult international situation remains relevant. The Asian geopolitical and economic turn of Russia to the East brings

<https://www.rosatom.ru/journalist/smi-about-industry/stoimost-perevzyennykh-v-2019-godu-po-smp-rossiyskikh-gruzov-prevysila-1-trln-rublej-rosatom/> (accessed 10 January 2023).

²¹ Severnyy morskoy put': itogi 2020 goda. Makety infografiki [Northern Sea Route: results of 2020. Infographic layouts]. URL: <https://arctic.gov.ru/wp-content/uploads/2021/02/2020.pdf> (accessed 10 January 2023).

²² Gruzooborot Sevmorputi v 2021 godu: rost sverkh ozhidaniy. Ob"em perevozok gruzov po Sevmorputi v ne-skol'ko raz prevzoshel rekordy Sovetskogo Soyuzha [Cargo turnover of the Northern Sea Route in 2021: growth beyond expectations. The volume of cargo transportation along the Northern Sea Route several times exceeded the records of the Soviet Union]. URL: <https://arctic-russia.ru/article/gruzooborot-sevmorputi-v-2021-godu-rost-search-ophidiid/> (accessed 10 January 2023).

²³ Plan gruzopotoka po Sevmorputi prevyshen na 2 mln t v 2022 godu [The plan for cargo traffic along the Northern Sea Route was exceeded by 2 million tons in 2022]. URL: https://www.korabel.ru/news/coments/plan_gruzopotoka_po_sevmorputi_prevyshen_na_2_mln_tonn_v_2022_godu.html (accessed 10 January 2023).

²⁴ Ob"em perevezennykh gruzov po SMP v 2022 godu sostavil 34,034 mln t. [The volume of cargo transported along the NSR in 2022 amounted to 34.034 million tons]. URL: <https://rosatom.ru/journalist/news/obem-perevezennykh-gruzov-po-severnomu-morskomu-puti-v-2022-godu-sostavil-34-034-mln-tonn/> (accessed 13 January 2023).

²⁵ Global'nyy nefteservis ukhodit iz Rossii: shans dlya otechestvennogo biznesa [Global Oilfield Service Leaves Russia: A Chance for Domestic Business] // Redaktsiya «Federal Press» [Editorial Board of Federal Press] / Dmitriy Koptev. URL: <https://fedpress.ru/article/2953054; Kakie kompanii ushli iz Rossii: spisok na 18 yanvarya 2023 goda> [Which companies left Russia: a list as of January 18, 2023] / Ilya Shevchenko. URL: <https://grandguide.ru/kakie-kompanii-uhodyat-iz-rossii/> (accessed 18 January 2023).

new opportunities and challenges. Growth in freight traffic in 2021–2022 opens a new window of opportunity for both the Russian state and domestic business, the growth of Russian investment in the Russian Arctic, the development of FSBI GlavSevmorput, the large Northern Sea Route from Murmansk to Vladivostok, including coastal voyages.

FSBI GlavSevmorput was established in 2022 by Order of the Government of the Russian Federation dated July 23, 2022 No. 2019-r. The functions and powers of the founder and owner of the property of this federal state budgetary institution are carried out by the State Atomic Energy Corporation Rosatom. FSBI GlavSevmorput includes the FSUE Atomflot Marine Operations Headquarters, functions and separate personnel of the FSBI Administration of the Northern Sea Route of Rosmorrechflot of the Ministry of Transport of Russia. The creation of the FSBI GlavSevmorputi, according to V.V. Ruksha, Deputy General Director of the State Atomic Energy Corporation Rosatom, Director of the Directorate of the Northern Sea Route: *“This is not a distribution of powers, this is a matter of creating a “single window” so that the ship-owner does not apply to three or four different places, but has the opportunity to quickly contact one place, and this place will be able to consolidate information and give it to the ship-owner”*²⁶. GlavSevmorput provides ice-breaking assistance to vessels, development of navigation routes, arrangement of the icebreaking fleet, taking into account hydrometeorological, ice and navigational conditions. The most important function is the issuance, suspension, renewal and termination of permits for navigation of ships in the NSR²⁷.

In January 2022, the Government of the Russian Federation decided to combine the action plans for the development of the NSR, which were prescribed in two federal projects up to 2024 and 2030, into one federal project (FP) up to 2030 — *“Year-round Northern Sea Route”*²⁸. Thus, starting from 2022, the FSBI GlavSevmorput of the Rosatom State Corporation will actually become the sovereign owner on behalf of the Russian state in the operating water area of the Northern Sea Route.

In the new electronic global reality, the activities of the State Corporation Rosatom, which is developing the *“Unified Platform for Digital Services on the Northern Sea Route”* (abbreviated as UPDS NSR), aimed at digitalizing the NSR, ensuring the safety of navigation and dispatching the fleet in the Arctic, deserve the highest praise. The UPDS NSR provides for servicing up to 1500 unique users, who will be provided with 27 digital services, including:

- satellite navigation and communications;

²⁶ Rosatom vossozdast FGBU «Glavnoe upravlenie Severnogo morskogo puti» [Rosatom will recreate the Main Directorate of the Northern Sea Route]. URL: <http://www.morvesti.ru/news/1679/96214/> (accessed 09 January 2023).

²⁷ Charter of the Federal State Budgetary Institution "Main Directorate of the Northern Sea Route" as amended on July 25, 2022, pp. 1–15. URL: <https://nsr.rosatom.ru/upload/iblock/bb9/Ustav.pdf> (accessed 06 January 2023).

²⁸ Resheno ob'edinit' federal'nye proekty «Razvitie Severnogo morskogo puti» i «Severnyy morskoy put' — 2030» v odin — «Kruglogodichnyy Sevmorput'» [It was decided to unite the federal projects "Development of the Northern Sea Route" and "Northern Sea Route—2030" into one — "Year-Round Northern Sea Route"]. URL: <https://www.arcticway.info/resheno-obedinit-federalnye-proekty-razvitie-severnogo-morskogo-puti-i-severnyy-morskoy-put-2030-y> (accessed 13 January 2023).

- data collection and assessment of the environmental situation in the water area of the NSR;
- provision of data on the location of rescue and medical services;
- collection of chronological statistical information about the passage of vessels, including speed parameters by region;
- navigational charts and navigational and hydrographic support;
- compilation of detailed weather forecasts for specific areas of the NSR water area;
- development and construction of optimal routes for ships, depending on navigation, hydrometeorological information and ice conditions;
- computer vision — operational identification and assessment of ice conditions;
- monitoring the development of ice conditions in the water area of the NSR;
- artificial intelligence — models of deep data analysis, modelling and decision-making support ²⁹.

Leading design organizations and scientific institutes are involved in the creation of the UPDS NSR: JSC Greenatom, JSC Sitronics, JSC CNIIMF, Center for Marine Research of Lomonosov Moscow State University, Moscow Institute of Physics and Technology. Work on the UPDS NSR will be completed in 2024. The project will cost about 2.9 billion rubles, including funds allocated from the federal budget ³⁰.

In January 2023, the Government of the Russian Federation adopted additional decisions to ensure year-round navigation in the Arctic. The rules for granting subsidies for the creation of a digital ecosystem of the Northern Sea Route were approved. For this purpose, the federal budget allocated 3.8 billion rubles for 2023–2024 ³¹. To ensure the efficient operation of the Northern Sea Route in the 21st century, it is important to use modern technologies, digital services, the existing capabilities of the Russian state, research centers, NArFU named after M.V. Lomonosov and other universities of the Russian Arctic, the activity and initiative of youth and students.

The Government of the Russian Federation approved the “Plan for the development of the Northern Sea Route for the period up to 2035” by the order of August 1, 2022 ³². Its main goals are

²⁹ Direktsiya SMP Goskorporatsii «Rosatom» zavershila razrabotku kontseptsii Edinoy platformy tsifrovyykh servisov, predostavlyayemykh v akvatorii Severnogo morskogo puti (EPTsS SMP) [The Directorate of the NSR of ROSATOM has completed the development of the concept of the Unified Platform for Digital Services Provided in the Water Area of the Northern Sea Route (UPDS NSR)]. URL: <https://www.atomic-energy.ru/news/2021/12/15/120297> (accessed 10 January 2023).

³⁰ O khode razrabotki Edinoy platformy tsifrovyykh servisov na Sevmorputi [On the development of the Unified Platform for Digital Services on the Northern Sea Route]. URL: <https://seanews.ru/2022/06/16/ru-o-hode-razrabotki-edinoy-platformy-tsifrovyykh-servisov-na-sevmorputi/> (accessed 10 January 2023).

³¹ Mikhail Mishustin: Pravitel'stvo profinansiruet infrastrukturye proekty dlya razvitiya SMP [Mikhail Mishustin: The government will finance infrastructure projects for the development of the NSR]. URL: <https://ru.arctic.ru/infrastructure/20230116/1014181.html> (accessed 16 January 2023).

³² Rasporyazhenie Pravitel'stva RF ot 1 avgusta 2022 g. № 2115-r «Ob utverzhdenii plana razvitiya Severnogo morskogo puti na period do 2035 goda» [Decree of the Government of the Russian Federation of August 1, 2022 No.

to ensure reliable and safe transportation of cargoes and goods for people living in the Far North, as well as to create conditions for the implementation of investment projects in the Arctic zone of the Russian Federation. The list of 150 activities of this plan includes the construction of terminals, coastal and hydrotechnical structures, bunkering and maintenance bases; creation of marine transshipment complexes for liquefied natural gas, a hub port for organizing transit traffic in Vladivostok, a transport and logistics hub in the seaport of Korsakov on Sakhalin; development of Murmansk and Arkhangelsk transport hubs. The icebreaking fleet is being updated, including nuclear-powered icebreakers of the Leader project. It is planned to build an emergency rescue fleet of 46 ships and equip the Arctic integrated emergency rescue centers of the Ministry of Emergency Situations with helicopters. An Arctic satellite constellation is being created to provide hydro-meteorological and navigational support for navigation and climate change assessment³³. The measures implemented and planned by the Government of the Russian Federation have a positive impact on the development of the NSR in 2022–2023.

