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Analysis of Participation of Banking Institutions in the Strategic Development Programs of the Russian Arctic *

© Roman V. BADYLEVICH, Cand. Sci. (Econ.), Senior Researcher
E-mail: ramapatit@rambler.ru
Luzin Institute for Economic Studies, Apatity, Russia
© Elena A. VERBINENKO, Cand. Sci. (Econ.), Associate Professor, Leading Researcher
E-mail: everbinenko@yandex.ru
Luzin Institute for Economic Studies, Apatity, Russia

Abstract. The article examines the issues of financing the development of the Russian Arctic territories and the participation of banking structures in this process. A set of strategic documents for the development of the Arctic zone of the Russian Federation is considered, the dynamics of approved amounts of funding for Arctic development programs are analyzed, and the structure of sources of financing for investment in fixed assets in regions whose territory belongs to the Arctic zone of the Russian Federation is studied. It is concluded that banks are not sufficiently involved in investment activities in most of the Arctic regions (except the Yamal-Nenets Autonomous Okrug, where the active role of banking institutions is due to participation in the financing of large gas and oil production projects in the Northern part of the region), and in recent years, foreign banking structures decline investment activity. The article describes the prospects of participation of the largest Russian banking structures in implementing large-scale projects in the Arctic, such as VTB Bank, Sberbank of Russia, and Gazprombank. The analysis of the possibilities of concentration of banking capital, as well as the use of mechanisms of public-private partnership based on the creation of a single financial institution with state participation is performed. The most effective form of improving the efficiency of financial flows management in the framework of strategic development of the Arctic territories can be the creation of The Bank for reconstruction and development of the Arctic.
Keywords: *Russian Arctic, regions of the Russian Federation's Arctic zone, strategic development program, investment structure, bank financing, Bank for reconstruction and development of the Arctic.*

The Arctic has been one of the key strategic development priorities in our country over the past decade. Arctic natural resources, especially those of the continental shelf, are a strategic reserve of national importance. The land border of the Arctic regions of Russia is quite long - about 22,600 km. The territories differ considerably in terms of study and development, settlement and level of socio-economic development. Therefore, ensuring sustainability of the Arctic regions' economy functioning requires state regulation and support. In the context of increasing attention to the resources and capabilities of the Arctic on the part of major powers such as the United States, Canada, China, in Russia in recent years, on the initiative of the President of the Russian Federation, a separate direction of state policy — the development of the Arctic zone of the Russian Federation — has been formed.

In recent years alone, several key policy documents aimed at the development of the region have been adopted (Fundamentals of the State Policy of the Russian Federation in the Arctic

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for the period up to 2020 and beyond, the Strategy for the Development of the Arctic Zone of the Russian Federation and ensuring national security for the period up to 2020, State program of the Russian Federation "Socio-economic development of the Arctic zone of the Russian Federation for the period up to 2020", Fundamentals of state policy of the Russian Federation in the Arctic for the period up to 2035), a system of state bodies for the implementation of such a policy is being actively formed — the State Commission on Development of the Arctic under the Government of the Russian Federation was established, the Ministry of the Russian Federation for the Development of the Far East was reorganized into the Ministry of the Russian Federation for the Development of the Far East and the Arctic.

Leading researchers associate the development of the Arctic zone of the Russian Federation with the implementation of major infrastructure projects [1, Borisov V.N., Pochukaeva O.V.], the implementation of complex technological solutions on the Arctic shelf and in remote areas [2, Balashova E.S., Gromova E.A.], the need to modernize operating production facilities [3, Romashkina G.F., Didenko N.I., Skripnuk D.F.], the implementation of large international innovation projects [4, Skvortsova I., Latyshev R., Oskolkova M.], the formation of new Arctic clusters [5, Afonichkina E.A., Afonichkin A.I.]. These areas of development are based on the need for significant financial resources, which cannot be satisfied only at the expense of internal sources of economic entities operating in the Arctic regions, or state investments. In this regard, the study of the possibilities of attracting funds from the financial sector (one of the main links of which is the banking system) for the formation of sufficient financial potential for the development of these regions is an important condition for ensuring the necessary rates of economic growth of these territories.

Strategic documents aimed at the development of the Arctic territories of Russia

At the end of the last decade and the beginning of this one, large-scale projects aimed at the comprehensive development of the Russian Arctic were formed. It was supposed to send significant funds for their implementation. But with the emergence of crisis phenomena in the economy, the imposition of sanctions on Russia in 2014–2015 funding for most projects has been significantly reduced. In recent years, only military projects and related projects were continued to be implemented in full and on time. At the same time, even initially economically attractive projects in the field of exploration and production of raw materials in the Arctic were postponed until better times or were financed in a very limited amount. Also, projects for the creation of territorial clusters (with the exception of a ship-repair innovation cluster in the Arkhangelsk oblast), special economic zones (with the exception of the Murmansk port zone) were not implemented.

In 2017 amendments to the State Program of the Russian Federation "Social and Economic Development of the Arctic Zone of the Russian Federation for the Period up to 2020" were made, the most important of which was the calculation of the need for financing the proposed activities aimed at the development of the Arctic Zone of the Russian Federation, which, at the proposal of the Government of the Russian Federation, should have amounted to about 210 billion rubles by

2025 [1], and the key direction of the development of the Russian Arctic has become the process of creating support zones (it was supposed to form support zones along the entire route of the Northern Sea Route in all regions, whose territory wholly or partly belongs to the Arctic zone of the Russian Federation). However, in today's difficult economic conditions, it is impossible to expect full compliance of the established obligations. In particular, in February 2020, a decision to reduce the measures of the State Program by 50 billion rubles in 2020–2022 (from 190 billion rubles to 140 billion rubles) was made [2]. In fact, further funding is expected only in the key areas of the program — the creation of support zones in the Arctic and the development of human capital. All other areas and activities in the program will remain only in the form of transfers, and their implementation will be carried out within the framework of sectoral programs. At the same time, given the emerging objective reality associated with the announcement of a pandemic of a new coronavirus infection in the world, and the gigantic efforts of the authorities at all levels to contain and counteract the infection, which require significant financial costs, we should expect further cuts in funding for industry and territorial development programs, including the state program for the development of the Arctic.

One of the steps taken to increase the effectiveness of the Russian Federation Government efforts in the development of the Arctic territories of Russia should be the adoption of the Strategy for the development of the Arctic zone of the Russian Federation and ensuring national security for the period up to 2035. The objective of the early adoption of this strategic document is outlined in the Fundamentals of State Policy of the Russian Federation in the Arctic for the period up to 2035, adopted in March 2020 [3]. The task of adopting such a strategy was outlined by the President of the Russian Federation back in April 2019 during a speech at the V International Arctic Forum "The Arctic — Territory of Dialogue", which took place in St. Petersburg. By the end of 2019, the Ministry of the Development of the Far East and the Arctic created a draft of such a strategy. The scientific community, experts, regional authorities, and the public were involved in the formation of the project. In May 2020 the content of the Strategy is being adjusted, in particular, the draft has been sent to the federal authorities, the document is being coordinated with the regional strategies of the constituent entities of the Russian Federation included in the Arctic zone of the Russian Federation. Dated back to the late January it was planned that by the end of March 2020 the revised draft strategy would be submitted to the Security Council of

[1] Finansirovanie gosprogrammy razvitiya Arktiki otsenivaetsya v 210 mlrd. rub. Material analiticheskogo agentstva «Finmarket» [Financing of the State Program for the Development of the Arctic is Estimated at 210 Billion Rubles. Material of the Analytical Agency “Finmarket”]. URL: http://www.finmarket.ru/main/article/4476418 (accessed 01 June 2020).

[2] Arktika podelitsya den'gami. Minvostokrazvitiya uproshchaet gosprogrammu ee razvitiya. Material gazety «Kommersant» [The Arctic will Share the Money. The Ministry for the Development of the Russian Far East Simplifies the State Program for Its Development. Material of the Newspaper "Kommersant"]. URL: https://www.kommersant.ru/doc/4269792 (accessed 01 June 2020).

[3] Osnovy gosudarstvennoy politiki Rossiyskoy Federatsii v Arktike na period do 2035 goda // Utverzhdeny ukazom Prezidenta RF ot 05.03.2020 № 164 [Fundamentals of the State State Policy of the Russian Federation in the Arctic for the Period Up to 2035. Approved by the Decree of the President of the Russian Federation No. 164 Dated 05.03.2020].

the Russian Federation, and in June it would be presented at the International Economic Forum in St. Petersburg [4], but a new economic reality and concentration of efforts Governments in the fight against coronavirus infection pushed these plans back.

At the moment a set of strategic documents aimed at the development of the Russian Arctic is shown in Fig. 1. It should be noted that the strategic basis for the development of the Arctic zone of the Russian Federation is currently in the stage of active formation and change.

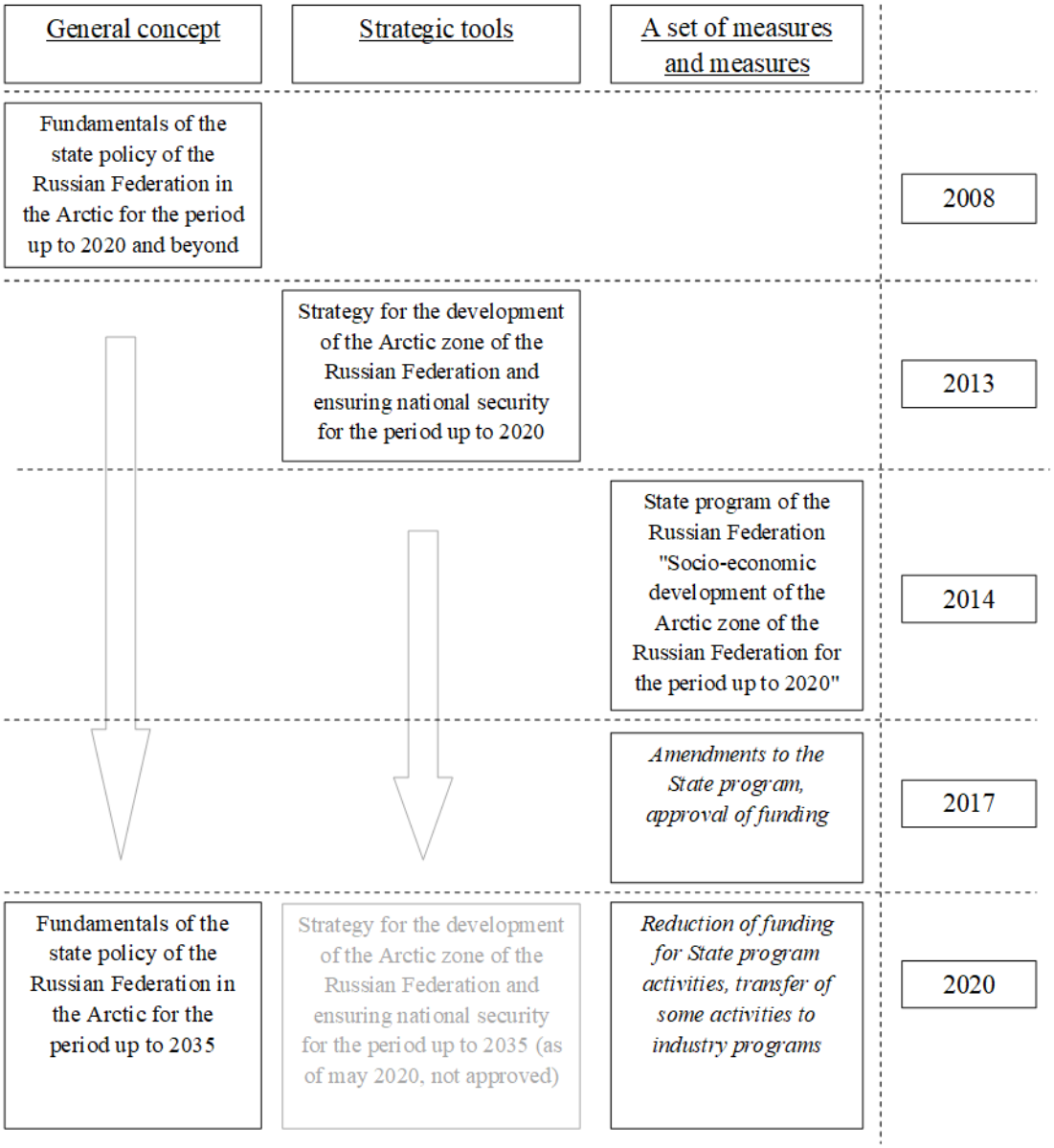

Fig. 1. Set of strategic documents aimed at the development of the Arctic Zone of the Russian Federation (created by the authors).

Let us consider the main sources and forms of the proposed financing of the measures listed in strategic documents and aimed at the development of the Arctic.

[4] Strategiya razvitiya Arkticheskoy zony Rossii budet gotova k 20 marta. Material Press-sluzhby Ministerstva RF po razvitiyu Dal'nego Vostoka i Arktiki [The Development Strategy for the Arctic Zone of Russia will Be Ready by March 20. Material of the Press Service of the Ministry of the Russian Federation for the Development of the Far East and the Arctic]. URL: https://minvr.ru/press-center/news/24231/ (accessed 03 June 2020).

As already mentioned above, the total amount of financial resources that were planned to be directed to the development of the Russian Arctic until 2025 was estimated at 210 billion rubles in 2017. More than 90% of these resources (over 190 billion rubles) were planned to be allocated at the expense of budgetary allocations from the federal budget. It is already clear that it is not possible to find sufficient budgetary allocations. Therefore, the state has to look for alternative ways of attracting funding to ensure the development of the Russian Arctic. Thus, it is planned to finance many projects for the Arctic development with the involvement of extra-budgetary sources.

Let us analyze the participation of non-budgetary sources in financing investments to the capital stock of the regions, whose territories belong to the Arctic zone of the Russian Federation. The graph shows the structure of financing investments sources to the capital stock in 2019.

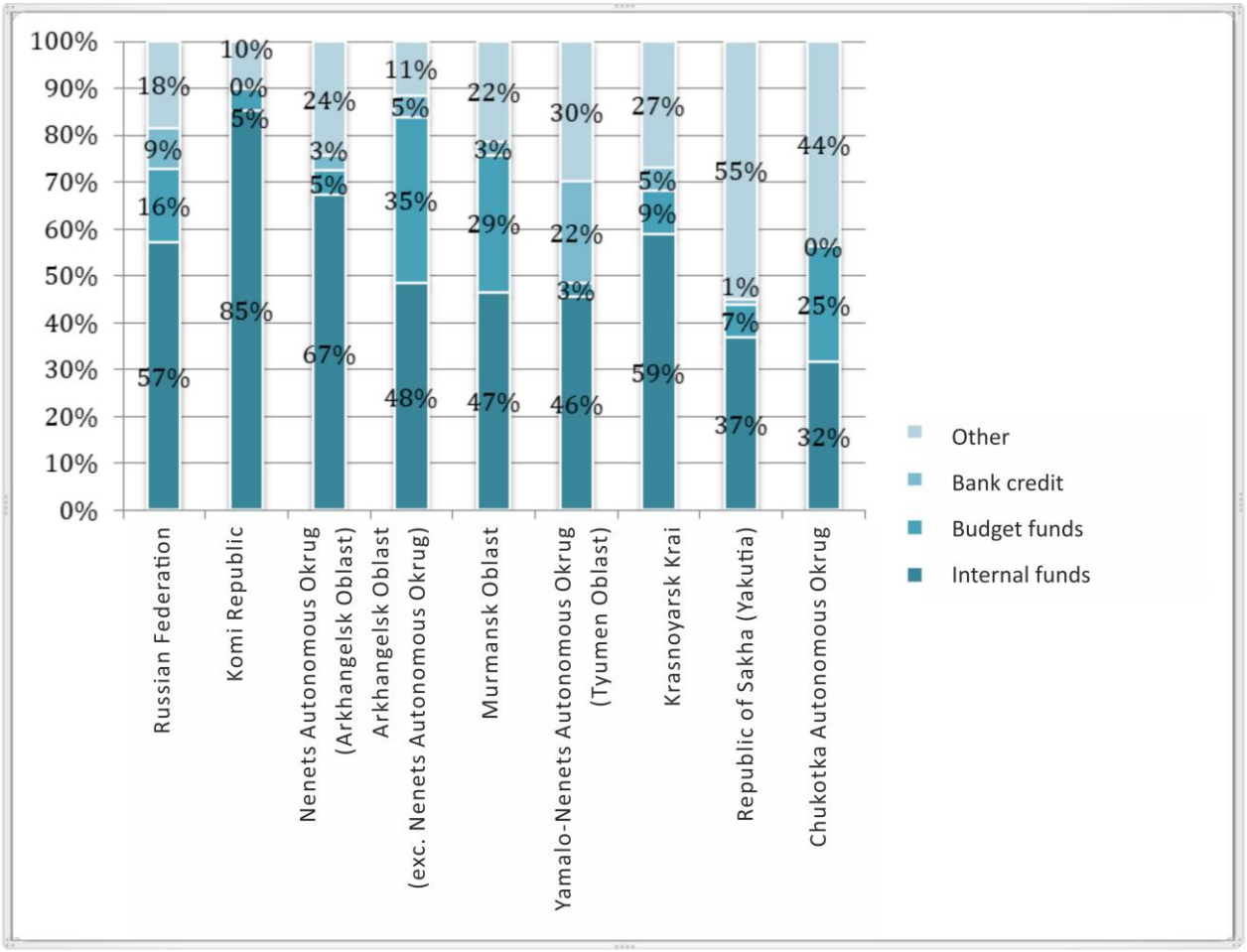

Fig. 2. Structure of investments in capital stock by sources of financing in 2019, % (according to UISIS) [5].

According to the data presented, the structure of sources in financing investments to the capital stock of the regions for the constituent entities of the Arctic zone of the Russian Federation is significantly different. So, for example, in the Komi Republic and the Nenets Autonomous Okrug, enterprises' own funds prevail in the structure of sources (85% and 67% of the total volume of in-

[5] Investitsii v osnovnoy kapital po istochnikam finansirovaniya v 2019 godu. Dannye sistemy EMISS [Fixed Capital Investments by Source of Funding in 2019. UISIS System Data]. URL: https://www.fedstat.ru/indicator/33644# (accessed 03 June 2020).

vestments). The share of budgetary funds in the structure of sources significantly exceeds the average Russian level (16%) in the Arkhangelsk oblast (35%) and the Murmansk oblast (29%). In the context of a reduction in funding for the State Program of the Russian Federation "Social and Economic Development of the Arctic Zone of the Russian Federation", as well as a decrease in business activity and profitability of large industrial enterprises in the context of the 2020 crisis, we should expect a decrease in investment in real investment projects in the Arctic.

Place of bank lending in the structure of funding sources activities for the development of the Arctic

Bank lending in the absolute number of the Arctic regions occupies a much smaller share in the structure of sources of financing for investments in capital stock compared to all-Russian data (in 2019 the share of bank loans in investments in capital stock in Russia was about 9%). An exception is the Yamalo-Nenets Autonomous Okrug, where in recent years the share of bank loans has exceeded 20% (in 2019 the value of this indicator was 22%). At the same time, 140 out of 188 billion rubles of bank loans aimed at financing investments in non-financial assets in the Yamalo-Nenets Autonomous Okrug fell on loans from foreign banks. The main volume of investments in capital stock in the Yamalo-Nenets Autonomous Okrug falls on the development and formation of infrastructure for large gas and oil production projects in the northern part of the region. In particular, these are Bovanenkovskiy, Tambeyskiy, and Kamennomysskiy gas production areas and Novoportovskiy and Messoyakhskiy oil production areas.

It should be noted that banking structures in Russia as a whole are quite far away from the real investment processes. During 2016–2018 the share of bank loans in the structure of funding sources was at the level of 10%–11%, and according to preliminary data, in 2019 this indicator decreased to 9%. At the same time, a similar indicator in developed countries is at least 35% (in the USA this indicator is at the level of 40%, in European countries on average — 45%, in Japan — about 65%) [6, Urmancheev I.Sh.]. The share of participation of foreign banks in financing investments in capital stock in recent years has decreased from 5.4% in 2017 to 2% in 2019. According to 2018 data, only in seven Russian regions (including The Khanty-Mansi Autonomous Okrug and The Yamalo-Nenets Autonomous Okrug, which are also part of the Tyumen oblast) loans from foreign banks were sent to finance investments in non-financial assets. The Yamal-Nenets Autonomous Okrug has become the only such region among all the Arctic regions of the Russian Federation. In recent years, foreign credit institutions prefer to invest only in large oil and gas projects with a significant margin of financial strength and high profitability.

In addition to the structure of investments in capital stock by sources of financing, the ratio of bank loans directed for real investment purposes per thousand rubles of gross regional product is quite indicative. This indicator for the Arctic regions is shown in Fig. 3.

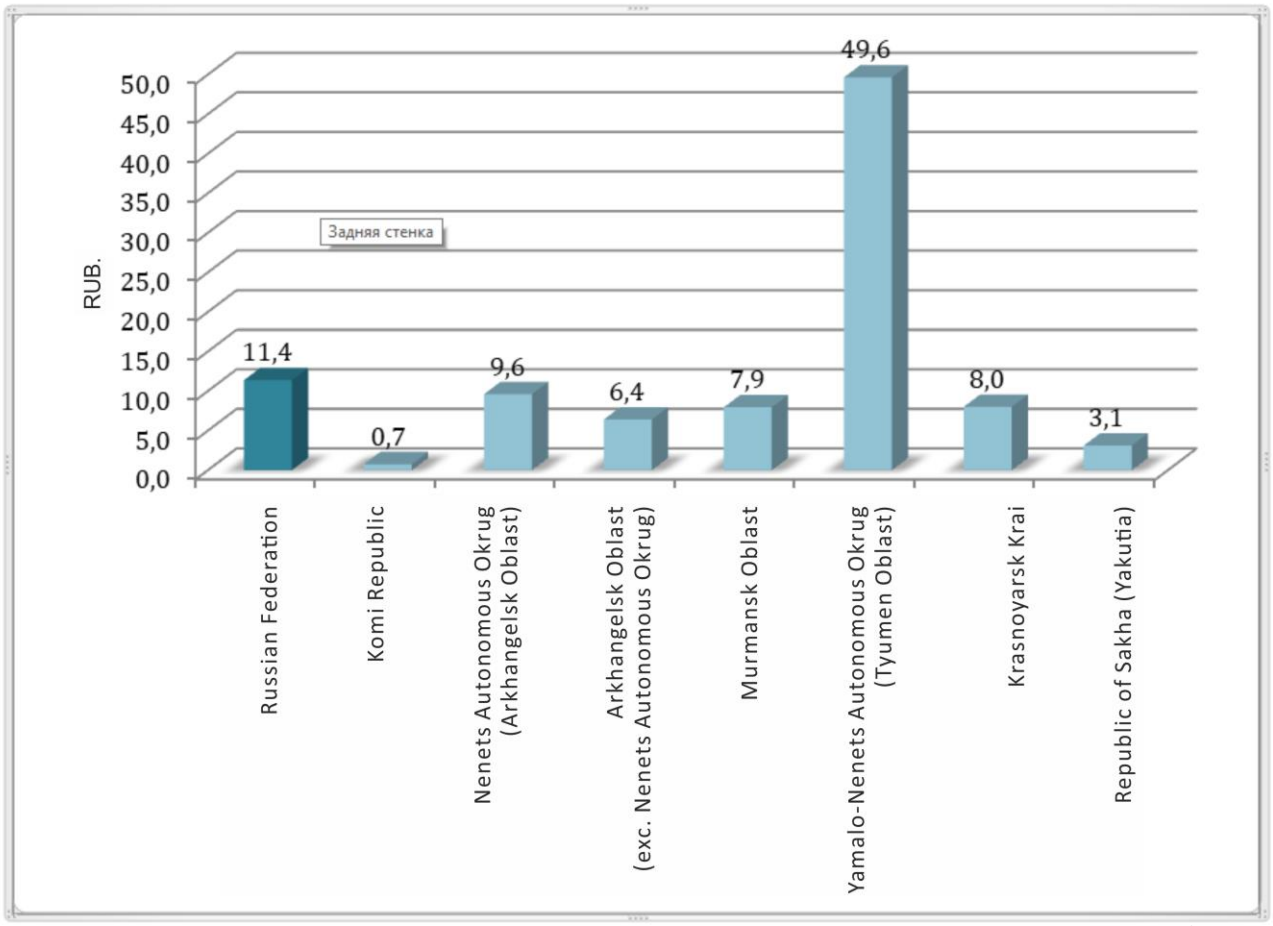

Fig. 3. The relative volume of bank loans aimed at financing investments in capital stock, per 1,000 rubles. GRP[6] for the subjects of the Arctic zone of the Russian Federation, rubles[7]

According to the graph, the only region of the Arctic zone of the Russian Federation where the volume of bank loans aimed at financing investments in capital stock is significant (more than four times higher than the average Russian level) is the Yamalo-Nenets Autonomous Okrug. The same region, as it was established by the authors in previously published works [7, Verbinenko E., Badylevich R.], is the leader among the Arctic regions of the Russian Federation in terms of the volume of investments in capital stock, financed through bank lending per capita. Despite a slight decrease in investment activity in the Yamalo-Nenets Autonomous Okrug in 2017–2019, the forecasts of regional authorities, according to which it is planned to attract up to 9 trillion rubles by 2050 only for the implementation of large investment projects in the north of the region [8], make it possible to speak with confidence about a further active role of banking structures in investment activities in this region. In all other Arctic regions the participation of banks in investment activities is insufficient.

[6] Preliminary GRP data of the constituent entities of the Russian Federation for 2019.
[7] No data available for Chukotka Autonomous Okrug.
[8] Investitsii v osvoenie severa YaNAO mogut dostich' 9 trln. rubley do 2050 goda. Materialy informatsionnogo agentstva «TASS» [Investments in the Development of the North of the Yamalo-Nenets Autonomous Okrug Can Reach 9 Trillion Rubles Until 2050. Materials of the Information Agency "TASS"]. URL: https://tass.ru/ekonomika/6341024 (accessed 03 June 2020).

Banking resources, according to the federal authorities' vision, is one of the main sources of financing for the implementation of large investment projects in the Arctic. In conditions when the volume of allocated budgetary allocations for the implementation of the main directions of development of the Arctic zone of the Russian Federation is being reduced, and the situation in the world commodity markets and the growing economic crisis in connection with the coronavirus pandemic in the world do not allow hoping for an increase in the investment opportunities of the state, large financial institutions can become significant participants in the implementation of state policy in the Arctic. This may be facilitated by the presence of large blocks of shares of the most influential Russian banks in state ownership (currently, according to official data, more than 50% of shares of Sberbank of the Russian Federation and almost 100% of shares of "Otkrytie" Bank belong to the Central Bank of the Russian Federation, Rosimushchestvo owns more than 60% of shares bank "VTB" and 100% of shares of "Rosselkhozbank" and "Promsvyazbank" and so on) and the presence of loyal managers, who are actually appointed with the participation of senior government officials.

The position of the President of the Russian Federation should become a catalyst for attracting banking structures to finance large projects for the development of the Russian Arctic. Many large financial institutions are already joining the process of implementing Arctic megaprojects now.

Since 2019 "VTB" Bank will increase its participation [9]. At the end of 2019 participation of "VTB" Bank in Arctic projects is about 500 billion rubles (80% of this amount is lending to investment projects, the remaining 20% are financial guarantees). In 2020–2021 the bank plans to increase its participation in the development of the Arctic at least twofold — to 1 trillion rubles. It is planned to accomplish this through the bank's participation in the project of an icebreaker fleet creation, which is currently being carried out by the "Rosatom" corporation. In 2019 the total amount of VTB's participation in this project was estimated at 150 billion rubles. In addition, the bank plans to participate in the implementation of an investment project for the development of the Baimskiy copper-gold deposit, which is located in the south-west of the Chukotka Autonomous Okrug and is, according to estimates, one of the largest deposits of copper and gold ores in the world. Up to 270 billion rubles can be allocated for these purposes. The construction and commissioning of the Baimskiy copper-gold deposit is currently being implemented by the Kazakh company KAZ Minerals. Another project that "VTB" Bank wants to invest in is a project for the extraction of platinoid ores on the Taimyr Peninsula of the Krasnoyarsk Territory. The bank's executives did not disclose the exact amount of VTB's participation in this project, owned by "Norilsk Nickel", but it is known that the total amount of investments required to implement the project in Taimyr is about 15 billion dollars.

[9] Burmistrova S. VTB predostavit 1 trln rub. na proekty v Arktike. Material portala «RBK» [VTB will Provide 1 Trillion Rubles for Projects in the Arctic. Material from the "RBC" Portal]. URL: https://www.rbc.ru/business/22/11/2019/5dd79bfc9a7947f3f95d6b05 (accessed 03 June 2020).

Since 2019 Sberbank has also been planning to participate actively in lending to large investment projects in the Russian Arctic. In particular, in April 2019 an agreement was reached between Sberbank and AEON Corporation to finance two large-scale projects: the first is connected to the development of a large coal deposit in the Krasnoyarsk Territory (on the Taimyr Peninsula) and the second is the creation of a port with associated infrastructure in the Nenets Autonomous Okrug in the Indiga village, which will become an important link in the development of the Northern Sea Route. The total amount of investments required for the implementation of these two projects is estimated at about 35 and 120 billion rubles [10]. Another initiative of Sberbank is related to the proposed financing of the "Severnaya Zvezda" company, which in the coming years plans to transport coal along the Northern Sea Route.

"Gazprombank", the third largest in terms of assets, also participated actively in lending projects for the development of the Arctic in 2019. Within the framework of the St. Petersburg International Economic Forum, the bank signed an agreement on the creation of port infrastructure in the city of Murmansk. The project envisages the construction of the coal terminal "Lavna", works on deepening the port area, and development of the port infrastructure [11]. Gazprombank's planned participation in the project is over 30 billion rubles. In addition, the bank supports many projects in the framework of the cluster of shipbuilding and production of marine equipment development in the Arkhangelsk oblast, participates actively in the development of transport and social infrastructure in the Yamal-Nenets Autonomous Okrug (currently the bank is implementing a project to build a bridge across the Pur River, is investing in the airport reconstruction in the city of Novy Urengoy [12]).

At the same time, in recent years, it has become increasingly difficult for the Government of the Russian Federation to count on participation of large foreign banks, which until 2014 had actively invested in Russian Arctic projects. There are at least two reasons for this. Firstly, the Western sanctions since 2014 have seriously complicated the participation of large international financial structures in the implementation of extracting and infrastructural Russian projects, which form the basis for the development of the Russian Arctic (for example, European companies are prohibited from lending and investing in development and exploitation of the offshore projects). And secondly, more and more large banks refuse to lend to projects in the Arctic and Antarctic for image-building reasons. The implementation of gas and oil production projects in the Arctic and

[10] Sberbank podpisal soglasheniya s Trotsenko po proektam v Arktike. Analiticheskiy material agentstva «RBK» [Sberbank Signed Agreements with Trotsenko on Projects in the Arctic. Analytical Material of the "RBC" Agency]. URL: https://www.rbc.ru/business/10/04/2019/5cadaf719a79473966e49ee8 (accessed 04 June 2020).

[11] Gazprombank pomozhet sozdaniyu novoy infrastruktury porta Murmanska. Analiticheskiy material agentstva «Izvestiya» [Gazprombank will Help to Create a New Infrastructure for the Port of Murmansk. Analytical Material of the "Izvestia" Agency]. URL: https://iz.ru/886518/2019-06-07/gazprombank-pomozhet-sozdaniiu-novoi-infrastruktury-porta-murmanska (accessed 04 June 2020).

[12] Yamal i Gazprombank nametili dal'neyshee sotrudnichestvo. Informatsionnye materialy agentstva «Sever-press» [Yamal and Gazprombank Have Outlined Further Cooperation. Information Materials of the "Sever-press" agency]. URL: https://sever-press.ru/2019/05/31/jamal-i-gazprombank-nametili-dalnejshee-sotrudnichestvo/ (accessed 04 June 2020).

Antarctic currently contradicts many fundamental international documents in the field of ecology, in particular, the Paris Climate Agreement. For this reason, two major international banks, the British banking group Lloyds and the American JPMorgan Chase refused to invest in oil and gas projects in the Arctic and Antarctic in early 2020 [13]. Earlier, ABN Amro, Societe Generale and Goldman Sacs announced their rejection of financial participation in such projects.

Proposals to improve the sustainability of financial development of the Arctic zone of the Russian Federation

In the present circumstances, when, on the one hand, the state participation in the implementation of various directions of development of the Arctic decreases, and on the other hand, the role of individual banking structures in financing individual large projects in the regions of the Arctic zone of the Russian Federation is increasing, it makes sense to return to the consideration of the possibility of creating a single financial institution for the concentration and centralization of financial opportunities and improving the efficiency of investment flow management.

Many authoritative scientists and researchers have discussed the possibility of creating such an institute in recent years in their scientific works. In particular, proposals to create an Arctic Development Bank were made. In recent years the effectiveness of such institutions has been expressed by the President of the St. Petersburg Arctic Public Academy of Sciences Mitko V.B. [8, Zimin N.S., Minina M.V., Mitko A.V., Mitko V.B.], vice-governor of St. Petersburg Albin I.N.[14], full member (academician) of the public Russian Academy of Social Sciences and the Academy of Geopolitical Problems Lukin Yu.F. [9] and many others . This structure should be a mixed national investment and credit institution, which is being created to implement large investment projects in the Russian Arctic, as well as to ensure the formation of the necessary infrastructure in this territory. In general, the creation of such an institution involves the centralization of decision-making on the allocation of funding in the areas presented in the State Program “Socio-economic development of the Arctic zone of the Russian Federation”. An important feature of such a bank is that its resource base can be formed not only at the expense of budget allocations, but also by attracting financial resources from large commercial banks.

As an alternative to the creation of the Arctic Development Bank, the scientific literature quite often proposes the formation of the Arctic Development Fund. In particular, the proposal to create such a tool for the development of the Arctic territories is found in the works of Tatarkin A.I., Loginov V.G., Zakharchuk E.A. [10, Tatarkin A.I., Loginov V.G., Zakharchuk E.A.], Pasynkov A.F., [11, Zakharchuk E.A., Pasynkov A.F.]. The main difference between such an insti-

[13] Sidorovich V. Mezhdunarodnye banki otkazyvayutsya ot finansirovaniya neftegazovykh proektov v Arktike. Material portala RenEn [International Banks Refuse to Finance Oil and Gas Projects in the Arctic. Material from the RenEn Portal]. URL: https://renen.ru/mezhdunarodnye-banki-otkazyvayutsya-ot-finansirovaniya-neftegazovyh-proektov-v-arktike/ (accessed 04 June 2020).

[14] Vystuplenie vitse-gubernatora goroda Sankt-Peterburg I.N. Albina na V mezhdunarodnom forume «Arktika: nastoyashchee i budushchee». 7-8 dekabrya 2015 g. Sankt-Peterburg [Speech of the Vice-Governor of St. Petersburg Albin I.N. at the 5th International Forum "Arctic: Present and Future". December 7-8, 2015, St. Petersburg]. URL: https://ru.arctic.ru/economics/20151207/249338.html (accessed 05 June 2020).

tution and a banking structure is the mechanism of the resource base formation. The researchers propose to form the fund's resources mainly at the expense of deductions from the tax on the extraction of minerals, which are paid to the budget by large business entities operating in the Arctic zone of the Russian Federation. When companies use preferential taxation schemes, it is possible to transfer part of the value added to the fund. Researchers also propose to transfer export customs duties on "hydrocarbons" and payments for the use of natural resources received from the Arctic regions, while the fund itself, by analogy with the road fund, should be included in the state budget [12, Nikulkina I.V., Romanova E. V.]. The management of the fund's activities should be entrusted to the state commission for the development of the Arctic. It is proposed to use the resources of the fund on the terms of public-private partnership for the development of social, transport, and energy infrastructure of the Arctic regions.

With all the attractiveness of the idea of creating an Arctic Fund at the moment in the context of the development of an unprecedented global financial crisis, a significant reduction in gross domestic product and a probable recession in Russia in 2020, fall in world prices for raw materials, the possibility of forming the fund's resources in sufficient volume due to deductions from the mineral extraction tax seems highly questionable. Therefore, the creation of the Arctic Development Bank with the involvement of private capital for the development of the Arctic, including banking, is seen in modern conditions as more effective. At the same time, separate mechanisms for the formation of the Arctic Fund can be used when creating the Arctic Development Bank.

A prospective scheme of creation and functioning of the Arctic Development Bank, according to the authors, is presented in Fig. 4.

To a certain extent, when implementing the project of creation the Arctic Development Bank, it is possible to use the experience of the Far East Development Fund establishing, which was formed by Vnesheconombank in 2011. For almost a decade this fund has been actively involved in projects aimed at developing the Far Eastern and Baikal macroregions of Russia, attracting private investors and resources of Vnesheconombank[15]. Since 2015 the Fund has invested in 17 projects (including such large ones as the construction of the Inaglinskiy mining and processing complex (South Yakutia), the creation of a gas chemical complex for the production of methanol for export in the "Neftekhimicheskiy" ASEZ (Primorskiy Territory), the launch of a mining and processing plant based on the Malmyzhskoe field (Khabarovsk Territory) and a number of others) about 60 billion rubles, and the total investment in projects supported by the Fund amounted to more than 477 billion rubles [16]. By co-financing projects, the Fund makes it possible to reduce the cost of credit resources allocated to priority projects significantly, since resources obtained

[15] Razvitie Dal'nego Vostoka i Baykal'skogo regiona. Material Vneshekonombanka [Development of the Far East and the Baikal Region. Materials of the Bank for Foreign Economic Activity]. URL: https://xn--90ab5f.xn--p1ai/regionam/razvitiye-dalnego-vostoka-i-baykalskogo-region/ (accessed 06 June 2020).

[16] FRDV v 2019 godu uvelichil ob"em investitsiy v proekty na Dal'nem Vostoke na 54%. Informatsionnyy material agentstva «TASS» [The FRDV in 2019 Increased the Volume of Investments in Projects in the Far East by 54%. Informational Material of the "TASS" Agency.] URL: https://tass.ru/ekonomika/7427119 (accessed 06 June 2020).

through subsidies from the federal budget are provided for investment purposes. Another advantage of the Fund's participation in project implementation is the involvement of Fund experts to work on projects, which allows reducing management costs at the design, construction and commissioning stages.

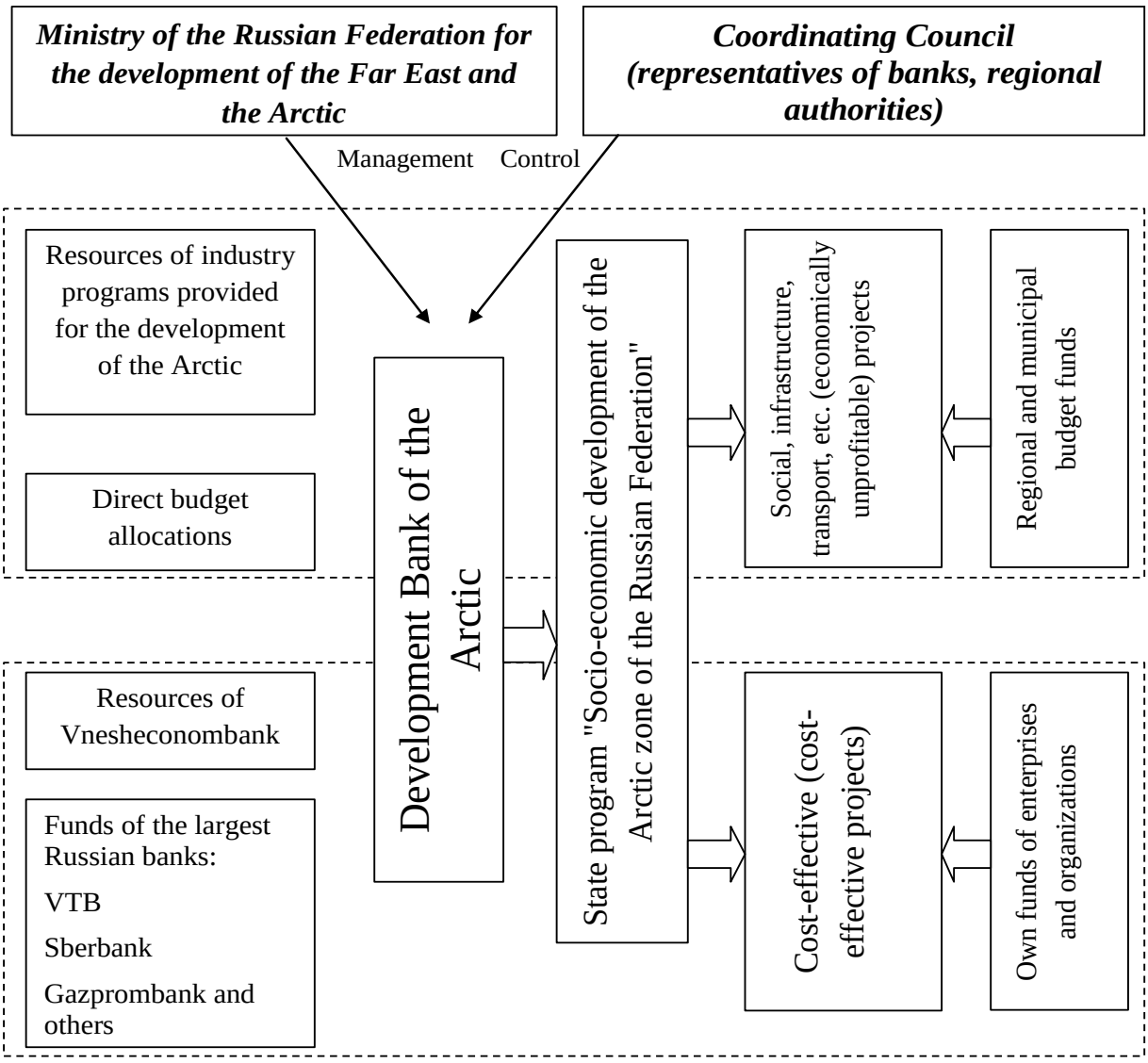

Fig. 4. Scheme of creation and functioning of the Arctic Development Bank.

Since 2019, according to the instructions of the President of the Russian Federation, the activities of the Far East Development Fund can be expanded to the territory of the Arctic zone of the Russian Federation[17]. However, this step, according to the authors, may be less effective than the creation of a separate Institute, specializing in the implementation of state policy aimed at the development of the Russian Arctic, with the attraction of funds not only from Vnesheconombank, but also from other large banking structures.

[17] «V Arktike tselesoobrazno nachinat' s proektov, svyazannykh s razvitiem transportnykh uzlov». Interv'yu s glavoy Fonda razvitiya Dal'nego Vostoka. Material portala «Pro-Arktik». ["In the Arctic, it is Advisable to Start with Projects Related to the Development of Transport Hubs". Interview with the Head of the Far East Development Fund. Material of the "Pro-Arctic" Portal]. URL: http://pro-arctic.ru/05/06/2019/expert/36837 (accessed 07 June 2020).

Conclusion

The Russian Arctic is the most important strategic macro-region, the development of which has received focused attention in recent years due to its economic, commercial and geopolitical importance. The study of the processes of financial support for achieving the strategic development goals of the Arctic zone of the Russian Federation is of great importance in the system of state Arctic policy. The search for effective ways to form a sufficient financial base, as well as the optimization of financial flow management processes are integral elements of the well-timed and complete implementation of measures of the state program of the Russian Federation "Socio-economic development of the Arctic zone of the Russian Federation for the period up to 2020", the implementation of large commercial and infrastructure projects, preservation and development of labor potential in the Arctic.

At the present time in the context of decrease in the possibilities of allocating state resources for the development of the Russian Arctic, it is especially important to attract extra-budgetary financing, in particular, the resources of the banking system. However, the conducted study allowed us to conclude that bank lending in most of the Arctic regions occupies a much smaller share in the structure of sources of financing for investments in capital stock compared to the average indicators for Russia. Besides, lending activity of foreign institutions has decreased in the Arctic regions in recent years, which is primarily due to the imposition of sanctions against the Russian Federation in 2014. The only Arctic region where the indicators of bank lending for investments are much higher than the national average is the Yamalo-Nenets Autonomous Okrug.

The position of the President of the Russian Federation, who urged leading Russian banks to increase participation in the implementation of Arctic projects, makes it possible to look optimistically at the intensification of the participation of the largest banking structures. In 2019–2020 the banks such as "VTB", Sberbank of Russia, and "Gazprombank" came forward with the intention to participate in financing the development of the Arctic.

The creation of the Arctic Development Bank can systematize the participation of the largest banks in the implementation of the state policy for the development of the Arctic territories. The creation of such a structure will allow solving the following tasks:

- to attract the resources of the largest banking structures to the financing of the state policy for the development of the Arctic In conditions of budgetary resources deficit;
- to concentrate limited financial resources on the most priority projects for the development of the Arctic zone of the Russian Federation;
- to use the mechanisms of public-private partnership more actively in order to implement socially significant projects and programs in a wide range of areas of activity (from basic industries and R&D to the provision of public services), contributing to the development of the Arctic territories;

- to systematize the work in the field of financing projects included in the State Program "Social and Economic Development of the Arctic Zone of the Russian Federation";
- to attract the resources of Vnesheconombank to the implementation of large industrial and infrastructure projects in the Arctic, which are mainly used for the development of the Far Eastern and Baikal macroregions.

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Features of Clustering in Fisheries by the Example of Fisheries in the Northern Basin and the Murmansk Oblast *

© Anatoly M.Vasilyev, Doc. Sci. (Econ.), Professor, Chief Researcher
E-mail: vasiliev@pgi.ru
Luzin Institute for Economic Studies, Apatity, Russia

Abstract. The purpose of the study is the rationale for creating a fisheries cluster in the Northern Basin. The analysis of the creation of classical clusters in foreign countries is carried out, information on the limited use of these structures is provided. The stages of clusterization of the fishing industry in Russia are considered. The reasons for the lack of implementation of numerous cluster projects are clarified. The main one is the refusal of fishing fleets to enter the cluster. The successful functioning of the fishery complex in the Northern Basin in the pre-market period is presented. The reasons for its destruction and the stagnation of enterprises and organizations' economies serving the main structures of the marine economic activity of fishing fleets are clarified. They are caused by a change in the structure of mining fleets, the development of uncontrolled export of fish products directly from the sea, with the departure of fishing vessels for repairs and maintenance to foreign ports. The practicality of creating a local fish cluster, the core of which will consist of fishing vessels with an incomplete cycle of processing aquatic biological resources and coastal fish processing enterprises, is justified. The proposed measures stimulate entry into the cluster. The study's practical significance lies in the creation of conditions for the deep processing of aquatic biological resources and the release of innovative fish products, as well as for the development of ship repair and other enterprises serving the fishing fleet.
Keywords: *Western Arctic, cluster, fishery of seafood, processing, innovation.*

Introduction

The goals and objectives of the country's fisheries are given in the state program of the Russian Federation "Development of the fishery complex"[1].

Many national scientists consider the creation of clusters in coastal regions to be one of the economic instruments for achieving the goals set for the fisheries industry by the President and the Government of the Russian Federation, referring at the same time to foreign experience [1–5].

However, the analysis of the economy clustering abroad, including countries with developed fishery, showed that the practice of formalizing the existing fishery complexes into clusters is not developed there [6, 7]. Only in Iceland the ICELAND ocean cluster was created in 2011. It has been in operation for more than six years. “The mission of the Icelandic Oceanic Cluster is to create value by bringing together entrepreneurs, business and maritime expertise. To fulfill this mission, we provide a wide range of services and invest our resources in new ancillary and shipping projects. Currently, the cluster includes more than 120 companies and an accelerator of 3,000

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[1] Gosudarstvennaya programma Rossiyskoy Federatsii «Razvitie rybokhozyaystvennogo kompleksa»: utverzhdena postanovleniem Pravitel'stva RF ot 15 aprelya 2014 g. № 314 (v red. postanovleniya Pravitel'stva RF ot 27 marta 2019 g. № 324) // SZ RF. 2014. St. 2160 [State Program of the Russian Federation “Development of the Fishery Complex”: Approved by the Decree of the Government of the Russian Federation of April 15, 2014 No. 314 (as Amended by the Government of the Russian Federation of March 27, 2019 No. 324). SZ RF. 2014. Art. 2160].

square meters area. The network companies represent all parts of the ocean value chain with a focus on seafood. The branch of this cluster has been established and operates successfully in New England (USA). Twelve companies were created as subsidiaries of the cluster" [8]. Aquaculture Cluster is successfully operating in Norway. It is not only one of the driving forces in the field of aquaculture, but also innovation in the country as a whole[2].

Cluster structures have also been formed in the sector of commercial fish and seafood farming in the leading countries (Chile, Iceland, France, Vietnam). Asian countries (Japan, South Korea, China) have developed port complexes, including refrigerators for receiving and storing fish products, fish processing enterprises, technical centers for servicing and repairing ships, as well as transport and logistics networks for the delivery and sale of commercial products. An additional stimulus for the development of these complexes is the raw materials imported from Russia[3, 4, 5] [9].

Activities of State bodies for the clustering of fisheries

The necessity and directions for the development of clustering of the "fish" economy in Russia (in sectoral, territorial or innovative aspects) have been repeatedly reflected and declared in the official program and policy documents. One of them envisaged, at the initial stage (2008), to form a network of territorial production clusters, taking into account regional industry specialization. For the coastal regions of the Far East a bioresource cluster creation was envisaged, the basis of which will be the extraction and processing of aquatic biological resources and mariculture[6].

The next fundamental document in relation to fishing activities is the instruction of the President of the Russian Federation dated 21 March 2013 Pr-613 on the creation of a fish processing cluster with modern port infrastructure and refrigeration facilities in the Far East, the implementation of which will allow to reorganize the fish industry of the Far East in a single high-tech complex. Over the past period, several projects have been developed for the Far Eastern fishery cluster, including the Japanese Institute "Nomura". All of them remained unfulfilled[7].

Another instruction of the President of Russia Putin V.V. on the creation of a "fish" cluster in the Far East followed after the meeting of the Presidium of the State Council for the Development of Fisheries on 19 October 2015. The Russian Government reaction to it was the decision to create 4 regional clusters in the Primorskiy Territory, Kamchatka, Sakhalin and the Kuriles. One of

[2] Klastery Norvegii [Clusters of Norway]. URL: https://1neof.ru/klastery-norvegii/ (accessed 15 June 2020).
[3] Korea Industrial Complex Corporation: Official web-site. URL: http://www.kicox.or.kr/home/eng/ (accessed 03 January 2020).
[4] Maritime culture of China. URL: www.cseac.com (accessed 03 January 2020).
[5] Fuchzhou nameren postroit' krupneyshiy offshornyy rybolovetskiy klaster v Kitae [Fuzhou Intends to Build China's Largest Offshore Fishing Cluster]. URL: http://news.wenweipo.com/2014/01/07/NN1401070006.html (accessed 03 October 2019).
[6] Kontseptsiya dolgosrochnogo sotsial'no-ekonomicheskogo razvitiya Rossiyskoy Federatsii na period do 2020 goda (utv. Rasporyazheniem Pravitel'stva RF ot 17.11.2008 g. N 1662-r) // SZ RF. 2008. № 47. St. 5489 [The Concept of Long-Term Socio-Economic Development of the Russian Federation for the Period Up to 2020 (Approved by the Order of the Government of the Russian Federation of November 17, 2008 N 1662-r). SZ RF. 2008. No. 47. Art. 5489].
[7] Rybnyy klaster rastashchili po Dal'nemu Vostoku [The Fish Cluster Was Taken Away across the Far East]. URL: https://primamedia.ru/news/486698/ (accessed 09 January 2020).

them was created in June 2018 in the Kamchatka Territory and includes the Ministry of Fisheries of the Kamchatka Territory, the Agency for Investments and Entrepreneurship, JSC "Corporation for the Development of Kamchatka", the Union of Fishermen and Entrepreneurs of Kamchatka, the Union "Chamber of Commerce and Industry" of the Kamchatka Territory, as well as 49 enterprises of large, medium and small businesses. The cluster should become the main supplier of fish products to the European part of Russia along the Northern Sea Route.

The situation is similar in the coastal regions of the North-West of Russia. In 2016-2017 decisions to create clusters in the field of fishing activities in the Arkhangelsk, Kaliningrad and Murmansk oblasts and fish farming in the Republic of Karelia were made. The creation of these clusters was initiated by the regional administrations, which received support at the sectoral level..

The decision to create and develop a fishery cluster in the Murmansk oblast was approved by the regional governor in 2016 as part of the Murmansk oblast state program "Development of fish and agriculture, regulation of markets for agricultural products, raw materials and food" [8]. Subsequently, due to the lack of support and positive decision on this issue from the main potential participants (fishing organizations and the Murmansk Sea Fishing Port), the provision for the creation of a fishery cluster was excluded from the program [9].

In November 2017, by order of the Ministry of Agroindustrial Complex and Trade of the Arkhangelsk Oblast No. 356-p, a working group was formed to create a cluster, which completed its activities in May 2019 by signing documents on the formation of the Arctic Fisheries Cluster. It is considered to be interregional, with the involvement of the enterprises of the Northwestern Federal District. It is planned to create a multifunctional coastal complex in Arkhangelsk within the cluster, focused on receiving and deep processing of fish supplied via the NSR, as well as supplying it to the regions of the Central Federal District (CFD). This is supported by the commissioning of additional onshore processing facilities within the framework of the investment quotas mechanism.

It should be noted that, in spite of the Arkhangelsk trawl fleet's official entry into the cluster, the participation of fishermen in its activities, in our opinion, will not be active. This is primarily due to the presence of non-sailing fishing vessels. The priority of the supply of fish products abroad is also reflected. Therefore, the orientation towards the supply of Far Eastern fish both for

[8] Gosudarstvennaya programma Murmanskoy oblasti «Razvitie rybnogo i sel'skogo khozyaystva, regulirovanie rynkov sel'skokhozyaystvennoy produktsii, syr'ya i prodovol'stviya» (utv. postanovleniem Pravitel'stva Murmanskoy oblasti ot 11.11.2016 № 561-PP) [State Program of the Murmansk Oblast "Development of Fish and Agriculture, Regulation of Markets for Agricultural Products, Raw Materials and Food" (Approved by the Government of the Murmansk Oblast of 11 November 2016 No. 561-PP)]. URL: https://mrcx.gov-murman.ru/activities/RHK/rpu1-docs/561_pp.pdf (accessed 10 November 2019).

[9] Prilozhenie k postanovleniyu Pravitel'stva Murmanskoy oblasti ot 05.07.2017 №340-PP «Izmeneniya v gosudarstvennuyu programmu Murmanskoy oblasti «Razvitie rybnogo i sel'skogo khozyaystva, regulirovanie rynkov sel'skokhozyaystvennoy produktsii, syr'ya i prodovol'stviya» [Appendix to the Decree of the Government of the Murmansk Oblast Dated 05 July 2017 No. 340-PP "Changes to the State Program of the Murmansk Oblast "Development of Fish and Agriculture, Regulation of Agricultural Products, Raw Materials and Food Markets"]. URL: http://docs.cntd.ru/document/450257674 (accessed 10 November 2019).

processing and for supplying fish products to the regions of the Central Federal District should be considered correct.

Speaking about the development of the Arctic cluster as an interregional one, in our opinion, one should keep in mind the preserved ship repair base. This factor will facilitate interregional cooperation. At the same time, the leadership of the regions neighboring the Arkhangelsk oblast is jealous of leadership in the development of the Arctic. Therefore, it can presumably hinder interregional cooperation.

Materials and research methods

In the theoretical works of the authors named at the beginning of the article, the issues of the possibilities of creating fishery clusters from the point of view of determining factors are considered. An increase in the production of deep processing products, a decrease in prices for fish products, an increase in exports and an increase in filling the domestic market are declared.

However, the problems of attracting fish raw materials to onshore processing centers and reducing fish prices of ultimate suppliers are not investigated. At the same time, it is known that the export of fish is already excessively large and is inefficient from the state point of view. The domestic market does not receive fish raw materials and finished products of marine manufacture in the necessary quantities, ensuring its accessibility to the population. For example, in the Murmansk oblast up to 80% of the catch is exported [10].

In order to actualize the issue of a fishery cluster creation in the Murmansk oblast (or, conversely, the absence of such a problem) an analysis of the fisheries industry state was carried out.

The fishing industry of the Northern Basin was a powerful fishing and processing complex by 1990. The fishing fleet consisted of 434 vessels, including 181 units of large tonnage and 216 units of medium tonnage. The total catch of fish and seafood reached 1 593 thousand tons, the output of fish products was 1 299.2 thousand tons, including output of coastal factories — 141 thousand tons. The cargo turnover of the Murmansk Sea Fishing Port reached 1 166.2 thousand tons. The ship repair was fully provided by the Murmansk shipyard and the workshops of the mining enterprises. The necessary fishing equipment was made by the Murmansk fishing gear factory, and various containers were made by the container plant. Design and engineering organizations carried out orders for ships and coastal enterprises for the development and manufacture of new technologies for fish products, various equipment and outfit. The Nikolai M. Knipovich Polar Research Institute of Marine Fisheries and Oceanography (PINRO) and Northern Exploratory Fishing (Sevrybpromrazvedka) provided the fleets with a raw material base, and various schools — with personnel. We can say that it was a directively created effective fishery cluster [10].

[10] Razrabotka osnovnykh polozheniy dolgosrochnoy programmy osvoeniya bio- i uglevodorodnykh resursov Zapadno-Arkticheskikh shel'fovykh akvatoriy: otchet o NIR (zaklyuch.): 3-96-4006 / Institut ekonomicheskikh problem Kol'skogo nauchnogo tsentra Rossiyskoy Akademii nauk; nauch. ruk. Ostistyy B.K.; otv. ispoln.: Ostistyy B.K., Vasil'ev A.M. Apatity, 1998. S. 290 [Development of the Main Provisions of a Long-Term Program for the Development of Bio- and Hydrocarbon Resources of the West Arctic Shelf Areas: Report on Research: 3-96-4006. Institute of Economic Problems of

In the 1990s , in the process of privatization, fragmentation of old enterprises and establishment of new ones, separation of economic entities by type of activity and specialization, the general pool corporate structure collapsed, and interaction in a single production chain weakened. The decrease in the level of interaction was differentiated, but in most cases, it was critical.

So, in 1988–1990 the total share of products and services of service industries in the total cost of production fleets and floating bases was 45.0–46.0%. And in 1992 it had already dropped to 18.0%. It should be noted here that during this period price factors also had a significant impact on the change in the significance of certain types of costs that form the cost of production of field organizations. This was expressed, first of all, in a more dynamic rise in prices for the products of the main production of the fish industry [11].

There were quantitative and structural changes in the composition of the fishing fleet, a decrease in the catch of fish and seafood.

The number and structure of the fishing fleet, formed in market conditions, with the raw material base available in the nearby fishing areas taken into account, is shown in table 1.

Table 1

Dynamics of the Northern Basin fishing fleet development [11,12]

Indicators	1990	2000	2010	2017	The ratio of 2017 to 1990, %
Fishing vessels, units	416	423	287	224	53.8
Large and big, units	183	72	31	18	9.8
Average, units	221	318	174	136	61,5
Small and undersized, units	14	33	31	70	500,0
Total catch, thousand tons	1593	648	824.4	569.2	35.7
Note: according to the registers of the Murmansk Sea Fishing Port					

In 2017 fishing activities were carried out by 177 vessels registered in the ports of the Northern Basin and leased from the enterprises of the basin (80.0% of the registered composition). The delivery and unloading of fish products directly from the fishing areas was carried out by 107 fishing vessels: 1 large, 2 big, 55 medium, 49 small and undersized vessels.

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[11] Kontseptual'nye napravleniya innovatsionnogo razvitiya morekhozyaystvennogo kompleksa Evropeyskogo Severa Rossii: otchet o NIR (promezhut.): 3-10-4002 / Institut ekonomicheskikh problem Kol'skogo nauchnogo tsentra Rossiyskoy Akademii nauk; nauch. ruk. Vasil'ev A.M.; otv. ispoln.: Vasil'ev A.M., Kuranov Yu.F., Grushenko E.B. i dr. Apatity, 2011. 97 s. [Conceptual Directions of Innovative Development of the Maritime Complex of the European North of Russia: Report on Research (interim): 3-10-4002. Institute of Economic Problems of the Kola Scientific Center of the Russian Academy of Sciences; scientific. adv. Vasilyev A.M.; executed by Vasiliev A.M., Kuranov Yu.F., Grushenko E.B. et al. Apatity, 2011. 97 p.].

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A group of "non-sailing" to Russian ports vessels was formed in. In 2017 there were 70 units: 57 medium, 4 large and 9 big vessels. As part of the latter, 6-7 trawlers are permanently deployed in the South Atlantic in the economic zones of African states. The rest of the "non-sailing" trawlers belongs to Murmansk enterprises and carry out fishing activities in the near Atlantic, the Norwegian and Barents seas.

The main part of demersal fish species (55.0–60.0%) is currently caught by medium-sized non-serial trawlers purchased abroad (were in exploitation) and new ones (built after 1995). They include vessels equipped with filleting equipment, the productivity of which in the fishery is approximately twice that of the serial group of vessels. They also determine the main composition of "non-sailing" ships.

Physically and morally obsolete medium freezer trawlers of serial (prereformed) construction, catching up to 25% of bottom fish, are used mainly in the nearby fishing areas. They produce only primary cutting fish products. All waste is thrown overboard.

Small and undersized vessels, mastering 7–8% of ABR in the "coastal" fishery mode, are the main suppliers of chilled primary processed fish products (semi-finished fish gutted with or without head).

The favorable situation in the bottom fishery has contributed to an increase in fillet production at sea. Its volumes in 2008–2013 increased threefold and remained at the level of 28.0–29.0 thousand tons until 2016. 25.0–28.0% of the total catch (raw) of cod and haddock was directed to fillet production. Subsequently, the production of fillets on ships under the influence of the price situation on international markets decreased and in 2018 amounted to 19.5 thousand tons using one-fifth of the raw material from the total catch [13].

The last decade is characterized by the growth of financial indicators of the fishing organizations of the Murmansk oblast. In 2009–2016, the overall growth in the profitability of fishing organizations in the Murmansk oblast increased 3.3 times (from 22.4 to 73.9). In 2017 it was slightly lower (69.5%) (Table 2).

Table 2

Production indicators of the Murmansk oblast enterprises

Indicators	2005	2009	2013	2015	2016	2017
1. Catch, thousand tons	579.0	609	696	681	644	698
1.1 The share of cod and haddock in the catch structure, %	29.5	33.3	47.4	44.6	49.5	47.0
2. Production of fish products, thousand tons	480.0	504.0	564.4	538.0	508.9	546.7
2.1 Frozen (including herring)	424.7	442.0	479.7	461.5	425.6	451.5

[13] Nauchnye i prikladnye osnovy ustoychivogo razvitiya i modernizatsii morekhozyaystvennoy deyatel'nosti v zapadnoy chasti arkticheskoy zony Rossiyskoy Federatsii: otchet o NIR (promezhut.): 0226-2018-0006 / Institut ekonomicheskikh problem Kol'skogo nauchnogo tsentra Rossiyskoy Akademii nauk; nauch. ruk. Vasil'ev A.M.; otv. ispoln.: Vasil'ev A.M., Kuranov Yu.F., Fadeev A.M. i dr. Apatity, 2018. 115 s. [Scientific and Applied Foundations of Sustainable Development and Modernization of Maritime Economic Activities in the Western Part of the Arctic Zone of the Russian Federation: Report on Research (interim): 0226-2018-0006. Institute of Economic Problems of the Kola Scientific Center of the Russian Academy of Sciences; scientific. adv. Vasilyev A.M.; executed by Vasilyev A.M., Kuranov Yu.F., Fadeev A.M. et al. Apatity, 2018. 115 p.].

2.2 Fillet	8.1	12.2	28.4	28.8	28.2	25.7
2.3 Other food and canned products	38.2	41.8	50.8	43.9	50.5	65.2
2.4 Non-food products	9.0	8.0	5.5	3.8	4.6	4.3
3. Export of fish products from fishing and coastal enterprises, thousand tons	225	212	304	314	332	346
3.1 Share of frozen fish products (uncut and semi-finished product), %	84.4	92.2	87.2	85.0	88.0	84.5
4. Profitability of sold products of fishing organizations, %*	0.1	22.4	37.0	67.3	73.9	69.5
Note: *profit (loss) ratio of sales to cost of goods sold (products, works, services) including commercial and management costs						

At the same time, it should be noted that the profitability of the pelagic fishery in the North Atlantic in recent years did not exceed 20.0–25.0%. The situation is similar for the enterprises developing catches of pelagic fish species in the economic zones of African states. Taking this into account, the profitability of products sold in the fishery of bottom fish species was higher than the average indicators and was at the level of 85.0–90.0%, and possibly even higher. This is confirmed by the results of the analysis of financial indicators of the enterprises of the Northern Basin in the fishery of bottom fish species, where the main share (87.0–90.0%) is cod and haddock.

The sustained increase in production profitability was due to the influence of the following main factors:

- increase in the efficiency of fishing activities. This took place under the influence of an increase in the technical level of the used fishing fleet, optimization of its structure and improvement of the state of the raw material base in the bottom industry (cod, haddock);
- intensification of export activities, supported by the devaluation of the ruble in 2014 and setting to zero export duties on fish products in the period 2013–2017;
- granted tax benefits (since 2009).

Fishing in the Northern Basin is characterized by a high level of export activity, which makes fishing enterprises highly dependent on external market conditions.

In the context of unlimited liberalization of export activities, the private interests of fishing companies prevail over the state ones. This is confirmed by the disregard for the requirements declared at the state level to ensure the approved directive provisions of food safety and the adopted decisions on import substitution [14].

Changes in fisheries policies and reduced fishing potential due to market transformations have led to a decrease in catches and demand for services from enterprises and organizations serving the fleet. Table 3 shows data on some indicators of enterprises and organizations of the Murmansk oblast, characterizing the direction of the ongoing processes.

[14] Stenogramma: Zasedanie prezidiuma Gossoveta po voprosam razvitiya rybokhozyaystvennogo kompleksa [Transcript: Meeting of the State Council Presidium on the Development of the Fisheries Industry]. URL: http://открытаяотрасль.рф/articles/679 (accessed 19 November 2019).

According to the data given in table 3, the port's handling of fish products decreased 5.6 times, the number of employees — 9.9 times.

Table 3

Dynamics of production indicators and the number of workers in infrastructure enterprises of the fishery complex of the Murmansk oblast

Indicators	1990	2000	2008	2017	The ratio of 2017 to 1990, %
1. Total sea cargo turnover of the fishing port (excluding oil depot), thousand tons	1412.9	396.3	254.9	319.3	22.6
1.1. Cargo turnover of fish products	1166.2	383.4	189.7	207.4	17.8
1.2. Unloading of fish products	1142.4	370.8	185.7	165.6	14.5
2. Packing plant					
2.1. Production of cans for ships, sq.m.	227.7	30.2	24.4	by order	10.7
2.2. Production of corrugated packaging for ships, sq.m.	14.3	11.8	7.9	by order	55.2
3. Number of employees, people					
3.1. Ship repair production	9088	2230	1750	600-700	7.1
3.2. Industrial equipment (fishing gear)	363	175	80-90	85-90	24.1
3.3. Package plant	1383	737	452	340	24.6
3.4. Fishing port	5049	1943	1440	511	10.0
3.5. Transport ships	6295	n/d	n/d	250-300	4.4
3.6. Scientific research, design, technological	5424	n/d	n/d	500-550	9.7
Note: according to data obtained from enterprises					

Ship repairing activities of 30–35 small organizations are limited to servicing small, undersized and, in insignificant numbers, medium fishing vessels. Some of them are being repaired and docked at the remaining complex facilities of enterprises in Arkhangelsk. A significant factor is that there is no sustainable prospect for small ship-repair enterprises in the Murmansk oblast due to the uncertainty of the possibilities of interaction between sea and coastal enterprises. In order to increase the volume of ship repair at Russian enterprises, it has long been necessary to solve the problem of “non-sailing” ships, which are currently being repaired abroad. According to RK-Profi No. 47 (733), fishery organizations annually spend about 2 billion rubles for this purpose.

A stable practice to form mobile teams to carry out repair work on Russian ships has developed in Norway [12].

Packaging for canned food and preserves are not produced in the Murmansk oblast, they are imported from St. Petersburg. The production of corrugated packaging is carried out in limited volumes by the order of enterprises. The relative retention of the employees’ number of the Murmansk tare factory is due to the diversification of its activities in the can production, not related to fishing and fish processing.

The production of fishing gear and the provision of fishing equipment is more differentiated and is carried out by 6-7 micro-enterprises.

There are several enterprises in Murmansk that provide services for ship supply, including food, spare parts for ship mechanisms, fire-fighting equipment and emergency rescue equipment, radio equipment, satellite communications, navigation and fish-finding equipment.

A significant reduction in the number of employees occurred in the structure of industry research institutes and planning and design organizations. At the same time, the decrease in scientific and technical personnel was largely associated with a decrease in the volume of fish processing and ship repair production, including the modernization and re-equipment of ships, with a decrease in funding.

Currently, scientific developments (technical and technological) are carried out at the Murmansk State Technical University and PINRO. The latter also carries out scientific research activities to determine the state of raw material reserves of aquatic biological resources (ABR) in the water area of the North Atlantic and the Arctic Seas. This work is carried out on a limited scale due to underfunding and lack of modern research vessels. The private enterprise RPC "Morinfo" also provides information support to fishing activities.

There are 2–3 small design and engineering organizations in Murmansk that develop technical documentation related to the operation of ships (purchased, undergoing repair or modernization).

The intensification of foreign economic activity of fishing organizations in the Murmansk oblast, export of at least 80.0–85.0% of the most massive and liquid bottom fishing objects (cod, haddock, etc.), limits the possibilities of the domestic market. The wholesale system of this group of goods is dominated by the “seller's market” with prices at the export level. The high level of wholesale prices for fish products has an additional restrictive effect both in the retail sales system and when used for production purposes for deeper processing and expansion of the range of products. The latter is to the greatest extent associated with the activities of the Murmansk coastal enterprises specializing in the processing of cod fish species, in which the cost of raw materials (semi-finished product) in the cost structure reaches 65.0–70.0%. The products obtained from the processing of cod and haddock make up 66.0–71.0% of the total natural volume of production of Murmansk coastal enterprises. The initial raw material base for this developing production is the supply of frozen and chilled semi-finished products from oceanic and coastal fisheries in the Barents and Norwegian Seas (table 4).

Table 4

Production indicators of onshore fish processing enterprises of the Murmansk oblast

Indicators	2005	2009	2013	2015	2016	2017	The ratio of 2017 to 2005, %
1. Total output of fish products, thousand tons	31.1	27.4	29.8	20.7	27.0	31.7	101.9
1.1 Food products	30.4	27.4	23.9	16.0	19.9	26.3	86.5
1.1.1 Frozen (freezing of chilled raw and semi-finished products)	12.6	11.6	6.5	2.0	1.9	4.5	35.7
1.1.2 Products from cod fish species (fillets, klipfisk, minced fish, etc.)	9.3	8.1	14.1	11.7	15.9	18.2	195.7
1.1.3 Other food products (salted, smoked, cookery, etc.)	2.0	2.3	3.3	2.3	2.1	3.6	180.0
1.2 Canned food, preserves	6.5	5.4	3.9	3.1	5.0	3.7	56.9
2. Food products, including canned food and preserves (excluding frozen fish), thousand	17.8	15.8	21.3	17.1	23.0	27.3	153.4

tons							
2.1 Share of products from cod fish species,%	52.2	51.3	66.2	68.4	69.1	71.4	136.8
3. Profitability of sold products of onshore enterprises,%	-3.3	-2.5	0.5	2.7	7.0	-2.3	69.7
4. Unloading of chilled fish products	14.1	7.2	32.6	28.1	27.8	38.7	274.5
- cod, haddock	12.5	6.1	27.4	22.7	21.2	30.4	243.2

It should be noted that the average annual load of the main production (fillet and klipfisk production) of enterprises does not exceed 40.0–45.0%. Not more than 7.0% of the total catch of cod and haddock is sent to fillets and klipfisk. Insufficient utilization of the main capacities and the high cost of raw materials determine, in general, persistently low indicators of the economic efficiency of coastal fish processing. Unprofitable enterprises of coastal processing of cod fish species are compensated by the possibility of VAT refund on the export of fish products (up to 70.0% of the main types of produced products).

The increase in fillet production since 2016 was largely due to the commissioning of the new “Polar Sea +” plant as part of the “Norebo” holding with guaranteed supplies of chilled raw materials. This trend continued in 2017.

The usage of chilled raw materials in the production of fillets from cod fish is the most promising option for the development of coastal enterprises, since it increases the quality and cost of products, the possibility of selling them in Western markets. As a result, competitiveness and financial results are increasing.

When assessing the prospects for the development of onshore enterprises, the most significant problems include the lack of guaranteed supplies of fish raw materials for processing, which has a negative impact on capacity utilization and the rhythm of production activities, restrains production volumes and an increase in positive financial results. The presence of a significant raw material component of exports and unloaded capacities of onshore enterprises confirms the need to increase the scale of onshore deep processing and, accordingly, to increase the discharge of chilled semi-finished products.

A potential base for increasing the supply of chilled fish raw materials for coastal processing can be considered frozen semi-finished product exported by fishing enterprises (gutted fish without a head). This applies, first of all, to the products produced by medium-sized serial-built vessels in the Russian economic zone.

Study results and discussion

The above data indicate that in the current conditions the main part of the fishing organizations of the Murmansk oblast have no incentives to create an additional unifying organizational system in the form of a cluster. They see it as an additional add-on that limits their capabilities. The same negative attitude was towards the proposals (February 2019) to participate in the interregional "Arctic Fishery Cluster" of the Arkhangelsk Oblast.

In world practice, the formation of clusters with the participation of marine fishing companies has not been widely developed, which, in our opinion, is associated with the use of a small fishing fleet, united in various legal forms with coastal enterprises processing catches and trading fish [15]. Oceanic fishery predominates in Russian fisheries. Trawler owners appropriate substantial rental income. According to our calculations, it is up to 40% of the value of the economic turnover [13]. The export of fish products directly from the sea is weakly controlled. There are opportunities to receive unaccounted income [16]. In the Murmansk and Arkhangelsk oblasts, these factors contribute to the isolation of fishing enterprises especially strongly, since more than half of the harvested hydrobionts are currency-intensive: cod, haddock, halibut and crab with a high rental component [13]. A similar situation is in the Far East fishing basin.

The analysis of the Murmansk fishery complex showed:

- growing potential of the oceanic fishery block and the alienation of its main part from the relationship with the infrastructure coastal base of Russia (Northern Basin);
- stagnation of onshore fish processing, as well as the infrastructure sector, which serves in limited volumes medium, small and undersized vessels based in the Murmansk seaport;
- impossibility of creating a regional cluster on classical terms due to the refusal to voluntarily enter into the oceanic fishing fleet, which is the core of the potential cluster.

At the same time, it can be argued that the effective overcoming of most of the negative phenomena noted above in the functioning of the fisheries of the Murmansk oblast is possible in unification. This is based on the rich resource potential of the seas of the Western Arctic, which should be used in the interests of society and the state, as well as an efficient fishing fleet and new high-tech coastal enterprises for processing fish and seafood under construction.

As is known, the Murmansk oblast has been called a pilot region for the development of the Arctic zone of the Russian Federation, where the Kola support zone is being created, which should be based on seven sectoral and intersectoral clusters, including a fish one. Also, according to the Forecast of socio-economic development of the Murmansk oblast for the period up to 2035, the largest share in the GRP structure will be occupied by the key sectors of the region's economic specialization: manufacturing, extractive and fishing industries, each of which will make up about

[15] Nauchnye i prikladnye osnovy ustoychivogo razvitiya i modernizatsii morekhozyaystvennoy deyatel'nosti v zapadnoy chasti arkticheskoy zony Rossiyskoy Federatsii: otchet o NIR (promezhut.): 0226-2019-0022 / Institut ekonomicheskikh problem Kol'skogo nauchnogo tsentra Rossiyskoy Akademii nauk; nauch. ruk. Vasil'ev A.M.; otv. ispoln.: Vasil'ev A.M., Kuranov Yu.F., Fadeev A.M. i dr. Apatity, 2019. 120 s. [Scientific and Applied Foundations of Sustainable Development and Modernization of Maritime Activities in the Western Part of the Arctic Zone of the Russian Federation: Report on Research (Interim): 0226-2019-0022. Institute of Economic Problems of the Kola Scientific Center of the Russian Academy of Sciences; scientific. adv. Vasilyev A.M.; executed by Vasiliev A.M., Kuranov Yu.F., Fadeev A.M. et al. Apatity, 2019. 120 p.].

[16] Press-konferentsiya rukovoditelya Federal'nogo agentstva po rybolovstvu Andreya Kraynego 25.12.2012 g. [Press Conference of the Head of the Federal Agency for Fisheries Andrey Krainy 25 December 2012]. URL: http://presscentr.rbc.ru/pressconf/2012/12/25/837697/ (accessed 21 December 2020).

10-12% of the GRP. They are supposed to be combined into 7 clusters, the structure of which covers almost all enterprises in the Murmansk oblast[17].

It is proposed to use the "Project Approach" as the main economic mechanism for forming clusters[18].

The Forecast does not say how the negative attitude to joining the cluster of the oceanic fishing fleet will be overcome. In our opinion, in this case the decisions of the federal authorities are indispensable in this case. For example, the rules for endowing fishing organizations with quotas of bioresources or export policy may be changed, as well as the adoption of the Law “On the connection of the fishing fleet with the coastal community” is possible.