The boundaries of the NSR water area are officially defined by the Rules of navigation in the water area of the Northern Sea Route, approved by the Decree of the Government of the Russian Federation of September 18, 2020 No. 1487 with amendments and additions of September 19, 2022:

“When a vessel is sailing to the waters of the Northern Sea Route from the west 48 hours before approaching the western border of the Kara Gate, Matochkin Shar or Yugorskiy Shar straits, or before approaching the meridian 68 degrees 35 minutes east longitude (hereinafter referred to as the western border), and when the ship to the water area of the Northern Sea Route from the east 48 hours before approaching the parallel of 66 degrees 05 minutes north latitude and (or) to the meridian 168 degrees 58 minutes 37 seconds west longitude (hereinafter referred to as the eastern border) or immediately after leaving the seaport, located outside the water area of the Northern Sea Route (if the sailing time of the vessel after leaving the seaport to the western or eastern border is less than 48 hours)”³⁴.

The captain of any ship is obliged to inform the authorized body about the planned time (Moscow time) of the ship’s arrival to the western or eastern border, respectively, as well as specific information on 14 points, including the port and destination, the weight of the transported cargo, fuel, fresh water and food, the number of crew members and passengers on the ship, the

2115-r "On approval of the plan for the development of the Northern Sea Route for the period up to 2035". URL: <https://www.garant.ru/products/ipo/prime/doc/405010751/> (accessed 16 January 2023).

³³ Rasporyazhenie Pravitel'stva RF ot 1 avgusta 2022 g. № 2115-r «Ob utverzhdenii plana razvitiya Severnogo morskogo puti na period do 2035 goda» [Decree of the Government of the Russian Federation of August 1, 2022 No. 2115-r "On approval of the plan for the development of the Northern Sea Route for the period up to 2035"]. URL: <https://www.garant.ru/products/ipo/prime/doc/405010751/> (accessed 16 January 2023).

³⁴ Postanovlenie Pravitel'stva RF ot 18 sentyabrya 2020 g. N 1487 «Ob utverzhdenii Pravil plavaniya v akvatorii Severnogo morskogo puti». S izmeneniyami i dopolneniyami ot 19 sentyabrya 2022 g. [Decree of the Government of the Russian Federation of September 18, 2020 N 1487 "On approval of the Rules for navigation in the waters of the Northern Sea Route", with amendments and additions from September 19, 2022] URL: <https://base.garant.ru/74664152/> (accessed 05 January 2023).

estimated date and time (Moscow time) of the ship's entry into the NSR water area, indicating the geographical coordinates of the planned NSR border crossing point and the planned end date of navigation in the NSR water area.

In view of the above, it is quite natural to suggest that the geographically included seaports of Korsakov on Sakhalin and Vladivostok are in the plan for the development of the Northern Sea Route as well as Arkhangelsk and Murmansk transport hubs; Kamchatka Krai and Murmansk Oblast, which are not officially part of the NSR. These and other objects in terms of meaning do not belong to the small water area of the NSR, but to the large water area of the "Northern Sea Transport Corridor" from Murmansk to Vladivostok or the so-called "Great Northern Sea Route".



Fig. 2. The Northern Sea Route: Murmansk, Anadyr, Petropavlovsk-Kamchatskiy, Vladivostok³⁵.

The water area of the Northern Sea Route, in which GlavSevmorput operates, legitimately includes only four seas: the Kara, Laptev, East Siberian, and Chukchi. The Barents and Bering Seas are included in the list of ports in the Arctic Basin. The official website of Rosatom informs: *"The Northern Sea Route (NSR) is a shipping route, the main sea communication in the Russian Arctic. It runs along the northern coast of Russia along the seas of the Arctic Ocean (the Barents Sea, the Kara Sea, the Laptev Sea, the East Siberian Sea, the Chukchi Sea and the Bering Sea). The NSR connects the European and Far Eastern ports of Russia, as well as the mouths of navigable Siberian rivers into a single transport system"*³⁶.

That is actually the unified transport system, ensuring security in the seas of the Arctic basin and the Far East. Under the conditions of Western sanctions and the Asian vector of Russia to the east, such an approach is extremely necessary, quite logical and justified. It seems to be a matter of officially establishing a unified maritime north-eastern transport system of Russia at the state level, possibly as early as 2023. Time is getting denser every day.

³⁵ Rosatom vossozdast FGBU «Glavnoe upravlenie Severnogo morskogo puti» [Rosatom will recreate the Federal State Budgetary Institution "Main Directorate of the Northern Sea Route"]. URL: <http://www.morvesti.ru/news/1679/96214/> (accessed 16 January 2023).

³⁶ Development of the Northern Sea Route. URL: <https://www.rosatom.ru/production/fleet/> (accessed 08 January 2023).

The Arctic Basin

The Arctic Basin, where Rosmorport operates, officially includes 16 seaports³⁷ of the Murmansk, Arkhangelsk and Anadyr branches: Varandey, Vitino, Dikson, Dudinka, Kandalaksha, Murmansk; Arkhangelsk, Mezen, Naryan-Mar, Onega, Sabetta; Anadyr, Beringovskiy, Pevek, Provideniya, Egvekinot. The annual delivery of coal, fuel, products, timber and general cargoes, containers to the hard-to-reach areas of the Far North, including those connected with sea and river transport, takes its permanent niche in the volume of cargo flows through seaports.

Total cargo turnover of the seaports of the Arctic Basin in 2020–2022:

2020: 96 million tons, 8.4% less than in 2019. Of which: 30.1 million tons of dry cargo, 65.9 million tons of liquid cargo. Cargo turnover of ports: Murmansk — 56.1 million tons, Sabetta — 27.8 million tons, Varandey — 4.9 million tons, Arkhangelsk — 3.3 million tons³⁸.

2021: 94.3 million tons, decreased by 1.7 million tons (1.9%) compared to 2020. Of which: 29.0 million tons of dry cargo, 65.3 million tons of liquid cargo. Cargo turnover of ports: Murmansk — 54.5 million tons, Sabetta — 27.9 million tons, Varandey — 4.6 million tons, Arkhangelsk — 3.2 million tons³⁹.

2022: 98.5 million tons, 4.4% more than in 2021. The volume of liquid cargo transshipment increased by 5.7% to 69.1 million tons, dry cargo — by 1.5% to 29.4 million tons⁴⁰. In just three years, almost 289 million tons of cargo was transported in the Arctic Basin.

At the state level, the Russian Federation uses double statistics on the volume of transported goods: firstly, the volume of cargo transportation only in the water area of the NSR; secondly, the cargo turnover of the seaports of the Russian Arctic basin. At the same time, there are no seaports of the Barents, White, Pechora seas in the data of cargo transportation along the Northern Sea Route, as if they do not exist in the Russian Arctic at all. And the sea ports of Far East Basin of the FSUE Rosmorport — Vladivostok, Magadan, Okhotsk, Petropavlovsk-Kamchatskiy and others — are not officially included in the Arctic Basin. That is, the Russian Federation operates a dual management system in the seas of the unified Russian Arctic.

Due to Russia's ongoing Asian turn to the east in international relations, increasing cargo traffic to Asia (China, India and other countries), and sanctions, there is no reason to fear innovation in any decisions made. There is a need to bring management, existing norms, rules of navigation in the northern seas of our country into line with the existing reality in the economy, politics, to ensure the security of the entire Russian Arctic.

³⁷ Rosmorport. Enterprise services. URL: <https://www.rosmorport.ru/services/seaports> (accessed 08 January 2023).

³⁸ Cargo turnover of Russian seaports for 12 months of 2020. URL: <https://www.morport.com/rus/news/gruzooborot-morskih-portov-rossii-za-12-mesyacev-2020-goda> (accessed 17 January 2023).

³⁹ Cargo turnover of Russian seaports for 12 months of 2021. URL: <https://www.morport.com/rus/news/gruzooborot-morskih-portov-rossii-za-12-mesyacev-2021-g> (accessed 18 January 2023).

⁴⁰ Gruzooborot morskikh portov Arkticheskogo basseyna v 2022 godu vyros na 4,4% [Cargo turnover of the seaports of the Arctic Basin in 2022 increased by 4.4%]. URL: <https://b-port.com/index.php/news/276010> (accessed 18 January 2023).

Author's proposals concerning the Russian Arctic and the Far East

- Firstly, ensuring security in the Russian Arctic and the Far East, including the entire water area from Murmansk to Vladivostok, is becoming one of the current priorities of the Russian Federation in the new historical conditions. The Ministry of Defense of the Russian Federation proposed in 2022 to amend the federal law “On internal sea waters, the territorial sea and the contiguous zone of the Russian Federation”, to change the rules for passage along the Northern Sea Route. As a result, the President of the Russian Federation V.V. Putin signed Law No. 155-FZ of July 31, 1998, as amended on December 5, 2022, establishing the rules for the passage of ships, including foreign warships, through internal sea waters. It draws attention to the fact that all kinds of prohibitions and permissions, in essence (not formally), refer not only and not so much to the small water area of the Northern Sea Route, but precisely to the entire Russian Arctic and the Far East, all internal sea waters, territorial seas, as well as military and tourist ships, the use of natural resources. In this regard, the current federal law, as amended on December 5, 2022, covers many issues of maritime activities, ensuring security in the Russian Arctic and becomes, to some extent, a benchmark of subsequent changes.