Conclusion

The article shows, on the one hand, the improbability of establishing a classic fishery cluster under existing organizational conditions and, on the other hand, the expediency of its formation. The directions of federal and regional bodies activity are proposed in order to stimulate fishing entities to enter the classic fishery cluster.

It can be concluded, by the reference to the real state of the fishery complex of the Murmansk oblast, that the potential for the formation of a cluster is currently promising, in our opinion, on the basis and in the scale of interaction of coastal fishing, coastal fish processing plants, and other enterprises and organizations serving fishing activities. The proposed option has four properties — the determinants of the Porter model: the necessary production factors, the demand for fish products in the domestic and foreign markets, the presence of related and service industries (in the city of Poljarnyj and in the city of Murmansk), as well as intra-industry competition. The initiator of the fish food cluster can be (with the support of the "Center for cluster development of the Murmansk oblast") the Murmansk branch of the all-Russian "Fish Union". It mainly unites enterprises that process cod fish species. Active participation of coastal fishing enterprises (NPO ACFFM) with the involvement of the management of the Shipyard in Poljarnyj, interested in this process, is also necessary.

In 2018, the management of the Federal Research Center of the KSC RAS formed a group to carry out scientific and productive activities for the development of biotechnologies. The goal of the project is to create a research and production cluster of biotechnology for the processing of pharmacologically valuable raw materials, including algae, crustaceans and fish waste. Involvement of this group in the composition of the fish food cluster being created will enhance its innovative orientation.

The strategic goal of creating a territorial-local fish cluster in the Murmansk oblast is to form an effective system of interaction and cooperation between participants - companies in the

[17] Prognoz sotsial'no-ekonomicheskogo razvitiya Murmanskoy oblasti na period do 2035 goda [Forecast of Socio-economic Development of the Murmansk Oblast for the Period Up to 2035]. URL: https://minec.gov-murman.ru/activities/forecasts/sub02/ (accessed 10 January 2020).
[18] Ibid.

fishery complex (backbone and infrastructure) and the scientific and educational sector to ensure food security, saturation of the domestic market with high-quality and affordable fish products for the population, increase efficiency and competitiveness of enterprises and the economy of the region as a whole, its export potential. To achieve the strategic target, interaction covers all interested parties, including associations of cluster participants, non-profit and public organizations, investors, government and local authorities

The local project of creating a fishery cluster in the city of Poljarnyj on the basis of the ship-repair plant of JSC "10 SRY" is supported by its management. The cluster includes the unloading of fish products, inter-voyage repairs of ships, preparation for going to sea for fishing, complete processing of products, their transportation to the consumer and the construction of a small and medium-sized fishing fleet.

The main goals and functions of the cluster structure can be represented as follows:

- coordination of joint actions to expand the scale of fishing and onshore production activities;
- development of measures to improve the efficiency of ABR development and their processing;
- development and implementation of new technologies for fish processing, management and marketing;
- training, retraining and attracting qualified specialists;
- implementation of joint investment projects for infrastructure development;
- strengthening the stability and predictability of long-term contractual relations for the supply of raw materials to onshore enterprises, the performance of work and the provision of services between the cluster members;
- coordination with the competent authorities of proposals aimed at lowering administrative barriers to the delivery and unloading of fish products from the fishery.

The considered fish cluster is characterized by the common activity of the participants (backbone and infrastructural) to create the final fish products of varying degrees of processing (food, canned, technical, fodder).

The long-term and sustainable operation of the fish cluster can only be achieved through the implementation of effective incentive measures, particularly for fishing organizations. For these purposes, in addition to attracting national program activities and supporting development institutions, a comprehensive system of raw materials and financial support for participants at the sectoral (departmental) and regional levels should be developed and used. For example, the list of potentially effective incentive measures consider a guaranteed increase in the volume of coastal fishery due to a change in the status of fishing vessels producing primary cutting products from bottom fish at sea, as well as due to the transfer of unrealized scientific quotas and quotas to the coastal fleet of the third countries.

One of the main directions of achieving the goals of creating and developing the cluster is the implementation of joint projects. This requires, in accordance with the approved legislative framework, the identification of mechanisms and instruments for budgetary, informational and advisory support for the implementation of these projects.

A problematic issue in the Murmansk oblast is the lack of capacity for the disposal of increasing non-food waste at onshore and fish farms. For these purposes, it is necessary to build a plant for fat and flour production as an infrastructure component. The construction of a covered berth is no less important in conditions of limited docking opportunities and unfavorable climatic conditions.

In order to give the cluster an innovative focus, it is necessary to consider the possibilities of financial support for the development of biotechnologies (on the basis of raw materials of little-used ABR and waste from operating enterprises) with their subsequent commercialization. The latter will also require investment in the development of new production in the framework of public-private partnerships.

In Murmansk oblast in the period 2019–2021 it is planned to increase the capacity (by 1.5-2.0 times) for fish processing, including fillet production, based on the construction of factories within the framework of the state program of resource support, with the allocation of investment quotas for cod and haddock for this purpose. This circumstance, other things being equal, will increase the competition of onshore enterprises for the attraction of chilled raw materials

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13. Aleksandrova M.A., Vasilyev A.M., Kartashov M.V. Otsenka morskikh ekosistemnykh uslug na baze osnovnykh promyslovykh bioresursov kak osnova ustoychivogo sostoyaniya bol'shoy morskoy ekosistemy I sokhraneniya bioraznoobraziya [Estimation of Marine Ecosystem Services Based on The Main Commercial Bioresources as a Basis for the Sustainable Status of the Large Marine Ecosystem and Biodiversity Conservation]. *Voda i ekologiya: problem I resheniya* [Water and Ecology], 2018, no. 2, pp. 70–86.

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Business and Government: Environmental and Economic Responsibility in the Russian Arctic*

© Natalya V. DYADIK, Cand. Sci. (Econ.), Senior Researcher
E-mail: ndyadik@mail.ru
Luzin Institute for Economic Studies, Apatity, Russia
© Anastasiya N. CHAPARGINA, Cand. Sci. (Econ.), Senior Researcher
E-mail: ndyadik@mail.ru
Luzin Institute for Economic Studies, Apatity, Russia

Abstract The growing interest in environmental problems on the part of society leads to the fact that more and more attention is paid to the activities of enterprises, and the criteria for the greening of their production are becoming more stringent. With the growth of industrial production, the scale of the negative impact on the environment increases, so simply discussing environmental problems becomes insufficient. There is a need for a comprehensive accounting of the environmental performance of organizations and the development of measures to compensate for the resulting environmental damage. The article examines the issues of environmental and economic relations between business and government in the Russian Arctic. The purpose of this study is to form a theoretical approach to solving the problem of greening the Arctic regions based on the analysis of the ecological and economic relations between government and business. Legal and economic instruments for regulating environmental protection in Russia, as well as strategic documents for the development of the Russian Arctic in the field of ecology are analyzed. An assessment of the environmental and economic responsibility of companies operating in the Russian Arctic is carried out on the basis of non-financial reporting data. The results of the analysis show that the presented non-financial information is not transparent enough, and the level of business responsibility is rather low. To solve the problem posed, the authors propose a theoretical approach to building a "green" partnership, which allows finding a compromise between the interests of the state and business. The formation of an integrated ecological and economic approach in the state regulation of environmental protection activities will allow reaching a point of bifurcation in the relationship between government and business and thereby leveling the anthropogenic load on the ecosystem of the territory.
Keywords: *ecology, state, business, non-financial reporting, "green" partnership, Russian Arctic.*

Introduction

The problem of the country's raw material specialization influence on its socio-economic development has been repeatedly raised by domestic and foreign scientists. The relationship between the abundance of natural resources and the economic development of the country ("the problem of the resource curse") is considered by scientists from two positions. Some believe that countries rich in natural resources develop more slowly than countries with less rich resources [1, Auty R.M, 2, Sachs J.D., 3, Polterovich V.M., 4, Barma N.]. Others associate the problems in the development of the economy of a country with a rich natural resource potential with the efficiency of managing this resource [5, Torvik R., 6, Mehlum H.]. In particular, E. Raynert in his work "How Rich Countries Got Rich and Why Poor Countries Stay Poor" concludes that the vicious circle of poverty in countries, even those with rich resources, is not connected with the resources them-

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selves, but with the concentration on monoproduction in industries with diminishing returns and with abuse of the theory of comparative advantages [7, Raynert E.S.].

The Russian Arctic is a geostrategic territory of the Russian Federation and is of great economic, military-strategic and transport-logistic importance. Huge reserves of natural resources are concentrated in the Arctic, including energy resources [8, Isaytsev D.N., 9, Kizhaeva A.V.], where the main holdings for the extraction and processing of mineral resources operate. There is a third of the world's proven reserves of nickel and platinoids on its territory, as well as a significant part of the world's cobalt reserves and almost the entire extracted volume (80%) of oil and gas, over 90% of tin, diamonds, gold, mica, apatite and many other types of raw materials[1] [10, Larichkin F.D.]. The Arctic zone of Russia occupies 1/5 of the country's territory and includes the Murmansk Oblast, the Nenets, Yamalo-Nenets and Chukotka Autonomous Okrugs, the northern regions of Karelia, Komi, Yakutia, the Arkhangelsk Oblast and the Krasnoyarsk Territory[2]. According to scientists [11, Ventsyulis L.S., 12, Akimov V.A., 13, Ivanova L.V.], the ecological state of the Arctic is characterized by many problems (waste management, atmospheric pollution, wastewater pollution, climate change, etc.) that require effective solutions. Therefore, the object of this study is the Russian industrial complex of the Arctic regions of Russia. So far, the most discussed discourses in the field of environmental economics include issues of state regulation of environmental protection, environmental and economic relations with stakeholders, assessing the negative impact of industrial companies on the environment. So, at present, a certain economic mechanism is being formed to regulate the relationship between the state and business to eliminate the negative impact of enterprises on the environment. In the works of Russian scientists, the economic mechanism of environmental management involves the use of an environmental management system and its implementation into the general enterprise management system [14, Kochemasova E.Yu., 15, Orgadulova G.A., 16, Potrubach N.N., 17, Kovalenko K.O.]. In addition, tools for environmental and economic incentives for natural resource users have been developed to regulate the environmental activities of enterprises, in particular, measures of positive and negative incentives have been identified.

However, the state economic regulation of the processes of nature management and environmental protection in Russia today does not have a sufficiently developed legislative base. Barkan M., Berezovskiy P. and Borzenkov V. believe that Russia has not created a really operating mechanism for economic stimulation of environmental protection and rational use of natural resources, which would reflect the harm from environmental pollution in the activities of enterprises [18]. A team of authors from the State Regional Centre of Standardization, Metrology and Certifi-

[1] Makurin A. Led tronulsya. Zachem Rossiya vkladyvaetsya v Arktiku? Ezhenedel'nik «Argumenty i Fakty». № 50. 12 dekabrya 2018 [The Ice is Broken. Why is Russia Investing in the Arctic? Weekly newspaper “Arguments and Facts”. No. 50. 12 December 2018]. URL: https://aif.ru/money/economy/lyod_tronulsya_zachem_rossiya_vkladyvaetsya_v_arktiku (accessed 15 May 2020).

[2] Proekt Zakona «O razvitii Arkticheskoy zony Rossiyskoy Federatsii» [Draft Law "On the Development of the Arctic Zone of the Russian Federation"]. URL: https://regulation.gov.ru/projects?type=Grid (accessed 15 May 2020).

cation claims that there is no comprehensive approach to the development and adoption of regulations, standards and regulations that limit the negative impact on the environment. T. Sedash notes that currently the legislative mechanism of environmental insurance, environmental audit, implementation of the best available technologies requires significant improvement [19]. T. Alieva believes that the replacement of state environmental supervision by environmental audit will increase the focus on the most important environmental problems [20].

At the same time, sufficient attention is paid to the issues of eco-balance in taxes as the main economic regulator of environmental protection. The eco-balance in taxes is based on A. Pigou's theory of “external or explicit costs”. A manifestation of positive external effects is the spread of new environmentally friendly technologies, and negative — of environmental pollution [21, Chuzhmarova S.I.]. I.A. Mayburov and Ivanov Yu.B. pay special attention to the development of the theoretical foundations of environmental taxation [22]. Other environmental economists define taxes as important mechanisms of state environmental policy [23, Shuvalova E.B., 24, Bazin D., 25, Howarth R.B.]. In addition, the scientific community is actively discussing the issue of greening the territories of the North and the Arctic [26, Glaz'ev S.Yu., 27, Gromov V.V.].

Modern research examines the issues of balanced interaction between government and business as a basis for constructive dialogue. So, for example, public-private partnership can act as an effective mechanism for the implementation of "joint activities" of the state and business in solving environmental problems, and communities that develop certain rules for the ownership and economic use of common resources" and are able to ensure their long-term preservation and reproduction play a leading role within the framework of environmental protection measures [28, Medyanik N., 29, Ostrom E.]. In general, there is a widespread transformation of human attitudes to environmental problems, society is increasingly aware of its responsibility for the destruction of the biosystem and is ready to join forces in the combating against environmental problems [30, Alimov A.A.].

Several stages can be distinguished in the development of human relations with the environment:

- Stage I — until the 1960s — awareness of the negative anthropogenic impact on the environment.
- Stage II —1970s — understanding that intensive use of natural resources and indiscriminate use of natural resources undermines the economy and reduces the well-being of future generations.
- Stage III — 1980s can be characterized by the active introduction of “green” technologies. This period is interconnected with the formation of the concept of sustainable development.
- Stage IV — 2000s — “consolidation” of the concept of sustainable development in international and national legislation, in business and society.

The vulnerability of the natural environment of the Arctic regions predetermines the need to include the ecological component as the main vector of development. Today, increased attention to the problems of preserving ecosystems, reducing the anthropogenic negative impact and developing a green economy is a global trend followed by the Russian Arctic regions.

At present, various state instruments are used to assess the technogenic and anthropogenic impact on the ecosystems of the regions. However, these measures are not enough to level the negative impact of industrial enterprises on the environment. In this regard, the purpose of this study is to form a theoretical approach to solving the problem of greening the Arctic regions based on an analysis of the ecological and economic relations between government and business.

Within the framework of this goal, two hypotheses are put forward:

- Hypothesis 1 — The existing environmental responsibility of business in Russia is not sufficiently transparent, and the mechanisms of state regulation do not allow compensation for environmental damage.
- Hypothesis 2 — Formation of an integrated ecological and economic approach in the state regulation of environmental protection will allow reaching the point of bifurcation in the relationship between government and business and thereby leveling the anthropogenic load on the ecosystem of the territory.

Research methodology

The methodological basis of the study consisted of the works of domestic and foreign economists in the field of environmental economics, regional and spatial economics; scientists engaged in research on the problems of the North and the Arctic.

The methods of economic and statistical analysis were used to achieve the goal. A content analysis of the existing regulatory and legislative framework is carried out, the mechanisms and tools used in Russia to regulate the relationship between government and business in the framework of greening territories in comparison are analyzed, a theoretical model of balanced “green” relationships between government and business is built.

The analysis of conflicts of interest and the construction of a theoretical model of a balanced relationship between government and business on greening issues were based on a comparison of the environmental and economic responsibility of companies and government regulators.

In order to identify and structure the environmental responsibility of a Russian company in a specific territory or region, the authors propose a methodology based on the collection and processing of empirical material and expert assessments. A qualitative assessment of the environmental responsibility of companies in the industrial complex of the Russian Arctic was made on the basis of 7 criteria. Each criterion is assigned a color level according to the degree of fulfillment: green, red and yellow:

- Criterion 1: “Type of independent assessment”: green — there is a professional assurance and assurance taking into account the views of stakeholders, yellow — partial professional assurance or assurance taking into account the views of stakeholders (including public assurance), red — there is no external assurance or there is no reporting in accordance with the requirements of international organizations.
- Criterion 2: “The presence of the quantitative indicators, mitigation measures in the environmental management system”: green — environmental management has been introduced at all subsidiaries of the Group (Company), yellow — at least one or more, red — absent.
- Criterion 3: “Measures to reduce the impact on the environment”: green — yes, red — no.
- Criterion 4: “Interaction with the local population (community) on issues of greening the territory”: green — there is a separate document, yellow — there is no separate document, but work is in progress, red — no work is in progress and there is no separate document.
- Criterion 5: “Energy Efficiency Program”: green — quantitative performance indicators have a positive trend with the previous period, yellow — there are quantitative indicators, but the trend is not reflected, red — there are no quantitative indicators of energy efficiency.
- Criterion 6: “Program for the conservation of biodiversity”: green — available, yellow — partially (for individual projects of the company), red — no.
- Criterion 7: “Voluntary insurance of environmental risks”: green — yes, red — no.

The quantitative assessment of environmental and economic indicators was carried out on the basis of indicators reflected in the non-financial statements of companies.

Analysis and results

Before discussing the assessment of the environmental and economic responsibility of companies, the main and strategic documents regulating environmental protection in the Russian Arctic should be mentioned.

The main document for the formation of state environmental policy in the Arctic, as well as throughout the territory of the Russian Federation, is Federal Law No.7-FZ “On Environmental Protection”[3]. But there is also a package of documents that is aimed at regulating activities exclusively on the territory of the Russian Arctic, namely: Basic Principles of Russian Federation State Policy in the Arctic to 2035 [4]; State program of the Russian Federation “Social and economic development

[3] Federal'nyy zakon ot 10.01.2002 N 7-FZ (red. ot 31.12.2017) «Ob okhrane okruzhayushchey sredy» // Konsul'tant Plyus [Federal Law of 10.01.2002 N 7-FZ (as Amended on 31 December 2017) "On Environmental Protection". Consultant Plus].

[4] Ukaz Prezidenta Rossiyskoy Federatsii 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 "Basic Principles of Russian Federation State Policy in the Arctic to 2035"].

of the Arctic zone of the Russian Federation" [5]; "Development strategy of the Arctic zone of the Russian Federation and ensuring national security for the period up to 2020"[6]. For example, "Basic Principles of Russian Federation State Policy in the Arctic to 2035" reflect the environmental specificity of the Arctic, focusing on leveling the environmental consequences of economic activity in the Arctic. The main aspects of socio-economic development, ecology, achieving strategic interests and ensuring national security in the Russian Arctic are reflected in the State Program and in the Strategy for the Development of the Arctic Zone of the Russian Federation.

In addition, ASPOL and other international associations have developed various standards: the National Public Standard "Environmental Safety of the Arctic", Arctic Standards OCS (Outer Continental Shelf); ISO standards; "Guidelines for ships operating in polar waters"; Polar Code and others. The introduction of standards makes it possible to define specific rules for the economic activities of organizations in the existing legal framework. For example, the "Environmental Safety of the Arctic" standard was developed with the aim of ensuring socially acceptable formats of economic activity in the Russian Arctic regions, since the existing regulatory framework does not reflect all aspects of environmental management in the Arctic zone[7].

Any companies conducting economic activities in the Arctic must strive to ensure the achievement of sustainable development goals in the region of presence, to preserve the natural and cultural heritage for future generations[8]. This is possible thanks to the implementation of CSR practices, active interaction with stakeholders, competent management of social and environmental risks, and, consequently, the maintenance of public non-financial reporting

Public non-financial reporting is a set of information and indicators that reflect the goals, approaches and results of organizations' activities on all significant issues of social responsibility and sustainable development, a minimum list of mandatory disclosed indicators[9]. There are differ-

[5] Postanovlenie Pravitel'stva RF ot 21.04.2014 N 366 (red. ot 31.08.2017) «Ob utverzhdenii gosudarstvennoy programmy Rossiyskoy Federatsii «Sotsial'no-ekonomicheskoe razvitie Arkticheskoy zony Rossiyskoy Federatsii» [Decree of the Government of the Russian Federation of April 21, 2014 No. 366 (as Amended of August 31, 2017) "On Approval of the State Program of the Russian Federation "Social and Economic Development of the Arctic Zone of the Russian Federation"].

[6] Strategiya razvitiya Arkticheskoy zony Rossiyskoy Federatsii i obespecheniya natsional'noy bezopasnosti na period do 2020 goda RF. Sayt Pravitel'stva RF [Development Strategy of the Arctic Zone of the Russian Federation and Ensuring National Security for the Period Up to 2020. RF Government Website]. URL: http://government.ru/info/18360/ (accessed 05 July 2019).

[7] Natsional'nyy obshchestvennyy standart «Ekologicheskaya bezopasnost' Arktiki» [National Public Standard "Environmental Safety of the Arctic"]. URL: http://arcticas.ru/docs/2016/Broshura_Arctica.pdf (accessed 15 May 2020).

[8] The Call for Responsible Economic Activity in the Arctic Region was also announced by the Arctic Council, namely the Working Group on Sustainable Development in the Arctic (Sustainable Development Working Group, SDWG, http://www.sdwg.org/). So, in 2012, the Initiative on Corporate Social Responsibility was created and a platform for constant dialogue between representatives of business communities operating in the Arctic region was opened, which is called the Arctic Economic Council (http://arcticeconomiccouncil.com/). The Arctic Council CSR Initiative was created to bring together companies from various industries to engage them in dialogue to achieve sustainable development and responsible use of natural resources in the Arctic. URL: http://www.kas.de/wf/doc/kas_39168-1522-2-30.pdf?141112150837 (accessed 15 May 2020).

[9] Rasporyazhenie Pravitel'stva RF ot 05.05.2017 N 876-r «Ob utverzhdenii Kontseptsii razvitiya publichnoy nefinansovoy otchetnosti i plana meropriyatiy po ee realizatsii» [Order of the Government of the Russian Federation of

ent standards for the provision of non-financial information GRI, SASB. With the integration of Russia into the international market and the adoption of international accounting and reporting standards, many large Russian holdings practice the development of environmental policy based on the GRI standard, despite the fact that it is not always possible to determine the stated goals by these standards company [31, Borgstedt P., 32, Heflin F.].

Consider the non-financial reporting of large Russian holdings implementing projects for the exploration and development of resources in the Arctic regions of Russia. These include FOSAGRO, NORILSK NICKEL, NOVATEK, EUROCHEM, SEVERSTAL, AKRON, LUKOIL, GAZPROM, ROSNEFT, ALROS [10]. The analysis of companies' activities from the point of view of ensuring environmental responsibility is based on the official public annual non-financial statements of companies for 2018 [11]. It should be noted that the activity of Russian companies in terms of placing both environmental and other non-financial reports is rather low. So, as of January 2019, 176 companies and 924 reports were registered in the National Register (on a cumulative total since 2001). Environmental reports (ER) — 82, social reports (SR) — 326, reports on sustainable development (RSD) — 314, integrated reports — 174, industry reports —27 are among them[12]. Against the global background of the development and activation of the process of public non-financial reporting, Russia still occupies the last position (Fig. 1).

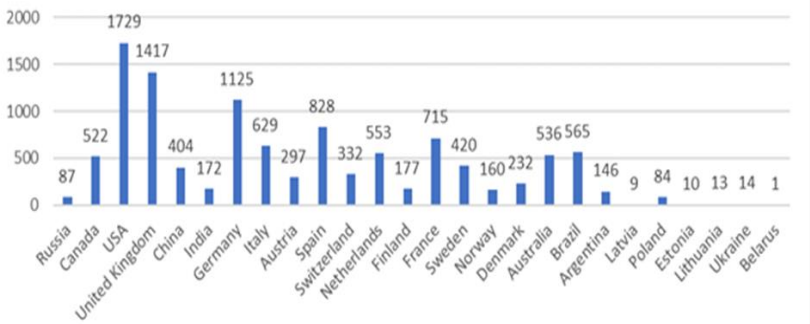

Fig. 1. The number of companies publishing non-financial reporting in different countries, 2018 [13].

05 May 2017 No. 876-r "On Approval of the Concept for the Development of Public Non-Financial Reporting and an Action Plan for Its Implementation"]. URL: http://www.consultant.ru/document/cons_doc_LAW_216631/ (accessed 15 May 2020).

[10] Perechen' vedushchikh kompaniy-rabotodateley, osushchestvlyayushchikh deyatel'nost' na territorii Arkticheskoy zony RF [List of Leading Employing Companies Operating in the Arctic Zone of the Russian Federation]. URL: http://arctic-union.ru/napravleniya/kompanii-rabotodateli/. Obzor ustoychivogo razvitiya arkticheskikh kompaniy (dekabr' 2019) [Sustainable Development Review of Arctic Companies (December 2019)]. URL: https://goarctic.ru/news/obzor-ustoychivogo-razvitiya-kompaniy-rabotayushchikh-v-rossiyskoy-arktike-za-period-15-sentyabrya-1/. «Sibur», «Nornikel'» i «Lukoyl» – v troyke liderov po ustoychivomu razvitiyu Arktiki ["Sibur", "Norilsk Nickel" and "Lukoil" are Among the Three Leaders in the Sustainable Development of the Arctic]. URL: https://porarctic.ru/blog/2019/06/07/sibur-nornikel-i-lukojl-v-trojke-liderov-po-ustojchivomu-razvitiyu-arktiki/ (accessed 15 May 2020).

[11] The data used in this paper is taken from the annual non-financial statements of Russian companies for 2018 due to the availability of the most relevant information at the time of the study, since the non-financial statements of companies for the last year are usually published in the second half of this year.

[12] Nefinansovaya otchetnost' v Rossii i mire: tseli ustoychivogo razvitiya – v fokuse vnimaniya / Analiticheskiy obzor, Moskva, 2019 [Non-Financial Reporting in Russia and Worldwide: Sustainable Development Goals in Focus. Analytical review, Moscow, 2019].

[13] Based on the data of URL: www.corporateregister.com (accessed 15 May 2020).

In 2018 almost all of the above companies submitted the Sustainability Report. The exception was EUROCHEM and AKRON, which reflected their environmental responsibility in the company's general annual report. To disclose their non-financial activities, 9 out of 10 companies used B/C GRI (main type of standard), NORILSK NIKEL used A GRI (extended type of standard).

The results of a qualitative assessment of the environmental responsibility of companies in the industrial complex of the Russian Arctic for 2018 according to the methodology proposed by the authors are presented in Table 1.

Table 1

Qualitative assessment of the environmental responsibility of companies in the industrial complex of the Russian Arctic for 2018. [14]

Company name	Type of report	Type of GRI standard	Type of independent assessment	The presence of quantitative indicators in the environmental management system	Measures to reduce the impact on the environment	Interaction with the local population (community) on issues of greening the territory	Energy efficiency programs	Biodiversity conservation programs	Voluntary insurance of environmental risks
FOSAGRO	RSD [15]	B							
NORILSK NICKEL	RSD	A							
EUROCHEM	GO	B							
SEVERSTAL	RSD	B							
AKRON	GO	B							
LUKOIL	RSD	B							
GAZPROM	RSD	B							
NOVATEK	RSD	B							
ROSNEFT	RSD	B							
ALROS	RSD	B							

All the surveyed companies take measures to reduce their environmental impact. Almost all the companies (8 out of 10) publish information on quantitative indicators in the environmental management system. The environmental management system has not been implemented in the main production subsidiaries of AKRON and has been partially implemented in FOSAGRO (in 2018 Apatit JSC and Apatit BF JSC successfully passed inspection audits for compliance with the requirements of international standards ISO 9001: 2015, ISO 14001: 2015).

The criterion “Interaction with the local population (community) on issues of greening the territory” is also “green” for almost all companies. As a rule, companies enter into cooperation agreements with the regions of their presence and provide them with significant assistance in the economic and social development of local communities, as well as preserving the ecological safety

[14] Perechen' vedushchikh kompaniy-rabotodateley, osushchestvlyayushchikh deyatel'nost' na territorii Arkticheskoy zony RF [List of Leading Employing Companies Operating in the Arctic Zone of the Russian Federation]. URL: http://arctic-union.ru/napravleniya/kompanii-rabotodateli/. «Sibur», «Nornikel'» i «Lukoyl» – v troyke liderov po ustoychivomu razvitiyu Arktiki [“Sibur”, “Norilsk Nickel” and “Lukoil” are Among the Three Leaders in the Sustainable Development of the Arctic]. URL: https://porarctic.ru/blog/2019/06/07/sibur-nornikel-i-lukojl-v-trojke-liderov-po-ustojchivomu-razvitiyu-arktiki/ (accessed 15 May 2020).

[15] RSD — report on sustainable development.

of residence and the national identity of indigenous peoples. Note that the EUROCHEM company does not have clear information about the population leading a traditional way of life in the report, therefore the criterion was assigned a red color.

Only half of the companies included in the analysis have energy efficiency programs, and quantitative performance indicators have a positive trend with the previous period.

AKRON does not have quantitative energy efficiency indicators, but the company claims in the report that its energy efficiency indicators are expressed in terms of cash savings.

The situation is worse with biodiversity conservation programs. Four companies — FOSAGRO, EUROCHEM, SEVERSTAL, AKRON — do not have biodiversity programs. And for 3 companies — GAZPROM, NOVATEK, ALROS — the criterion is met partially in one or more (but not simultaneously in all) of the following areas: there is the amount of funding for biodiversity conservation; availability of an approved list of indicator types in the regions of presence / activity of the company; availability of research and / or monitoring programs for indicator species; the availability of the results of scientific research and work in the field of biodiversity conservation in public space; mechanisms for the participation of stakeholders in the discussion of biodiversity conservation programs.

The presence of voluntary environmental risks insurance demonstrates the understanding of the importance of managing these risks by the company's management. For example, in order to reduce the risk of financial losses, NOVATEK carries out the following types of voluntary insurance: property insurance in case of loss (destruction) and / or damage; insurance of losses from business interruptions (business risks); insurance of construction and assembly risks; insurance of risks during prospecting, exploration and development of deposits (risks of loss of control over a well); management liability insurance.

In general, according to this criterion, the companies were divided into two groups:

- with voluntary insurance of environmental risks — LUKOIL, GAZPROM, NOVATEK, ROSNEFT, ALROS;
- without voluntary insurance of environmental risks — FOSAGRO, NORILSK NICKEL, EUROCHEM, SEVERSTAL, AKRON.

Thus, a comparative analysis of the information provided in the non-financial reporting on the proposed criteria would reveal a leader in environmental responsibility — this is LUKOIL. The company publicly declares that in its activities are guided by the principles of sustainable development and is trying to achieve a balance between socio-economic and natural-ecological development. LUKOIL makes a significant contribution to the environmental safety of production, storage and transportation of oil products in Arctic conditions. The company was the first in Russia to

use the zero discharge technology in offshore projects. LUKOIL possesses a full arsenal of oil spill response equipment in Arctic waters, including infrastructure and trained specialists[16].

Within the framework of the concept of sustainable development, a balance between environmental and economic responsibility is important, since long-term planning is impossible without the efficient, rational use of natural resources. Relying only on the qualitative indicators of companies, one cannot judge their overall environmental and economic responsibility. It is appropriate to supplement them with an assessment of quantitative indicators.

Quantitative indicators, as well as qualitative ones, characterizing the environmental and economic responsibility of companies, do not have sufficient transparency to conduct their comprehensive assessment.

Table 2

Quantitative assessment of the economic responsibility of companies in the industrial complex of the Russian Arctic in 2018.

Company name	Environmental protection costs, mln rub.	Environmental payments for excess emissions, waste disposal, mln rub.	Environmental payments for regulatory emissions, total, mln rub.	Share of excess payments in the total volume of environmental payments, %	Fines for non-compliance with environmental legislation, mln rub.	Company revenue, bln rub.	Share of environmental payments for excess emissions in the company's total revenue,%	Share of gross environmental payments for regulatory emissions in the company's total revnue,%	Share of environmental protection costs to the company's revenue, %
FOSAGRO	8053.1	2.901	153.4	1.89	0.6	233.4	0.001	0.07	3.5
NORILSK NICKEL	31768	695.2		n/d	3.2	728.9	0.001		4.4
EUROCHEM	n/d	n/d	n/d	n/d	n/d	349.8	n/d	n/d	n/d
SEVERSTAL	3436	n/d	n/d	31.6	n/d	457.5	n/d	n/d	0.8
AKRON	686	n/d	10.8	n/d	n/d	108.1	n/d	0.0001	0.6
LUKOIL	35528	n/d	n/d	23	0	8058.3	n/d	n/d	0.4
GAZPROM	39154	197.04	615.8	32	10.2	8126	0.002	0.01	0.5
NOVATEK	2384	8.5		n/d	1.1	832	0.001		0.3
ROSNEFT	31 697	1040	1159	22	290	8200	0.012	0.014	0.4
ALROS	5 221	n/d	n/d	n/d	n/d	282.6	n/d	n/d	1.8

Table 2 shows that practically no company (with the exception of FOSAGRO, GAZPROM and ROSNEFT) provides data on the volume of environmental payments, on the amount of fines for non-compliance with environmental legislation, which significantly complicates the adequate analysis of non-financial reporting indicators and does not allow an accurate assessment of the environmental responsibility of companies. Nevertheless, on the basis of the data presented, we will try to analyze the activities of industrial companies in relation to measures to green the territories of their presence. The most active in the implementation of environmental protection measures in the Arctic regions (in absolute terms) are mainly oil and gas companies — LUKOIL, GAZPROM, ROSNEFT and one metallurgical enterprise — NORILSK NICKEL. For example, the top three are investing about 30–40 million rubles in environmental protection measures. However, if

[16] Reyting ustoychivogo razvitiya kompaniy, rabotayushchikh v rossiyskoy Arktike, 2018 [Sustainable Development Rating of Companies Operating in the Russian Arctic, 2018]. URL: https://porarctic.ru/wp-content/uploads/2018/09/Polyarnyj-indeks.-Versiya-1.0.pdf (accessed 15 May 2020).

we compare them in terms of the specific volume of environmental protection costs to the company's revenue, the picture changes significantly. Leadership in environmental protection measures aimed at preserving natural ecosystems is observed mainly in the chemical and metallurgical industries. For example, FOSAGRO spends about 3.5% of its revenues on greening, NORILSK NICKEL and ALROS — 4.4% and 1.8% respectively, other enterprises have less than 1% environmental costs. The analysis of reports on the sustainable development of companies showed that the bulk of funding is aimed at measures to reduce emissions of pollutants into the atmosphere, land reclamation and wastewater treatment.

Can the damage from pollution of the territories of the companies' presence be compared with the amount of financing for its elimination? The question is quite complex and multifaceted. To answer this question, let us try to analyze the data in table 3 and compare them with the data of the previous tables 1 and 2.

Table 3

Quantitative assessment of the environmental responsibility of companies in the industrial complex of the Russian Arctic for 2018

Company name	Gross emissions of SO_2 into the atmosphere, thousand tons	Emissions of other significant pollutants into the atmosphere, thousand tons	Gross emissions of greenhouse gases, thousand tons	Water consumption for the company's own needs, Thousand m^3	Waste, total, thousand tons	Number of accidents with negative consequences for the environment, pcs.	Volume of energy consumed from renewable sources, thousand kW/h	Specific weight of emissions into the atmosphere, kg/t [17]
FOSAGRO	11.36	16.55	451.2	97369	99125	0	n/d	161.94
NORILSK NICKEL	1869.6	57.0	10000	1412.1	30720	0	4132.5	33242
EUROCHEM	n/d	0.027	204.5	72100	n/d	0	n/d	43.5*
SEVERSTAL	96.5	43.6	22.1	149530	n/d	0	n/d	1054
AKRON	n/d	n/d	n/d	n/d	43.1	0	45.0	n/d
LUKOIL	25.1	408.2	30.0	428.5	2963	43	1 365.3	340
GAZPROM	276.2	2617.86	120.1	4280.2	180.74	917	459 666.3	248
NOVATEK	33	51.3	7936.8	2 993	71.2	1	9877778	0.075 [18]
ROSNEFT	86	1749	76.4	2 153.5	14 064	0	n/d	573
ALROS	219.1	n/d	550.8	8.1	15 933	1	n/d	1.626 [19]

It should be noted that the variation in some indicators (gross greenhouse gas emissions, wastes, water consumption) between companies in 2018 is several orders of magnitude. At the same time, some companies accumulate significant volumes of waste as a result of their activities (FOSAGRO, NORILSK NICKEL), others consume water actively for their own needs (SEVERSTAL) or are the main “pollutants” of the atmospheric air (NORILSK NICKEL, SEVERSTAL, ALROS, GAZPROM).

[17] Otchety ob ustoychivom razvitii kompaniy promyshlennogo kompleksa Arktiki RF za 2018 g. [Sustainable Development Rating of Companies Operating in the Russian Arctic, 2018.]

[18] * Calculation based on greenhouse data emissions only, as other data are not available.

[19] Calculated in relation to the company's revenue due to the complexity of the conversion per unit of finished goods (unit of measurement of finished goods carats).

For example, the company NORILSK NICKEL (non-ferrous metallurgy) spends 4.4% of its revenue on greening and is the leader in CO_2 and SO_2 emissions into the atmosphere: about 33 tons per 1 ton of finished products, while Gazprom with large volumes of emissions spends less than 1 % of proceeds.

Thus, a comparison of data on the costs of greening with quantitative indicators of the environmental responsibility of companies in the industrial complex of the Russian Arctic for 2018 allows us to conclude that not all enterprises have environmental costs comparable to the amount of environmental damage caused. Companies need to pay more attention to efficient use of energy resources, reduction of emissions and waste disposal.

Summarizing the analysis of the non-financial reporting of Russian holdings operating in the Arctic regions, we can conclude that their level of responsibility is now insufficient and opaque, which confirms the previously put forward hypothesis 1. Nevertheless, the importance of greening the territories of presence is growing, especially among companies in the industrial sector, even despite the fact that activities in the Arctic are regulated by separate (specific) regulatory and legal documents and there are various economic regulators. However, the increasing severity of environmental problems requires the improvement of a different system of environmental protection measures in the Arctic, possibly through the adoption of special legislation in the field of environmental protection in the Arctic zone

Discussion

Current legislation in the field of environmental protection regulation is not aimed at building symmetrical relations between government and business and does not help to reduce the negative impact of enterprises' activities on the environment. An analysis of existing economic mechanisms and legal measures showed that the use of directive management methods only is ineffective and does not lead to a significant improvement in the state of ecosystems. For example, the ecological disaster in Norilsk on May 29, 2020 is a confirmation of this. It should be noted that Norilsk has previously been in the focus of ecologists' attention due to accidents at Norilsk Nickel. In 2016 the Daldykan River turned red due to emissions from the Nadezhda Metallurgical Plant. According to Oleg Mitvol, the former deputy head of Rosprirodnadzor, the damage from a diesel spill in Norilsk could reach 100 billion rubles, and work to restore the natural environment will take up to 10 years[20]. At the same time, an increase in cargo traffic in the Arctic leads to an increase in fuel consumption, which, of course, has a great impact on the ecological state of the atmospheric air in the region, increases the risks of fuel spills[21]. The recently adopted subprogram

[20] «V Arkticheskoy zone takoy avarii ne bylo nikogda»: otsenen ushcherb ot razliva diztopliva v Noril'ske [“There Has Never Been Such an Accident in the Arctic Zone”: the Damage from a Diesel Fuel Spill in Norilsk Was Assessed]. URL: https://www.infox.ru/news/283/236801-v-arkticeskoj-zone-takoj-avarii-ne-bylo-nikogda-ocenen-userb-ot-razliva-diztopliva-v-norilske (accessed 15 May 2020).

[21] Perevod arkticheskogo flota s mazuta na szhizhennyy prirodnyy gaz (SPG). Rossiya v okruzhayushchem mire. Knizhnikov A., Kliment'ev A. Diskussionnye materialy k mezhdunarodnoy konferentsii «Sudostroenie v Arktike», iyun' 2019 g., Arkhangel'sk [Conversion of the Arctic Fleet from Fuel Oil to Liquefied Natural Gas (LNG). Russia in the Outside

"Development of the NGV fuel market" [22] will help to reduce and possibly even avoid accidental oil spills. Unfortunately, the current economic mechanisms now are aimed only at eliminating emergencies (fines, etc.), and not at preventing them. At the same time, the extreme deterioration of equipment and the lack of funds allocated for its repair significantly increase the likelihood of such environmental disasters.

To determine the economic effect, we compare the costs of business and the government for environmental protection. The business costs are payments for negative impact on the environment, and public expenditures are the expense on environmental protection (Fig. 2).

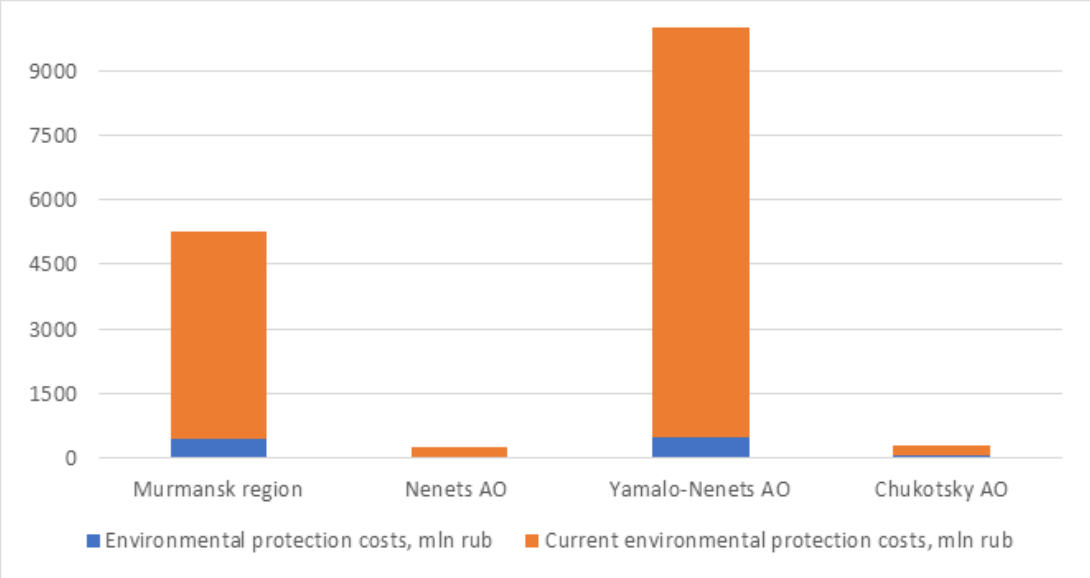

Fig. 2. Comparison of business and government expenditures on environmental goals in 2018 by regions of the Russian Arctic [23, 24].

The analysis showed that the compensation payments of businesses for the negative impact on ecosystems established by the state are incomparable with the costs of the state for financing programs for the protection and restoration of the environment. Note that all regions of the Arctic — regions with a significant level of impact of enterprises on ecosystems and a marginal threshold of environmental vulnerability, have a significant negative effect.

Thus, it is necessary to develop a system of regulators that will allow not only to minimize the level of costs associated with the greening of territories, but to form symmetrical relations between government and business while simultaneously reducing the level of anthropogenic load on the ecosystem. To reduce the economic damage from environmental pollution, it is necessary to

World. Knizhnikov A., Klimentiev A. Discussion Materials for the International Conference "Shipbuilding in the Arctic", June 2019, Arkhangelsk]. URL: https://wwf.ru/upload/iblock/629/rabochie_materialy_po_spg_forum_sudostroenie_iyun_2019.pdf (accessed 15 May 2020).

[22] Postanovlenie Pravitel'stva RF ot 02.03.2020 N 221 [Decree of the Government of the Russian Federation of 03 February 2020, No. 221].

[23] As an example, data for the regions fully included in the Arctic zone of the Russian Federation are given.

[24] Note: data for one year are given, since no significant changes were revealed for previous periods. Source: authors' calculations based on Rosstat data.

improve microeconomic indicators (the environmental costs of the enterprise, namely, to adjust the profit when calculating the amount of the company's environmental obligations to compensate for environmental damage). Such actions will “translate” the economic damage into internal costs of the company, affecting directly their business activities and at the same time stimulating the introduction of the best available technologies.

In modern conditions, in the opinion of the authors, an effective mechanism can be the model of "green" partnership, which will allow achieving balanced relationships between government and business in the context of environmental protection [33, Chapargina A.N.] (Fig. 3)

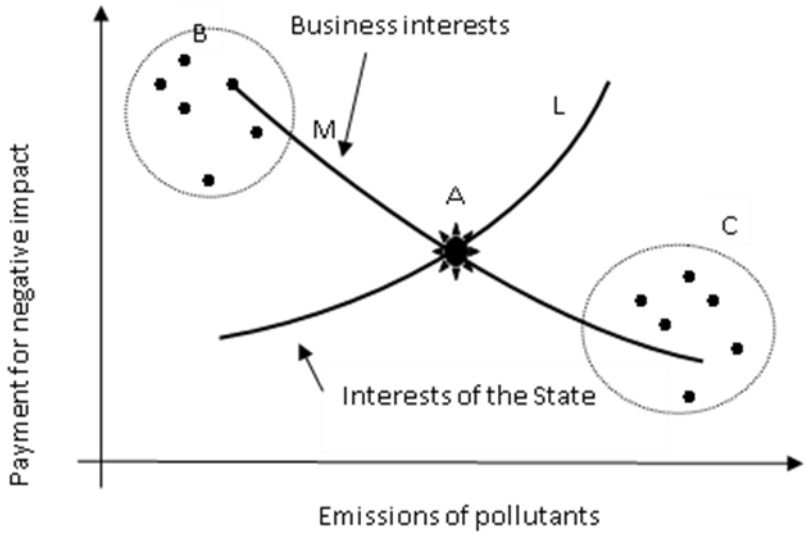

Fig. 3. Model of “green” partnership between business and state [25].

In the presented model, the set of points B are the interests of the authorities, that is, when compensation for environmental damage is significantly higher than harmful emissions. The set of points C, on the contrary, reflect business interests that are focused on minimizing environmental costs with a significant amount of pollutant emissions. There is a conflict of interests between government and business. At the same time, this situation causes an imbalance and leads to asymmetric relationships and, as a consequence, to negative economic effects. The urgency of the problem makes it necessary to find a point where the interaction of business and government on issues of greening will move to a qualitatively new level of their relationship.

The alignment of interests can be represented graphically. Curve L in Fig. 3 reflects the interests of the state, and curve M — the interests of business. New relationships arise between the interested groups (power-business) at the intersection of the curves at point A. Point A is a bifurcation point[26] that characterizes the moment of the formation of a new qualitative order of bal-

[25] Source: compiled by the authors.

[26] It is important to distinguish the concepts of bifurcation and optimum. Within the framework of this study, the authors use the concept of bifurcation to characterize the new relationship between power and business, since bifurcation is a critical state of the system, in which there is a qualitative leap and the transition of the system to a new state of stability. In addition, the optimum point characterizes only the mutual economic benefit as a result of certain relations and does not reflect their qualitatively new level.

anced interaction between business and government. At the same time, the environmental responsibility of business will come exactly at this point — the point of bifurcation, since the maximum marginal environmental payments will be highly unprofitable for business and thereby stimulate them to "voluntarily" invest in the modernization of technologies to reduce the technogenic impact on ecosystems. At the same time, the level of corporate environmental responsibility of the business will increase significantly.

Today, the relationship between business and government on environmental issues in the context of the presented model can be conditionally characterized by a set of points C (Fig. 3). In other words, low payments for adverse ecosystem effects are associated with high levels of harmful emissions (Table 4).

Table 4

Indicators reflecting the relationship between government and business in the Arctic (percentage of units)[27]

	2014	2015	2016	2017	2018
	Murmansk oblast				
Payments for negative impact on GRP	0.0002	0.0013	0.0010	n/d	n/d
Share of pollutant emissions in GRP	1.1100	1.0700	0.8700	0.2363	0.1610
	Nenets Autonomous Okrug				
Payments for negative impact on GRP	0.0017	0.0002	0.0001	n/d	n/d
Share of pollutant emissions in GRP	0.6100	0.7100	0.5500	1.1656	0.9020
	Yamalo-Nenets Autonomous Okrug				
Payments for negative impact on GRP	0.0008	0.0004	0.0002	n/d	n/d
Share of pollutant emissions in GRP	0.4700	0.5300	0.6100	0.3536	0.2660
	Chukotka Autonomous Okrug				
Payments for negative impact on GRP	0.0009	0.0009	0.0006	n/d	n/d
Share of pollutant emissions in GRP	0.4100	0.5000	0.5100	0.3663	0.3609
	The Russian Federation				
Payments for negative impact on GRP	0.0004	0.0004	0.0002	n/d	n/d
Share of pollutant emissions in GRP	0.3900	0.4000	0.4000	0.4287	0.3804

Despite the steady downward trend in the share of emissions to GRP, caused mainly by the stagnation of the regional economy, the ecological situation in the Arctic regions remains tense. Environmental payments established for enterprises of the extractive and manufacturing industries (the main pollutants) are only the minimum requirements of the legislation for compensation for harm caused, not taking into account the future development of the regions where the polluting enterprises operate.

[27] Source: authors' calculations based on Rosstat data.

The model of "green" partnership presented above indicates that it is possible to achieve a compromise solution to the problem only if the vectors of interests of the authorities and business are aligned. For example, in 2014, NORILSK NICKEL entered into an agreement with the Government of Russia [28], part of which was the closure of the Nickel Plant in Norilsk (one of the dirtiest industries in the Arctic [29]), which did not provide for the elimination of nickel and copper production, but for the "transfer" of production to regions with a more favorable environmental situation in comparison with the city of Norilsk (Sverdlovsk oblast — concentrate melting, Murmansk oblast — concentrate processing) [30].

Although such agreements show to some extent a constructive dialogue and the coordination of business and government actions, they still do not reflect the achievement of the so-called bifurcation point, demonstrating only extreme measures to prevent an environmental catastrophe in the region. This type of measures should not be systemic, otherwise, widespread closure of enterprises will be required.

The harm to society caused by the technogenic impact of enterprises on the environment must, of course, be compensated. One of the ways may be the introduction of corrective taxes, which will, to some extent, compensate for the losses of society from the mismatch between the interests of the state and business. The well-known economist A. Pigou proposed introducing a special tax to resolve conflicts caused by externalities (external effects), based on the condition of binary relations between social damage from harmful emissions and the marginal social costs of reducing this damage.

In Russia, the expert community is actively raising and discussing the issue of introducing an environmental tax [31]. Experts note that its introduction is necessary for the financial support of the activities of the Government of the Russian Federation in the direction of greening the regions and ensuring conditions in the country for the realization of the constitutional right of citizens to a favorable environment. At the same time, the state environmental policy does not provide for a compromise solution of problems between the state and business.

Thus, it is necessary to develop such a "theory of implementation" of economic mechanisms, which, on the one hand, will provide the state with financial resources for the implementation of state environmental programs, on the other hand, will arouse the interest of business in creating effective environmentally balanced behavior when investing in environmental technolo-

[28] Thus, the closure of the oldest asset of the company, the Nickel Plant, as well as the modernization and reconstruction of the existing production facility, allowed to reduce SO2 (sulfur oxide) emissions in the city of Norilsk by 30%.

[29] Predpriyatie ezhegodno vybrasyvalo v vozdukh okolo 400 000 t dioksida sery [The Enterprise Annually Emitted about 400,000 Tons of Sulfur Dioxide into the Air]. URL: https://www.vedomosti.ru/business/articles/2016/06/28/647054-nornikel-zakrivaet-nikelevii-zavod (accessed 15 May 2020).

[30] Direktor zapolyarnogo filiala «Noril'skogo nikelya» — o modernizatsii proizvodstva i zakrytii Nikelevogo zavoda, 2 maya 2015 [Director of the Polar Division of Norilsk Nickel — on the Modernization of Production and the Closure of the Nickel Plant, May 2, 2015]. URL: www.trk7.ru (accessed 15May 2020).

[31] We leave out of the scope of attention the assessment of the effectiveness of the introduction of the new tax, since this was not the subject of research.

gies. The proposed theoretical approach (model) to the formation of a constructive partnership will allow reaching a bifurcation point in the relationship between government and business and thereby leveling the technogenic load on the ecosystem of the Arctic territories, which confirms the previously put forward hypothesis 2.

Conclusion

Theoretical postulates suggest that the state environmental policy is based on the following basic principles: the introduction of the best available technologies, compensation for environmental harm and a scientifically grounded combination of the triad (ecology — economy — society) of interests of a person, society and the state.

Today, the achievement of symmetrical relations between business and government should be based on "partnership" interactions that allow taking into account the interests of opposing sides. Unfortunately, in practice, the asymmetry of their interests is noted: the narrowly pragmatic attitude of business towards nature and the inability of the authorities to preserve the natural environment for future generations, which necessitates a change in the forms and methods of state policy in the field of environmental protection measures. The main idea of the transformations is not "pressure" on business, but the elimination of the existing conflict of interest by moving to a new qualitative level of interaction between government and business.

Searching for symmetrical relations between government and business in the Arctic becomes even more urgent due to the resource-raw materials orientation and the mono-profile of the economies of the Arctic regions. This specificity and features of the socio-economic development of these regions must be taken into account when developing mechanisms and tools for regulating the relationship "power–business".

It should be noted that economists do not have a unified approach to modeling constructive partnership between government and business in the field of ecology. We believe that it is necessary:

- firstly, to develop symmetry in relationships, and cooperation in this case should be bilateral and interdependent in addressing important environmental issues. Namely, on the part of the authorities —formation of such legal initiatives that will allow to develop and stimulate the environmental responsibility of business and create favorable conditions for the development of entrepreneurship. On the part of business structures — striving for transparency and openness in reflecting non-financial environmental information and compliance with environmental management standards, as well as improving the conditions for partnership in the environmental field;
- secondly, to reconstruct environmental taxation according to the principle "it is not the consumer who pays, but the polluter does," thereby shifting the tax burden on enterprises, whose activities cause irreparable harm to the environment. In addition, it is necessary to develop a system of tax incentives (tax credits, cancellation of payment of

certain payments, etc.) for enterprises that implement the best available technologies, but not within the framework of general taxation, but in the system of environmental payments;

- thirdly, to follow the principles of the above-presented model of "green" partnership (reaching the bifurcation point), which allows to transform the system of state regulation of environmental management qualitatively, which in the future will make it possible to achieve the decoupling effect.

In the opinion of the authors, it is only possible to stop the further degradation of the biosphere through the joint efforts of all participants and at all levels of the society organization.

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Comparative Assessment of Innovative Development of the Far North Regions *

© Nikolay E. EGOROV, Cand. Sci. (Phys. and Math.), Leading Researcher
E-mail: ene01@ya.ru
Scientific-Research Institute of Regional Economy of the North, M.K. Ammosov North-Eastern Federal University, Yakutsk, Russia
© Grigoriy S. KOVROV, Cand. Sci. (Econ.), Leading Researcher
E-mail: kgs02@yandex.ru
Scientific-Research Institute of Regional Economy of the North, M.K. Ammosov North-Eastern Federal University, Yakutsk, Russia

Abstract. The paper deals with the assessment of the level of innovative development of the Northern regions. Based on the data of the annual rating of innovative economies, performed by Bloomberg, a comparative analysis of the rating of innovative economies in the Nordic countries is presented. It is noted that Russia has been consistently ranked 25–27 in the last four years, although in 2016, it was in the 12th place. An overview analysis of methodological approaches and methods for assessing the level of innovative development of a region in Russia is carried out. On the basis of statistical data on the composite integral index, a comparative assessment of the level of innovative development of 17 regions of the Far North of the Russian Federation for 2017 is carried out, and the corresponding ranks are analyzed separately for 5 subindices of thematic blocks: socio-economic conditions, scientific and technical potential, innovation activity, export activity and the quality of regional innovation policy. The study shows a significant difference between the regions of the Far North of the Russian Federation in terms of the level of innovative development. In five subjects of the Far North of the Russian Federation, the values of the composite innovation index are higher than the average for the Russian Federation. Different positions occupied by regions are also observed in the rankings for individual sub-indices. The results of such ratings make it possible to assess the comparative advantages and disadvantages of specific regions for further consideration in the program documents on their innovative development.
Keywords: *Far North, subject, innovative development of the region, rating, indicator, subindex.*

Introduction

Today, the economies of many countries and Russia are focused on innovative development, and the issues of assessing the level of innovative development of regions are topical. Assessment of the innovative potential of the region on the basis of constant monitoring of changes in its indicators is a necessary tool for determining the level of development of the innovative component of the regional economy and making various organizational and managerial decisions by local government authorities.

Currently, various methods and models for assessing the level of innovative region development (IRD) are proposed in Russia [1–9]. Despite numerous studies in this area, there is no uniform approach to assessing the innovation index [9, Mityakov S.N., Mityakova O.I., Murashova N.A., p. 97]. One of the tools for managing innovation activity is timely and robust monitoring, which allows to make quick decisions that prevent a failure in the implementation of projects of a full innovation cycle. The IRD indicators are the key performance indicators, recorded in the stra-

* For citation: Egorov N.E., Kovrov G.S. Comparative Assessment of Innovative Development of the Far North Regions. *Arktika i Sever* [Arctic and North], 2020, no. 41, pp. 62–74. DOI: 10.37482/issn2221-2698.2020.41.62

tegic regional documents [5, Ilyina I.E., Zharova E.N., Agamirova E.V. Kamenskiy A.S., p. 232]. For example, the Institute of Innovative Economics of the Financial University under the Government of the Russian Federation has developed the Concept for the formation of the IRD index of Russia[1]. The index is a comprehensive assessment of the potential of IRD, taking into account the probable success and effectiveness of the implementation of new innovative projects based on a comprehensive analysis of the potential of the region. An important aspect of determining the prevailing conditions, the existing potential and the prospects for innovative development of a particular region is the identification and consolidation of specific socio-economic parameters registered by official statistics and available for use in calculating individual indicators [4, Droshnev V.V., Droshneva M.D., p. 75].

According to the authors [1, Barinova V.A., Zemtsov S.P., p. 116], the assessment of the level of innovative development of the region can be carried out only through the assessment of the contribution of the scientific and technological component to the growth of the gross regional product, other assessments suggest only the determination of the region's potential for the creation and implementation of new knowledge and technologies.

According to Lisina A.N. [6, p. 115], the main problem in determining the level of innovation development of a region is the lack of a scientifically grounded, necessary and sufficient number of indicators to assess the effectiveness of regional innovation processes. The analysis of management requirements shows that in order to improve the efficiency of management decisions in the innovation sphere, it is necessary to identify 15–20 indicators, on the basis of which the IRD is calculated. There is also a proprietary methodology for the rapid assessment of IRD based on the Triple Helix model, which makes it possible to perform a comparative econometric assessment of the level of IRD, as well as the contribution of the scientific and educational complex, business and the state to the overall innovative development of an economic entity according to their minimum key statistical indicators in the field of scientific and innovative activities [10, Egorov N.E.; 11, Egorov N., Pospelova T., Yarygina A., Klochkova E.].

Currently, the rating of the IRD is estimated by the Association of Innovative Regions of Russia (AIRR) and the Institute for Statistical Studies and Economics of Knowledge (ISSEK) of the National Research University “Higher School of Economics” (NRU HSE). For example, AIRR, together with the Ministry of Economic Development of the Russian Federation, with the participation of representatives of regional administrations and leading experts of the country, has developed an IRD rating for monitoring and management purposes [2]. The rating represents the actual results of the innovative development of all constituent entities of the Russian Federation, with special at-

[1] Kontseptsiya formirovaniya Indeksa innovatsionnogo razvitiya regionov Rossii [The Concept of Forming the Index of Innovative Development of Russian Regions]. URL: https://www.yumpu.com/xx/document/read/31819701/ (accessed 03 May 2020).

[2] Reyting innovatsionnogo razvitiya regionov Rossii. Versiya 2017. Assotsiatsiya innovatsionnykh regionov Rossii [Rating of Innovative Development of Russian Regions. Version 2017. Association of Innovative Regions of Russia]. URL: https://www.nso.ru/sites/test.new.nso.ru/wodby_files/files/document/2018/02/documents/airr17.pdf (accessed 03 May 2020).

tention paid to the analysis of the positions of the regions-members of the Association, the reasons for their movement in the final rating and its constituent sub-ratings. The rating of innovative regions of Russia in 2018 includes 29 indicators. The developed analytical rating system makes it possible to demonstrate the regional authorities strengths and weaknesses, directions for further development and improvement of innovation systems, as well as the dynamics of changes in all areas reflected by the indicators.

ISSEK of NRU HSE has been regularly issuing a rating of innovative development of the constituent entities of the Russian Federation since 2012[3]. The ratings are based on the original system of quantitative and qualitative indicators of the innovative development of regions, which is based on the results of many years of research by ISSEK of NRU HSE and meets modern statistical standards used both in Russian state statistics and in the practice of leading countries and international organizations (OECD, Eurostat and etc.). It also integrates indicators used in similar developments of the European Commission (Regional Innovation Scoreboard) [4]. The developed rating is the result of ranking the subjects in descending order of the values of the Russian Regional Innovation Index (RRII). The ranking examines the key components of the innovative development of regions by 53 indicators grouped into five thematic blocks: socio-economic conditions (A), scientific and technological potential (B), innovation activity (C), export activity (D) and the quality of regional innovation policy (E), each of which has its own sub-rating. The final RRII index is formed as the arithmetic mean of the normalized values of all indicators included in the rating. All regions are divided into four groups based on the lag of the values of the integral indicator of the RRII index from the result of the leading region. It should be noted that in the list of regions, data for the Arkhangelsk and Tyumen regions are given without taking into account information on the autonomous okrugs located on their territories. The main value of this rating is the individual profiles of 85 constituent entities of the Russian Federation, detailing the results for all indicators of innovative development and allowing to identify the features of the innovation system of each region.

For a comparative assessment of the innovative development of the northern countries of the world, the concept of the "Far North" is taken as a basis. The Far North is a part of the Earth's territory located mainly north of the Arctic Circle [5]. Despite the fact that the countries of northern Europe occupy 20% of the territory of the entire northern part of the globe, their population is small and accounts for only 4% of all those living in this part of the world. Traditionally, the northern countries of the world include Denmark, Iceland, Norway, Finland, Sweden, Russia (Europe) and the countries of North America — Canada, USA [6].

[3] Reyting innovatsionnogo razvitiya sub"ektov Rossiyskoy Federatsii. Vypusk 6 / pod red. L.M. Gokhberga. Moskva: NIU VShE, 2020. 264 s. [Rating of Innovative Development of the Constituent Entities of the Russian Federation. Issue 6. Ed. by L.M. Hochberg. Moscow, NRU HSE, 2020. 264 p.]. URL: https://issek.hse.ru/ (accessed 03 May 2020).
[4] European Commission (2019) Regional Innovation Scoreboard 2019. URL: https: //ec.europa.eu/growth/sites/ growth/ files/ris2019.pdf (accessed 03 May 2020).
[5] Krayniy Sever [Far North]. URL: https://ru.wikipedia.org/wiki/ (accessed 22 June 2020).
[6] Severnye strany mira [Northern countries of the world]. URL: http://severnyestrany.ru (accessed 03 May 2020).

According to the results of the rating of innovative economies, carried out annually by the Bloomberg Agency, **Germany, South Korea, Singapore, Switzerland and Sweden are the five leading countries**[7]. This rating shows the general ability to develop innovative technologies in each state based on the analysis of dozens of criteria in seven categories: research and development, value-added production, productivity, high technology density, higher education efficiency, research concentration, patent activity. Among the Nordic countries, Sweden, Denmark, Finland and the United States are included in the TOP-10 innovative economies of the world in 2020 (Table 1). Over the past four years, Russia has been consistently occupying 25–27 positions, although in 2016 it was in the 12th place.

Table 1

Ranking of innovative economies of the northern countries

Country	2020	2019	2018	2017	2016
Sweden	5	7	2	2	3
Finland	7	3	7	5	7
Denmark	8	11	8	8	9
USA	9	8	11	9	8
Norway	17	17	15	14	14
Canada	22	20	22	20	19
Iceland	23	23	24	25	28
Russia	26	27	25	26	12

As it is known, the key indicator of the effectiveness of innovative activities of an economic entity is the indicator "The proportion of innovative goods, works, services in the total volume of shipped goods, performed works, services". The dynamics of changes in this indicator among the northern countries of Europe for 2007–2017 is shown in Fig. 1.

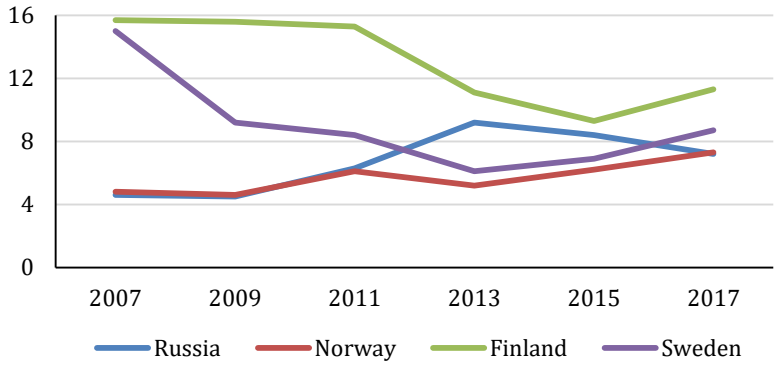

Fig. 1. Dynamics of changes in the indicator "The share of innovative goods, works, services in the total volume of shipped goods, performed works, services" [8].

[7] Reyting innovatsionnykh ekonomik-2020 [Ranking of Innovative Economies-2020]. URL: https://theworldonly.org/rejting-innovatsionnyh-ekonomik-2020 (accessed 03 May 2020).

[8] Source: Indikatory innovatsionnoy deyatel'nosti: 2019: statisticheskiy sbornik. L.M. Gokhberg, K.A. Ditkovskiy, I.A. Kuznetsova i dr.; Nats. issled. un-t «Vysshaya shkola ekonomiki». Moskva: NIU VShE, 2019. 376 s. [Indicators of Inno-

As can be seen from the presented illustration, according to this indicator, Finland occupies a leading position among the northern countries, although in the period 2011–2015 there is a decline in its level by 39.2%. A similar situation is observed in Sweden, which indicator decreased by 59.3% for 2007–2013. In Norway, over the entire period under consideration, there is a gradual increase in its value by 28.0%. Since 2013, Sweden and Norway have shown equally stable growth rates by 29.9% and 28.8%, respectively.

After achieving a two-time increase in the level of the indicator in 2013 as compared to 2007, Russia has experienced a constant negative development, reaching a value of 7.2% in 2017, which is a decrease of 21.7% compared to 2013. It should be noted that, in accordance with the approved target indicators for the implementation of the Strategy for innovative development of the Russian Federation for the period up to 2020[9], the value of the indicator "*The share of innovative goods, works, services in the total volume of shipped goods, performed work, services of industrial production organizations*" in 2020 year should increase by 3.5 times compared to 2013, reaching 25%.

Also, one of the main indicators of the development of the country's innovative economy is the indicator "Intensity of costs for technological innovation" (*the share of costs for technological innovation in the total volume of shipped goods, performed work, services*). According to this indicator, Sweden occupies a leading position among the Nordic countries, Russia is in 4th place with a value of 2.44% (Fig. 2), showing confident dynamics towards reaching the target of 2.5% by 2020 according to the target indicators of the Strategy [10].

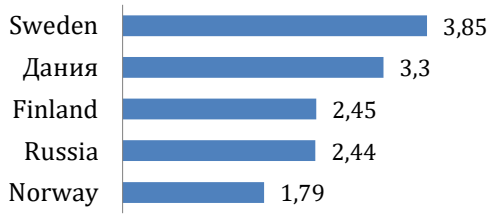

Fig. 2. Intensity of costs for technological innovation, 2017 [11].

The concept of the "Far North" in Russia is a group of concepts with a vague spatial localization, depending on the purpose of consideration. For example, in order to regulate benefits and compensations for workers living in areas with a harsh climate, a certain territory of the Far North (and equivalent areas) is allocated. At the same time, in order to regulate the northern delivery,

vation Activity: 2019: Statistical Collection. Gokhberg L.M., Ditkovskiy K.A., Kuznetsova I.A. et al.; National Research University Higher School of Economics. Moscow, NRU HSE, 2019. 376 p.]. URL: https://issek.hse.ru/ (accessed 03 May 2020).

[9] Strategiya innovatsionnogo razvitiya Rossiyskoy Federatsii na period do 2020 goda. Rasporyazhenie Pravitel'stva RF ot 8 dekabrya 2011 g. № 2227-r. [Strategy for Innovative Development of the Russian Federation for the Period Up to 2020. Government Executive Order of the Russian Federation Dated December 8, 2011 No. 2227-r.]. URL: https://legalacts.ru/doc/rasporjazhenie-pravitelstva-rf-ot-08122011-n-2227-r/ (accessed 03 May 2020).

[10] Ibid.

[11] Reyting innovatsionnogo razvitiya sub"ektov Rossiyskoy Federatsii. Vypusk 6 / pod red. L.M. Gokhberga. Moskva: NIU VShE, 2020. 264 s. [Rating of Innovative Development of the Constituent Entities of the Russian Federation. Issue 6. Ed. by Gokhberg L.M. Moscow, NRU HSE, 2020. 264 p.]. URL: https://issek.hse.ru/ (accessed 03 May 2020).

the territory of the Far North is determined by the "List of regions of the Far North and equivalent areas with limited periods for the delivery of goods (products)" and does not coincide with the above-mentioned territory: there are regions and areas that are included in only one of these lists [12].

The list of regions of the Far North (RFN) was first defined back in the USSR by Resolutions of the USSR Council of Ministers of 10.11.1967 No. 1029 and of 03.01.1983 No. 12. Subsequently, a new resolution with significant changes was issued by the same body in 1983 [13]. This legal act appeared because there were too many different laws regulating various spheres of life of people living in the RFN. The resolution was changed again in 2012, when some settlements of the Khanty-Mansi Autonomous Okrug began to belong to the RFN. In general, this normative act is still in force, although amendments are being made there in the form of new settlements, in which there are problems with the provision of products and a transport network. In 2019, the following territories are included in the list of regions of the Far North (Table 2).

Table 2

The list of regions of the Far North [14]

Oblast	Krai	Republic	Autonomous Okrug
Murmansk	Krasnoyarsk	Komi	Nenets
Arkhangelsk	Kamchatka	Sakha (Yakutia)	Khanty-Mansi
Irkutsk	Khabarovsk	Karelia	Yamal-Nenets
Tyumen		Tuva	Chukotka
Magadan			
Sakhalin			

Thus, at present 17 regions from 4 federal districts belong to the regions of the Far North of the Russian Federation (FNRF): North-West — 5 (Murmansk and Arkhangelsk Oblasts, the Republics of Karelia and Komi, Nenets Autonomous Okrug (NAO)); Uralsky — 3 (Tyumen Oblasts, Khanty-Mansi (KhMAO) and Yamalo-Nenets (YaNAO) Autonomous Okrugs); Siberian — 3 (Krasnoyarsk Krai, Irkutsk Oblast, Republic of Tyva); Far East — 6 (Khabarovsk and Kamchatka Krais, Magadan and Sakhalin Oblasts; Republic of Sakha (Yakutia), Chukotka Autonomous Okrug (ChAO).

Results and Discussion

The rating of innovative development of the regions of the FNRF for 2017 is presented in Table 3.

[12] Krayniy Sever [Far North]. URL: https://ru.wikipedia.org/wiki/ (accessed 22 June 2020).
[13] O vnesenii izmeneniy i dopolneniy v Perechen' rayonov Kraynego Severa i mestnostey, priravnennykh k rayonam Kraynego Severa [On Amendments and Additions to the List of Regions of the Far North and Localities Equated to Regions of the Far North]. URL: http://www.consultant.ru/document/cons_doc_LAW_403/ (accessed 22 June 2020).
[14] Rayony, priravnennye k Kraynemu Severu: perechen'-2019 [Regions Equated to the Far North: List of 2019]. URL: https://blogkadrovika.ru/rajony-priravnennye-k-krajnemu-severu-perechen-2019 (accessed 22 June 2020).

Table 3

Rating of the FNRF regions by the level of the composite innovation index (CII), 2017[15]

Regions	CII	Subindices				
		A	B	C	D	E
Krasnoyarsk Krai	12	14	29	28	22	13
Khabarovsk Krai	16	6	32	15	43	18
Tyumen Oblast	25	11	11	21	33	67
Irkutsk Oblast	33	24	18	47	27	43
Murmansk Oblast	36	37	63	38	6	46
Khanty-Mansi Autonomous Okrug	44	10	54	53	61	44
Arkhangelsk Oblast	45	29	43	14	46	71
Republic of Sakha (Yakutia)	55	15	55	55	57	53
Komi Republic	57	55	14	79	44	56
Kamchatka Krai	58	28	49	49	62	57
Yamal-Nenets Autonomous Okrug	59	8	50	52	70	69
Republic of Karelia	60	65	25	59	50	58
Sakhalin Oblast	65	44	75	58	36	78
Magadan Oblast	70	47	74	50	75	73
Republic of Tuva	78	52	81	84	84	54
Nenets Autonomous Okrug	84	84	84	69	72	84
Chukotka Autonomous Okrug	85	81	85	67	77	85

According to the NRU HSE methodology, the regions occupying ranks 12–45 (7 subjects) are in group 2, which is inferior to the leader of the rating – Moscow – in terms of RRII by more than 20%, but no more than 40%. In the third group lagging behind in terms of CII from the first in the rating of the region by more than 40%, but not more than 60%, there were 8 subjects (55–78 ranks). The last group 4 includes two outsider regions out of 85 constituent entities of Russia, in which the values of RRII are lower than in Moscow by more than 60%. Thus, only 5 regions of the FNRF out of 85 constituent entities of the Russian Federation, occupying from 12th to 36th places in the rating, have CII values above its average for the Russian Federation (0.3349) (Fig. 3). These are Krasnoyarsk (0.4424) and Khabarovsk (0.4077) Krais, Tyumen (0.3739), Irkutsk (0.3551) and Murmansk (0.3521) oblasts, which generally occupy relatively high places in the “Social economic conditions ”(see Table 3).

[15] Reyting innovatsionnogo razvitiya sub"ektov Rossiyskoy Federatsii. Vypusk 6 / pod red. L.M. Gokhberga. Moskva: NIU VShE, 2020. 264 s. [Rating of Innovative Development of the Constituent Entities of the Russian Federation. Issue 6. Ed. by Gokhberg L.M. Moscow, NRU HSE, 2020. 264 p.]. URL: https://issek.hse.ru/ (accessed 03 May 2020).

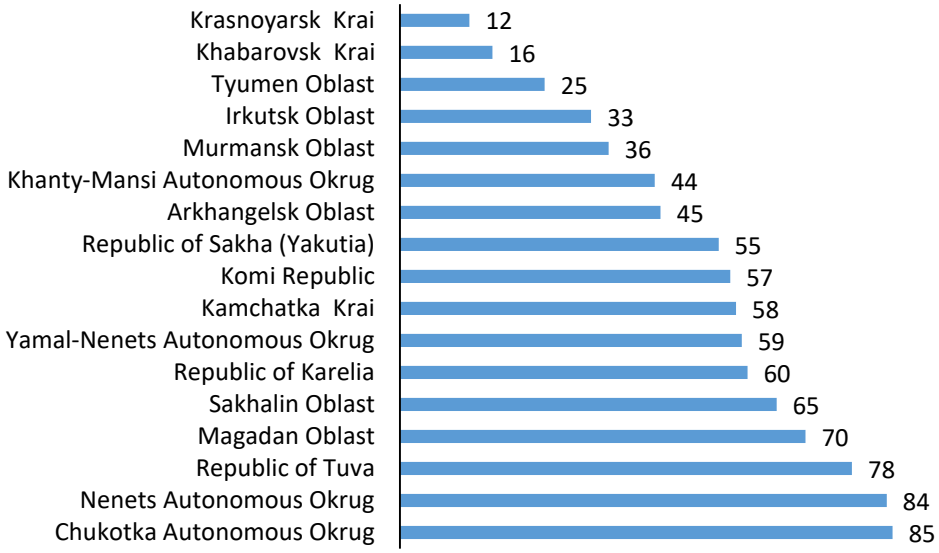

Fig. 3. Raiting of CII of FNRF regions, 2017 [16].

The corresponding ranks for 5 sub-indices of thematic blocks analysis shows that positions occupied by the leaders-regions differ. So, according to the sub-index “Socio-economic conditions” there are 6 regions of the FNRF above its average value for the Russian Federation (0.414), which occupy 6-15 places among 85 subjects. It shows the presence of good socio-economic conditions for the development of innovative activities in these subjects. The sub-index includes the main macroeconomic indicators, educational potential of the population and the potential for digitalization of the region. According to this sub-index, the top three regions of the FNRF are headed by the Khabarovsk Krai, the Yamalo-Nenets (Yamalo-Nenets Autonomous Okrug) and the Khanty-Mansi Autonomous Okrug (KhMAO), the Tyumen Oblast, which are in the TOP-10 regions of the Russian Federation in terms of educational potential (Khabarovsk — the 2nd place, KhMAO — the 8th) and the potential for digitalization (YaNAO — the 5th place, KhMAO — the 4th) (Fig. 4).

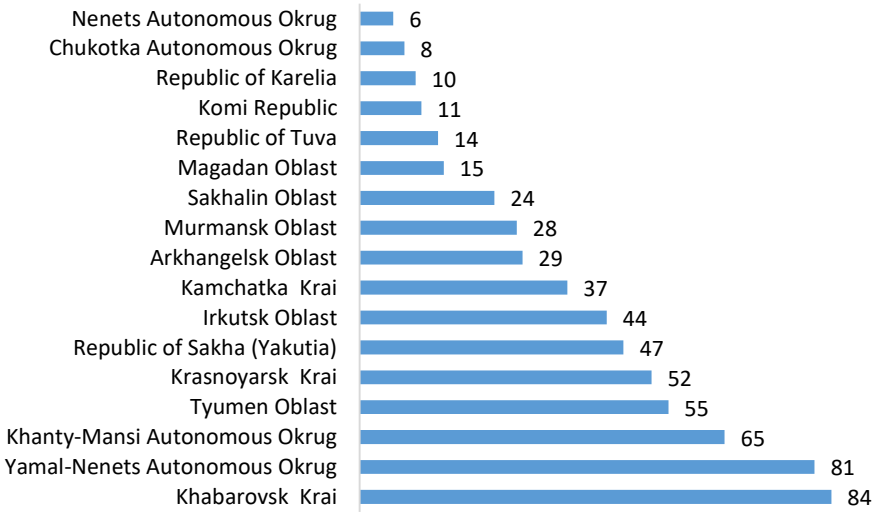

Fig. 4. Rating of FNRF regions according to the sub-index "*Socio-economic conditions*".