- Secondly, the Russian Arctic and the Far East are becoming closer and clearer to each other in every sense. The Eastern Economic Forum (EEF-2022), held in Vladivostok under the topic “Towards a Multipolar World” brought together more than seven thousand participants from 68 countries. In the first three days of the EEF-2022, 260 agreements were signed for a total of 3 trillion 255 billion rubles. The development of investment projects in the Far East continues actively. In 2022 2760 new investment projects were implemented with state support, investments in the amount of 2 trillion 880 billion rubles were made and 107.5 thousand jobs were created, 554 enterprises were put into operation. The infrastructure of the territories of advanced social and economic development is being developed. It makes sense to create a unified maritime northeastern transport system of Russia. The digital services of the “Unified Platform for Digital Services on the Northern Sea Route” can and should be used both in the marine area of the Arctic Basin and in the seas of the Far East.

- Thirdly, it makes sense to make the necessary amendments and additions to the previously adopted “Rules of navigation in the water area of the Northern Sea Route” by clearly defining the water area of the FGBU GlavSevmorput from Murmansk to Vladivostok, stipulating all the necessary provisions. There are two options here. The first option: “Rules of the passage of vessels in the water area of the Northern Sea Route” are applied only in the small water area of the NSR, as a sectoral part of the large Northern Sea Route from Murmansk to Vladivostok. The second option: the effect of these rules to ensure safety extends not only to the small water area of the NSR, but also to the entire large water area of the Northern Sea Transport Corridor without any exceptions, with the addition of the seaports of the Far Eastern Basin of Rosmorport — Vladivostok, Petropavlovsk-Kamchatskiy and others.

- Fourthly, it is time to merge the existing maritime administrative structures and sea-ports of FSUE GlavSevmorput and FSUE Rosmorport into a single structure. The process of unification of departments in one management structure has already begun since July 2022 due to the transfer of functions and individual personnel of the FSBU “Administration of the Northern Sea Route” from Rosmorrechflot of the Ministry of Transport of Russia to the FSBI GlavSevmorput. Methodologically, in order to improve the quality of state administration in the Arctic and the Far East, the interaction between different structures and to achieve the best results in their activities, such a merger of federal authorities and management bodies is quite mature and can be implemented without large costs and staff reductions.

- Fifthly, in any of the options for reorganizing the management of the large water area of the northern seas of the Russian Arctic and the Far East, it is important to retain the historical name “Main Directorate of the Northern Sea Route”.

“Trans-Arctic Sea route” — an international sea route in the Arctic

The operation of Arctic shipping lanes in the near future poses another huge challenge, largely dependent not on the will of people and states, but on climate change and the melting of the Arctic ice. We are talking about the transport circumpolar corridor “Trans-Arctic Sea route” (TSR)⁴¹. This route, about 3900 km long, passes through the North Pole and is about 1500 km shorter than the NSR. Not only the West, but also China is betting on the use of TSR in the future.

The Arctic is heating up faster than anywhere else on Earth, according to PhD Nathanael Melia from the University of Victoria (UK). Satellite observations show that the Arctic region is losing sea ice at a tremendous rate. Sea ice losses create opportunities for shorter global trade links between East Asia and the UK across the Arctic. The Arctic shipping season may triple by the middle of the 21st century. The ongoing climate change and the melting of the Arctic ice are opening up the Trans-Arctic Sea route (TSR) for exploitation by the United States, China and other countries, effectively reducing the significance of the Russian Northern Sea Route. Transarctic flights are currently focused on two main routes: 1) the Northern Sea Route (NSR), along the northern coast of Russia for cargo flows and travel between Europe and Asia; 2) Northwest Passage (NWP), through the Canadian Archipelago as a route from the US East Coast to Asia. The circumpolar Trans-Arctic Sea route (TSR) will become the fastest and most direct route in the future. Statistical data on transit along the NSR and NWP, based on data from the Arctic Logistics Information Office 2015 and Canadian Coast Guard 2015, showed an overall increase in trans-Arctic voyages. Shipping experts agree that these few voyages are still exploratory in nature, “testing the waters” to understand whether the Arctic routes are economically viable [6].

Sea routes in the Arctic are being gradually explored by China, exploring the possibilities of the TSR. China positions itself as an Arctic state and is a member of the Arctic Council. Chapter 33

⁴¹ See, for example, map TSR / Czesław Dyrz, Polish Rear Admiral, Doctor of Technical Sciences in Geodesy and Cartography, Master of Geography, Rector of the Polish Naval Academy in 2007-2015. URL: <https://t.me/sevmorput/2956> (accessed 10 January 2023).

of the 14th Five-Year National Economic and Social Development Plan and the outline of long-term goals for 2035 explicitly states: “Participate in practical cooperation in the Arctic and build the Ice Silk Road”⁴².

The well-known scientific work of D.A. Medvedev, R.A. Polponchik and L.A. Checker “China’s Arctic policy in the first quarter of the 21st century” edited by Doctor of Technical Sciences S.N. Grinyaev, published in 2020, is devoted to the study of directions and tools of practical programs of China’s Arctic development. According to the authors of the book, a balanced and compromise approach to cooperation with China in the Arctic seems optimal for Russia. It is possible that China may demand the status of neutral waters for the Northern Sea Route. Despite the intensive negotiation process, the current state of affairs can be characterized by the Chinese proverb “Hot in politics, cold in economics” [7, Medvedev D.A., Polonchuk R.A., Shashok L.A., pp. 62–73, 75].

Discoveries and naming of geographical objects in the Russian Arctic

Global climate change has been affecting the Arctic “weather kitchen” for a number of years, affecting changes in the Arctic landscape that are becoming more and more visible. The ongoing increase in air and water temperature in the Arctic since the last mapping of Novaya Zemlya and Franz Josef Land archipelagos in the beginning of the 1950s showed an increased reduction of their glaciation area, had a significant impact on the natural landscape and led to formation of new geographical objects. Typical of the marginal parts of land-based glaciers, single rocks or rocky peaks rising above the glacier surface and flowing around it, so-called “nunataks” (in Eskimo language: “nuna” — lonely, “tak” — peak) turned into capes and islands, and valleys and fjords into bays. These and other climatic challenges required systematic oceanographic research aimed at ensuring safety of general navigation and maritime activities in the seas of the Arctic Ocean [8].

During 2015–2017 alone, new geographical features were identified and mapped: 12 islands, 14 capes, one strait, six bays. Previously discovered objects that were not marked on maps were mapped: Rozhkov Island in the Krivoshein Bay; the strait separating the island of Northbrook, with the conventional name “Gaydovskiy Strait”; a cape in the Glazov Bay with the conventional name “Krugosvetka” (the new proposed name is “Cape of Admiral Vladimirkiy”). The following are distinguished as new geographical objects: Bepokoiniy Strait; two islands with conventional names West Northbrook and East Northbrook. The disappearance of the island of Perlamutrovyy in the archipelago of Franz Josef Land was recorded [8, Kornis A.V., Sharomov A.V., p. 106]

Joint expeditions of the Northern Fleet and the Russian Geographical Society explored Novaya Zemlya in 2018, the islands of Franz Josef Land in 2019, and Severnaya Zemlya, Taimyr, the New Siberian Islands and Wrangel Island in 2020 in the process of implementing a single historical and cultural project “The Main Facade of Russia. History, events, people”. The 2021 expeditionary

⁴² Chetyrnadtsatyy pyatiletniy plan natsional'nogo ekonomicheskogo i sotsial'nogo razvitiya Kitayskoy Narod-noy Respubliki i Nabrski dolgosrochnnykh tseley na 2035 god [Fourteenth Five-Year Plan for the National Economic and Social Development of the People’s Republic of China and Outline of Long-term Goals for 2035]. URL: http://www.gov.cn/xinwen/2021-03/13/content_5592681.htm (accessed 06 January 2023).

season was postponed to 2022 due to a prolonged repair of the Ilya Muromets icebreaker, but part of the planned research on Novaya Zemlya was carried out by military personnel. The route of Fyodor Rozmyslov along Matochkin Shar and the flight of the first Arctic pilot Jan Nagurskiy along the entire coast of Novaya Zemlya were reconstructed⁴³. The tasks of the 2022 expedition included studying the routes of polar expeditions of past years, searching for and monitoring the state of cultural heritage sites and scientific research on the seismicity of the Arctic region, local manifestations of strong earthquakes, active tectonic movements⁴⁴.

Taking into account the constant changes taking place not only in the Arctic, the Federal Service for State Registration, Cadastre and Cartography (Rosreestr) proposed changing the approach to maintaining the "State catalogue of geographical names", which contains the names of geographical objects, for each subject of the Russian Federation⁴⁵. According to O.A. Skufinskiy, head of Rosreestr, the creation of the "Unified information system of geographical object names" will make it possible to clarify, update and digitize data, to make access to them as convenient as possible, and to optimize the process of interaction in the field of naming geographical objects. *"This will become one of the drivers of economic growth in the regions and the territorial development of the country as a whole"*⁴⁶. By order of the Federal Service for State Registration, Cadastre and Cartography dated June 22, 2022 No. P / 0242, a new procedure for identifying existing names of geographical objects, including the Arctic region, was approved⁴⁷.