[16] Reyting innovatsionnogo razvitiya sub"ektov Rossiyskoy Federatsii. Vypusk 6 / pod red. L.M. Gokhberga. M.: NIU VShE, 2020. 264 s. [Rating of Innovative Development of the Constituent Entities of the Russian Federation. Issue 6. Ed. by Gokhberg L.M. Moscow, NRU HSE, 2020. 264 p.]. URL: https://issek.hse.ru/ (accessed 03 May 2020).

According to the sub-index "Scientific and technical potential", only 2 regions are above the average for the Russian Federation (0.4305): the Tyumen oblast (0.4888) and the Komi Republic (0.4632), which occupy 11th and 14th places among 85 constituent entities of the Russian Federation (Fig. 5). This fact testifies to the relatively low indicators in the field of personnel training, financing and the effectiveness of research and development in the regions of the FNRF. It should be noted that the Tyumen oblast is in the 4th place among the subjects of the Russian Federation in terms of the volume of funding for science, and the most competitive salary in science is recorded there in terms of the ratio of the average monthly salary of workers engaged in research and development to the average monthly nominal gross salary in the region[2].

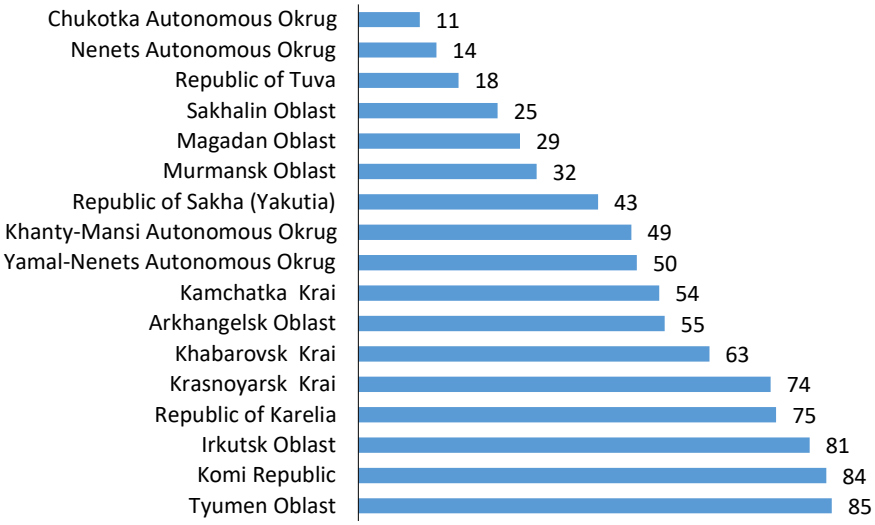

Fig. 5. Rating of FNRF regions according to the sub-index *"Scientific and technical potential"*.

Besides, the regions of the FNRF have low indicators for the sub-index "Innovation activity": only 3 regional leaders are located above the average value of this index in the Russian Federation (0.3096): Arkhangelsk oblast (0.3897), Khabarovsk Krai (0.3853) and Tyumen area (0.3540) (Fig. 6). The leading position of the Arkhangelsk oblast is mainly due to the achievement of high indicators in terms of the effectiveness of innovative activities, and the Khabarovsk Territory — according to the indicator "Costs for technological innovation".

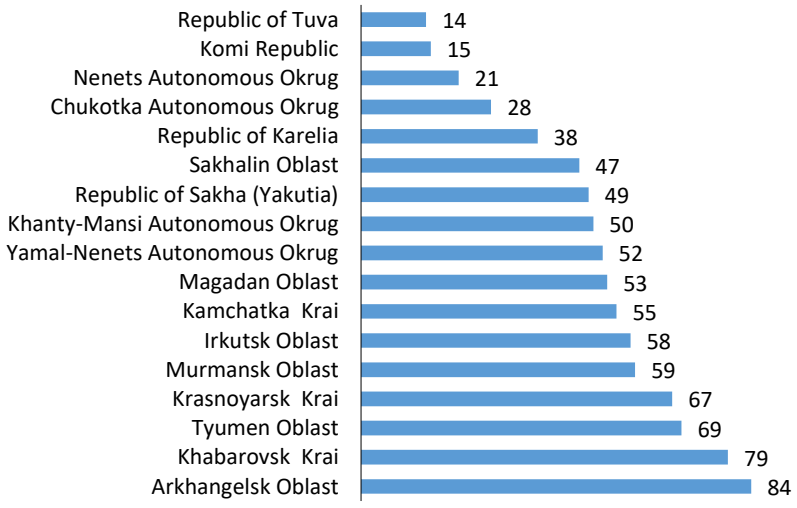

Fig. 6. Rating of FNRF regions according to the sub-index *"Innovation activity"*.

In the ranking according to the “Export activity” sub-index, the Murmansk Oblast is by far the leader (0.4647), taking the 6th place in the overall rating of the constituent entities of the Russian Federation. The Krasnoyarsk Krai (0.3975), Irkutsk (0.3707), Tyumen (0.3428) and Sakhalin (0.3151) oblasts are also located above the average value of this index in the Russian Federation (0.2935) (Fig. 7). It should be noted that in terms of "Export of goods and services" the Murmansk oblast takes the third position and is included in the TOP-10 successful regions of the first group of regions. The main contribution to its rating success was made by non-resource exports in the field of innovation.

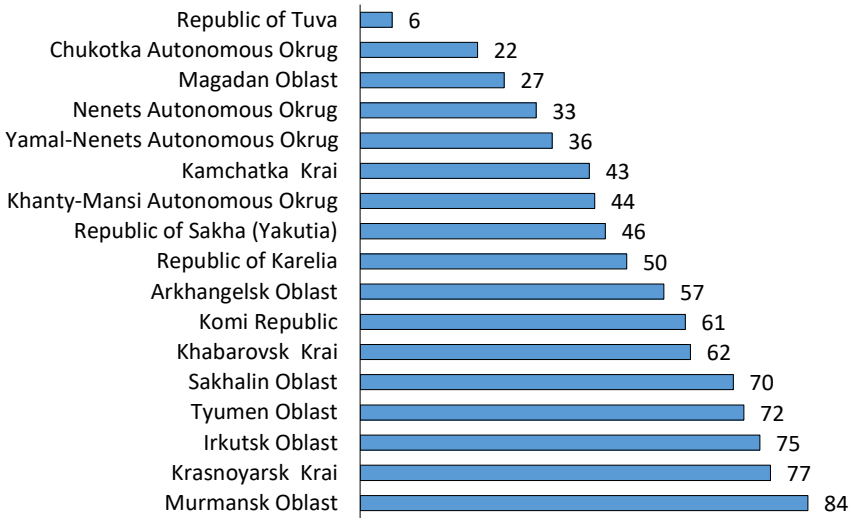

Fig. 7. Rating of FNRF regions according to the sub-index *“Export activity”*.

The sub-index "Quality of regional innovation policy" comprehensively reflects the positions of the regions in the following parameters: elaboration of legal regulation of innovation activity, the presence of specialized coordinating bodies and development institutions in the field of innovation, the volume of budgetary support for civil science and technological innovation, the involvement of regions in scientific, technical and innovation federal policy. According to this sub-index, only Krasnoyarsk (0.49) and Khabarovsk (0.493) krais were included in the list of regions with a value above the average value for the Russian Federation (0.33), which occupy 13 and 18 ranking places, respectively, among 85 constituent entities of the Russian Federation (Fig. 8). Krasnoyarsk Krai is consistently included in the second group of regions for all indicators of the sub-index, and the Khabarovsk Krai — in the first group for the development of regulatory documents in the field of innovation policy and in the second group for its organizational support.

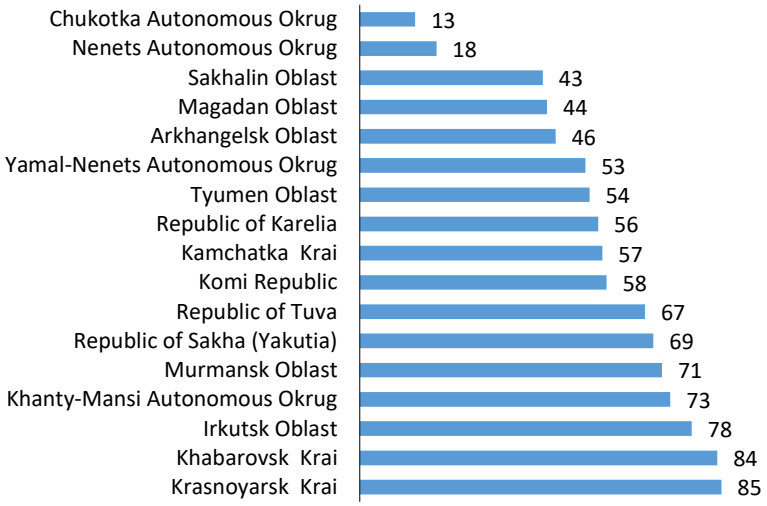

Fig. 8. Rating of FNRF regions according to the sub-index *"Quality of regional innovation policy"*.

Conclusion

The study showed a significant difference between the regions of the FNRF in terms of the level of innovative development: only 5 regions of the FNRF have the values of the composite innovation index above its average for the Russian Federation. Different positions taken by the regions are also observed in the rankings for individual sub-indices.

In general, conducting such rating assessments of innovative development for each region is very useful and allows assessing the comparative advantages and disadvantages of regions for further consideration in program documents on their innovative development.

Thus, in connection with the existing socio-economic conditions of the regions of the Far North, as well as taking into account the prospects for further development, an increase in the level of innovative development of the region is necessary and possible only when restructuring the entire economic system of these territories on the basis of the widespread introduction of modern innovative technologies (digitalization, augmented reality, Internet and other technologies) in the economic and social sectors

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Problems of the Arctic Traditional Industries in Yakutia *

© Natalya V. RODNINA, Dr. Sci. (Econ.)
E-mail: rodninanv@gmail.com
Arctic State Agrotechnological University, Yakutsk, Russia

Abstract. The transformations taking place in Russia since the 90s have changed both the political and economic and social systems of the country. Privatization led to a loss of manageability of all agriculture, but significantly negatively affected the traditional agricultural sectors of Yakutia. The transformation of organizational and legal forms and the transition to small-scale production negatively affected animal husbandry as the main occupation of the republic's indigenous population. Despite government support for traditional industries, there has been no positive change. Of particular concern is the implementation of large industrial projects in the Arctic. The subject of the study is factors and trends affecting the socio-economic situation and the development of traditional industries. The goal is to determine the features and patterns of the development of traditional industries and assess the impact of ongoing transformations in the Arctic on their condition. The research hypothesis is the assumption of insufficient state regulation measures and mutually beneficial economic relations with business in the industrial development of the Arctic. The results of the studies showed the need to increase the attention of all levels of government in deciding on the development of a particular territory of the Arctic and identifying such rules and mechanisms for companies that should not only ensure the preservation of agricultural industries, but also improve the quality and standard of living of the population. The research methodology is based on system analysis using economic and statistical methods, analytical and computational algorithms for processing information on the development of agro-industrial complex and changing dynamics, including content analysis.
Keywords: *Traditional industries, Arctic, state support, business, social responsibility, reindeer herding, herding horse breeding, economic potential.*

Introduction

For several centuries there was an interest in the Far North and the Arctic in Russia. The Arctic territories, due to the presence of natural and economic conditions for economic activity, play an important role from the standpoint of national security and socio-economic development of the country as a whole [1].

The largest share of hydrocarbon reserves is directly concentrated in the Russian sector of the Arctic (Table 1) [2].

Table 1

Hydrocarbon reserves by country, %

Country	Oil	Natural gas
Russia	41	70
USA (Alaska)	28	14
Canada	9	4
Greenland	18	8
Norway	4	4

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In this regard, the further spatial development of the new Russia is inevitably linked to its Arctic zone. The importance of the Arctic for the economy and the future of Russia is enormous. Almost all types of natural resources are located in the Arctic, and their extraction can now proceed at an accelerated pace.

Recognition of the Arctic not just as a raw material appendage, but as a zone of strategic interests, determines the growing role of socio-economic development of the Arctic zone of the Russian Federation (AZRF).

At the same time, the process of resource development should take into account not only the interests of companies carrying out production activities in the area concerned, but also the interests of the region in which the deposits are being exploited.

This also applies to the Republic of Sakha (Yakutia). The Yakutia Arctic is a territory of traditional nature management and agricultural production, represented by traditional industries such as reindeer herding, horse breeding, hunting and others. The socio-economic development of the Yakutia Arctic is impossible without the preservation of these important industries, both from the standpoint of protecting the interests of the indigenous small-numbered peoples of the North, and from the standpoint of ensuring food self-sufficiency in the region itself. An integrated and systematic approach is required to determine measures of state regulation of the further development of the Arctic zone of Yakutia.

Importance of the Arctic Yakutia for Russia

There are more than 100 types of minerals on the territory of the Arctic zone of the Republic of Sakha (Yakutia): rare earth metals, diamonds, oil, gas, tungsten, copper, antimony, gold, silver and other natural resources, including diamond placers on the Anabar, Olenek, Molodo, Motorchuna, rivers, Tomtor rare earth metals deposit, Deputatskoe tin deposit, Kjuchus gold deposit and others [3].

The development project of the North Yakutsk support zone provides investments in the amount of about 360 billion rubles for the period from 2017 to 2030. The development of the extractive industry will contribute to the implementation of large infrastructure projects and an increase in cargo traffic up to 0.7 million tons [4].

Arctic zone of the Sakha Republic (Yakutia) is one of the priority geostrategic territories of Russia, which is located in the Eastern Arctic. The area of the territory of Arctic Yakutia is 1 608.8 thousand sq. km., or more than half of the entire territory of the republic (3 083.5 thousand sq. km). Its natural boundaries in the north are form the Laptev and East Siberian seas. The total length of the sea coastline exceeds 4.5 thousand km. It is bordered to the west by the Krasnoyarsk Territory, to the east — by the Chukotka Autonomous Okrug, to the south — by 6 municipal regions of the republic: Mirninskiy, Nyurbinskiy, Vilyuyskiy, Kobyayskiy, Tomponskiy i Oymyakonskiy regions. The Arctic zone of the Sakha Republic (Yakutia) includes — 13 regions, including 4 national ones; — 84 mu-

nicipalities of the settlement level, including 29 national ones; — 119 settlements: 2 cities, 10 urban-type settlements and 107 rural settlements, 22 of which have no permanent population.

According to preliminary estimates, the population of 13 Arctic regions of the republic as of January 1, 2019 is about 68 thousand people with a specific weight in the total population of the republic of only 7.0%. At the same time, in terms of the occupied area, it is 52.2%. The population density is 0.04 inhabitants per sq. km. The most numerous population lives in the Verkhoyanskiy district — 11.1 thousand people (16.5% of the population of AZ), and the smallest number is in the Allaykhovskiy district — 2.7 thousand people (4.0%).

More than 60% of the population of the Arctic zone of the republic is rural residents. The share of agriculture in the gross municipal product of the AZ of SR (Ya) is about 4% (SR (Ya) — 1.8%). Among the districts, the Verkhoyanskiy District (26.8% of the total gross agricultural output), Anabarskiy (17.6%), Srednekolymskiy (12.3%) and Eveno-Bytantayskiy (9.3%) districts make the largest contribution to the industry, which mainly engaged in breeding cattle and meat herd horses.

At the same time, the Arctic zone is characterized by a difficult social situation: according to the results of 2018, the share of the population with incomes below the subsistence level was 19.6%, the level of registered unemployment was 4.9%, which is 2.9 times higher than the national average (1,7%), the mortality rate was higher than the national average (9.9 ‰ versus 7.8 ‰), the migration loss rate in 2018 was (–) 11.5 per 1 000 people, which is more than 3,5 times higher than the national average (– 3.0 ‰).

At a meeting in St. Petersburg, the President of Russia noted that now, "... when the Arctic zone of Russia is experiencing a new stage of industrial, socio-economic, infrastructural revival, it is especially important to concentrate as much as possible on the topic of nature conservation. I repeat, when involving this region in the economic turnover, we must adhere to a carefully verified, balanced approach. It is based, firstly, on accurate knowledge of the resource and natural potential of the Arctic and an objective assessment of the feasibility of certain actions, the development of our own scientific and technological capabilities for the development of the North; secondly, clear, obligatory adherence to the strictest environmental standards, the unconditional priority of environmental protection measures; thirdly, the utmost transparency of economic activity in the Arctic, and this also presupposes a constant dialogue with civil society institutions, with environmental and ecological organizations —naturally, first of all, with those who pursue genuinely noble goals, and do not speculate on environmental problems, does not turn them into a subject of bargaining, own PR or business" [1].

[1] Soveshchanie po voprosu effektivnogo i bezopasnogo osvoeniya Arktiki, sostoyavsheesya 5 iyunya 2014 g. v Sankt-Peterburge [Meeting on the Efficient and Safe Development of the Arctic, Held on June 5, 2014 in Saint Petersburg]. URL: http://www.kremlin.ru/transcripts/45856 (accessed 02 June 2020).

Thus, the President of the country has given clear guidelines for preserving the nature of the Arctic as a national interest, which, of course, will make it possible to respect the interests of the northern peoples and preserve their vital activity.

"The country has managed to set a course for the integrated development of the northern territories <…> Our goal is to preserve resources and people in the Arctic, to build visible, long-term life prospects for people", — Rogozin noted[2].

The main goal of the state is to improve the quality and standard of human life. The development of agro-industrial production in the Arctic is the most important economic and social task.

The state of traditional industries in the Arctic zone of Yakutia

The economy of the rural areas of the Yakutia Arctic is based on traditional forms of nature management. The Republic of Sakha (Yakutia) belongs to one of the main reindeer husbandry regions of Russia, in which reindeer husbandry is a branch of traditional farming that determines the way of life of the indigenous peoples of the North.

Northern domestic reindeer husbandry is developed in Ustyanskiy, Nizhnekolymskiy, Eveno-Bytantayskiy, Anabarskiy, Bulunskiy, Momskiy districts. The main branches of animal husbandry (mainly Verkhoyansk, Srednekolymskiy, Eveno-Bytantayskiy, Momskiy, Abyyskiy districts) also include herd horse breeding [5].

Sustainable development of the regional agrarian economy depends on the influence of internal and external factors. Organizational and economic changes in the 1990s affected all branches of agriculture, but especially the traditional branches of the North.

In the reindeer husbandry industry, the main problems that hinder its transition to a qualitatively new level of development remain:

1. Land:

• lack of land surveying and the need for costly monitoring of the state of reindeer pastures;

• unresolved issues of land use;

2. Economic:

• lack of a developed system of indicators for assessing the economy of reindeer husbandry;

• lack of organizational and economic measures for conducting the industry;

• weak material and technical and personnel support;

• low level of human resources [6].

Herd horse breeding is also the industry that best suits the local climatic conditions, labor skills and traditions of the indigenous population of the republic, which makes it possible to produce the largest amount of products with the least labor and cost.

[2] Mezhdunarodnyy forum «Arktika: nastoyashchee i budushchee» v Sankt-Peterburge [International Forum "Arctic: Present and Future" in Saint Petersburg]. URL: https://russian.rt.com/russia/article/456782-rossiya-arktika-razvitiye (accessed 29 May 2020).

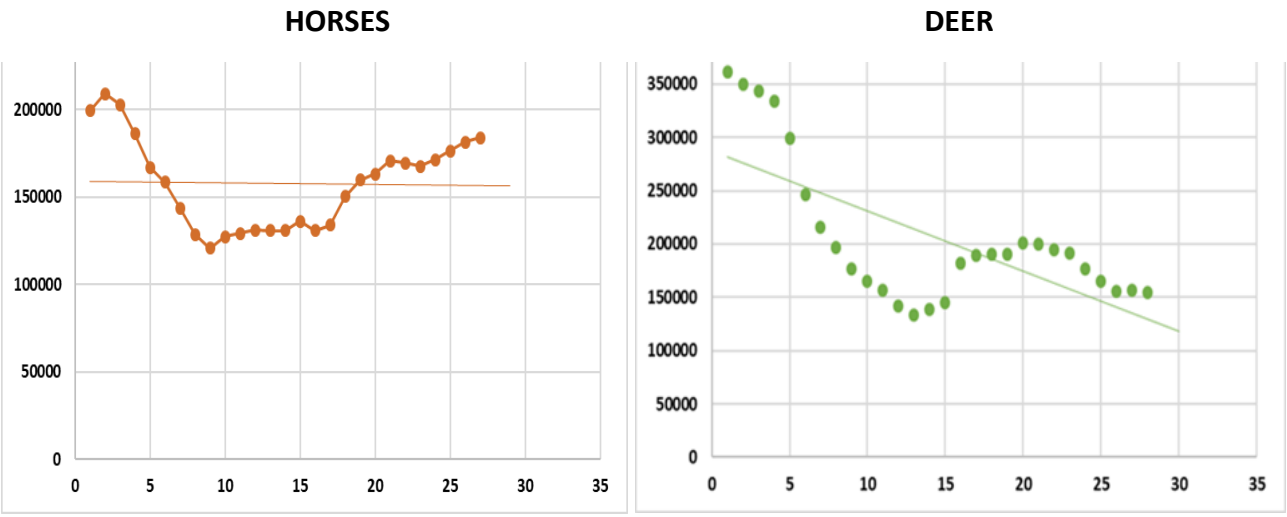

Fig. 1. Dynamics of the population of deer and horses in the Republic of Sakha (Yakutia) for the period from 1990 to 2017

A retrospective analysis indicates the presence of cyclical features in the development of these industries, equal to approximately 8-12–year periods (Fig. 1).

Taking these features into account and taking appropriate measures, certain negative trends in the development of reindeer and herd horse breeding could have been avoided. As a result of the annual reduction in the number of domesticated reindeer and horses as of January 1, 2018, their numbers amounted to 154.6 and 184.2 thousand respectively (Fig. 2). For reference: the number of reindeer in 1985 was 369.5 thousand heads in the republic as a whole, and herd horses in 1990 — 199.5 thousand. With these indicators, Yakutia ranks second in Russia in terms of the number of herd horses and fifth in terms of the number of domesticated reindeer.

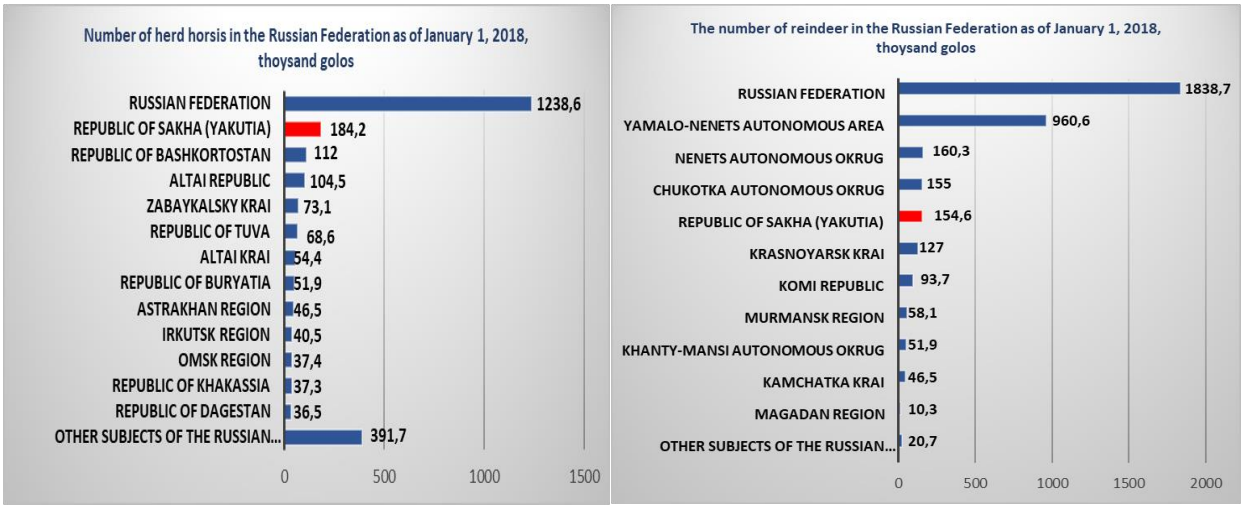

Fig. 2. Share of the Sakha Republic (Yakutia) in the total number of deer and horses in the Russian Federation as of January 1, 2018.

During the Soviet period, there was quite intensive government support that created a platform for the development of the Arctic. Support measures were envisaged in the form of

northern and regional coefficients to wages, guaranteed benefits and compensation for expenses when leaving for treatment, good food and material security.

State support is also provided today. Thus, the basis of Russia's Arctic policy is determined by the model of sustainable development of the Arctic territories and an integrated approach to solving the problems of socio-economic development of the indigenous peoples of the North, the main components of which are: social, i.e. creation of conditions for self-development and self-sufficiency of indigenous small-numbered peoples of the North, economic (sustainable exploitation of resources, development of regional infrastructure and ensuring the participation of indigenous communities in the implementation of large-scale projects) and ecological, ensuring environmental protection, limiting the negative impact of industrial activities on the territory of nature use of peoples of the North, preservation of biodiversity in the region [7].

The Republic of Sakha (Yakutia) is actively involved in the implementation of the agrarian policy of the Russian Federation and the implementation of the main goals and objectives of federal state programs. This is facilitated by the republican law on the development of agriculture, adopted in 2016. In addition, the Head of the Sakha Republic (Yakutia) elected in 2018, approved the priority goal of agricultural development as one of 5 strategic decrees — an increase in the level of provision of the population with high-quality food products of local production.

Meanwhile, despite the measures of state support provided in recent years, agriculture in the Far North and the Arctic is experiencing difficulties.

The low results of the development of industries indicate the incompleteness of the levers used by the state. Despite the program-targeted method of agricultural management, which is characterized by a strict orientation of the program to achieve the planned result, the allocation of the necessary financial, material and other resources for the program is not achieved [8].

The quality indicators in reindeer husbandry and horse herding are decreasing. From year to year, the yield of offspring decreases and the mortality rate increases (table 2).

Table 2

Breeding and mortality of deer and horses in agricultural enterprises of the Sakha Republic (Yakutia) [3]

	2005	2010	2015	2016	2017	2018
Breeding rate per 100 uterus						
foals	39	56	61	64	61	40
tuguts	57	54	46	49	46	44
Livestock mortality, percent of herd turnover						
horses	4.9	3.1	2.3	2.1	2.5	3.6
deer	12.6	15.6	19	16	17	22

[3] Territorial body of the Federal State Statistics Service for the Republic of Sakha (Yakutia) (SAKHA (YAKUTIA) STAT). Statistical Collection No. 4/441. Agriculture in the Republic of Sakha (Yakutia) for 2005, 2010, 2015-2018. P. 63.

One of the problems of the Arctic territories is currently considered as the disturbance and degradation of pastures, the destruction of lichens and shrubs. Serious problems of reindeer pastures are applied by all-terrain vehicles and tractors, and other heavy equipment, which, as a rule, do not move along roads, but over vegetation [9].

Problems of low reproduction rates caused by the insignificant degree of breeding coverage and the difficult financial condition of farms, such as a weak fodder base, are added as a result of violations of the Arctic lands use.

Traditional industries practically do not develop. The investment potential during the study period did not undergo any positive and cardinal changes; the majority of agricultural producers have no investment activity at all. This primarily applies to reindeer herding and herd horse breeding. As it can be seen from the table 3, there were no investments and, therefore, no input of production assets in these industries.

Table 3

Implementation of production branches of agriculture in the Sakha Republic (Yakutia) [4]

	2005	2010	2015	2016	2017	2018
Implemented						
Livestock premises, thousand places: For cattle For pigs	1.2 1.2	- 0.05	0.7 -	2.4 0.3	3.0 0.2	0.6 -
Whole milk production capacity, tons per shift	10	-	-	-	-	5.0
Bakery production capacity, tons per day	-	-	-	-	-	5.0
Storages for potatoes, vegetables, thousand tons	0.4	-	-	-	-	-
Power transmission lines for the electrification of agriculture	28.9	3.13	62.4	11.4	7.1	9.4

As for the Arctic zone of the Sakha Republic (Yakutia), as of January 1, 2019, this territory contains 106.3 thousand heads of reindeer, or 72.5% of the total livestock. The main share of the reindeer herd is kept in the farms of Ustyanskiy (22.8%), Anabarskiy (16.6%), Bulunskiy (13.3%), Eveno-Bytantayskiy (12.4%), Nizhnekolymskiy (12.3%), Momskiy (10.3%) districts. Despite government support, the number of reindeer is decreasing every year, and in Abyyskiy and Allaikhovskiy uluses (Indigirskaya group) the branch of northern domestic reindeer breeding has completely disappeared.

Horse breeding is practiced in all areas of the Arctic zone of the Sakha Republic (Yakutia), even by 2010 there is a 26.2% decline to 14 312 heads here. As for the categories of farms, there has been a shift towards small forms of farming and the share of agricultural enterprises has decreased from 42% to 26%. In turn, small-scale enterprises are very strongly dependent and tied to the terri-

[4] Territorial body of the Federal State Statistics Service for the Republic of Sakha (Yakutia) (Sakha (Yakutia) Stat). Statistical Collection No. 4/441. Agriculture in the Republic of Sakha (Yakutia) for 2005, 2010, 2015-2018. P. 39.

tory in which they are located, since the scope of their activities practically does not go beyond this region [10].

In this regard, an unfavorable situation, in the event of ill-considered industrial development of the Arctic zone of Yakutia, may further complicate the situation in traditional industries. To change negative trends, it is necessary to rethink the current policy and change the measures of not only state regulation, but also the attitude of big business to the problems of traditional sectors of the agro-industrial complex, including the need for a transition to an integrated and indissoluble development of traditional industries and rural areas.

The main priority of the agro-industrial complex is to ensure food security. For the Arctic zone it is also necessary to form an agri-food system, which must correspond to the strategic plans of Russia, taking into account innovative development [11]. In the course of the study, the author determined the value of the investment and innovation potential of traditional industries as an objective basis for the formation of strategic decisions to ensure their sustainable development.

For the Arctic territories social responsibility becomes part of the social partnership of the state, business and society and requires the development of a whole system of joint decisions. The scale and complexity of projects for the development of the natural productive forces of the North of Russia require partnerships and the use of the experience of Canada, Norway, Alaska (USA) [12]. The implementation of the state policy in the field of development and use of natural and mineral resources should have, among other things, scientific support. Solving the tasks of strategic development of the Arctic zone of the Sakha Republic (Yakutia) should contribute to an increase in the quality of human life by creating infrastructure and building up the economic potential of the region. The study of the social role of business, its responsibility, including the increase in social investment, is becoming one of its obligations in the Arctic zone today. As an example, Norway seeks not so much to increase (or restrain the rate of decline) in hydrocarbon production, but to a certain high level of "social value" of the extracted raw materials [13]. At the same time, these mechanisms must be effectively combined with the mechanisms of state regulation of the development of the agro-industrial complex.

The process of public administration of such an industry as the agro-industrial complex is complicated. Here, the legal foundations, industry specifics, and regional problems are intertwined. At the same time, the author notes that solving the problem of increasing production volumes in traditional industries by increasing the allocated financial resources is only a partial solution. Strengthening economic potential in order to increase their share in the product market can only be ensured by the introduction of modern innovative measures. Thus, in reindeer husbandry, it is necessary to introduce the latest technologies for reindeer grazing with the formation of rational herd sizes and electronic certification of reindeer cattle. Complete modernization of the material and technical base and a revision of motivational incentives for workers are required. For herd horse breeding, measures to ensure the restoration of the system of selection and breeding work and the

creation of highly productive herds should be taken. The Srednekolymskiy region is a place for breeding the Kolyma type of Yakut horses, and the Verkhoyansk region — for the Yan type. Taking these factors into account, these areas are of strategic importance for the preservation and development of the Yakut horse breed in the republic. Significant areas of natural lands in the Arctic regions are the main potential for further increasing the head of herd horses in the republic. The construction of small horse bases and their mechanization, the creation of support nodal complexes for the deep processing of livestock products will create conditions for the transformation of agricultural production and ensure an increase in the level of food self-sufficiency in Yakutia, as defined by the Food Security Doctrine.

Conclusion

The intensification of the state's activity in the Arctic regions of the Far East stimulates the development of the North Yakutsk support zone of socio-economic development. At the same time, insufficient attention is paid to the preservation of the system of the Arctic agriculture.

Studying the processes occurring in the traditional sectors of agriculture in the Arctic zone of Yakutia, taking into account the importance of the development of the Arctic territories for the country, the author came to the conclusion about the need for an integrated approach to the further regulation of economic relations.

Based on analytical data, the article substantiates the conclusion that the development of traditional industries depends on the consolidation of efforts of the state and business, in particular, industrial and transport companies engaged in the development of the Arctic zone.

To prevent and mitigate negative impacts, regulation must be scientifically sound and timely. The choice of methods and instruments of regulation should be based on the current state of the industries to determine clear generating measures. It is important to implement a set of measures to strengthen the financial and economic foundations of traditional industries, for which a feedback mechanism based on a reliable information database should be introduced into the regulatory system. The choice of regulatory actions should be appropriate to the specifics and nature of the industry. Large business should have a certain social responsibility for possible interference and disturbance in the state of traditional industries on the basis of partnership.

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Transformation of the Socio-Economic Space of the Russian Arctic in the Context of Geopolitics, Macroeconomics, and Internal Factors of Development [*]

© Tatiana P. SKUFINA, Doc. Sci. (Econ.), Professor, Chief Researcher
E-mail: skufina@gmail.com
Luzin Institute for Economic Studies, Apatity, Russia
© Marina N. MITROSHINA, Postgraduate
E-mail: fridma@mail.ru
Luzin Institute for Economic Studies, Apatity, Russia

Abstract. The purpose of the article is to review scientific ideas about the transformation of the Russian Arctic's socio-economic space in the context of geopolitics, macroeconomics, and intraregional factors of development. This review's significance is determined by the fundamental problems that accompany the development of the Russian Arctic, the growing importance of this territory for the national economy. These contradictions' objectivity is confirmed, which naturally indicated the shortcomings of economic theory, which does not allow us to solve these contradictions. For example, the contradiction between the high costs of functioning of the economy, social sphere and the need to raise the level of socio-economic development of the Russian Arctic; between the tasks of increasing the exploitation of resources and the requirements of the environment, etc., that is, what objectively makes it challenging to solve the problem of sustainable development of the Arctic. However, the numerous scientific studies considered, correlated with transformations in politics, economy, and demography, allowed us to assert that ideas have their driving force, influence, and provide transformational processes in the Arctic. The specificity and the strong influence of geopolitics on socio-economic transformations in the Russian Arctic are identified, but at the same time, the significance of the manifestation of expansionism as an internal human need for settlement, fame, and wealth is emphasized, which also ensures the development of the Arctic. Systemic changes are identified, socio-economic trends in the Russian Arctic are presented, which allowed us to establish the positive impact of modern policy on the development of the Russian Arctic, which marks a trend of reducing demographic losses. The prospects for the socio-economic development of the Russian Arctic are considered, taking into account the current situation of the coronary crisis, internal transformation processes, the influence of politics.

Keywords: *expansion, Arctic, transformation process, socio-economic space, regulation, geopolitics, macroeconomics, regional factors.*

Introduction

This article differs not only in external massive characteristics (significant volume, the number of scientific literature sources, the complexity of the presented review, etc.), but also in the specificity of the genesis and functional orientation towards the expansion of ideas about transformations in the Arctic, suggesting the expansion of the journal “Arctic and North” in the global information space. The article was written within the framework of the state program “Scientific and technological development of the Russian Federation” in terms of the implementation of the backbone event “Supporting the expansion and strengthening of the international authority

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of national knowledge bases (banks), including journals and their collections", in this case due to financial support through the RFBR competition "Expansion".

We emphasize the internal logic, structure and explanatory value of the "expansion" semantics for the presentation and development of Arctic problems. Let us recall that, in a general sense, expansion in the Russian language is traditionally associated with the logic of the development of living organisms, characterizing their ability to spread in space beyond their original habitat. However, this concept is often used not in biology, but in the social sciences, extrapolating the initial essence and the desire to spread living things in space to social processes. In recent years, world science has been considering the phenomenon of expansion much broader than the traditional representation of the social sciences, that is, more than a certain, albeit significant, but just a component of the politics of countries, regions, social groups, etc. Expansion is now presented as an independent social phenomenon that determines the course of history, the specifics of civilizational dynamics, the development of individual territories, in particular — the territory of the Arctic [1, Shaptalov B.N., p. 18-29].

A characteristic feature of the policy of expansionism is the combination of spontaneous, natural processes with purposeful, conscious actions to spread meanings, symbols, value orientations, etc. on the basis of a verified, scientifically grounded technology of such distribution. In many respects, the history of the development of economic thought is associated precisely with the formation of a theory that provides an effective technology for such distribution. In this regard, it is worth mentioning the work of Mark Blaug, which should be read with special attention, since it contains not only a verified history of economic thought, but also an important context — a strong grasp of a critical understanding of the theory from the standpoint of changing views of politics, considered on the basis of a thorough economic analysis of data [2, Blaug M., p. 200–206, 444–445, 549–552]. Of particular interest is the separation of theoretical approaches and even schools to the study of the manifestation of expansionism in the Arctic by the media [3, Padrtovaab B., p. 37].

The socio-economic space of the Arctic is a world of expansionism, to some extent even larger than the rest of the territories: due to the decisive influence of politics on public life because of obvious limitations in realizing the potential of internal self-development against the background of the geopolitical significance of the Arctic. Thus, social and economic development in the Arctic is inconceivable outside the context of the policy of expansionism. That is why the key place in the thematic journal "Arctic and North" is occupied by the issues of settlement processes in the North and the Arctic, illustrating the processes of biological, social and cultural expansion, issues of economic growth, politics and management, illustrating economic and political expansion.

Reflection of the results of the expansionism manifestation is in the transformational dynamics. The purpose of this study is an overview of the transformation of the socio-economic

space of the Russian Arctic in the context of geopolitics, macroeconomics, taking into account the influence of intraregional development factors.

The fundamental scientific significance and, at the same time, the practical relevance of the proposed review is determined by the fundamental nature of the problem, consisting in the contradiction between the strengthening of the geopolitical and economic significance of the Arctic zone of the Russian Federation (AZRF) and the simultaneous increase in the socio-economic problems of these territories, accompanied by an increase in the structural imbalances of the economy, backwardness characteristics of the life quality of the population in comparison with non-northern territories, objective factors pushing the population and business out of the Arctic territories [4, Baranov S.V., p. 46–48; 5, Porfiryev B.N.; 6, Kryukov V.A., Kryukov Ya.V., p. 26; 7, Skufina T.P., Baranov S.V., p. 66–68; 8, Regions of the North and the Arctic of the Russian Federation ..., p. 18–34, 76–79; 9, Economy of the Modern Arctic..., pp. 27–39, 56–62, 144–149, 154–185].

Achieving the objective involves answering three questions, which are presented as research tasks.

The first question (first objective): what is the impact of geopolitics, internal factors of development on the socio-economic processes in the Arctic? The scientific novelty of this result is determined by the refinement of ideas about the reflection of geopolitics and internal factors in the real transformational processes of the development of the Russian Arctic from the beginning of the 20th century to the present day. The key question is: does geopolitics really determine the real socio-economic transformations of the Russian Arctic, and if so, to what extent?

The second question (second objective): identifying systemic changes, providing an assessment of the socio-economic trends in the Russian Arctic that were interrupted, as well as new trends that developed in the post-Soviet period, including an analysis of the impact of macroeconomics and intraregional development factors. The scientific novelty of this result is presented in a comprehensive diagnosis of transformational changes, carried out on the basis of interdisciplinary tools.

The third question (third objective): what are the prospects for the socio-economic development of the Russian Arctic, taking into account the presented diagnostics of the current situation, the genetics of transformation processes, the influence of geopolitics. The scientific novelty of this result is determined by the complexity of ideas about the probable development processes of the Russian Arctic.

Review of the current state of research on transformational dynamics in the Arctic

Issues related to socio-economic, political transformations, governance in the Arctic are currently in the focus of discussions around the world among politicians, public administration, scientists, and business structures. This is due to the growing strategic importance of the Arctic,

which indicated a clear trend in the transformation of political and related economic relations in the Arctic. It is even possible to say that the transformations of political and economic relations in the Arctic are some kind of indicator of changes in world politics. So, in recent years, a significant place in world studies has been given to the analysis of the transfer of power, interests, opportunities for the implementation of tasks in the Arctic by countries and regions of the world, including those that are not traditional "Arctic" powers. Researchers from European countries emphasize the need for "collective management" of the Arctic. "At the moment, we need to focus on the importance of international geopolitical relations, aimed at comprehensive cooperation in the European Union, which will allow the collective management of the Arctic" [10, Danilo V., p. 50]. Increased attention is paid to discussing the attention to the Arctic of actively developing Asian countries with an emphasis on Sino-Russian relations. It is noted that a powerful factor of economic growth marked the transition of political and economic power to China. Responsibly, the rhetoric has also changed. So, earlier China positioned the Arctic as a common heritage of mankind, and now it calls itself an "almost Arctic" country [11, Gjedssø B., Galluccib V., p. 240; 12, Anosova L.A., Trigubenko M.E., Lezhenina T.V., Nguyen K.Kh., Yakovlev A.A., p. 12–36]. It is obvious that the current conditions of the pandemic will significantly change the alignment of world forces and significantly strengthen China's claims to the Arctic, including the continuation of active investment in the largest Russian Arctic projects.

So far, no one can reliably assess how deep the changes in the global alignment of forces will be, how great China's claims to the Arctic will be, what is the role of Russian-Chinese relations in this, and how exactly the Arctic space is being transformed in this renewed reality. However, there is no doubt that these changes will have the most significant impact on the politics and national economy of Russia. Thus, Russia is characterized by the longest coastline in the Arctic among all five coastal states that share Arctic territories. The Arctic is a geostrategic territory for Russia due to the huge reserves of minerals, which enhances its strategic importance in the long term. In Russia, the increased importance of the Arctic issues is naturally reflected by the declared priorities of ensuring the processes of sustainable socio-economic development, enshrined in the formed normative and legal literature, in order to solve geopolitical, economic, interrelated social development problems of the Russian Federation [13, Kudryashova E.V., Zarubina L.A., Sivobrova I.A., p. 39–42; 14, Zaikov K.S., Kondratov N.A., Kudryashova E.V., Lipina S.A., Chistobaev A.I., pp. 5–7]. At the same time, some inconsistency of the scientific basis accompanying the management of the transformational dynamics of the Arctic is noted.

We believe that this inconsistency is explained by two main factors. The first factor was named by academician Minakir P.A. "strategic dead ends". The essence of the deadlock is a conflict of goals, objectives, mechanisms declared in the national strategy of spatial development of the Russian Federation with the postulates of the theory of spatial development and regional strategies [15, p. 967]. As a result, the macroeconomic situation does not contribute to the confi-

dent development of the industrial sector, which is especially problematic for the old industrial regions of the North [16, Uskova T.V., Lukin E.V., Mel'nikov A.E., Leonidova E.G., pp. 63, 70]. The second factor is the inconsistency of the theory of development and management of the socio-economic space of the Russian Arctic. This inconsistency makes it especially important to consider modern theoretical views on the transformation in the Arctic.

Note that the analysis of research cannot be concentrated specifically on the AZRF due to the fact that this zone actually stood out as an object of management only in 2016, but a much wider zone - the North of Russia as an object of research and management, including the territory of the modern AZRF, has a long the history of transformational dynamics, including the management system and the corresponding policy [17, Skufina T.P., pp. 17–19]. It was this policy that was able to ensure during the USSR the development of not only the economy, but also high standards of quality of life of the population relative to the best foreign analogues [18, Samarin A.V., p. 450–455].

Among the fairly extensive literature covering in detail the positive, negative facts and transformations in the North, as well as the specifics of scientific support, one should especially highlight the generalizing monographic work under the scientific editorship of Academician Porfir'eva B.N. “Socio-Economic Problems of the Russian Arctic in the Research of the Institutes of the Russian Academy of Sciences: History, Modernity, Prospects” [5]. It is obvious that artificial extraction of AZRF studies from this set of fundamental data on the North is not appropriate.

So, the state of modern research is a huge and diverse layer of information, including the theoretical and scientific-practical groundwork of the USSR in the theory of management, politics, economics of development and settlement of the territories of the North and its Arctic component; modern developments that give rise to rather contradictory ideas of domestic scientists about the prospects, priorities and policies of the North and the Russian Arctic; as well as foreign research focused mainly on the formation of such a policy, which concentrates not on conceptual priorities, but on solving practical problems in the formation of factors of sustainable development of specific territories of the circumpolar North with a separate emphasis on environmental policy issues [19, McCannon J.; 20, Gutnev M.Yu., Konyshev V.N., Sergunin A.A., p. 108]. All these aspects and many others determine their views on the problems of the modern state policy formation and the corresponding transformations in the Arctic.

The modern array of information can be conditionally divided into three components. The conventionality of this division is determined both by the indicated multidimensionality and by the interpenetration of the selected directions.

Firstly, these are investigations aimed at studying the internal properties, connections, relations of the functioning of the socio-economic space of the North and the Arctic, including forecasting developments. Numerous works of this group can be classified from the standpoint of methodological differences in the predominance of the method of obtaining information. Thus, a

three-component grouping is possible into studies based on statistical developments, on the analysis of the institutional environment, as well as on the analysis of sociological methods (including observation, interviews, questionnaires, etc.).

The author's observations show that the priority of statistics is given in the studies of the USA, Canada, and considerable attention is paid to such studies in Russia [21, Korchak E.A., p. 141; 22, Skufina T.P., Baranov S.V., pp. 52–54, 60–62; 23, Skufina T.P., Baranov S.V., Korchak E.A., pp. 25–27]. As a rule, these studies not only determine some quantitative dependencies and patterns, but also highlight promising directions, specific competitive advantages of certain northern territories that can provide economic and social development, often taking into account the ecological context [24, Healy A., pp. 29–31].

Priority to sociological approaches and research methods of the northern territories is given in the works of scientists from Scandinavian countries [25, Markkula I., Turunen M., Rasmus S., p. 1070]. At the same time, the general context of the "Scandinavian" component of research, as a rule, is the priority of "sociality" over the economic constraints of development, the substantiation of the need for increased spending on the social sphere of northern settlements is especially active among other works. These studies often consider the worldview issues of perception of reality by indigenous peoples, migrants, adapters, the cultural and spiritual significance of ecosystems, etc. Promising direction among studies in Russia is the combination of mathematical modeling with sociological methods for studying the socio-economic dynamics of the North. In particular, the authors of the article are adherents of this approach, which gives a unique combination of quantitative characteristics of objective reality and the reflection of this reality in the minds of the population, social groups [26, Baranov S.V., Skufina T.P., Gushchina I.A.; 27, Skufina T.P., Bazhutova E.A., Samarina V.P., p. 51].

Institutional investigations are more characteristic for Russian studies. However, it should be noted that these works are based not on a typical understanding of institutional analysis (traditionally based on a powerful mathematical apparatus, game theory, the study of institutions with sociological verified methods, etc.), but only a narrow part of the methodology of institutionalism, an exciting analysis of legislative ensuring the functioning of the socio-economic and ecological environment of the North and the Russian Arctic. To clarify, foreseeing possible objections, we are talking about the "predominance" of research, which does not mean the absence of the traditional use of typical mathematical tools of institutionalism, for example, in research of works based on a sociological approach to the study of formal and informal institutions for the functioning of management and the formation of policy in the North. But all these studies emphasize the effect of the northern rise in prices, which generates requirements for protectionism and compensatory functioning of the economy and social sphere. At the same time, different measures of protectionism and compensation are justified. The second part of the works on the formation of policy is devoted to this.

So, secondly, these are studies focused on the formation of a policy that determines the specifics of the life of the economy and social sphere of the North and the Arctic.

The increased geopolitical attention to the northern territories, as well as the developed nature of the economies of all foreign circumpolar countries (i.e., sufficient economic opportunities) predetermine the relative commonality of strategic priorities aimed at shaping policies that ensure sustainable development. The model of this sustainable development is understood in many ways, including rational nature management, environmental protection, the human dimension and international cooperation at the regional and global levels [21, Korchak E.A., p. 124]. The fact that despite the diversity of the tract model of sustainable development, the countries of the world demonstrate the same approaches to financing such development is of particular interest. [28, Anosova L.A., Kabir L.S., pp. 20–22]. From the standpoint of management, two types of work are clearly distinguished among foreign studies. Works of the first type are of an exclusively practical nature. Thus, a significant amount of research is aimed at optimizing costs to ensure economic and social effects in local communities of the North, as well as regulatory support of protective economic conditions for the functioning of northern settlements, including issues of compensation from the exploitation of the natural environment [29, Tolvanen A., Eilu P., Juutinen A., Kangas K., Kivinen M., Markovaara-Koivisto M., Naskali A., Simila J., pp. 832–834]. Works of the second kind are of an interdisciplinary nature and link several aspects of ensuring a sustainable development model at once, but also, as a rule, with a clear practical meaning: for example, a particularly relevant area is the development of recommendations for politicians and management based on the connection between climate change and expected changes in the life of northern peoples [30, O'Faircheallaigh C., p. 102; 31, Bring A., Shiklomanov A., Lammers R.B., pp. 79–82; 32, Karen K., Ljubicic G., p. 47]. Two properties are characteristic for foreign studies in the field of substantiating policy in relation to the socio-economic space of the North and its Arctic component. Firstly, it is the relative theoretical and methodological commonality of ideas about the policy of ensuring the socio-economic life of the northern territories [33, Serova N., Korchak E., Skufina T., p. 6]. Secondly, as a rule, there is a great focus on solving current practical problems, which, perhaps, is explained precisely by the absence of theoretical and methodological contradictions. It should be noted that experts on Arctic issues in Russia rightly believe that foreign experience is difficult to apply in Russian management practice due to significant differences in the institutional environment, the economic importance of Arctic resources, management relations, etc. At the same time, foreign experience often gives some new ideas, development guidelines, actualizes the need to revise a number of policy components in the North and in the AZRF.

As for Russian investigations, the authors' generalizing studies show that over a number of years they have been characterized by a lesser unity of reference points in the formation of a policy for the management of the North and the Arctic [34, Skufina T.; 35, Skufina T.P., pp. 25–27]. Some researchers are still discussing the feasibility of integrated socio-economic development,

generating conflicting opinions, up to focusing on a predominantly rotational way of developing the AZRF [36, Kozlov A.V., Gutman S.S., Rytova E.V., Zakharov A.N., pp. 19–23].

Still, the vast majority of researchers take a pragmatic position — to provide scientific support for the implementation of state policy in order to achieve the declared task of integrated socio-economic development of the Russian Arctic as a single macro-project as a single planning object. The significance of this task is associated with national security, which is determined by at least two factors: firstly, the resources of the Russian Arctic are the main source of filling the country's budget; secondly, the task of the complex socio-economic development of the Russian Arctic cannot but be set as a basic guideline for policy in the Arctic due to the necessary synchronization with global processes. Such a pragmatic position of providing scientific support for the management of the AZRF is being implemented actively and on a large scale, characterized by its complexity and interdisciplinarity [37, Laverov N.P.; 38, Minakir P.A., Krasnopolskiy B.Kh., pp. 12–14].

So, the policy objectives were specified before the implementation of the Arctic megaproject, support development zones are being formed, the implementation of which determines not only economic development, but also an improvement in the quality of life of the population of the Russian Arctic. At the same time, according to the academician Kryukov V.A., the formation of an effective policy (both long-term and anti-crisis) should include taking into account the historical features of the formation of industry and infrastructure in the North and its Arctic component, as well as the current global trend of changing public relations [9, Economy of the Modern Arctic: the Basis of Success is Effective Interaction and Management of Integral Risks, pp. 8-19]. Summarizing, Kryukov V.A. notes: “The basis for the formation of relationships in a changing economy should be an understanding of the fact that the economy is not limited to achieving commercial efficiency, to comparing costs and benefits in monetary terms. Changes in the economy in the world are increasingly assessed by social metrics.” [39, Mekhanic A., p. 46] This confirms the feasibility and importance of considering the third component of Arctic research — the context of the quality of life of the Arctic population.

So, the third component is the investigations devoted to the quality of life — a category that characterizes the essential circumstances of the public life of the population. The sociological and philosophical view of the category of quality determines the value of the quality of life as the ability of a specific norm for a particular person (community) to act as a form of representing and meeting people's needs. In this regard, researchers note “the shift in the focus of research to subjective parameters of life, and the concept of subjective quality of life becomes a generalizing category for describing the subjective conditions for the formation of psychological well-being” [40, Lebedeva A.A., p. 4].

This approach to quality of life offers great opportunities for learning. However, the majority of economic research, both fundamental and practical, with all its diversity, takes a different position and actually studies the structure of needs and the possibilities of satisfaction. At the

same time, two types of work are traditionally observed: either with a bias towards the perception of the quality of life as a kind of integrated social indicator [41, Bjerregaard P., Dahl-Petersen I., Larsen C., p. 149–153], or the decisive importance is given to the material security of life, the economic side of social life [42, Korchak E.A., Serova N.A., Emelyanova E.E., Yakovchuk A.A., p. 3–4; 43, Okrepilov V.V., Chudinovskikh I.V., p. 490–492].

In Russian studies of the quality of life, as a rule, the main attention is paid to the economic side of life. We believe this is due to a whole series of reasons of objective and subjective properties. Thus, this is due to the relevance of considering the impact of crisis processes on the development of certain regions and the spatial development of the country as a whole, which requires the study of quantitative components of the quality of life based on formal statistical indicators. Besides, differences in economic specialization and other numerous facts of the diversity of the regions of the Russian Federation determine not only the theoretical, but also the practical significance of studying the interregional differentiation of the parameters of the quality of life, which also requires the ratio of verified indicators of the category of "quality of life", and this focuses on the statistical indicators that characterize precisely the economic side of the "quality of life" category.

In addition to the study of the statistical indicators dynamics in the context of the quality of life, a number of studies add sociological methods. On the basis of combining population surveys with the analysis of statistical data, the reasons for differences in the level of wages, cash incomes of the population by region are studied, the issues of perception by the population of the constituent living conditions of the northern and Arctic territories are investigated [44, Rimashevskaya N.M.; 45, Gushchina I.A., Kondratovich D.L., Polozhentseva O.A., p. 502]. A certain specificity of the research of the Kola, Karelian, Vologda scientific centers of the Russian Academy of Sciences, which traditionally study the quality of life of the population of the North and the Arctic on the basis of detailed surveys of the population, is to determine the features of the reflection of the authorities' activities and the policy pursued on the components of the quality of life in the minds of the population. There appears an evidence base not only for the strengths and weaknesses of management, but also for the fact that socio-cultural factors are an underutilized reserve of economic growth of territories [46, Shabunova A.A., Leonidova G.V., Chekmareva E.A., pp. 162-164, 176].

The basis for the involvement of this reserve is social innovation. A certain interest, which makes one think about the available reserves of the participation of research centers in the development of social innovation, is represented by works that testify to the empirically confirmed facts of the separation of scientists from the creation of successful practices of social innovation with the simultaneous active production of technological innovations. According to colleagues from developed countries, this distinguishes qualitatively the functional orientation of Russian research centers for the territory from the situation in developed countries of the world [47, Social Innova-

tion: a New Innovation Paradigm for Social Development ..., pp. 219–221]. However, the most important issue for us is the fact of underutilization of the capabilities of scientific centers in the production of social innovations, which outlines the possibilities for the further development of conjugation of science with territorial needs.

Summing up, the diversity, ambiguity, controversy of research results concerning socio-economic transformations, politics and management in the Russian Arctic Zone can be noted again. However, it is possible to single out general theses of governance and geopolitics concerning the priorities of maintaining geopolitical stability, the declaration of sustainable development priorities, responding to the challenges of climate change, ensuring international cooperation, and the demand for scientific support of social and economic processes in the Arctic. At the same time, these theses break down on "political inability" in terms of Heininen Lassi [48, p. 195]. Therefore, in order to clarify the answers to the questions posed by us, we propose to consider the socio-economic transformations in the Russian Arctic in the context of the declared policy reflecting the geopolitical situation, macroeconomic tasks, and regional development conditions.

Transformation of the socio-economic development of the Russian Arctic through the prism of politics

A review of numerous studies devoted to the history of the manifestation of expansionism in the Arctic, confirms the priority influence of two interpenetrating processes on socio-economic transformations in the Arctic [19, McCannon J.; 33, Serova N., Korchak E., Skufina T., p. 6].

Firstly, this is the spontaneous development of the Arctic space due to the inevitable human need for resettlement, knowledge of the unknown, striving for fame and wealth. It recalls the thesis of the great polar explorer Roald Engelbreggt Gravning Amundsen, who successfully completed almost all of his hardest expeditions and lost his life while rescuing the Arctic expedition on the airship Umberto Nobile: "A person can get used to everything except the cold." A significant amount of pages in the annals of the North and the Arctic belongs to Russia. So, even in studies of a clearly anti-Russian sense, the importance of Russian polar research and the development of the northern space of the Tsarist and Soviet period, carried out by the efforts of Arctic enthusiasts at the risk of their lives, is emphasized — Count Fyodor Litke, industrialist Mikhail Sidorov, pilot Yan Nagurskiy and many others [19, McCannon, pp. 34–82, 118–126].

Secondly, these are systematic steps towards the development of the northern outskirts under the pressure of geopolitical factors that give rise to the state expediency of the development of the North and the Arctic. For more than four hundred years, the Russian state has invested human resources and money in the formation of reference points and the infrastructure development of Russia in the northern territories. For example, under the pressure of geopolitics and internal interests, in contrast to the British and Dutch, in 1584 the Arctic port of Arkhangelsk was founded. In 1600, the fortified center of Mangazeja was created to advance the Russians deep into

Siberia and collect yasak. Successful examples of geopolitically significant decisions to “bring the space” of the Pacific Ocean closer to European Russia through the construction of the Great Siberian Railway, the attempts of imperial Russia to connect Murmansk with Vladivostok by laying the Northern Sea Route, which subsequently ensured the development of remote territories, are given in the collective monograph by the academician Kryukov V.A. [9, Economy of the Modern Arctic..., p. 5–6].

The most powerful impuls to transformations in the North and in the Arctic was provided by the period of the USSR [49, Fauzer V.V., Smirnov A.V., p. 112]. To summarize, the well-known scholar Korchak E.A. defines the intensive and purposeful development of the North and the Arctic during the Soviet period due to the geopolitical component and the value of resources, notes the large-scale motivational component of the Soviet propaganda for the development of the Arctic territories, aimed at attracting qualified personnel [21, pp. 121–125]. This ensured the creation of industrial centers, an extensive network of mono-settlements, infrastructure development, including the development of the Northern Sea Route. The transformation of the sparsely populated territories of the Russian North and the Arctic is characterized by a sharp increase in the population during the USSR and its decline in the post-Soviet period.

The periodization of politics in the North in the context of all-Russian politics and the impact of foreign policy factors in the post-Soviet period, as a rule, contains 3 main stages. Stage 1— Situational Policy (1991–2000), was characterized by landslide socio-economic characteristics in the regions of the North, which correlated with the all-Russian situation, but a number of compensatory and protectionist measures in force in the Soviet period were confirmed by specialized legislation (for example, in 1993 the Federal Law “On State Guarantees and Compensations for Persons Working and Living in the Far North and Equated Areas” was adopted, in 1996 the Federal Law "On the Fundamentals of State Regulation of the Socio-Economic Development of the North of the Russian Federation" was adopted (expired from 01.01 .2005), establishing the principle of protectionism and the main directions of state policy in the North). Stage 2 (2000–2005) — a policy declared to reduce interregional differentiation, to strengthen protectionism for the North, but in fact, a number of benefits for business and the population have been reduced, which is fixed by law. Stage 3 (2005–2008) — the stage of the policy of polarized development, the gradual rejection of the recognition of the North as a special object of state policy and management, which is fixed by the absence of a specialized normatively fixed policy in relation to the North as a single territory [21, Korchak E.A., pp. 125–129; 34, Skufina T., pp. 148–150; 35, Skufina T.P., p. 25].

In fact, the need to take into account the specifics of the North in regional policy is replaced in future by the development policy of the Russian Arctic. Thus, the state program of the Russian Federation “Regional policy and federal relations”, approved in 2013, no longer contains the word “North”, it focuses only on the AZRF. Recall that already in 2008, the President of the Russian Federation approved the “Fundamentals of the State Policy of the Russian Federation in

the Arctic for the period up to 2020 and beyond", in 2013, the "Strategy for the Development of the Arctic Zone of the Russian Federation and Ensuring National Security up to 2020 ", now there is an active rule-making process of the formation of specialized regulatory legal acts concerning the Russian Arctic.

The transformation of politics naturally led to socio-economic transformations in the North of Russia. So, in 1991 (for the first time since 1959) a decline in the population of the North was observed. In 1991, the population of the North decreased by 1.5 million people, in 1992 — by 0.4 million people, in 1993 — by 0.2 million people, in 1994 — by 0.2 million people. The total losses of the northern territories by 2010 amounted to more than 1.6 million people.

We believe that the causes of human losses in the North and the Arctic are different, but in general, they are explained by three facts, which to a certain extent retain their significance to the present day.

The first factor is the benefits established by the state; wage premiums (especially in conditions of significant inflation) have lost their stimulating role. So, the average monthly wage in rubles in the North zone was 471 rubles in 1990 (on average in Russia — 311 rubles), in 1991 — 889 rubles. (on average in Russia — 611 rubles), etc. It is obvious that the excess of wages in the North zone for the analyzed period under conditions of significant inflation did not compensate living in unfavorable conditions caused by special objective factors of "northernness".

The second factor is the poorly equipped North. For example, the housing provision of the population in the regions of the North at the beginning of market transformations was significantly lagging behind the average Russian indicators. So, at the beginning of 1991, if on average in Russia there were 11 square meters of living space for each resident (at a rate of 12 square meters), then in the North it was 9 square meters. At the same time in Buryatia it was only 4.5 square meters, in the Chita oblast — 6 square meters. In 1991, about 1.110 thousand families of the North (36% of all families) were in the queue to receive a new comfortable housing. At the beginning of 1991 almost 3.5 million square meters of housing, or 2.4%, in the regions of the North was in a dilapidated or emergency condition (in Russia as a whole — 1.3%), and in the Chita oblast the share of such housing was 8%, in the Komi SSR — 6%, in the Sakhalin oblast — 4%, in the Magadan oblast — 3.5%. At the same time, at the beginning of 1991, 5% of the total population lived in adapted premises (beams, trailers), for example, in Yakutia, in the Magadan oblast it was 3%, in the Kamchatka krai — 1% (in Russia as a whole — 0.6%). It should be noted that the reduction in housing construction in the regions of the North was characterized by a faster pace than the national average. So, in the period 1990–2004, the commissioning of residential buildings in the North zone decreased by more than 4 times, while in Russia as a whole — less than 2 times. The main reason is obvious — a sharp reduction in public investment in construction and some weakening of the urgency of the need for housing in connection with the migration outflow of the population from the North.

The third factor is the limited probability of finding a job in a mono-structural economy. Thus, the average annual number of people employed in the branches of the economy in 1990 was 6.153 thousand people, in 1991 — 6,098 thousand people, in 1992 — 6.008 thousand people (total in Russia — 72.071 thousand people), in 1993 — 5.597 thousand people (total in Russia — 70.851 thousand people), in 1994 — 5.414 thousand people (total in Russia — 68.484 thousand people). These data indicate that the rates of decline in those employed in the economy of the North and Russia are generally the same. However, the mono-structural economy of the North provided fewer opportunities for employment of the unemployed population [8, Regions of the North and the Arctic of the Russian Federation ..., pp. 36–39].

The emphasis on the AZRF as a special object of state policy in general had a positive effect on the Arctic regions. The intensification of investment processes led to the development of new fields, the revival of production, the development of infrastructure, ensured the preservation of scientific organizations and the system of higher education, which slowed down the migration losses of the Arctic regions (table 1).

Table 1

The population of the regions, the territories of which are fully included in the AZRF, thousand people[1].

Region	1925	1940	1950	1960	1970	1980	1990	1995	2000	2005	2010	2015	2020
Nenets Autonomous Okrug	n/d	n/d	n/d	37	39	47	52	44	41	42	42	43	44
Murmansk oblast	23	202	337	606	799	665	1191	1067	941	857	800	766	741
Yamalo-Nenets Autonomous Okrug	n/d	n/d	n/d	64	80	158	489	478	496	515	524	540	544
Chukotka Autonomous Okrug	n/d	n/d	n/d	47	101	133	162	96	62	51	49	51	50

At the same time, our studies indicate a rather high prevalence of migration sentiments among the population of the Arctic territories. Moreover, studies show that this is a consequence of insufficient consideration of the Arctic specifics in the formation of an all-Russian social policy. For example, when shaping the changes in the pension reform, the demographic risks for the Arctic were not sufficiently taken into account [26, Baranov S.V., Skufina T.P., Gushchina I.A., p. 160]. So, when answering the question “Have your plans for further residence in the Murmansk oblast changed due to the increase in the retirement age?” the most significant groups of the population for the Arctic economy — the youth and the middle-aged population — have already thought about moving to more comfortable climatic conditions and have already changed their plans for

[1] Compiled by the author. Source: Federal State Statistics Service. URL: https://www.gks.ru/ (accessed 12 June 2020).

further residence (table 2). It is obvious that in the near future this creates significant risks to the stability of the economy of the Arctic region — the Murmansk oblast (Table 2).

Table 2

Distribution of answers of residents about migration attitudes in connection with changes in the retirement age, taking into account gender and age, % of the total of respondents [2]

Answer options	Men				Women			
	18–29	30–49	50–64	65+	18–29	30–49	50–64	65+
No, they have not changed, I will live and work here	46.6%	50.7%	54.9%	71.0%	41.8%	40.0%	58.0%	67.0%
They have rather changed, I am thinking about moving to more comfortable climatic conditions	21.2%	27.8%	18.8%	9.7%	30.6%	40.8%	20.2%	12.5%
Have definitely changed, have already found another place of residence and work	15.3%	9.5%	4.9%	0.0%	11.2%	6.5%	5.2%	4.5%
I am at a loss to answer	16.9%	12.0%	21.5%	19.4%	16.3%	12.7%	16.6%	16.1%

Currently, the formation of legislation aimed at increasing investment in the Russian Arctic and the formation of new development mechanisms continues[3]. The formation of development mechanisms as a whole proceeds on the basis of the modern geo-economic paradigm based on the combination of state material and financial resources with business resources with institutional support aimed at creating a comfortable environment for regional reproduction of an endogenous type. Note that a detailed analysis of the responses of the regional economy to the impact of economic, political, institutional, military-political properties from the standpoint of the modern geopolitical paradigm is given in the research [50, Minakir P.A., Prokapalo O.M.]. According to northern scholars, the disadvantage of the mechanism for the development of the Arctic is that "the solution to the problems of the socio-economic development of the Arctic zone of Russia has so far only a "project focus" — cooperation and integration of efforts remain "in the shadows" [50, Minakir P.A., Prokapalo O.M., p. 9].

However, the needs of the practice transform this approach, including the necessary integration. For example, the cooperation of interests and opportunities for the development of the mineral resource sector of the Russian Arctic, characterized by deteriorating mining conditions, the development of more and more complex and more high-risk deposits. So, in the works of Kryukov V.A., numerous examples and conditions of cooperation are given: joint projects of PJSC Novatek to liquefy natural gas (based on attracting large foreign financial and oil and gas companies Total, CNPC and the Silk Road Fund as co-investors); a long-term agreement between "Gazprom Neft" and "Gazprom" for the development of hard-to-recover Achimov oil deposits in the Yamburgskoje field in the Yamalo-Nenets Autonomous Okrug, etc. [9, Economy of the Modern

[2] Source: authors' interviews [26, Baranov S.V., Skufina T.P., Gushchina I.A., p. 170].

[3] It should be noted the current and professional work of the Center for the Economy of the North and the Arctic of the ANO "Institute for Regional Consulting" under the leadership of A.N. Pilyasova in the preparation of the information bulletin "Monitoring of the Socio-Economic Development of the Arctic Zone of Russia", where comprehensive information on the latest processes in the Russian Arctic is placed.

Arctic ..., pp. 9–14]. The need for integration with foreign partners is determined by both the need for financial resources and the need for technologies due to the lack of proprietary technologies to ensure the development of Arctic projects, especially in the shelf zone. This is the main risk of the implementation of the model of sustainable development of the Arctic, which makes it expedient to consider the prospects for the socio-economic development of the Russian Arctic, taking into account the presented current situation, the genetics of transformation processes, the influence of geopolitics.

On the prospects for the AZRF development

The prospects for the development of the AZRF cannot be considered outside the context of today's reality — a crisis that for the first time in modern history has a non-economic nature. The depth, duration and strength of the impact of this crisis is largely determined not by the results of the interaction of the main financial and economic factors that can be analyzed and predicted, but in fact by the main two issues: 1) how quickly and with what losses it will be possible to cope with the spread of coronavirus; 2) what kind of policy will be formed: focused on the formation in the minds of business and the population of the idea that the crisis is of a short-term nature or focus on the long-term and deep nature of the crisis.

The analysis of publications allows us to assert that the specifics of the crisis determine the objective problems of forecasting its development due to the impossibility of predicting the behavior of these two main parameters, let us clarify: the impossibility at the present stage. So, the first parameter: how quickly and with what losses it will be possible to cope with the spread of COVID-19 is unknown. Let us clarify that all forecasts of reputable organizations give a scatter of forecast data for COVID-19 in orders, which makes them inapplicable. Consequently, forecasts of the crisis development are virtually absent, being replaced by forecasts of probable trends without the traditional prediction of detailed baseline and forecast data. The second parameter is also not reliably predicted due to the huge range of policies and practices of developed countries, both with regard to quarantine measures in particular, and attitudes for recovery periods. Note that these policies are not always explained by the economic possibilities of fighting the virus and finding a balance between economic losses and quarantine security measures.

In this regard, no assumptions about the development of the AZRF are correct and no theoretical conclusions about the likely development of the Arctic can be valid. However, would anyone seriously deny the need for certain guidelines for development that are inconceivable without prediction and prescription of the future? We propose to consider two possible development scenarios.

The first is to preserve the current vector based on the declared goal of increasing the level of socio-economic development of the Russian Arctic by ensuring economic growth in the Arctic regions. It is based on the implementation of a policy aimed at creating an institutional environ-

ment and management measures to ensure the development of resource mining (including mining in hard-to-reach areas, on the shelf, development of hard-to-recover reserves), associated industrial development, including ones on the basis of the integrated use of raw materials, the development of fishing , fish farming, etc., coordinated infrastructural development and improving the quality of life of the population. At the same time, significant resources are directed to support sectors of the economy that can enhance the development of the Arctic regions in the main types of economic activities and ensure diversification (digitalization, tourism development, support for scientific and educational activities in the Arctic, etc.). Considerable attention is paid to ensuring the sustainable development of indigenous peoples living in the Russian Arctic.

Note that the modern processes of institutionalization of the AZRF development correspond to the logic of this vector of development. Thus, raising the level of socio-economic development of the Russian Arctic is a normatively fixed goal of management. The system of legal regulation continues to develop, which determines the development of the AZRF as a specific object of state planning and management. So, in May 2020, a draft of the Arctic Development Strategy up to 2035 was submitted to the Government of the Russian Federation, developed in accordance with the Fundamentals of State Policy of the Russian Federation in the Arctic for the period up to 2035, approved on March 5, 2020. The Strategy defines development objectives linked to stages of implementation, timing, results, provided with a clearly defined implementation mechanism. A new state program for the socio-economic development of the Russian Arctic is in the process of being developed, which is planned to be adopted by the end of 2020. The system of attracting investment resources is being improved. For example, in June 2020, a tenfold decrease in the investment threshold for obtaining preferences and the status of a resident of the Arctic zone (up to 1 million rubles) was approved, which will expand the possibilities of investment access to the Arctic economy even for small enterprises. Substantial benefits are provided for the development of offshore fields and the production of liquefied gas. Process of facilitation the access of the indigenous peoples living in the Russian Arctic to aquatic and hunting biological resources is in progress. Considerable attention is paid to the development of science and education, both directly in the Russian Arctic and in the Arctic territories to provide the economy with personnel, including highly qualified personnel.

The second scenario is a reduction in economic activity in the Russian Arctic due to the external conjuncture of prices for the main export products of this territory, or due to the introduction of additional sanctions limiting the possibilities for the development of deposits and their economic feasibility, the curtailment of planned facilities in the field of processing, tourism, etc. In this case, an increase in the migration outflow of the economically active population is expected, as well as a corresponding reduction in the scientific and educational infrastructure. The policy is aimed at strengthening the role of the state in helping organizations and citizens adapt to negative

long-term consequences. A separate task is to provide the growing social problems, including the mono-settlements of the Arctic, with less financial resources.

Obviously, the two vectors presented are polar, and, taking the multivariance into account, are unlikely to be realized in practice in their pure form. However, they will be present to some extent in the future precisely because of their polarity.

Conclusion

Summing up, the review study presented has achieved its objective and provided a substantiated response to the questions raised. Thus, a series of concernings regarding the development of the Arctic has been confirmed. For example, the contradiction provided by the inadequacy of the Arctic policy — well named by Heininen Lassi as "political inability" — whenever it is required to find a compromise between the requirements of ecology and economics, between the requirements of sustainable development of the adjacent territory and their own national development goals, etc. Another example is the contradiction characteristic of the capitalist economy, which complicates the task of ensuring the socio-economic development of the Russian Arctic in conditions of increased costs of the functioning of the economy and the social sphere of the Arctic, but at the same time the need to develop natural resources of the Arctic for the national economy, while simultaneously solving the problem of increasing the level of social and economic development of this territory.

The objective nature of the contradictions limits the development of economic theory explaining the development and management of the Arctic. However, consideration of scientific and political views on the Arctic, including those of an expansionary nature, allows asserting that ideas have their own driving force, influence and provide transformation processes in the Arctic. Correlation of these ideas with transformations made it possible to answer the questions posed. Geopolitics largely determines and reflects the real socio-economic transformations of the Russian Arctic. We also note that expansionism, which is inherent in humans as a need for resettlement, a thirst for knowledge, fame, wealth, etc., also has a certain influence on the development of the Arctic. In many respects, it was the emphasis in scientific research and policy on the tasks of ensuring sustainable development, represented in the positions of the Arctic countries and supra-formation organizations, which provided Russia with a return to the tasks of increasing the level of socio-economic development of the Russian Arctic. This made it possible to slow down the systemic changes in the post-Soviet period peculiar to the North (which naturally led to demographic losses), to ensure investment growth and gradual infrastructure development of the AZRF territory. However, a number of objective problems, including the underestimation of the specifics of living and functioning in the Arctic, continue to push the population and business out of this territory. The prospects for the development of the Russian Arctic are associated with two factors. Firstly, how successfully the legislation being formed, aimed at increasing the level of socio-economic development of the Arctic, will cope with these objective problems. Secondly, the extent to which the coronocrisis will distort the

current forecasts and development plans of the Russian Arctic. The answer to this question is unknown. But the future of the Arctic can depend on it.

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cal Methods for Determination of Efficiency of the Authority Activity on the North of Russia and the Arctic (on the Example of Murmansk Oblast)]. *Sovremennye problemy nauki i obrazovaniya* [Modern Problems of Science and Education], 2013, no. 6, p. 502.

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National Projects in the Arctic Zone of the Russian Federation *

© **Nikolay N. GAGIEV**, Cand. Sci. (Econ.), Leading Researcher
E-mail: gagiev.nn@rea.ru
Plekhanov Russian University of Economics, Moscow, Russia
© **Lyudmila P. GONCHARENKO**, Doc. Sci. (Econ.), Professor
E-mail: goncharenko.lp@rea.ru
Plekhanov Russian University of Economics, Moscow, Russia
© **Sergey A. SYBACHIN**, Cand. Sci. (Econ.), Associated Professor, Leading Researcher
E-mail: sybachin.sa@rea.ru
Plekhanov Russian University of Economics, Moscow, Russia
© **Anna A. SHESTAKOVA**, Senior Specialist
E-mail: ofdandelionwine@mail.ru
Ministry of Labour and Social Protection of the Russian Federation, Moscow, Russia

Abstract. In 2021, the Russian Federation will assume the chairmanship of the Arctic Council. This fact confirms the special attention of the country's leadership to the unique geostrategic region. In December 2020, President of the Russian Federation Vladimir Putin, at an online meeting with volunteers and finalists of the contest "Volunteer of Russia", noted that Russia would grow with the Arctic and the territories of the North. Many Russian citizens' lives and the state's success in the international arena depend on this territory's development. One of the most important mechanisms for achieving the stated goals is national projects (NP), which should make a significant contribution to the development of the country's territory. The purpose of the study is to assess NP in the subjects that are entirely related to the Arctic zone: Murmansk oblast, Nenets Autonomous Okrug (NAO), Yamalo-Nenets Autonomous Okrug (YANAO), and Chukotka Autonomous Okrug (CHAO). In the course of the work, general scientific research methods were applied: comparative analysis, data comparison, induction, deduction, etc. The study results showed that, despite all the differences in economic and geographical position, financial condition, population, and regional development priorities, all Arctic regions have similar problems that hinder the effective development of territories. Without solving the problems indicated in the work, it is impossible to expect a qualitative «breakthrough» and implement the NP's goals.
Keywords: *North, Arctic, region, national project, regional project, socio-economic development.*

Introduction

The North of the Russian Federation is a unique territory that occupies almost 2/3 of the territory of our country. The North of the Russian Federation can be divided into two zones: territories fully referred to the Far North and areas equated to the Far North [1]. In addition, there are

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[1] Postanovlenie Sovmina SSSR ot 03.01.1983 N 12 (red. ot 27.02.2018) «O vnesenii izmeneniy i dopolneniy v Perechen' rayonov Kraynego Severa i mestnostey, priravnennykh k rayonam Kraynego Severa, utverzhdennyy Postanovleniem Soveta Ministrov SSSR ot 10 noyabrya 1967 g. N 1029» (vmeste s «Perechnem rayonov Kraynego Severa i mestnostey, priravnennykh k rayonam Kraynego Severa, na kotorye rasprostranyaetsya deystvie Ukazov Prezidiuma Verkhovnogo Soveta SSSR ot 10 fevralya 1960 g. i ot 26 sentyabrya 1967 g. o l'gotakh dlya lits, rabo-tayushchikh v etikh rayonakh i mestnostyakh», utv. Postanovleniem Sovmina SSSR ot 10.11.1967 N 1029) [Decree of the Council of Ministers of the

the Arctic territories in the North zone, which are separately distinguished and include the territories of the Yamalo-Nenets, Nenets and Chukotka Autonomous Districts, the Murmansk Oblast, and also partially the territories of the following subjects: the Republic of Komi (Vorkuta urban district (hereinafter — UD)); seven municipal districts of the Arkhangelsk oblast, including the Arkhangelsk UD; Krasnoyarsk Territory (Norilsk UD, Taimyr Dolgan-Nenets and Turukhansk districts); Republic of Sakha (Yakutia) (13 uluses (districts)); lands and islands located in the Arctic Ocean specified in the Decree of the Presidium of the Central Executive Committee of the USSR of April 15, 1926 and other acts of the USSR[2]. 2.431.518 people live In the Arctic zone of the Russian Federation (AZRF), as of 01.01.2020[3], which is approximately 1.65% of the country's population. The area of the Russian Arctic is slightly more than 3 million km² (18% of the entire territory of the country), while it provides over 11% of the country's total national income. Fig. 1 shows the division of the territories of the Russian Federation into zones of the North and the Arctic.