As of August 1, 2022, an amendment was made to the current federal law of 1997. The effect of the Federal Law of the Russian Federation "On the names of geographical objects" as amended in 2022 applies to the continental shelf (seabed and its subsoil), the exclusive economic zone of the Russian Federation, unless otherwise provided by international treaties of the Russian Federation (Article No. 3)⁴⁸. The Russian Federation has sovereign rights and exercises jurisdiction on the Arctic continental shelf in the manner determined by at least ten acts of the federal level and international law, including the UN Convention on the Law of the Sea of December 10, 1982. According to this Federal Law, geographical objects include continents, oceans, seas, bays, straits,

⁴³ «Glavnyy fasad Rossii» [The main facade of Russia]. URL: <https://www.rgo.ru/ru/ekspedicii/glavnyy-fasad-rossii> (accessed 17 January 2023).

⁴⁴ Zemletryaseniya na Novoy Zemle: uchenye podelilis' podrobnostyami ekspeditsii [Earthquakes on Novaya Zemlya: scientists shared the details of the expedition]. URL: <https://www.techinsider.ru/science/1555527-zemletryaseniya-na-novoy-zemle-uchenye-podelilis-podrobnostyami-ekspeditsii/> (accessed 17 January 2023).

⁴⁵ Gosudarstvennyy katalog geograficheskikh nazvaniy [State catalog of geographical names]. URL: <https://cgkipd.ru/science/names/reestry-gkgn.php> (accessed 18 January 2023).

⁴⁶ Rosreestr predlozhit sozdat' GIS naimenovaniy geograficheskikh ob'ektov [Rosreestr proposed to create a GIS of names of geographical objects]. URL: <https://d-russia.ru/rosreestr-predlozhit-sozdat-gis-naimenovaniy-geograficheskikh-obektov.html> (accessed 01 January 2023).

⁴⁷ Ob utverzhdenii poryadka vyyavleniya sushchestvuyushchikh naimenovaniy geograficheskikh ob'ektov / Prikaz federal'noy sluzhby gosudarstvennoy registratsii, kadastra i kartografii ot 22 iyunya 2022 g. № P/0242 [On approval of the procedure for identifying existing names of geographical objects / Order of the Federal Service for State Registration, Cadastre and Cartography dated June 22, 2022 No. P / 0242]. URL: https://rulaws.ru/acts/Prikaz-Rosreestra-ot-22.06.2022-N-P_0242/ (accessed 27 December 2022).

⁴⁸ Federal'nyy zakon «O naimenovaniyakh geograficheskikh ob'ektov» (po sostoyaniyu na 1 avgusta 2022 goda) [Federal Law "On the Names of Geographical Objects" (as of August 1, 2022)]. URL: http://komitet4.km.duma.gov.ru/upload/site28/152-FZ_na_01.08.2022.pdf (accessed 27 December 2022).

islands, mountains, rivers, lakes, glaciers, deserts and other natural objects; republics, territories, regions, autonomous oblasts and districts; cities and other settlements; all administrative-territorial formations (units); railway stations, seaports and river ports, airports. Article No. 9 of the Federal Law defines the procedure for assigning and renaming geographical objects. Geographical objects may be named after persons directly involved in their discovery, study, development or foundation. The names of state and public figures, representatives of science and culture and other persons who have merit before the state can be posthumously assigned to geographical objects that do not have names. The assignment of the same name to several homogeneous geographical objects within the boundaries of an administrative-territorial entity (administrative-territorial unit) is not allowed⁴⁹.

New names in the Russian Arctic have been given to two nameless islands located on the territory of the Arkhangelsk Oblast and part of the Franz Josef Land archipelago — West Northbrook and East Northbrook. Cape Bulanova and Kuznetsov Island, Cape Afanasev, Cape Admiral Vladimirskiy, Cape Mamontov, Cape Moroz, Buchmeyer and Osokin Islands appeared on the Novaya Zemlya archipelago. This is done to commemorate the hydrographers and geodesists who have made a significant contribution to the exploration and study of the Arctic: Bulanov Boris Vasilyevich (1945–1998), Kuznetsov Valentin Pavlovich; participants of the Great Patriotic War, Lieutenant Commander Fyodor Prokopyevich Afanasev (1912–1988) and Admiral Lev Anatolyevich Vladimirskiy (1903–1973); Mamontov Vasiliy Alekseevich (1913–1983)⁵⁰, Moroz Ivan Danilovich (1914–2005), Bukh Meyer Vsevolod Vasilyevich (1905–1988), Osokin Igor Vasilyevich (1914–1996).

FSUE “Hydrographic Enterprise” is planning to survey over 320 thousand kilometres of bottom topography in the waters of the Northern Sea Route in the period from 2020 to 2024. The increase in cargo traffic to the east, due to the sanctions against Russia, objectively requires an increase in the volume of cartographic study of the eastern section of the Northern Sea Route. Therefore, in 2022, hydrographers worked a lot in the East Siberian Sea, the Sannikov Strait, the Laptev Sea and the Kolyma River. In total, over 30 thousand linear kilometers were explored in the eastern section of the NSR, which accounted for approximately 67% of the total scope of work. Based on the results of the summer-autumn navigation in 2022, the Hydrographic Enterprise of the State Corporation Rosatom surveyed 45.2 thousand linear km of the bottom topography in the waters of the Northern Sea Route. This is the maximum figure in the history of modern Russia⁵¹. This work, so necessary in the Arctic, continues.

⁴⁹ Federal'nyy zakon «O naimenovaniyakh geograficheskikh ob"ektov» (po sostoyaniyu na 1 avgusta 2022 goda) [Federal Law “On the Names of Geographical Objects” (as of August 1, 2022)]. URL: http://komitet4.km.duma.gov.ru/upload/site28/152-FZ_na_01.08.2022.pdf (accessed 27 December 2022).

⁵⁰ Kalendar' pamyatnykh dat Arktiki — Arktik-fond [Calendar of Memorable Dates of the Arctic — Arctic Fund]. URL: <https://arctic.narfu.ru/kalendar-pamyatnih-dat> (accessed 18 January 2023).

⁵¹ «Gidrograficheskoe predpriyatie» Rosatoma vypolnilo rekordnyy ob'em issledovaniy akvatorii Severnogo morskogo puti [The Hydrographic Enterprise of Rosatom has completed a record volume of surveys of the water area of the Northern Sea Route]. URL: <https://www.rosatom.ru/journalist/news/gidrograficheskoe-predpriyatie-rosatoma-vypolnilo-rekordnyy-obyem-issledovaniy-akvatorii-severnogo-m/> (accessed 30 December 2022).

Conclusion

In conclusion, it is important to note that Russia is gradually focusing and adequately responding in the Arctic to modern civilizational challenges in the context of the permanent variability of the entire global society. I agree with the assessment made by scientists S.Yu. Kozmenko and A.S. Kozmenko about the beginning of the decline of globalization as the dominant direction of modern geopolitics and geoeconomics, the impact of a special military operation on the destruction of the “liberal economic model” [9, p. 39]. Increasing the role of the Russian state in the development of the Arctic region and the Far East is becoming a strategic goal of the domestic and foreign policy of the Russian Federation.

It is difficult to foresee all force majeure circumstances in a constantly changing world, which was very clearly shown by the coronavirus pandemic, the US presidential election, the war in Nagorno-Karabakh, and the special military operation in Ukraine. Russia has the ability and resources to successfully overcome emerging difficulties by consistently improving its public administration system, solving acute international and domestic problems of the development of the Russian Arctic, the Far East, the great Northern Sea Route in the logic of realizing its national interests, using modern technologies, digitalization, all available potential and accumulated experience of its development in the 20th–21st centuries.

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Zemstvo Tradition as a Particularly Valuable Intangible Cultural Heritage of the Russian North

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Abstract. The article presents the scientific results obtained during the study of the zemstvo self-government tradition in the Russian North. This tradition is considered as a particularly valuable intangible cultural heritage. Its image-symbolical vocabulary (thesaurus) could be used in development of a regional strategy and local projects for the spatial development of the northern macroregion. The idea-concept of “zemstvo” (“mir”) holds a unique position within the conceptual sphere of the Russian North’ geocultural space. It is an ideal, canonical form of religious and sociocultural land management of Pomorye, which appears as reserved island-archipelago covered by web of autonomous, autocratical communities. The natural and cultural landscape of the Northern Russian mir is replete with “conciliar” and “sophian” semantics and symbolics of development, specialness, selfness, freedom, unitotality, triality, rhythmicity, gracefulness, wisdom. The cultural and semiotic mechanisms of the Slavic-Russian development of the lands and waters of the midnight Edge of the World are studied. Sacred geography and geosophy of “verhovskiy” and “nizovskiy” colonization streams of the North and the Arctic regions are revealed. Special attention is paid to the presentation of the experience and practices of preserving and adapting the sacred heritage associated with land management and consecration of territories and water areas of Pomorye (Kenezerskiy National Park, Naryan-Mar and Mezen Diocese, the project “Common Cause. Revival of Wooden Temples of the North”).

Keywords: *zemstvo, mir, conciliarity, Sophia the Wisdom of God, triality, spatial development, Russian North, Arctic, Pomorye*

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In the Year of the cultural heritage of the peoples of Russia, it seems extremely necessary and urgent to turn to those fundamental ideas, values and symbols that have determined the peculiarity, identity of the traditional order and way of the Russian North, which turned it into a protected territory of meanings and an integral ensemble-monument of the national and world culture, saturated with powerful pro-educational, eidetic energy, staying now “in a removed form”, “under wraps”, but when it is actualized (released), it can become an ideological source and a fig-

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urative-symbolic resource for projects for the spatial development of the northern and Arctic territories. According to the well-known Russian architect, academician A.V. Bokov, the strategy of spatial development “is determined by values and goals, categories that are more general, stable, fundamental and high, belonging not so much to the realm of everyday and material things, but to what is usually associated with the spiritual culture and mentality of society. <...> The goals and values that the economic strategy, the development of the military-industrial complex, and the strategy of spatial development are explicitly or implicitly obey arise and form within culture, acquiring the outlines of an ‘ideology’” [1, Bokov A.V., pp. 16–17].

In the hierarchy of the ideosphere and concept sphere of the Russian North, in its sacred geocultural thesaurus, a particularly significant place is occupied by the idea-concept of “zemstvo” or “mir”, which goes back to the Slavic-Russian communal-veche, “cathedral” tradition of “Zemle(mir)arranging” as a particularly valuable, unique intangible heritage, the creative assimilation and acceptance of which is of paramount importance for the development of the ideology and philosophy of modern regional and local “cultural scripts” (scenarios) of the spatial development of the Northern macro-region.

The core geocultural constant, the structural paradigm of the natural and cultural landscape of Northern Rus’ is the image of the Cathedral, which in its natural (geomorphological) form acts as the primary symbol of the “Island-Archipelago” as a united and diverse collection of lands, waters and inhabitants of the Russian World.

The idea-principle of catholicity shaped and structured the geocultural space of the Russian North, was the cornerstone laid in the socio-cultural foundation of the land management of the northern territory, its religious principles, which gave rise to the institutions, meanings and values of the traditional zemstvo “autocratic” people’s rule, which determined the identity style and way of life of Pomor cities, counties and volosts, and which can serve as an ideational design paradigm for the modern arrangement of local self-government. The eidos of the “folk community” in Pomorie had the highest generative potential and sacred authority, which allowed, despite Petrine regulations, regimentations and restrictions, to preserve the very spirit of the zemstvo tradition, its semantic and vital coordinates until the era of troubled times and palace coups of the 20th century.

As early as the beginning of the last century, researchers of the church life of the Arkhangelsk Eparchy noted that “the ideal of the Old Russian parish as a community institution continues to live in the minds of common people, often expressed in facts that contradict existing church and civil institutions” [2, Sel'skiy svyashchennik, p. 19]. The famous Russian historiographer and phenomenologist of Russian law and zemstvo church in the North of Russia S.V. Yushkov concluded that “the autonomy of a secular parish corresponded to the secular worldview brought up on zemstvo self-government and was a kind of ideal of parish life, according to northern secular people” [3, p. 8]. In modern Russian historiography, based on the data of extensive comparative historical research, typological convergences have been established between the structures and insti-

tutions of the “communal-veche” system of city-states (lands, volosts) of Ancient Russia and the socio-political organization of ancient Greek polities [4, Dvornichenko A.Yu.]. Such a comparison of the veche (zemstvo) tradition of the northern and arctic lands and the limits of the House of Saint Sophia with the urban civil community of ancient Greece allows us to update the status of traditional zemstvo self-government in the Russian North as an ideal form of religious and socio-cultural location and development. According to the well-known researcher of the ancient Greek polity I.E. Surikov, “there is nothing “unfinished” in polis. It is like a work of art, strikingly sophisticated, a system so elaborated and sharpened in every detail that nothing could be added or subtracted. The polis is a kind of magnificent integrity, a social and spiritual “cosmos”. We firmly believe that this is, in general, the most perfect type of society ever seen in world history. It facilitated the development of the individual and the collective to the greatest extent” [5, p. 42].

Such a high assessment of the socio-political organization of the polis is quite applicable to the cathedral structure of the North Russian mirs (zemstvos), which were created according to the precepts of Measure and Beauty, a sophisticated work of Northern Russian socio-cultural creativity (“art”). This creativity was based on the powerful foundation of the living northern sacred tradition, the structural paradigm of which (the symbol of “All-Unity”) generated new geocultural texts (works). In accordance with the timeless logic of the myth of the eternal return and the technology of traditional fine art, these works were skillful “translations” (copies) of eternal measures, canons, samples (“originals”). The conservative, “freezing” options of zemstvo self-government in the Russian North, which preserved and multiplied the religious and cultural heritage of the metropolis — Lord Velikiy Novgorod, have been repeatedly noted by researchers of the church antiquity of Pomorie: “Not only the main features of parish life, but all original features of ancient church and culture of Novgorod and its domains were closed by conservative order of zemstvo’s self-government from outside influences” [3, Yushkov S.V., p. 3].

The long-term preservation and productivity of the “letter and spirit” of the zemstvo tradition in Pomorie after the reforms of Patriarch Nikon that shook the foundations of Ancient Russia and the centralization of the church-parish and administrative-territorial structure of Russia in the reign of Peter I was due to its symbiosis with the cathedral system of the Old Believer communities: “The development and rooting of split in the northern territory can be fully explained only if we take into account the existing organization of the parish, namely, the “autonomy” of religious communities, bordering on arbitrariness” [3, Yushkov S.V., p. 3]. To all the renewals, challenges and questions of the “rebellious century”, “Pomor answers” appeared, which made it possible to preserve in the North the unique sacred cosmos of the old faith as the spiritual support of the Zemskiy Sobor — mir. Such a long preservation of the traditional folk philosophy of unity, life and death “in mir”, “common cause” (“with all mir”) indicates that the concept of mir (zemstvo) belongs to the eternal ideas-constants of Russian worldview, its sacred nucleus. It is no coincidence, therefore, that in the Dictionary of Russian culture by Yu.S. Stepanov, the concept of “peace”, associated with the concepts of “Friends–Aliens”, “Place (space)”, “Ourselves, our people”, “Law,

legality”, “Morals, ethics” [6, p. 86–126], occupies the first place in the list of dictionary entries and in the hierarchy of cultural constants. In the studies of the “New-Moscow school of linguoculturological (conceptual) analysis”, the key concept “peace” is associated with the ideas and images of “harmony”, “calm”, “comfort”, “structure”, “arrangement”, “humility”, “reconciliation” [7, Shmelev A.D.]. In the fundamental works of the classic of Russian historiography M.M. Bogoslovskiy, devoted to the study of history, historical geography and “anatomy, physiology and pathology” of zemstvo self-government in the Russian North (Pomorie) in the 17th century, the concept of “mir” is seen as “a social union bound by the interests of the common good” [8, p. 192]. The Northern Russian world is presented in the image of a self-sufficient, independent, original, autocratic microcosm-society, possessing the highest sacred authority in the perception of the laity: “It was the duty of the laity to be humble in mir, to live in mir “conscientiously” and not to perform any actions that affect common interests “unbeknown to mir”” [8, Bogoslovskiy M., p. 193].

Undoubtedly, M.M. Bogoslovskiy’s use of the ideologemes of “common good” and “common interests”, which, according to the historiographer, lie in the axiological foundations of the mir, is a modernization and desecralization of sacred principles of conciliar personalism of the northern land-organization. The mir as a spiritual integrity, as a conciliar entity, precedes the multitude of its individual members, the laity, gathered together, “according to Khomyakov, not by the commonality of interests, but by the spiritual and moral bond, the bond of shared love” [9, Khoruzhiy S.S.].

The mir was the guardian and interpreter of the sacred texts of the local tradition, law and moral law, the mirror of conscience, the guardian of memory, the guardian of the measure and beauty of the Zemstvo Domostroy, which was created in the process of the Slavic-Russian (Novgorod) colonization of the northern and Arctic territories of Pomorie in the image and likeness of the sacred land management of the Lord of Velikiy Novgorod — the House of Saint Sophia. Exploring the origin and inner meaning of the ancient Greek word “σοφία”, the outstanding Russian linguist V.N. Toporov noted that “this word and the concept of mythologeme behind it” are “among the key and fundamental in European and Middle Eastern spiritual culture over the past three millennia” [10, p. 148]. The etymological analysis of the initial semantic motivation of the word “Sophia” allowed V.N. Toporov to reveal its duality, which focuses, on the one hand, “on the concept of isolation, separation, selfhood (the principle of individualization) and, on the other hand, indicates inclusion in a certain community (the process of generalization). Both of these circles of meanings, as well as both of these processes, are closely connected with the more special idea of assimilation, transformation of non-own into own. The first semantic circle is associated with words denoting “singularity”, “separation”, “singling out”. The second circle is formed by “sobor” vocabulary (“assembly”, “rural community”, “house”, “freedom-sloboda”) [10, Toporov V.N., pp. 160–161].

The “semantic ambivalence of σοφία (or rather, the ordered alternation of meanings)”, revealed by V.N. Toporov [10, p. 167], determined, in our opinion, the duality, more precisely, the

dual unity of the image of St. Sophia as a symbol and icon of the Slavic-Russian colonial (eschatological) exodus to the countries of the mystical Northeast and the structural paradigm of the organization (creation) of the new mir, which gave rise, on the one hand, to the courageous pathos of the heroic myth and the ritual of development, isolation, separation, cutting the water-forest chaos of the “Finnish Rus’” (A. Blok), and on the other hand, the feminine cosmogonic symbolism of the gathering of world- and house-building. The semantic “ambiguity” of the lexeme and mythologeme “Sophia” resonates with two theological and hierotopical traditions of perception of the Church in the Russian lands: “The first one felt the Church to a greater extent as the Body of Christ and, in the act of creating the temple by Wisdom, accentuated the image of Wisdom-Christ. The second one perceived the Church as the Mother of God, the womb that contained Christ, protection, fence; in the verse “Wisdom builds a house for itself”, this tradition focused on the image of the House of the Mother of God. The first, Novgorodian, created a deep cult of the church of St. Sofia. The second, dating back to ancient Kiev and developing in the North-Eastern and then Moscow Rus’, revered primarily the churches of Mother of God” [11, Plyukhanov M.B., p. 503].