The aim of this study is to assess NP in four regions fully referred to the Arctic zone of the Russian Federation. To achieve this goal, the following tasks should be solved: to assess the structure of NP in the specified entities; identify the most pressing problems that hinder the achievement of the goals set in the NP and propose recommendations for solving the selected problems.

USSR of 03 January 1983 No. 12 (as amended on 27.02.2018) "On Amendments and Additions to the List of Regions of the Far North and Localities Equated to Regions of the Far North, Approved by the Decree of the Council of Ministers of the USSR of November 10, 1967 No. 1029" (Together with the "List of Regions of the Far North and Localities Equated to the Regions of the Far North, Which are Subject to the Decrees of the Presidium of the Supreme Soviet of the USSR of February 10, 1960 and September 26, 1967 on Benefits for Persons Working in These Regions and Localities", approved by the Resolution of the USSR Council of Ministers of 10 November 1967 No. 1029)]. URL: http://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=LAW&n=292097 (accessed 04 August 2020).

[2] Ukaz Prezidenta Rossiyskoy Federatsii ot 02.05.2014 N 296 (red. ot 13.05.2019) «O sukhoputnykh territoriyakh Arkticheskoy zony Rossiyskoy Federatsii» [Decree of the President of the Russian Federation of 05 February 2014 No. 296 (as amended on 13 May 2019) "On the Land Territories of the Arctic Zone of the Russian Federation"]. URL: http://www.consultant.ru/document/cons_doc_LAW_162553/ (accessed 05 August 2020).

[3] Estimation of the resident population as of January 1 of this year and on average for the previous year for the Arctic zone of the Russian Federation, constituent entities of the Russian Federation that are part of the Arctic zone of the Russian Federation. URL: https://gks.ru/storage/mediabank/xlFIQm1t/pok_86.xls (accessed 05 August 2020).

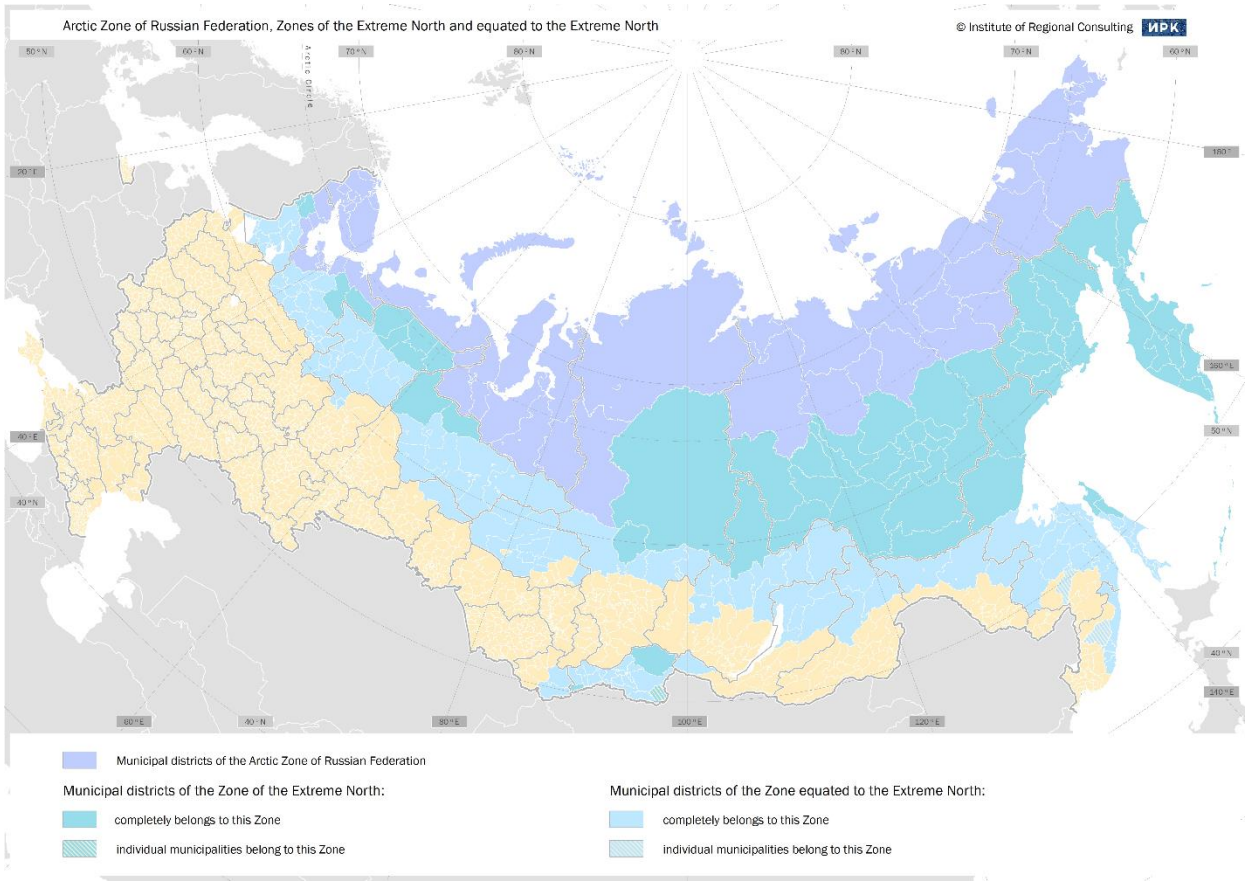

Fig. 1. The boundaries of the Arctic zone of the Russian Federation and the boundaries of the Far North regions and equivalent localities [4].

Legal regulation of the Russian Arctic

The development of the Arctic zone of the Russian Federation is governed by various regulatory legal acts now. Consider the main stages of the formation and development of the regulatory framework governing this territory.

In the Order of the Government of the Russian Federation of November 17, 2008 N 1662-r (as revised on September 28, 2018)[5] in section 7, there was the first mention of the need to intensify the development of the Russian sector of the Arctic through the further development of fields, including on the Arctic shelf, the development of port facilities, development of the Northern Sea Route, reduction of environmental damage, development of modern technologies. In the next 10 years, there have been no changes in the Concept, except the appearance of JSC «DOM.RF».

[4] ANO «Institut regional'nogo konsaltinga» [ANO "Institute of Regional Consulting"]. URL: https://www.regionalconsulting.org/issledovatelyu-arktiki (accessed 15 August 2020).

[5] Rasporyazhenie Pravitel'stva Rossiyskoy Federatsii ot 17.11.2008 № 1662-r (red. ot 10.02.2017) «O Kontseptsii dolgosrochnogo sotsial'no-ekonomicheskogo razvitiya Rossiyskoy Federatsii na period do 2020 goda» [Order of the Government of the Russian Federation of November 17, 2008 No. 1662-r (as amended on February 10, 2017) "On the Concept of the Long-Term Socio-Economic Development of the Russian Federation for the Period up to 2020"]. URL: http://www.consultant.ru/document/cons_doc_LAW_82134/28c7f9e359e8af09d7244d8033c66928fa27e527/ (accessed 15 August 2020).

On September 18, 2008, the Arctic zone of the Russian Federation was legally defined, the "Fundamentals of the state policy of the Russian Federation in the Arctic up to 2020 and further perspective" [6] (invalid) was approved — a fundamental document adopted by the President of the Russian Federation, regulating activities in the AZRF. In March 2020, in accordance with the Decree of the President of the Russian Federation dated 05.03.2020 N 164[7], the national interests of Russia in the Arctic were expanded and clarified, the main threats and challenges to national security in this zone were identified, new tasks were formed in various areas of the Arctic zone and, which is extremely important, the main indicators of the effectiveness of the implementation of state policy in the Arctic up to 2035 have been determined.

In February 2013, pursuant to the above-mentioned State Policy Bases, the Strategy for the Development of the Arctic Zone of the Russian Federation and Ensuring National Security for the period up to 2020 was adopted [8]. This document determined the main mechanisms, methods and means of achieving strategic goals and priorities for the development of the Arctic and ensuring its national security. The main mechanism for the implementation of this Strategy was the State Program "Socio-economic development of the Arctic zone of the Russian Federation for the period up to 2020" (invalid), adopted in 2014, which was subsequently updated and adjusted in 2014, 2017, 2019 and 2020 [9].

The list of land areas of the Russian Arctic appeared in May 2014 after the signing of the Decree by the President of Russia dated 02.05.2014 No. 296 [10]. Subsequently, the list was expand-

[6] «Osnovy gosudarstvennoy politiki Rossiyskoy Federatsii v Arktike na period do 2020 goda i dal'neyshuyu perspektivu» (utv. Prezidentom Rossiyskoy Federatsii 18.09.2008 N Pr-1969) (nedeystv.) ["Basics of the State Policy of the Russian Federation in the Arctic for the Period until 2020 and Beyond" (approved by the President of the Russian Federation on September 18, 2008 No. Pr-1969) (invalid)]. URL: http://www.consultant.ru/document/cons_doc_LAW_119442/ (accessed 15 August 2020).

[7] Ukaz Prezidenta Rossiyskoy Federatsii ot 5 marta 2020 g. N 164 «Ob Osnovakh gosudarstvennoy politiki Rossiyskoy Federatsii v Arktike na period do 2035 goda». «Sobranie zakonodatel'stva RF», 09.03.2020, № 10, st. 1317 [Decree of the President of the Russian Federation of March 5, 2020 No. 164 "Basic Principles of Russian Federation State Policy in the Arctic to 2035". "Corpus of Legislation of the Russian Federation", 09 March 2020, No. 10, art. 1317].

[8] «Strategiya razvitiya Arkticheskoy zony Rossiyskoy Federatsii i obespecheniya natsional'noy bezopasnosti na period do 2020 goda» (utv. Prezidentom Rossiyskoy Federatsii) ["Strategy for the Development of the Arctic Zone of the Russian Federation and Ensuring National Security for the Period Up to 2020" (approved by the President of the Russian Federation)]. URL http://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=LAW&n=142561 (accessed 15 August 2020).

[9] Postanovlenie Pravitel'stva Rossiyskoy Federatsii ot 21.04.2014 N 366 (red. ot 31.03.2020) «Ob utverzhdenii gosudarstvennoy programmy Rossiyskoy Federatsii «Sotsial'no-ekonomicheskoe razvitie Arkticheskoy zony Rossiyskoy Federatsii». «Sobranie zakonodatel'stva RF», 05.05.2014, N 18 (chast' IV), st. 2207 [Resolution of the Government of the Russian Federation of April 21, 2014 No. 366 (as amended on March 31, 2020) "On Approval of the State Program of the Russian Federation "Social and Economic Development of the Arctic Zone of the Russian Federation". "Corpus of Legislation of the Russian Federation", 05 May 2014, No. 18 (Part IV), art. 2207].

[10] Ukaz Prezidenta Rossiyskoy Federatsii ot 02.05.2014 N 296 (red. ot 05.03.2020) «O sukhoputnykh territoriyakh Arkticheskoy zony Rossiyskoy Federatsii». «Sobranie zakonodatel'stva RF», 05.05.2014, N 18 (chast' I), st. 2136 [Decree of the President of the Russian Federation of 02 May 2014 No. 296 (as amended on 03/05/2020) "On the Land Territories of the Arctic Zone of the Russian Federation" "Corpus of Legislation of the Russian Federation", 05 May 2014, No. 18 (part I), art. 2136].

ed to include three municipal districts of the Republic of Karelia in 2017, and in 2019 the number of uluses (districts) of the Republic of Sakha (Yakutia) increased to thirteen.

On May 7, 2020, the Ministry of the Russian Federation for the Development of the Far East and the Arctic submitted a draft of "Strategy for the Development of the Arctic Zone of the Russian Federation and Ensuring National Security for the Period up to 2035" to the Government of the Russian Federation. The document was developed in order to fulfill "The Fundamentals of State Policy of the Russian Federation in the Arctic for the period up to 2035" [11]. At the moment, the document has been adopted by the Government of the Russian Federation and is being signed by the President. In addition to this project, in August 2020, the Republic of Sakha (Yakutia) adopted its own "Strategy for the socio-economic development of the Arctic zone of the Republic of Sakha (Yakutia) for the period up to 2035"[12]. This Strategy became the first independent document of the Arctic region. This document could then form the basis for creating their own strategies by the rest of the regions included in the Russian Arctic. The Strategy is based on the comprehensive development of infrastructure, the creation of support centers in the Arctic zone of the region, and an increase in the quality and standard of living of the population.

As part of the study of future legislation governing the development of the Arctic zone, it is worth mentioning the draft Decree of the Government of the Russian Federation, specifying the "List of regions of the Far North and localities equated to the regions of the Far North, for the purpose of providing state guarantees and compensation for people working and living in these areas and localities"[13]. In this project, in addition to clarifying the list of regions, the currently valid Resolutions of the Council of Ministers of the USSR of November 10, 1967 No. 1029 "On the procedure for applying the Decree of the Presidium of the Supreme Soviet of the USSR", of September 26, 1967 "On the expansion of benefits for persons working in the regions of the Far North and in are-

[11] Ukaz Prezidenta Rossiyskoy Federatsii ot 5 marta 2020 g. N 164 «Ob Osnovakh gosudarstvennoy politiki Rossiyskoy Federatsii v Arktike na period do 2035 goda». «Sobranie zakonodatel'stva RF», 09.03.2020, N 10, st. 1317 [Decree of the President of the Russian Federation of March 5, 2020 No. 164 "Basic Principles of Russian Federation State Policy in the Arctic to 2035". "Corpus of Legislation of the Russian Federation", 09 March 2020, No. 10, art. 1317].

[12] Ukaz Glavy RS (Ya) «O Strategii sotsial'no-ekonomicheskogo razvitiya Arkticheskoy zony Respubliki Sakha (Yakutiya) na period do 2035 goda» [Decree of the Head of the Republic of Sakha (Yakutia) "On the Strategy of the Socio-Economic Development of the Arctic Zone of the Republic of Sakha (Yakutia) for the Period up to 2035"]. URL: https://arktika.sakha.gov.ru/news/front/view/id/3205048 (accessed 15 August 2020).

[13] Proekt Postanovleniya Pravitel'stva Rossiyskoy Federatsii «Ob utverzhdenii Perechnya rayonov Kraynego Severa i mestnostey, priravnennykh k rayonam Kraynego Severa, dlya tseley predostavleniya gosudarstvennykh garantiy i kompensatsiy dlya lits, rabotayushchikh i prozhivayushchikh v etikh rayonakh i mestnostyakh, i o priznanii utrativshim silu nekotorykh aktov Pravitel'stva Rossiyskoy Federatsii, o priznanii nedeystvuyushchimi na territorii Rossiyskoy Federatsii nekotorykh aktov Soveta Ministrov SSSR» [Draft Decree of the Government of the Russian Federation "On Approval of the List of Regions of the Far North and Localities Equated to the Regions of the Far North for the Purpose of Providing State Guarantees and Compensations for Persons Working and Living in These Regions and Localities, and on Recognizing as Invalid Some Acts of the Government of the Russian Federation , on Recognition of Some Acts of the Council of Ministers of the USSR as Invalid on the Territory of the Russian Federation"]. URL: https://regulation.gov.ru/projects#npa=96056 (accessed 06 May 2020).

as equated to the regions of the Far North" [14] and the Resolution of the Council of Ministers of the USSR of January 3, 1983 No. 12 "On amendments and additions to the List of regions of the Far North and localities equated to the regions of the Far North, approved by the Council Resolution of the USSR Ministers of November 10, 1967 No. 1029" [15] will be repealed. The adoption of this decree will make it possible to systematize and generalize the list of these regions, to make changes to outdated regulations governing the issues of state guarantees and compensations to people living in the North.

In addition, in July 2020, the Federal Law No. 193 [16] was adopted, which will take effect from 28.08.2020. According to article 2 paragraph 3 of this law, the Arctic territories will additionally include the municipal district (MD) "Kaleval National Municipal District", "Kostomuksha Urban District" MD, "Segezha Municipal District" of the Republic of Karelia, "Inta" MD UD, "Usinsk" MD UD, "Ust-Tsilemskiy" MD of the Komi Republic, 10 rural settlements of the Krasnoyarsk Territory, "Leshukonsky Municipal District" and "Pinezhsky Municipal District" of the Arkhangelsk Oblast.

Analysis of the implementation of national projects in the AZRF

In 2018, the President of the Russian Federation Putin V.V. signed Decree No. 204 "On national goals and strategic objectives for the development of the Russian Federation for the period up to 2024" [17]. To achieve the goals set in the Decree by the end of 2024, the Government has de-

[14] Postanovlenie Sovmina SSSR ot 10.11.1967 N 1029 «O poryadke primeneniya Ukaza Prezidiuma Verkhovnogo Soveta SSSR ot 26 sentyabrya 1967 g. «O rasshirenii l'got dlya lits, rabotayushchikh v rayonakh Kraynego Severa i v mestnostyakh, priravnennykh k rayonam Kraynego Severa» [Resolution of the USSR Council of Ministers of November 10, 1967 No. 1029 "On the Procedure for Applying the Decree of the Presidium of the USSR Supreme Soviet of September 26, 1967 "On the Expansion of Benefits for Persons Working in the Far North and in Areas Equated to the Far North"]. URL: http://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=ESU&n=425&dst=4294967295 (accessed 03 May 2020).

[15] Postanovlenie Sovmina SSSR ot 03.01.1983 N 12 (red. ot 27.02.2018) «O vnesenii izmeneniy i dopolneniy v Perechen' rayonov Kraynego Severa i mestnostey, priravnennykh k rayonam Kraynego Severa, utverzhdennyy Postanovleniem Soveta Ministrov SSSR ot 10 noyabrya 1967 g. N 1029» (vmeste s «Perechnem rayonov Kraynego Severa i mestnostey, priravnennykh k rayonam Kraynego Severa, na kotorye rasprostranyaetsya deystvie Ukazov Prezidiuma Verkhovnogo Soveta SSSR ot 10 fevralya 1960 g. i ot 26 sentyabrya 1967 g. o l'gotakh dlya lits, rabotayushchikh v etikh rayonakh i mestnostyakh», utv. Postanovleniem Sovmina SSSR ot 10.11.1967 N 1029) [Decree of the Council of Ministers of the USSR of 03 January 1983 No. 12 (as amended on 27.02.2018) "On Amendments and Additions to the List of Regions of the Far North and Localities Equated to Regions of the Far North, Approved by the Decree of the Council of Ministers of the USSR of November 10, 1967 No. 1029 "(Together with the "List of Regions of the Far North and Localities Equated to the Regions of the Far North, which are Subject to the Decrees of the Presidium of the Supreme Soviet of the USSR of February 10, 1960 and September 26, 1967 on Benefits for Persons Working in These Regions and Localities", approved by the Resolution of the USSR Council of Ministers of 10 November 1967 No. 1029)]. URL: http://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=LAW&n=292097 (accessed 03 May 2020).

[16] Federal'nyy zakon ot 13.07.2020 N 193-FZ «O gosudarstvennoy podderzhke predprinimatel'skoy deyatel'nosti v Arkticheskoy zone Rossiyskoy Federatsii» [Federal Law of 13 July 2020 No. 193-FZ "On State Support for Entrepreneurial Activity in the Arctic Zone of the Russian Federation"]. URL: http://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=LAW&n=357078 (accessed 03 May 2020).

[17] Ukaz Prezidenta Rossiyskoy Federatsii ot 07.05.2018 N 204 (red. ot 19.07.2018) «O natsional'nykh tselyakh i strategicheskikh zadachakh razvitiya Rossiyskoy Federatsii na period do 2024 goda» [Decree of the President of the Russian Federation of 07.05.2018 N 204 (as amended on 19.07.2018) "On National Goals and Strategic Objectives of the De-

veloped 12 national projects (NP) and 1 comprehensive plan for the modernization and expansion of the trunk infrastructure, their total cost should be almost 26 trillion rubles. It should be noted that in connection with the coronavirus pandemic, the reduction in budget revenues, the insufficient achievement of targets, and the change in priorities, Presidential Decree No. 474 was signed in July 2020 [18], according to which the Government of the Russian Federation will have to adjust the NP and develop a unified plan to achieve the country's national development goals for the period up to 2024 and for the planned period up to 2030 by October 30, 2020.

In order to assess the progress of the NP implementation in the subjects of the Russian Arctic, let us turn directly to the analysis of the NP implementation in the Murmansk oblast, Nenets, Yamalo-Nenets and Chukotka Autonomous Okrugs.

On the basis of the NP, each constituent entity of the Russian Federation forms its own regional projects, taking into account the tasks assigned to it and the available funding. Table 1 shows a comparative characteristic of regional projects and the amount of financial support provided for 2020. Undoubtedly, the comparison in terms of the level of funding is incorrect, considering the financial capabilities of the regions, the established targets and tasks in regional projects, the population size, the area of the territory, the economic and geographical location, but nevertheless, the difference between the amount of funds allocated for the implementation of NP in the Chukotka Autonomous District and the Yamalo-Nenets Autonomous District is significant — more than 30 times, and between the Murmansk Oblast and the Yamalo-Nenets Autonomous District — almost 3 times.

Table 1

Number of regional projects implemented in the subjects of the Russian Arctic within the framework of national projects [19]

National project	Murmansk oblast	NAO	YaNAO	ChAO
Demographics	5	5	5	5
Healthcare	7	6	7	7
Education	8	7	7	7
Culture	3	3	3	2
Housing and urban environment	3	3	3	3
Ecology	6	5	3	4
Safe and high-quality roads	3	3	3	3

velopment of the Russian Federation for the Period Up to 2024"]. URL: https://base.garant.ru/71937200/ (accessed 03 May 2020).

[18] Ukaz Prezidenta Rossiyskoy Federatsii ot 21.07.2020 N 474 «O natsional'nykh tselyakh razvitiya Rossiyskoy Federatsii na period do 2030 goda» [Decree of the President of the Russian Federation of July 21, 2020 No. 474 "On the National Development Goals of the Russian Federation for the Period Up to 2030"]. URL: https://www.garant.ru/products/ipo/prime/doc/74304210/ (accessed 03 May 2020).

[19] Official website of the Government of the Murmansk region. URL: https://gov-murman.ru/regulatory/np/ (accessed 03 August 2020); Official website of the Government of the Nenets Autonomous Okrug. URL: http://digital.adm-nao.ru/proektnyj-ofis/ (accessed 03 August 2020); Official website of the Government of the Yamalo-Nenets Autonomous Okrug. URL: https://www.yanao.ru/activity/6565/ (accessed 03 August 2020); Official website of the Government of the Chukotka Autonomous Okrug. URL: http://xn--80atapud1a.xn--p1ai/natsionalnye-proekty/ (accessed 03 August 2020).

Labor productivity and supporting employment	-	3	2	-
Science	-	-	-	-
Digital economy	5	5	5	5
Small and medium businesses and support for business initiatives	5	5	5	5
International cooperation and export	4	2	2	3
The amount of financial support for the implementation of the NP in 2020 (million rubles)[20]	**14 574.77**	**3 584.54**	**43 370.63**	**1 414.54**
Total regional projects	**49**	**47**	**45**	**44**

Let us turn to the volume of funding for regional projects of the Arctic entities in order to identify the most significant and priority projects for each of the regions. Figures 2–5 show the amount of funding for each NP where the entity participates. The presented data may differ from the data in the passports of regional projects, since the amount of funding for NP is specified and adjusted several times a year, depending on the current financial and economic situation and due to discrepancies in the data provided by the subjects to the federal center. Let's single out those projects in which the planned amount of funding for 2019–2024 exceeds 10 billion rubles. At the same time, it should be noted that the indicated amounts of funding include both funds from the federal budget and from the district one.

In the Yamalo-Nenets Autonomous District (Fig. 2), the largest amount of funding was received by NP “Housing and Urban Environment” (over 59 billion rubles), “Demography” (over 46), “Health care” (over 44), “Education” (over 35), “Safe and high-quality roads” (over 20). It should be noted that out of the 215.6 billion rubles intended for realization of all NP in the district in 2019–2024, only 5.2 billion rubles is directed from the federal budget (approximately 2.4%), the rest of the funds are sought by the region on its own or brought by extra-budgetary sources. The most “expensive” regional projects of the district (over 10 billion rubles) are “Modern School” (31.4 billion rubles), “Ensuring a sustainable reduction in the housing stock unsuitable for habitation” (27.5), “Housing (Digital culture)”(22.4),”Promoting the employment of women — creating conditions for preschool education for children under three years old”(20.1), “Road network”(19.9),”Financial support for families at the birth of children”(17.9), “Control of oncological diseases” (17.1) and “Development of the primary health care system” (13.7). Thus, it can be noted that the priority areas of development in the subject are the construction of new schools and the renewal of the material base of the existing ones, the reduction of the share of dilapidated and unsafe housing and the resettlement of citizens living there, the provision of employment opportunities for women with children, including advanced training and retraining, increasing the availability of preschool education, increasing the birth rate, building new and modernizing exist-

[20] Edinyy portal byudzhetnoy sistemy Rossiyskoy Federatsii. Zaplanirovannye rezul'taty realizatsii regional'nykh proektov [Unified Portal of the Budgetary System of the Russian Federation. Planned Results of Implementation of Regional Projects]. URL: budg-budg-et.gov.ru/epbs/faces/p/Национальные%20проекты/Перечень%20региональных%20проектов/Результаты%20региональных%20проектов?_adf.ctrl-state=orn4bujnk_109&regionId=45 (accessed 03 August 2020).

ing roads, as well as early detection of malignant neoplasms, improving the quality and level of medical care.

In the Murmansk oblast (Fig. 3), the social orientation of the NP is singled out: the largest funding will be received by “Health care” (over 21 billion rubles), “Demography” (over 17) and “Housing and Urban Environment” (over 10). The most important regional project is “Control of oncological diseases” (14.5 billion rubles). The increased attention to this problem is not accidental: in the period from 2015–2019, the number of deaths due to neoplasms per 100 thousand people increased from 188.2 to 203.2 (an increase of 8%) and is the second cause of death in the region[21].

In the Nenets Autonomous District (Fig. 4), the most important and the only NP with the funding exceeding 10 billion rubles, is “Safe and High-Quality Roads” — 12.6 billion rubles, 12.3 billion rubles of this amount are allocated to the regional project “Road Network”. The two main goals set in this project are to increase the share of the length of regional and intermunicipal highways to 81.5% that meet regulatory requirements, as well as to bring the share of the length of the road network of the Nar'jan-Mar urban agglomeration to 90.3% corresponding to regulatory requirements. The smaller, in comparison with other subjects, amount of funds allocated for other NP is explained by the small population of the region: as of 01.01.2020, its number was 44.111 people.

In Chukotka Autonomous Okrug (Fig. 5) there is not a single NP for which more than 10 billion rubles would be allocated. The most financially secured are “Demography” (over 4 billion rubles) and “Health care” (3.3) NP. The main goal of the region is to “keep” the population, increase its number and improve the quality of medical care, especially in hard-to-reach and remote areas.

[21] Murmanskaya oblast' v tsifrakh / Federal'naya sluzhba gosudarstvennoy statistiki, territorial'nyy organ Federal'noy sluzhby gosudarstvennoy statistiki po Murmanskoy oblasti. Murmansk, 2020. S. 27 [Murmansk Oblast in Figures / Federal State Statistics Service, Territorial Body of the Federal State Statistics Service for the Murmansk Oblast. Murmansk, 2020, p. 27].

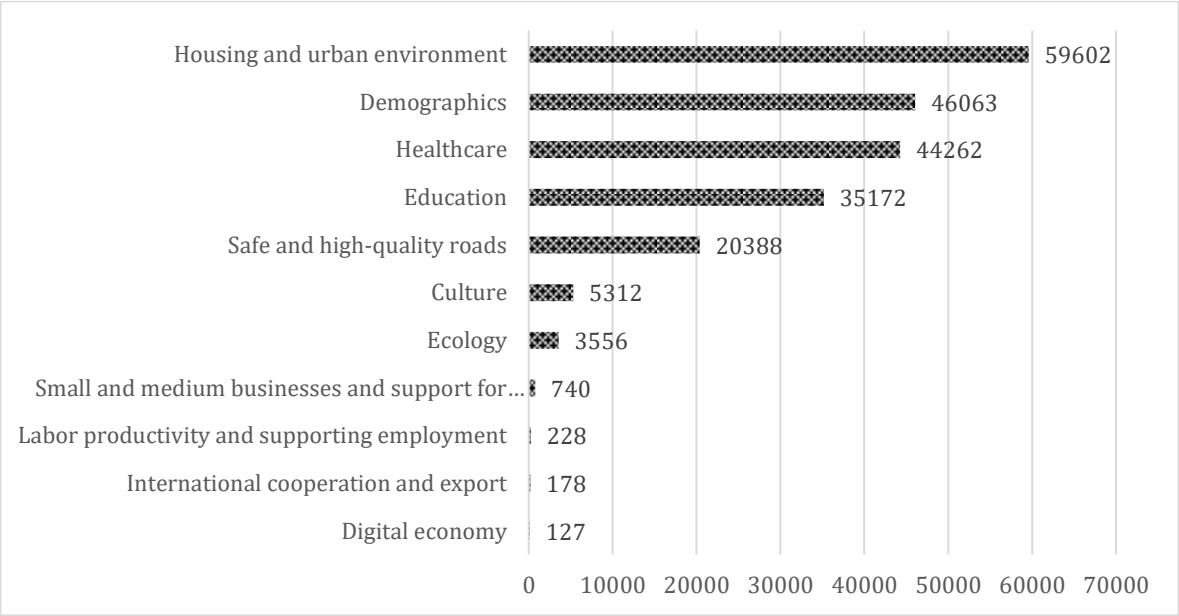

Fig. 2. Financing of regional projects in the Yamalo-Nenets Autonomous Okrug for the period 2019–2024, million rubles[22].

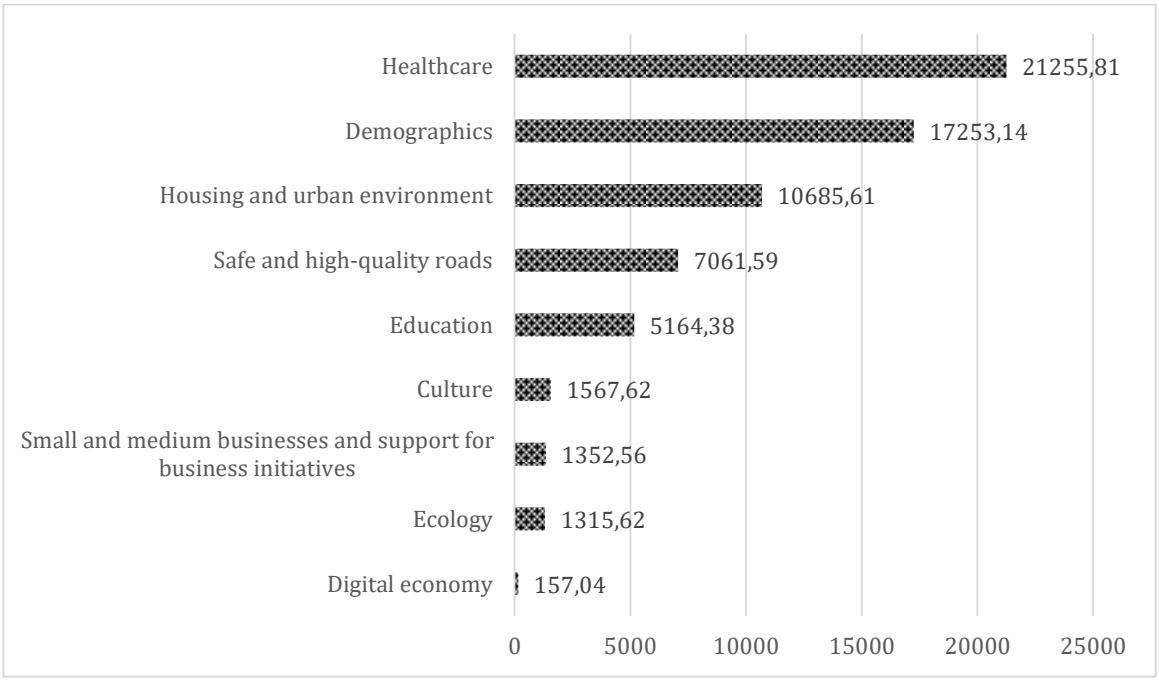

Fig. 3. Financing of regional projects in Murmansk oblast for the period 2019–2024, million rubles [23].

[22] Regional'nye proekty Yamalo-Nenetskogo avtonomnogo okruga po sostoyaniyu na 01.02.2020 g. Infografika [Regional Projects of the Yamalo-Nenets Autonomous Okrug as of 01 February 2020. Infographics]. URL: https://www.yanao.ru/documents/all/projects/70899/ (accessed 06 August 2020).

[23] Edinyy portal byudzhetnoy sistemy Rossiyskoy Federatsii. Zaplanirovannye rezul'taty realizatsii regional'nykh proektov [Unified portal of the budgetary system of the Russian Federation. Planned results of the implementation of regional projects]. URL: budg-et.gov.ru/epbs/faces/p/Национальные%20проекты/Перечень%20региональных%20проектов/Результаты%20региональных%20проектов?_adf.ctrl-state=orn4bujnk_109&regionId=44 (accessed 06 August 2020).

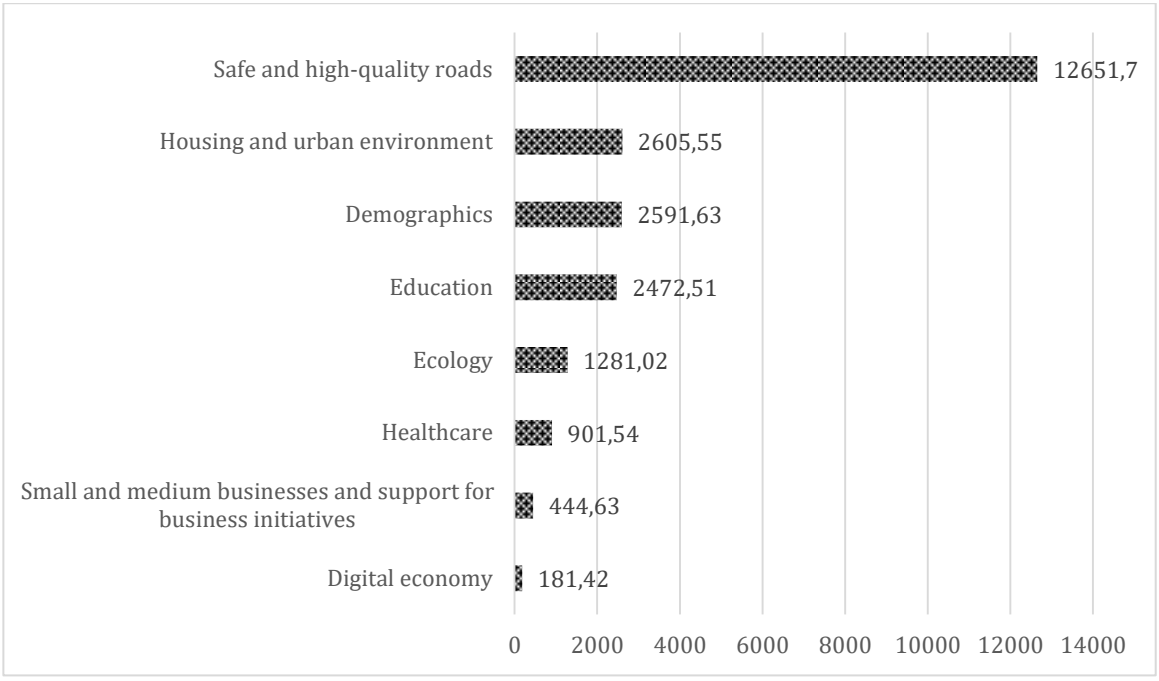

Fig. 4. Financing of regional projects in the Nenets Autonomous Okrug for the period 2019–2024, million rubles [24]

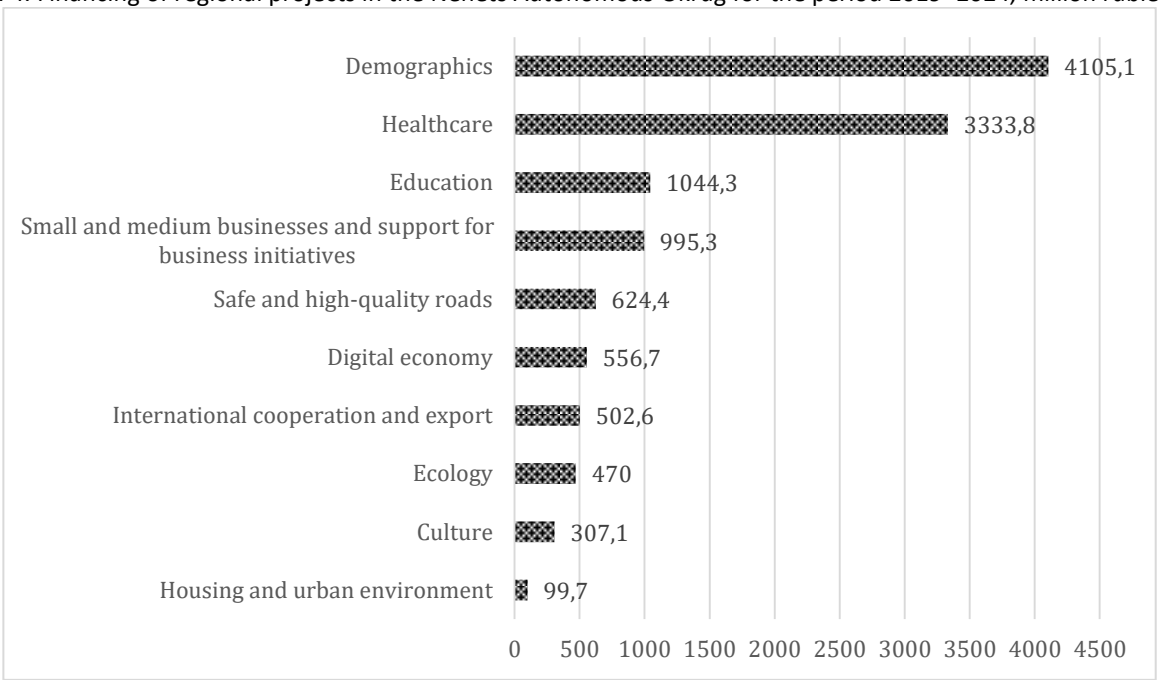

Fig. 5. Financing of regional projects in the Chukotka Autonomous Okrug for the period 2019–2024, million rubles [25]

[24] Edinyy portal byudzhetnoy sistemy Rossiyskoy Federatsii. Zaplanirovannye rezul'taty realizatsii regional'nykh proektov [Unified portal of the budgetary system of the Russian Federation. Planned results of the implementation of regional projects]. URL: budg-budg-et.gov.ru/epbs/faces/p/Национальные%20проекты/Перечень%20региональных%20проектов/Результаты%20региональных%20проектов?_adf.ctrl-state=orn4bujnk_109&regionId=44 (accessed 06 August 2020).