The sacred geography of Sophia and Mother of God (Uspenskiy) churches is correlated with the colonial (exploratory) geography of Upper and Lower Rus’, the sacred centers of which were the initial locuses (metropolises) of two ways (“Verkhovskaya”-Novgorod and “Nizovskaya”-Rostov) of colonization of Pomorie, developing under the guiding icons-images of Saint Sophia of the Wisdom of God and the Assumption of the Holy Mother of God.

One of the pioneers of the sacred geography of the holy kingdom of the Northern Thebaid was the famous Russian ethnographer and chronicler S.V. Maksimov, who not only created a hierotopic map of the island monasteries of northern Rus’, but also recreated the symbolic paths and crossroads of the Russian development of the land-water expanses of the North and the Arctic, outlining the eschatological path-exodus of the spatial icon of the church of St. Sophia from Tsargrad to the first capital of Siberia — Tobolsk, where “the church of St. Sophia is preserved as a clear evidence of the direct connection and dependence of colonization by distant acceptance from the Byzantine through Kiev and Polotsk and on the closest and native through Vologda and Solikamsk Sophia from Novgorod, which, according to ancient prophetic folk proverb, is only “where St. Sophia is”” [12, Maksimov S.V., p. 289]. The symbols of St. Sophia penetrated also the sacred space of the capital of the Russian North — Arkhangelsk, the oldest temple of which, according to S.V. Maksimov, was the Preobrazhenskiy Cathedral: “According to the custom of all Novgorod settlers, which has no exception anywhere, and in contrast to the oncoming colonization that went along the Oka and its tributaries with the temples of the “Prechistaya”, the first Russian church of the new city is dedicated to the Spas (Preobrazhenie), also with the inevitable and obligatory for the entire Russian north side-chapel of Nikola” [12, p. 304]. The image of Novgorod Sophia relates the “Spaso-Preobrazhenskiy” Arkhangelsk with “Uspenskiy” Vologda, the main temple of which was the Sophia Uspenskiy Cathedral, “her Spas (Spas because the temples

called Sophia were dedicated to Hypostatic Wisdom, that is, to the Second Person of the Holy Trinity) [12, p. 286].

In the sacral space of Upper and Lower Rus', the Sophia and Uspenskiy cathedrals in their feminine (Virgin) incarnation were "complemented" with churches in the name of the Archangel Michael and the Great Martyr George the Victorious with their male symbolism of a military feat, guiding and serpent fighting, in which typological convergences with cosmogonic (land-planning) motifs and patterns of the "main myth" about the struggle of the Thunderer with his enemy (Serpent), from whose cut sacrificial body the new world is deployed (gathered). "The temples themselves, especially Sophia, being a reproduction of Byzantine models, preserved the complex theological and symbolic meaning of the ideas and images of Wisdom and serpent-worship as the two principles by which the Christian world is arranged and protected" [13, Plyukhanov M.B., p. 228].

Verkhovskaya colonization created a hierotopic symphony of the Sophia Cathedral of the Spaso-Preobrazheniya and the monastery church of the Archangel Michael in the capital of the northern Pomorie — Arkhangelsk, saturating and enlightening the geocultural space of the North and the Arctic with the transfiguration symbolism of the Light of Tabor and the eschatological duel of the Archistrategos of heavenly forces with the serpent-dragon on the edge time and space. Nizovskaya developmental flow coming from Rostov Velikiy was marked by the erection of a symbolic ensemble of the Cathedral Uspenskaya Church and the Mikhailo-Arkhangelskiy Monastery in Velikiy Ustyug, the capital of southern Pomorie, which became the inheritance of the Blessed Virgin Mary. "Hence, the tradition to dedicate to various regions of Rus' or the Orthodox world the images of the Most Pure Virgin Mary, which in the Russian tradition are called by the name of the area — Tikhvinskaya, Kazanskaya, Smolenskaya, Feodorovskaya, Iverskaya, Vladimirskaya, etc. The space of the world is arranged by these sacred images, which create the non-material from the material space, the heavenly earth from the ordinary landscape. This is not just a manifestation of the feminine in a Christian context, it is a transformation, transubstantiation of the earthly, bodily into the heavenly and sacred, into the structure of Holy Rus'" [14, Dugin A.G., p. 384].

The metaphysics of the cathedral system of zemstvo self-government in the Russian North is revealed in the image of the Trinity as a key concept-term of Orthodox triadology (trinitarian theology) and Russian religious-philosophical thought, in the speculations and contemplations of which the number "three" and the paradigm of trinity were affirmed as "the most common characteristic of existence" [15, Florensky P., p. 596]. V.N. Toporov, who developed the traditions of Russian historiosophy and Orthodox hagiology, revealed the trinitarian structure of the ideational geospherical code of the "Russian Mir", embodied in the basic categories and ideas-concepts that became "peculiar ideological signs" of Russian life (holiness and priesthood, kingdom, zemstvo-mir) [16, Toporov V.N., p. 440]. Considering the relationship of the three fundamental ideas-concepts of the Russian picture of the world, V.N. Toporov notes that "among them, it is worth highlighting: 1) the connection of holiness, kingdom and zemstvo with the three-functional scheme investigated by Dumézil; 2) the dominant position of holiness in this scheme; 3) the im-

possibility of limiting the sacred only by holiness *sensu stricto*, its presence both in kingdom and in zemstvo; 4) the “sacred” character of this entire three-part cosmos of Russian life — holiness, kingdom, zemstvo” [17, Toporov V.N., p. 189].

The Northern Russian zemstvo as a small mir (microcosm), like a big mir — the sacred macrocosm of Russian life — embodied in its organization the cathedral prototype of the Trinity and arranged itself according to the laws of the Divine House-building and the mir Sophian aesthetics of the earthly Domostroy, based on the secret geopoetic and hierotopical commandment “as Measure and Beauty will say”. The ternary structure and symbolism of the northern mir, depicted in the elegant trinitarian formula of S.V. Yushkov (“Mir is one, but trinity in its manifestations”) [3, Yushkov S.V., p. 10], are manifested in its three aspects-hypostases (church parish, volost, community), which are displayed both in the architectural and landscape composition of the three-part temple ensemble of pogost and in the triad of concentric functional-semantic spheres, varying in the degree and quality of their sacredness. In the first circle, outlining the force field of the center of the mir, there are symbolic places and objects (pogost, church, chapel, cross) that have the highest degree of sacredness. The second circle is formed by a “near-church” (mirskoy) space, including a church meal (a place for mir congresses, feasts, brotherhoods, storerooms of the mir archive, treasury, beer cauldron, chamber of weights and measures), porch, parvis (a place for beggars, audients and penitents) and the market (fair) square — a kind of northern Russian zemstvo “agora”. In the third circle, that is the economic and commercial periphery of the sacred cosmos of the northern mir, there are both purely technological objects and spaces with a low semi-otic status (household yards, barns, mills, fields, trade routes and lands), as well as loci endowed with a powerful negative (“impure”) semantics of the sacred center of the “pagan” anti-mir, where the lame gods of underground fire reside — the blacksmiths of archaic mythology (banya, barns, smithy), which in the geopoetics of the Slavic Russian myth and ritual is opposed to the topos of the Orthodox temple (church) and allows to hypothetically see typological similarities between the binary semantic opposition of the Christian and “pagan” centers of the northern mir and the bipolar organization of the sacral space of the ancient Greek polis, in the genesis of which an important role was played by “the foundation of large sanctuaries on the borders of the polis horus, on the very “periphery”. Such a sanctuary <...> served as a sacred “development” of a remote space, invisible connections were established between it and the shrines of the city, a kind of “force field” arose, sacralizing the entire territory of the polis” [18, Surikov I.E., p. 184].

The founding of new mirs (zemstvos) on the lands of the alien, foreign and heterodox North was included in the plot of the developmental transitional rite, which involved the transfer of central sacred attributes and values (images, paradigms) of the metropolis (“old” Novgorod) to a new place, which turned to “new” (“old”) Novgorod with its veche “semisobornyy” way of life, which echoes the domestication ritual of the Great Greek colonization, in the plot of which the sacred temple fire of the metropolis was transferred (transported) to the withdrawn colony and lit again in the sanctuary and domestic fires of the goddess Hestia, whose sacred name merged into

one “mastering” semantics of “one’s own” (“hostess”) and “alien” (“guest”). In the Slavic-Russian tradition, the transitional rite of assimilation of an “alien” new space (house, pogost, settlement) and its transformation into one’s native space of the “old” place of residence was accompanied by the transfer of sacred images (icons) and any attributes associated with a hearth-oven of the old place.

The creation of a new mir begins with the cosmogonic act of erection of a cross in its God-chosen sacred center, building of a chapel or temple, which, according to the ideas of the laity, becomes a monastery, the home of that saint, in whose name the “zemstvo” church was consecrated. In traditional northern Russian folk religiosity, a saint placed in a church becomes, in modern terms, a “legal entity”, the proprietor of a church building and land, acquires the status of own, mir, zemskoy god, with whom the laity enter into contractual relations, making a number of agreements with him: “In the perception of the people of that time, the owner of the property, the subject of the right to it was not the parish, but the church itself, in which the saint whose name was given to the church was personified and identified with a vivid imagination that is now incomprehensible to us” [19, Bogoslovskiy M., p. 36]. Ideas about the real presence of God in the mir church were reflected in the form of peasants’ series of letters and acts, where not the church itself, but the name of the saint is indicated as a legal entity. The idea of the presence of God in certain sacral buildings or objects was also reflected in the popular denomination of icons as “gods” [20, Uspenskiy B.A., p. 118]. Therefore, zemstvo in the Russian North not only built temples-houses for their gods, but also had their own “icon gods”. The great Russian writer N. S. Leskov perfectly expressed the notion of zemstvo god, being in the mir and participating in its earthly conciliar work. In his hagiography and storytelling about the Orthodox development and education of the lands and peoples of the northern “Edge of the World”, he expressed the key idea (image) of the Russian folk (“naïve”) theology: “I love more than any or all ideas about the Divine our Russian God, who creates a Place by himself “in his bosom”” [21, Leskov N.S., p. 417].

In Rus', foreigners and non-Russians called St. Nicholas the “Russian God”, the patron saint of sailors and explorers, whose North Sea development path is marked in the sacred navigation of the Icy Sea-Ocean by a guiding series of St. Nicholas temples of Pomorie (“From Kholmogor to Kola — thirty-three Nicholas”).

The zemstvo mirs had not only their own god, but also their own priest-popes, elected and invited by the mir gathering to the parish to serve God and the mir. An outstanding Russian writer, philosopher, theologian, researcher of folk religiosity and church antiquity of Holy Rus' S.N. Durylin undertook a number of academic expeditions and spiritual journeys to the Russian North, where, according to his “mythical” opinion, “a quiet angel flew over the earth and waters — and the evil mir disturbance subsided once and for all”. He vividly described in his diary the soulful poverty of the service of local, native, zemskiy priests: “And what priests are here! The whole Russia should have such people: he is a plowman, he is a mower, he is a catcher, he is a rower, he is “theirs” — not only to peasant, but also to his cattle, his lake, his brightly colored northern field, and even to

the century-old village church, full of ancient icons, with the creaking heavy door, with the Saint Nicholas of Mozhaisk, all-round defender — he is one of his own” [22, Ageeva E.A., p. 8].

Their zemstvo god, their zemstvo priest and their own zemstvo church built an invisible spiritual stronghold of the mir, were sacred guards of cathedral doorstep, protecting the zemstvo unity in the “troubled times” of natural and social upheavals and disturbances (epidemics, epizootics, crop failures, famines, fires, wars, etc.). To overcome these difficulties the construction of the “everyday” temple (chapel or church) was performed with a strictly regulated hierotopical program, establishing the time-frame of the ritual (one day), the participants (all mir), and the strict observance of all the stages and details of the technological cycle [23].

The tradition of “everyday” temple building is rooted in the northern Russian zemstvo hierotopical creativity (“the art of the fine craftsmen” by Boris Shergin) and constitutes an original branch of “speculation in wood”, which transformed the Russian North into a reserved integral “Spaso-ordinary” wooden temple ensemble that collects and preserves the unity of the Russian Mir.

The mythopoetic legends about the construction ceremonies of the “Spaso-ordinary” temples depict the cathedral “vsegradskiy”, “vsemirskiy”, “universal” nature of the church-building rites in the Russian North, the sociocultural and religious space of which was arranged on the powerful foundation of people's self-government (zemstvo–mir), capable of instant mobilization, to the maximum concentration of their spiritual, mental and bodily forces to collect the disintegrated cosmic unity.

The metaphysics of “everyday” church building occupied an important place in church and archaeological research and the theological and philosophical heritage of the Russian thinker-cosmist N.F. Fedorov. Temple hierotopy and symbolism embodied the key ideas and philosophies of his cosmic vision of the “Common Cause”, built according to the commandments of St. Sergius of Radonezh, the builder of “the temple of the undivided, inseparable Trinity, as a model of unity and life-giving consent” [24, Fedorov N.F., p. 17].

The construction of “everyday” church by the whole mir within one day marked the resurrection (gathering) from the oblivion of troubled times of the integral cathedral body of the small and large Mir, turned folk (“naïve”) theology to comprehend the wisdom and Sophiat beauty of the “Common Word” (consensus) and “Common Cause” (collaboration), which has become the key concept (symbol) of the project “Common Cause. Revival of Wooden Churches of the North”, initiated by the Charity Foundation for the Revival of Churches of the Fatherland and supported by His Holiness Patriarch Kirill of Moscow and All Rus’. The project, aimed at preserving and restoring the wooden churches of the Russian North, revives not only the material object signs of sacred architecture, but also the spirit of the northern zemstvo tradition, bringing together all the voluntary restorers of churches, which becomes the assembly point of their “renewed”, transformed

mir-zemstvo, which created in Pomorie, according to one of the ideological founding fathers of the Common Cause movement, Archpriest Dmitriy Smirnov, “a wonderful wooden civilization”¹.

It is not by accident that the idea of the project of the voluntary movement “Common Cause” originated with its leader — the abbot of the Moscow church of St. Seraphim Sarovskiy, Archpriest Andrey Yakovlev, when he was in the Pomor village of Vorzogory, founded in the 16th century, on the beautiful “mountainous” coast of the Onega Bay of the White Sea, after his meeting with a local old-timer, who for many years had been alone in maintaining the crumbling wooden church-temple ensemble, the former sacred centre of the Vorzogorskaya volost. From here, from the Onega Pomorie, a broad volunteer movement of the “Common Cause” started, which included in its programs the temple heritage of the “wooden civilization” of the Russian North. On August 21, 2019, His Holiness Patriarch Kirill visited Vorzogory. He “highly appreciated the work of volunteers in restoring the wooden churches of the Russian North, noting that the temple is the center of spiritual life”². Devotional activity for the Orthodox development (consecration) of the Arctic territories and water areas of the Northern macro-region within the framework of the patriarchal project “Russian Arctic” is carried out in the Naryan-Mar and Mezen diocese, headed by Vladyka Iakov, who, with the blessing of His Holiness Patriarch Kirill, consecrated the northernmost church in the name of St. Nicholas on Alexandra Island of the Franz Josef Land archipelago, the North Pole of the Earth and the Northern Sea Route. Patriarchal eight-meter worship crosses were erected on the islands of the Novaya Zemlya archipelago, and the Patriarchal Island appeared on the sacred map of the Arctic.

According to Vladyka Iakov, who is unofficially called the “Lord of the Arctic”, “the Bishop of the entire Arctic and Antarctic” (Vladyka consecrated the first Orthodox church in Antarctica), “it is important to understand that the Church, our diocese, occupies a special place in justification and implementation of the state strategy for development of the Russian Arctic. Ivan III did not send a “great army” to the Polar region by chance — he was building the Northern Thebaid on the foundations laid by the disciples and successors of St. Sergius. In the opening address of His Holiness Patriarch Kirill, who visited our diocese this year, one hears the spiritual dominance of the Russian presence here, in the north, which reaches from the depths of time”³.

The entire ideosphere and conceptosphere of the geocultural space of the Russian North, its sacred thesaurus are deployed in the cathedral natural and cultural ensemble of the Kenozernyy National Park, which preserves and develops the centuries-old mirostructural tradition of

¹ 25 marta proshla V nauchno-prakticheskaya konferentsiya po problemam sokhraneniya i restavratsii pamyatnikov derevyannogo zodchestva «Vozrozhdenie derevyannykh khramov Russkogo Severa» [On March 25, the 5th Scientific and practical conference on the problems of preservation and restoration of monuments of wooden architecture "Revival of wooden temples in the Russian North" was held]. URL: <https://bogoslav.ru/event/4880870> (accessed 05 July 2022).

² Svyateyshiy Patriarkh Kirill osmotrel derevyannye khramy v derevnyakh Vorzogory i Podporozh'e Arkhangel'skoy oblasti [His Holiness Patriarch Kirill toured wooden churches in the villages of Vorzogory and Podporozhye in the Arkhangel'sk Oblast]. URL: <http://www.patriarchia.ru/db/text/5488611.html> (accessed 05 July 2022).

³ Kak na karte Arktiki poyavilsya Patriarshiy ostrov [How Patriarch's Island appeared on the map of the Arctic]. URL: <http://www.patriarchia.ru/db/text/5374538.html> (accessed 05 July 2022).

northern societies. Kenozerye is a recognized creative methodological school and a reserve paradigm of preserving and enhancing the traditional experience of local (zemstvo) self-government as a key land management ideologeme and axiologeme of the strategy for the spatial development of small historical towns and rural areas of the Northern macroregion, based on the sacred intangible cultural heritage of the Russian North (Pomorje).

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The Project “Arctic Oral Memory” as an Audiovisual Resource on the History of the Arctic Exploration and Exploitation *

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Abstract. The research group of the Arctic Museum and Exhibition Center, Peter the Great Museum of Anthropology and Ethnography, in cooperation with the Marine Heritage Association and the media group of the Marine Technical College in St. Petersburg are implementing the Arctic Oral Memory project, supported by the Presidential Grants Fund. The project involves the creation of an open Internet resource <https://arcticmemory.ru/> with video recordings of oral histories of famous Russian polar explorers. The article is devoted to the results and experience of the implementation of this project, which is at the intersection of journalism (popularization), cultural anthropology and history, providing the opportunity to see and hear first-hand information from those who personally participated in the study and development Arctic.

Keywords: *Arctic, oral memory, oral history, Arctic memory, Arctic heritage, polar explorer*

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Introduction

Oral history is one of the most important areas of historical research in Russia and in the world. The problems and methodology of this field were actively developed. This direction was formed in the second half of the 20th century and is associated with the studies of such representatives of American and European science as J. Evans, A. Portelli, A. Haley, J. Vansina, P. Thompson, D. Berto, L. Nithammer, L. Passerini and others [1, Loskutova M.V.; 2, Rostovtsev E.A.]. In Russia, historian S.O. Schmidt was one of the first to use this concept [3]. Since the 1990s, a significant number of projects have been implemented in Russia to record and analyze certain aspects of oral history. Thus, the materials presented by the project “Oral History” of the scientific library of Moscow State University, based on the phonological archive of the philologist and archivist V.D. Duvakin (<https://oralhistory.ru/>), have become very popular [4, Timofeev L.I., Pospelov G.N.].

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Projects related to the study of the oral history of the peoples of the Arctic exist in Russia and around the world. Collections of oral ethnographic sources are widespread, for example, the database of the Center for the Study of Traditional Culture of the European North at the Northern (Arctic) Federal University named after M.V. Lomonosov (<http://folk.pomorsu.ru/>) or the "Wandering Memory" project aimed at studying the oral history of the indigenous peoples of the Arctic [5, Dudek Sh.]. In Murmansk, in the mid-2010s, the project "Cultural Memory of Modern Russia: Euro-Arctic North" was implemented. On its basis, the Internet resource <http://cultmemory.ru/> was created, and a number of collections of sources were formed, including audio recordings, memoirs, and photographs. The materials presented on the site are a source of study of the cultural heritage of the Arctic [6, Tereshchenko E.Yu., Fedorov P.V.].

However, these projects focus only on certain spectrums of Arctic oral history. In addition, they do not imply a wide popularization of the acquired knowledge.

Problem description

A generation of polar explorers, who in the Soviet and post-Soviet periods took part in intensive development of the Arctic and Antarctic, is passing away beneath our eyes; they have knowledge, competencies and life experience that are important to record and pass on to future generations. First of all, these are participants in such outstanding and no longer existing projects as the drifting stations "North Pole", high-latitude air expeditions, ice air reconnaissance and work of polar aviation, maritime operations, mass housing construction in the Arctic, and much more. Unfortunately, the COVID epidemic has significantly accelerated this process.

Considering that a new wave of interest in the Arctic is now developing, large-scale projects are being implemented there. It is important to take the accumulated experience as carefully as possible and create mechanisms for transferring knowledge and experience accumulated by generations of those who explored and mastered the Arctic.

The aim of the project is to preserve the historical memory and information about the acquired competencies "from the first person" — famous Russian polar explorers.

Project objectives:

- providing conditions for recording and transferring the unique competencies and life experience of Russian polar explorers to the next generations;
- formation of a database of audiovisual sources for further historical and anthropological analysis.

Russia has a unique historical experience of exploring the polar regions. At the same time, many phenomena and episodes of exploration and study remain "behind the scenes", are not recorded either in literature or in research, and exist only in the oral stories of those who took part in these processes.

It should be noted that the "compilation" of the post-war history of the development and study of the Arctic has not yet been made, it is "fragmented" into articles and separate studies

with numerous thematic gaps. Moreover, in the domestic tradition, the approach to the description of historical plots is highly depersonalized, with only the first person acting in the process of description. But even these individuals are rarely "given a voice" (what might be called "a first-person story").

The Oral Memory of the Arctic project is designed to fill this gap and is aimed at creating a resource that would present the life stories of polar explorers as an integral part of the general history of Arctic exploration and exploitation.

Such an approach is more accustomed to journalism and cultural anthropology, where interviewing is the main method of obtaining information, and where we hear and see our respondents in person.

A feature of oral history is that it often reflects aspects of an activity that are difficult to capture in a written text. Due to the fusion of information received both visually (face, facial expressions, gestures) and aurally (verbal information, intonation, etc.), a complex information field of various meanings is formed. Such information is capable of forming a deep understanding of the material presented.

In addition to preserving historical memory, the project is aimed at identifying unique knowledge and competencies that are important to tell about in the "first person". There is no doubt that those who were directly involved in the study and development of the Arctic and achieved success in this have unique knowledge and competencies that are important to record, study and pass on to future generations. This project aims to transfer knowledge and competencies to the next generations.

Project methodology

The main method of the project is recording video interviews, in a broader sense — an ethnographic method. However, it is not just a method of "collecting field material", but an activity to "create a source" [7, Shcheglova T.K.].

Within the framework of the Presidential Grant, a video recording of 30 famous people whose life paths are connected to the Arctic is being made.

When selecting polar explorers, we proceeded from the following criteria:

1) The most important and large groups, identified by thematic feature, should be presented. We have identified four groups:

- researchers (employees of various institutes and institutions), observers (at polar stations), engineers, etc.;
- managers (heads of polar stations, heads of communal services, managers of various levels);
- participants in maritime navigation (captains, navigators), sailors, employees of port services. There are also representatives of polar aviation;
- travelers, popularizers of the polar regions.

2) When selecting polar explorers for video recording, experience (at least 20 years), work experience and real achievements in their field of competence were taken into account.

3) Ability to express thoughts correctly.

The last criterion was very important, because a significant component of the project is popularization, which is impossible without a clear and precisely stated thought. The ability to express a thought is also a criterion for the awareness and quality of the competencies that our respondents possess.

The polar explorers for the video interviews were selected in several stages. The initiators of the project have a broad outlook and understanding of the profile specialists due to the fact that they have been organizers of the scientific-practical conference "Polar Readings" for many years <http://polarconf.ru/>. This conference has become a well-known scientific project among specialists. Consultants of the Polar Commission of the Russian Geographical Society and the Association of Polar Explorers of Russia were engaged, who also proposed a number of candidates.

This was followed by phone calls to the proposed candidates in order to find out the possibility of an interview. In the context of the pandemic, the possibility of conducting interviews via the Internet (in Zoom) was offered.

Once agreement was reached, a biographical note was prepared. An individual questionnaire was prepared based on the basic questionnaire and the respondent's specific skills. The basic sequence of questions was preserved in order to build some overlap between different interviews. We tried to keep the temporal sequence of the interview (questions about personal development, education, family — with a transition to the first acquaintance with the Arctic, further development of various competencies and life experience). In conclusion, they were asked to identify the key points for younger followers.

The prepared questionnaire was sent to the respondent in advance for acquaintance and internal preparation for the interview. They tried to record in rooms that are somehow thematically connected with the Arctic — in the Russian State Museum of the Arctic and Antarctic, the Krasin Icebreaker Museum, the Arctic and Antarctic Research Institute, on operating icebreakers.

During the interview, the moderator, trying to keep the general line of the questionnaire, could freely vary and come up with new or guiding questions in order to maintain an active conversation. Thus, the interaction was a form of a semi-structured interview in order to obtain deep, exciting information for the respondent, which was important for transferring to potential listeners as expressed knowledge. This means that the interview was passed through double reflection by the respondent himself: 1) comprehending his own life path and competencies on the basis of the questionnaire and 2) keeping the invisible audience to which the interview was directed: the respondent was asked to choose and tell what, in his opinion would be important to pass on to future generations.

The duration of the conversation was individual, and experience has shown that it practically always ranges from half an hour to an hour and a half.

The result of the interview was a video recording (produced with proprietary equipment within the framework of the grant), which was then subjected to minor correction — pronounced gaps and hiccups that did not affect the meaningfulness of the speech were deleted. The recording was mastered with opening and closing titles. In addition to a long recording, a short 2–3 minute video was prepared for each interview with the most interesting statements of the respondent.

All videos are posted on YouTube on the Arctic Memory channel. Using a YouTube function called "subtitles", the interviews were transcribed and presented as texts on the website and as subtitles. When transcribing, we followed a literary approach, removing parasitic words and sometimes simplifying statements while maintaining the meaning. The presence of subtitles makes it potentially possible to translate the interviews into any language used by Google Translator. This feature will contribute to the widespread global promotion of this content.

A 26-minute film compilation based on the most interesting statements of polar explorers was produced as a result of the grant; it is available online on the project website.

All basic materials — biographies, photos of polar explorers and videos (as links to Youtube) are posted on the information resource <https://arcticmemory.ru/>. Additional materials (photos, documents, links to articles and books), provided by the polar explorers, are also placed there.

Conclusions and next steps

It would certainly be wrong to stop the project at the recording of 30 known polar explorers. Obviously, the project has great potential for development. This includes expanding the geography of the project to include specialists who have worked not only in the Arctic, but also in the Antarctic. A promising area of work is cooperation with various enterprises operating in the Arctic by organizing video recording of interviews with their veterans.

Given the constraints imposed by the pandemic, the focus of the project was on respondents from St. Petersburg (where the project team was located). At the same time, there are specialists who have worked in the Arctic and Antarctic and have unique competencies in all regions of Russia, as well as abroad. Obviously, these groups can also gradually be covered by the project. To expand the geography, it is important to connect local schools and museums to the project, as they can organize interaction with a particular polar explorer and record it. It is important that the project has created a resource aggregator where the filmed stories can be placed. Remote methods — conducting interviews with the recording function via the Internet — significantly facilitate the task.

Thus, the materials can be used for a number of different purposes: for wide popularization and acquaintance with real personalities who have contributed to the study and development of the polar regions; for historical and anthropological analysis in order to study various aspects, such as everyday life in the Arctic, biographies of polar explorers, hidden and obvious causes of certain events, etc.; to organize the educational and upbringing process both by watching videos

and by involving young people in the implementation of the project — participation in video recordings, preparation of questionnaires and biographies, transcription of records.

The resulting materials are a visual, personalized resource, highlighting the contribution of Russian polar explorers to the development of the Arctic. The life paths of these people are an invaluable source for studying the history of the development of the polar regions.

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