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The main problems hindering the implementation of national projects in the AZRF

The Russian Arctic zone is the most important strategic national priority of our country [1, Korchak E.A., p. 8; 2, Romashkina G.F., Didenko N.I., Skripnuk D.F., p. 29], characterized by a number of problems and difficulties that hinder its effective development and use of the existing potential. In the framework of the forum "Arctic: Territory of Dialogue"[26] held in April 2019, the key problems faced by the Arctic regions in the implementation of national projects were raised. Let us highlight the most critical of them, which, in our opinion, can negatively affect the achievement of the goals and objectives of the NP.

1. Low life expectancy in all regions, except for the YaNAD. Life expectancy in 2019 was 73.34 years on average in the country, while in the Murmansk oblast it was 71.75 years[27], in the NAD — 73.19 years[28], in the Yamalo-Nenets Autonomous District — 74.2 years[29], in the ChAD — 68.09 years[30], at the same time, the average healthy life expectancy in the country was 60.3 years, in the Murmansk oblast it was 59.4 years, in the NAD — 55.7 years, in the YaNAD — 56.5 years, in the ChAD — 49.1 years[31]. This situation cannot be explained, for example, by the general mortality rate of the population: in 2019, the natural increase (decrease) per 1.000 inhabitants in the Murmansk oblast was –2.4, in the NAD it was +4.7, in the Yamalo-Nenets Autonomous District it was +7.9, in the ChAD it was +1.4 (on average in Russia: –2.2). As noted at this forum, the main reason for the low life expectancy is the high mortality rate in the working age that is ahead of the average Russian indicators, for example, in the ChAD it is 1.7 times higher. To change the current situation, it is necessary to improve the quality of medical care provided by modernizing medical

[26] V Mezhdunarodnyy arkticheskiy forum «Arktika – territoriya dialoga». Panel'naya diskussiya «Natsional'nye proekty v Arkticheskoy zone Rossiyskoy Federatsii: mekhanizmy realizatsii» [The 5th International Arctic Forum "Arctic - Territory of Dialogue". Panel Discussion "National Projects in the Arctic Zone of the Russian Federation: Implementation Mechanisms"]. URL: https://forumarctica.ru/archive/2019/business-programme/ (accessed 13 August 2020).

[27] Hereinafter, all data on the subject are taken from Murmanskaya oblast' v tsifrakh / Federal'naya sluzhba gosudarstvennoy statistiki, Territorial'nyy organ Federal'noy sluzhby gosudarstvennoy statistiki po Murmanskoy oblasti. Murmansk, 2020. S. 19 [Murmansk oblast in figures / Federal State Statistics Service, Territorial Body of the Federal State Statistics Service for the Murmansk oblast. Murmansk, 2020, p. 19].

[28] Hereinafter, all data on the subject are taken from Nenetskiy avtonomnyy okrug v tsifrakh. 2019: kratkiy statisticheskiy sbornik / Feder. sluzhba gos. statistiki, Upr. Feder. sluzhby gos. statistiki po Arkhang. obl. i Nenets. avtonom. okr. (Arkhangel'skstat); [redkol.: I.N. Kozakova (pred.) i dr.]. Arkhangelsk: Arkhangelskstat, 2020. S. 35 [Nenets Autonomous Okrug in figures. 2019: short statistical compilation / Feder. state service statistics, Feder. state service statistics on Arkhangelsk oblast and Nenets Autonomous Okrug (Arkhangelskstat); [editorial board: Kozakov I.N. et al.]. Arkhangelsk: Arkhangelskstat, 2020, p. 35].

[29] Hereinafter, all data on the subject are taken from Yamalo-Nenetskogo avtonomnogo okruga v tsifrakh: Krat. stat.sb. / Upravlenie Federal'noy sluzhby gosudarstvennoy statistiki po Tyumenskoy oblasti, Khanty-Mansiyskomu avtonomnomu okrugu – Yugre i Yamalo-Nenetskomu avtonomnomu okrugu. T., 2020. S. 16 [Yamalo-Nenets Autonomous Okrug in figures: Short statistical collection / Office of the Federal State Statistics Service for the Tyumen oblast, Khanty-Mansi Autonomous Okrug - Yugra and Yamalo-Nenets Autonomous Okrug. T., 2020, p. 16].

[30] Ozhidaemaya prodolzhitel'nost' zhizni pri rozhdenii v Chukotskom avtonomnom okruge [Life expectancy at birth in the Chukotka Autonomous Okrug]. URL: https://habstat.gks.ru/storage/mediabank/UPf01YxU/Ожидаемая%20продолжительность%20жизни%20при%20рождении.xls (accessed 13 August 2020).

[31] Regiony Rossii. Sotsial'no-ekonomicheskie pokazateli. 2019: Stat. sb. / Rosstat. M., 2019. S. 36-37, 79-80 [Regions of Russia. Socio-economic indicators. 2019: Stat. digest / Rosstat. M., 2019. Pp. 36-37, 79-80].

equipment, improving the qualifications of doctors, increasing wages and wider use of telemedicine in remote areas. State programs, for example, "Zemskiy Doctor", should be more actively disseminated in the Arctic regions, including through the provision of additional benefits and preferences to medical workers, for example: provision of housing, additional payments for work in the regions of the Arctic zone, expansion of the social package.

2. High migration outflow of the population. Over the last five years, the migration decline in the Murmansk oblast amounted to 21.5 thousand inhabitants since 2015, in the NAD — to 700 inhabitants, in the YaNAD — to 20.9 thousand inhabitants, in the ChAD — to 970 inhabitants 32. As it can be seen, there is no positive migration growth in any entity. The dynamics over the past two years shows, that there has been an increase in the migration outflow in the Murmansk oblast, in the NAD there was a slight positive migration increase in 2019, in the YaNAD there is a downward trend in negative migration rates, in the ChAD positive migration population growth is recorded in 2018–2019. The situation is worsened by the fact that a distinctive feature of the migration is the outflow of inhabitants not only older than the working age, but also the young, working-age population [3, Kryukova V.A., Skufina T.P., Korchak E.A., p. 183].

The outflow of the working-age population is facilitated by many problems in the social sphere. For example, it is noted that "... due to the specific features (functional specifics of the Arctic settlements), a significant territorial differentiation of unemployment remains" [4, Korchak E.A., p. 134] in the Arctic regions, a shortage of jobs. A significant pressure on business, increased social obligations lead to the fact that small and medium-sized businesses do not "... have any significant impact on the economic aspects of the development of the Arctic territories" [5, Tutygin A.G., Chizhova L.A., Regeta A .I., p. 49], that is, the state and big business remain the only "driving forces" of regional development. This situation has developed, in our opinion, due to the fact that it is much more profitable for employers to recruit workers on a rotational basis from outside the Arctic regions. Here it is necessary to agree with the opinion of Pilyasov A.N. and Putilova E.S. that the further development of the Arctic territories does not imply the creation of a large number of new jobs and leads to a lack of social obligations to the population in this regard [6, p. 38]. To remedy this situation, in our opinion, it is necessary to oblige all organizations carrying out and planning their activities in the Arctic zone to attract, as a priority, residents of the region where the organization's activities are carried out. In the absence of specialists with the necessary qualifications and competence, it is possible to hire workers from other regions, primarily the northern ones, and only lastly from other entities. We believe that it is necessary to expand the provision of benefits and preferences to business entities, including through exemption from a number of regional taxes, as well as the introduction of incentive payments for the employment of the local population in order to increase the competitiveness of local businesses.

[32] Chukotskiy avtonomnyy okrug v tsifrakh. 2020: Con. stat. dig. / Khabarovskstat, g. Khabarovsk, 2020. S. 8 [Chukotka Autonomous Okrug in figures. 2020: Short stat. Sat. / Khabarovskstat, Khabarovsk, 2020, p. 8].

3. Low rates of housing commissioning, a high proportion of dilapidated, substandard housing. Harsh climatic conditions, difficulty in logistics supplies, high construction costs have a direct impact on the provision of housing to the population.

In 2019, the commissioning of housing in the Murmansk oblast amounted to 44.8 thousand square meters (91.5% of the level of 2018 excluding horticultural housing), in NAD — 18.9 thousand square meters (102.1 %), in YaNAD — 145.7 thousand square meters (77.1%), in ChAD — 1.3 thousand square meters (72.2%). Thus, everywhere, except for the Nenets Autonomous District, there is a significant decrease in construction rates from 8.5% to 27.8%. In 2018, in all Arctic regions, except for the Murmansk oblast, the share of emergency housing in the total area of the housing stock increased: in the Murmansk oblast (1.5% — unchanged), in the NAD — 6.9% (an increase of 1.7 %), in the YaNAD — 7.6% (an increase of 0.7%), in the ChAD — 2.9% (an increase of 1.6%)[33]. An important specific feature that affecyed the current difficult situation with the housing stock was that it was required to build a large number of new housing in a short time for temporary and permanent "migrants" during the period of industrial development of the North and the Arctic in particular (late 1920s to mid-1950s). This housing was fast-built, but temporary, designed for 20-25 years of service [7, Korchak E.A., Skufina T.P., p. 22], presented as "... a pile of barracks ... wooden houses" [8, Kalemeneva E.A., p. 155], and in general, built cities did not meet the requirements of the Arctic climate neither technically nor functionally [9, Yastrebov A.L., p. 24]. Taking this into account, within the framework of the federal project "Ensuring a sustainable reduction of unsuitable housing stock" over 20% will be intended for the demolition of emergency housing in the Arctic regions. For example, in the Yamalo-Nenets Autonomous District, the emergency housing stock exceeds the national average by 5 times. This can lead to another problem — many displaced persons from emergency housing are ready to move to other, more climate-friendly regions, which will cause an additional outflow of the population and aggravate the process of "depopulation" of territories taking place practically throughout the entire Arctic. The problem of resettlement and the solution of the housing issue should be given increased attention, including through the introduction of a number of changes to existing national and federal projects in order to take into account the specifics of these territories, at least in terms of increasing funding for these projects in the Arctic regions.

4. Transport problem. The AZRF is heterogeneous in terms of the level of development of transport infrastructure, the regions "... are practically not equipped in transport terms and practically do not have full-fledged connections with the backbone transport network and established intra-district communications" [10, Serova N.A., p. 95]. If in its western part the transport "connectivity" of territories with the rest of the country is quite well developed, then in the east all communications are provided at the expense of the Northern Sea Route, air communication and

[33] Regiony Rossii. Sotsial'no-ekonomicheskie pokazateli. 2019: Stat. sb. / Rosstat. M., 2019. S. 277 [Regions of Russia. Socio-economic indicators. 2019: Stat. dig. / Rosstat. M., 2019. p. 277].

seasonal river transport [11, Serova V.A., p. 63-64]. The high cost of intra- and interregional movements in the Arctic regions, the "isolation" of a part of the population living in remote settlements from regional centers, an outdated aircraft fleet, an underdeveloped air ambulance, unsatisfactory road conditions, low rates of infrastructure development of the Northern Sea Route — all this is just a small part of the problems that require an early solution. Without additional funding from the federal budget and the revision of the principles of "budgetary federalism", the Arctic regions are not able to cope independently with the accumulated problems.

Conclusion

The study has shown that national projects play an important role in the development of the Arctic territories. Each Arctic region is unique, with its own characteristics, "pain points", which can be dealt with within the framework of the NP implementation: the YaNAD, with its fairly good financial support, has the most acute problems of dilapidated housing, population growth, improving the quality of healthcare, building new schools, roads; in the Murmansk oblast is facing a difficult disease situation, especially cancer; in the NAD, as in the entire Arctic, a serious infrastructure upgrade is required, in particular, the road fund; in the ChAD NP are aimed at increasing the population, increasing the availability of quality medical care in remote settlements.

In our opinion, the key task of the ongoing national projects in the Arctic, in addition to improving the quality and standard of living of the population, is to raise the prestige of the Arctic regions. National projects are not a dogma, they can and should be subject to changes and adjustments. In this regard, when making changes to the relevant projects, it should be kept in mind that the Arctic territories should again become much more attractive both for the local population and for attracting non-indigenous young people (not only on a rotational basis, but also for permanent residence). It is required to introduce new meanings into the development of the North and the Arctic, "... the need for a holistic view of the new development process and its laws, drivers, levels and institutions becomes obvious" [12, Zamyatina N.Yu., Pilyasov A.N., p. 18], including through the mandatory creation of a mechanism of preferences for the population and local businesses living there.

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The Northern Sea Route: Problems of National Status Legitimization under International Law. Part II *

© Pavel A. GUDEV, Cand. Sci. (Hist.), Leading Research Fellow
E-mail: gudev@imemo.ru
Primakov Institute of World Economy and International Relations, Russian Academy of Sciences, Moscow, Russia

Abstract. The second part of the paper shows that the regime of navigation in the Arctic, particularly on the NSR, defended by Russia today, is much more liberal than that which existed in the Soviet years: up to the Gorbachev's 1987 Murmansk speech the Soviet Arctic was a closed sea region for foreign navigation. Permissive order of passage established today at the level of Russian national legislation applies only to civil ships, and in the framework of the 1982 Convention, measures to protect the marine environment from pollution from ships cannot be applied to warships, military auxiliary ships, and ships on the state non-commercial service. However, the presence on the Northern Sea routes of water areas with the status of internal historical waters, including several Arctic straits, plus the special legal status of the Arctic, which is not limited exclusively to the 1982 Convention, allows Russia to insist on the applicability of the permit regime also to foreign warships. This approach is based mainly on the two states' practice with the longest coastline in the Arctic: the USSR and Canada. Navigation along the NSR in today's ice conditions is not yet possible without passing through the waters of the Russian Arctic Straits, whose waters are classified by the USSR as internal on historical legal grounds. Although under the 1982 Convention, they can be conditionally regarded as international, the lack of permanent transit through them makes it possible not to recognize them as such. However, the Russian Federation's task to turn the NSR into an international shipping route may lead to a weakening of the current legal position. A similar situation may arise concerning the enforcement of Article 234 "Ice Covered Areas" of the 1982 Convention, which gives the Arctic countries additional rights in the field of navigation control. Lack of ice cover in the Arctic during most of the year can significantly strengthen the position of Russia's opponents, who insist on a too broad interpretation of this article on our part. Finally, climatic changes may lead to the NSR becoming more latitudinal, and then the Russian Federation will lose any legal grounds to regulate navigation.
Keywords: *Northern Sea Route, Arctic, USA, UN Convention on the Law of the Sea 1982, international straits, right of innocent passage, right of transit passage, inland waters, historical legal grounds, freedom of navigation, national legislation.*

Permissive or notification order of passage?

As noted above, from the point of view of the norms and provisions of the 1982 Convention, the introduction of a permitting procedure for passage through certain water areas, with the exception of the inland waters of a coastal state, although practiced by a number of countries, is still a direct violation of the convention norms. If to consider the legal regime of the NSR and the Arctic as a whole exclusively as falling under the norms and provisions of the 1982 UN Convention on the Law of the Sea, then the Russian Federation, of course, very broadly interprets its powers granted by Article 234 "Ice-Covered Areas". In relations with the United States, for example, as with the main opponent of our country in the dispute over the legal status of the NSR, the Joint

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Statement on the Unified Interpretation of the Norms of International Law Governing the Peaceful Passage of 1989 has not disappeared and continues to operate. And Russia, as the legal successor of the USSR, must directly follow these agreements.

However, it is not entirely correct to reduce all international maritime law exclusively to one Convention, namely, the 1982 UN Convention on the Law of the Sea, even though it claims to be universal, comprehensive. International custom continues to be the main source of international law. Position of a number of foreign researchers, according to which "the Arctic is governed by the rules of general international law, the main source of which for maritime spaces is the 1982 UN Convention on the Law of the Sea" [1, S. Guanmyao], is not entirely correct.

The legal status of the Arctic Ocean was formed long before the adoption of the 1982 Convention with the prevailing role of customary legal norms, historical legal foundations, legal practice of Russia and Canada as states with the longest Arctic coast [2, Vylegzhanin A.N.] It is also necessary to take into account that during the III UN Conference on the Law of the Sea (1973–1982), during which the text of the 1982 Convention was developed, the Arctic issues were practically not discussed, since other countries expressed their tacit agreement with the fact that the practice and national legislation of the Arctic states are the basis of the legal regime of this polar region. Within the informal group of five Arctic states, which functioned confidentially, it was agreed that all issues related to the Arctic should not be the subject of consideration of the Conference [3, Vylegzhanin A.N., p. 27]. It was also tacitly agreed that the applicability of the Antarctic model and the concept of the Common Heritage of Mankind (CHM) to the Arctic is unacceptable for the Arctic countries. Moreover, the legal regime of the Arctic was viewed as not fully identified with the regimes established by this Convention in relation to other non-freezing seas. Accordingly, the key conclusion, which is often overlooked, is that:

"There is no convincing evidence that at the III UN Conference on the Law of the Sea, the agreed will of the five Arctic states was that the high-latitude Arctic should become the subject of a future Convention on the Law of the Sea. On the contrary, there is evidence that the understanding of these states was different: both polar regions — the Arctic and Antarctic — were delicately excluded from special consideration at the Conference; thus, they were not considered as objects of the 1982 UN Convention on the Law of the Sea, and on quite logical, convincing grounds: both Antarctica and the Arctic already had their own specific legal status for each of these regions (only contractual — in the first case; also usually legal — in the second)"[3, Vylegzhanin A.N., p. 29].

On the basis of the position presented above and taking into account the practice that has developed for decades and the tacit agreement with this practice of other states (albeit with the exception of the United States), the Russian Federation can undoubtedly continue to insist on the applicability of the permitting procedure for passage through all waters of the NSR, including the

territorial sea and the exclusive economic zone, as well as the need to pay for icebreaker and pilotage.

It should be assumed that the current regime of navigation on the NSR is already quite liberalized compared to the Soviet years: until the beginning of Gorbachev's perestroika, it was actually closed for international shipping.

For the first time the idea of its opening for foreign transit was announced back in 1967 by the Minister of the USSR Maritime Fleet Bakaev V.G., but on the assumption of payment of mandatory icebreaking and pilotage [4, Franckx E.]. This Soviet proposal did not find a response from foreign shipping companies, primarily due to the short time span of navigation along the NSR. In 1987 Gorbachev M.S., in his speech in Murmansk, announced once again our country's interest in admitting foreign shipping companies to the NSR in order to profit from the operation of this transport route. It was true that a number of conditions had to be met, namely, the use of compulsory icebreaker and pilotage, as well as the compliance of ships with special ice requirements.

As a result, the permitting procedure for passage along the NSR is consolidated at the level of Russian national legislation now[1]. However, it applies exclusively to civil ships engaged in commercial transport. As for warships, military auxiliary vessels and ships owned by the state and being in state non-commercial service, it can be rightly assumed that the authorization procedure is fixed at the level of the Soviet and then the Russian legal doctrine[2]. The absence of any attempts to pass warships of foreign states along the NSR for many years can be considered direct evidence that the shipping regime defended by Russia did not raise any fundamental objections from either of sides.

However, in September 2018, the auxiliary vessel of the French Navy "RHONE" (A603 RHONE) passed from the Norwegian Tromsø to the Bering Strait through the NSR[3], without requesting any permission to pass from the Russian side (according to published information), including passing through the strait Vilkitskiy Archipelago Severnaya Zemlya[4], the water area of which is considered by our country as internal waters, the passage through which cannot be carried out without official consent. For some unknown reason, the Russian Ministry of Foreign Affairs did not issue any note of diplomatic protest, and the reaction came only from the Russian Ministry of Defense: the head of the National Center for Defense Management of the Russian

[1] Prikaz Ministerstva transporta Rossiyskoy Federatsii ot 17 yanvarya 2013 g. № 7 g. Moskva «Ob utverzhdenii Pravil plavaniya v akvatorii Severnogo morskogo puti» [Order of the Ministry of Transport of the Russian Federation of January 17, 2013 No. 7, Moscow "On approval of the Navigation Rules in the water area of the Northern Sea Route"]. URL: https://rg.ru/2013/04/19/pravila-dok.html (accessed 15 May 2020).

[2] Works and scientific views of the most qualified specialists in the field of international, in particular — maritime law.

[3] Flot NATO vorvalsya v Russkuyu Arktiku [The NATO fleet has broken into the Russian Arctic]. URL: http://nvo.ng.ru/realty/2018-10-04/100_181004flot.html (accessed 12 April 2020).

[4] French Navy. Marine Nationale Loire-class BSAH Rhône (MMSI:227998200) #A603 is departing #CFBEsquimalt, after arriving 2018-09-26 having taken the Northern Sea Route to get there. URL: https://twitter.com/steffanwatkins/status/1046844965190586373?s=20 (accessed 20 April 2020).

Federation, Colonel-General Mizintsev M. said that from now on, passage for these categories of ships/vessels would be allowed only after notifications of the Russian authorities about the purposes and route of navigation [5]. In particular, the following was said:

"In order to eliminate the legal vacuum in terms of the use of the Northern Sea Route, interdepartmental work has been organized to improve Russian legislation, the result of which will be the notification character of the navigation of foreign warships. The work will be completed by the beginning of navigation in 2019" [6].

For this purpose, the Ministry of Defense of Russia prepared amendments to the Decree of the Government of the Russian Federation of 02.10.1999 No. 1102 "On the Rules of Navigation and Stay of Foreign Warships and Other State Vessels Operated for Non-Commercial Purposes in the Territorial Sea, in Internal Sea Waters, in the Naval Bases, the Basing Points of Warships and Seaports of the Russian Federation". They provided for:

- the need for the flag state to submit a notification via diplomatic channels about the planned passage through the territorial sea of the Russian Federation in the water area of the NSR no later than 45 days before the expected date of its start;
- compulsory ice pilotage in the territorial sea and inland sea waters in the water area of the NSR;
- compulsory icebreaker assistance in the territorial sea and inland sea waters in the water area of the NSR, if necessary, due to ice conditions and receiving appropriate recommendations [7].

The following main reason was identified as the rationale for such innovations. So, within the framework of art. 234 of the 1982 Convention "The Russian Federation, in the Navigation Rules for the NSR, has established a permissive procedure for ships navigating along the NSR with compulsory ice pilotage and icebreaker (if necessary, caused by ice conditions) escort, which allows ensuring the safety of merchant shipping in the NSR water area. However, "in accordance with the provisions of art. 236 of the UN Convention, the NSR Rules do not apply to foreign warships and government vessels operated for non-commercial purposes (hereinafter — ships and

[5] Rossiya zakryvaet Sevmorput'. Moskva reshila uzhestochit' pravila pol'zovaniya svoey strategicheskoy vodnoy magistral'yu [Russia closes the Northern Sea Route. Moscow has decided to tighten the rules for using its strategic waterway]. URL: http://nvo.ng.ru/nvo/2018-12-14/2_1026_sea.html (accessed 20 April 2020).

[6] S 2019 goda voennye korabli smogut khodit' po Sevmorputi tol'ko uvedomiv RF [From 2019, warships will be able to navigate the Northern Sea Route only by notifying the Russian Federation]. URL: https://www.interfax.ru/russia/640154 (accessed 20 April 2020).

[7] Poyasnitel'naya Zapiska k proektu postanovleniya Pravitel'stva Rossiyskoy Federatsii «O vnesenii izmeneniy v pravila plavaniya i prebyvaniya inostrannykh voennykh korabley i drugikh gosudarstvennykh sudov, ekspluatiruemykh v nekommercheskikh tselyakh, v territorial'nom more, vo vnutrennikh morskikh vodakh, na voenno-morskikh bazakh, v punktakh bazirovaniya voennykh korabley i morskikh portakh Rossiyskoy Federatsii» [Explanatory Note to the Draft Decree of the Government of the Russian Federation "On Amending the Rules of Navigation and Staying of Foreign Warships and Other State Vessels Operated for Non-Commercial Purposes in the Territorial Sea, in Internal Sea Waters, at Naval Bases, at Basis military ships and seaports of the Russian Federation"]. URL: https://regulation.gov.ru/projects#npa=89000 (accessed 20 April 2020).

vessels), which is due to their sovereign immunity. The Russian legislation also does not take into account the peculiarities of the navigation of foreign ships and vessels in the water area of the NSR through areas located in the territorial sea and internal sea waters of the Russian Federation. At the same time, Russian warships and vessels must use the services of ice pilots and tugs when sailing along the entire length of the NSR" [8].

When analyzing these proposals, it may seem that the Russian Federation has decided to ignore the provisions of art. 236, to refuse to recognize the immunity of foreign warships, to restrict the right of innocent passage through their territorial sea, thereby revising the Soviet-American agreements of 1989 [9]. Thus, Russia unilaterally increases the level of tension in the Arctic, and can provoke the holding of certain events within the framework of the American Freedom of Navigation (FON) program.

From our point of view, another interpretation can be admitted.

On the one hand, the introduction of a notification procedure for navigation on the NSR for warships of foreign states is an unconditional liberalization of the regime, which has been formed for decades and was of a permissive nature, although it is not enshrined in national legislation. The fact that Russia is prepared to take this path, rather than return to closing its part of the Arctic for military navigation, may be seen as a sign of good intentions and not as an attempt to demonstrate additional control.

On the other hand, the introduction of a notification procedure for warships and ships in government non-profit service is not just a departure from previous practice, enshrined, first of all, at the level of the doctrine of law. This is the actual recognition of the extension of the internal historical waters status to a number of water areas of the NSR (primarily, the Arctic straits) by establishing direct baselines within the framework of the 1984–1985 Soviet government decrees is not completely illegitimate. Let us remind you once again: passage through the internal waters of a coastal state can be exclusively permissive.

The 1982 Convention, however, contains art. 8 (2), which states: "When the establishment of a straight baseline in accordance with the method provided for in Article 7 results in the inclusion of areas in internal waters which were not previously considered as such, the right of innocent passage provided for in this Convention shall be applied in such waters". Based on the meaning of this article, the controversial nature of classifying the waters of the Arctic straits as internal by overlapping them with a system of straight baselines indicates that the right of innocent passage should be applicable to these waters, which has long been insisted on by foreign experts [5, Franckx E., p. 270–271].

[8] Ibid.

[9] Todorov A.A. Kuda vedet Severnyy morskoy put'? [Todorov A.A. Where does the Northern Sea Route lead?]. URL: https://russiancouncil.ru/analytics-and-comments/analytics/kuda-vedet-severnyy-morskoy-put/?sphrase_id=35780334 (accessed 12 April 2020).

Paradoxically, but in the draft resolution of the Government of the Russian Federation "On the Rules of Navigation and Stay of Foreign Warships and Other State Vessels Operated for Non-Commercial Purposes in the Territorial Sea, in Internal Sea Waters, in the Naval Bases, the Basing Points of Warships and Seaports of the Russian Federation" contains exactly this provision:

"The provisions of paragraphs 28.1.–28.5. of these Rules shall also apply to innocent passage through the internal sea waters of the Russian Federation in the water area of the Northern Sea Route, which, prior to establishing a straight baseline in accordance with the method provided for in Article 7 of the United Nations Convention on the Law of the Sea of December 10, 1982, were not considered as such" [10].

The contradiction of this situation is that, on the one hand, we reject the approach that a number of Arctic waters were classified as internal waters on historical grounds, and are ready to recognize the extension of the right of innocent passage to them, as required 1982 Convention. On the other hand, we reinforce the notifying nature of innocent passage through the territorial sea and inland waters, which had not previously been considered as such, which very conditionally correlates with both the norms of the 1982 Convention itself and the provisions of the Soviet-American the 1989 Agreement. This raises a reasonable question: was the correct approach chosen initially?

From our point of view, there is no need to downgrade the legal status that was assigned to a number of Arctic waters, primarily the straits, both at the level of Soviet national legislation and legal doctrine. They should be consistently considered as internal historical waters, the passage through which can be exclusively permissive. Moreover, the rejection of this regime and its replacement by a notification procedure for warships, the application of the right of innocent passage through internal waters within the framework of art. 8 (2) of the 1982 Convention may erode the legal status of the NSR as a whole. It is the presence of water areas under full state sovereignty with a permissive procedure for entering them that allows Russia to adhere to a *single* (highlighted by me — G.P.) mode of navigation on the NSR, despite the fact that it passes through sea spaces with completely different legal status.

Functional and geographic criteria for assessing the legal status of straits

As noted above, the position of the Soviet leadership on the unique legal status of the NSR was based, among other things, on the appeal to the fact that it had never been used for interna-

[10] Poyasnitel'naya Zapiska k proektu postanovleniya Pravitel'stva Rossiyskoy Federatsii «O vnesenii izmeneniy v pravila plavaniya i prebyvaniya inostrannykh voennykh korabley i drugikh gosudarstvennykh sudov, ekspluatiruemykh v nekommercheskikh tselyakh, v territorial'nom more, vo vnutrennikh morskikh vodakh, na voenno-morskikh bazakh, v punktakh bazirovaniya voennykh korabley i morskikh portakh Rossiyskoy Federatsii» [Explanatory Note to the Draft Decree of the Government of the Russian Federation "On Amending the Rules of Navigation and Staying of Foreign Warships and Other State Vessels Operated for Non-Commercial Purposes in the Territorial Sea, in Internal Sea Waters, at Naval Bases, at Basis military ships and seaports of the Russian Federation"]. URL: https://regulation.gov.ru/projects#npa=89000 (accessed 20 April 2020).

tional shipping before, and, accordingly, part of the Arctic straits cannot be recognized as international with the right of transit passage.

The position of the United States on this issue is diametrically opposed: they consider that the main criterion for classifying the strait as international is its geographical position only (the connection of one part of the high seas or EEZ with another part of the high seas or EEZ). Moreover, the United States insists that the functional characteristics of the strait should not be limited to only one criterion — it was or wasn't used for international shipping, but should be supplemented with a new one — whether it can potentially be used for international shipping or not [6, Brubaker D.R., p. 267].

The US position, though not illogical, suffers from a certain one-sidedness. In particular, they completely ignore the conclusions of the UN International Court of Justice in the Corfu Strait case (Great Britain vs Albania, 1949), in which the geographical and functional criteria were taken into account as absolutely equivalent. Moreover, the two-part test for assessing the legal status of the strait is supposed to be considered as an established rule of customary law. The rejection of this by the United States is all the more surprising in light of the fact that Americans continue to insist that the entire 1982 Convention is a codification of customary law, and in various kinds of maritime disputes, Washington, more than ever before, appeals to customary law [7, Steinberg P.].

According to some experts, the wording of art. 37 Section II "Transit Passage" of the 1982 Convention – "This Section *applies to straits used for international navigation* (highlighted by me — G.P.) between one part of the high seas or exclusive economic zone and another part of the high seas or exclusive economic zones"— indicates that it deals exclusively with the current, not potential (!), use of the strait.

Today, at the level of the doctrine of law, there is no clear answer to the question: what scale of navigation through the strait is necessary in order to consider it international? It is just obvious that the infrequent or occasional use of the strait rather indicates that its falling into the category of "international" is highly doubtful. In addition, it seems that the use of the strait only by the ships of one littoral state and the absence of the passage through it of ships under foreign flags, also indicate not in favor of its "international status" [8, Rothwell D.].

For the assignment of "international" status, a large-scale calculation of the following criteria is extremely important: the total number of ships passing through the strait, their total tonnage, the value of the cargo on board, the size of these ships and vessels, as well as what flag states they are represented by [9, Pharand D., p. 34–36]. In addition, other countries must somehow express their full interest in this kind of "international" qualification of the strait.

Naturally, the position of the Russian Federation is based on the fact that only the "current", and not the "potential" use of the strait for the passage of ships under foreign flags makes it international from a legal point of view, and in this case the law of transit passage should be applicable to it. Although, it is worth noting here that this logic suggests that as the scale of shipping

grows, such straits can theoretically be qualified as international in one or another perspective [6, Brubaker D., p. 267].

For the Russian Federation, this may certainly mean that the transformation of the NSR into a full-fledged transit route connecting North America and the EU countries with Asian markets may raise the question of revising the legal status of a number of Russian Arctic straits with renewed vigor. This applies equally to the Canadian Northwest Passage, for which the United States will also be able to use stronger arguments for its qualification as consisting of a number of international straits.

Scope and scale of application of Article 234 "Ice-covered Areas"

One of the key elements of the legal position of the USSR and modern Russia in relation to the NSR are the provisions of art. 234 of the 1982 Convention, which states that:

"Coastal states have the right to enact and enforce non-discriminatory laws and regulations to prevent, reduce and control pollution of the marine environment from ships in ice-covered areas within the exclusive economic zone, where climatic conditions are *particularly severe and the presence of ice covering of such areas during most of the year* (highlighted by me — G.P.) create obstacles or an increased danger to navigation, and pollution of the marine environment could cause significant harm to the ecological balance or irreversibly disrupt it. Such laws and regulations take due account of shipping and the protection and conservation of the marine environment, based on the best scientific evidence available."

This article is rightfully called the "Arctic exception", as it speaks of taking into account the special environmental interests of the Arctic states in the field of shipping regulation. In fact, coastal states are empowered to impose national pollution control regulations that may be stricter than the corresponding international standards. Such powers go far beyond the normal competence of the coastal state in the exclusive economic zone (EEZ). The coastal state has the right to regulate the design, construction, manning and equipment of ships, which it cannot do under normal conditions, even in the territorial sea [11].

The wording of art. 234 regarding the fact that states are taking certain measures "within the exclusive economic zone" raises the question of the geographical limits of applicability of this article. Some foreign experts insist that this wording suggests that the article is aimed at regulation in the water area of the EEZ, that is, outside the 12-mile territorial sea. From their point of view, the provisions of art. 234 cannot be applied to the internal waters, the territorial sea, and even more — to international straits.

[11] Mikhina I. Konventsiya OON po morskomu pravu i razvitie SMP. Vozmozhnosti i ugrozy dlya Rossii [UN Convention on the Law of the Sea and the Development of the Northern Sea Route. Opportunities and Threats for Russia]. URL: http://russiancouncil.ru/sevmorput#mikhina (accessed 16 April 2020).

At the same time, the wording "within the exclusive economic zone", as other experts justly point out, can simply mean that such measures can be taken by the state along the entire length of the water area from the coastline to the external border of the EEZ [10, Bartenstein K.]. This explanation is not devoid of a certain logic: how a coastal state, in terms of the norms and provisions of modern international maritime law, can be endowed with greater powers within the EEZ than within the territorial sea?

In general, the most balanced point of view is that art. 234 is reasonably applicable to all marine areas up to the outer boundary of the 200-mile EEZ. With some confidence, we can say in general that the provisions of art. 234 is a fundamentally different model of the navigation regime integrated into the Convention in areas covered with ice for most of the year and aimed at priority protection of the vulnerable marine environment and its biodiversity. Art. 234 is much broader and giving more powers to the coastal state than the regimes of peaceful and transit passage [10, Bartenstein K., p. 45].

The United States is generally prepared to agree to a national level of regulation for shipping in waters under the sovereignty and jurisdiction of Canada and the Russian Federation, but only with respect to American-flagged civilian vessels on commercial flights. This conclusion can be made taking into account the fact that Washington is calmly reacting to the development of Canadian national legislation in this area. Moreover, the American Oil Pollution Act (OPA 1990), if applied to the ice-covered waters of the straits within the American EEZ in the Alaska region, will have very much in common with the provisions of art. 234 of the 1982 Convention, as well as with the Canadian and Russian regimes in the field of Arctic shipping, with one exception — its effect applies exclusively to ships carrying oil products [6, Brubaker D., p. 277].

However, the United States insists that any restrictions imposed under art. 234 (first of all, this is the permissive procedure for passage through the NSR with the obligatory use of icebreaker/pilotage), cannot be applied to warships and American ships in government non-commercial service. Indeed, the Convention contains art. 236, which says that:

"The provisions of this Convention relating to the protection and preservation of the marine environment do not apply to any *warships, naval auxiliary vessels, to other ships or aircraft owned or operated by a State and used at this time only for government non-commercial service*"(highlighted by me — G.P.).

Thus, on the one hand it may seem that art. 236 excludes the above categories of ships and vessels from the scope of art. 234. However, the practice of Russia and Canada, which coincides in this respect with each other, suggests the opposite: both states insist on the priority of the provisions of art. 234 over the provisions of art. 236. In addition, they put the domestic national legislation applicable to the Arctic, which, in turn, was not the subject of consideration of the III UN Conference on the Law of the Sea, 1973–1982, above certain conventional norms.

It is also important to note that, despite the position of Washington, which continues to insist that any measures to control shipping, including those prescribed under art. 234 of the 1982 Convention, must be necessarily agreed with the International Maritime Organization (IMO), the provisions of art. 234 does not in any way provide the slightest suggestion that such an option is mandatory or even desirable. Both the Russian Federation and Canada can take additional measures at the level of their national legislation without taking into account the position of the IMO, and hence the entire international community [11, Chircop A.; 12, Molenaar E.]. Moreover, it can be assumed that the involvement of any international authorities or any other structures in the regulation of shipping in Arctic waters will de facto erode and discredit art. 234, at least in the sense that both the Russian Federation and Canada insist on.

Under the auspices of the IMO, the so-called Polar Code was developed and adopted, applicable to the waters of both the Arctic and Antarctic. Its main task is to contribute to the harmonization of international legislation in the field of shipping, including through the introduction of specific amendments and additions to the key conventions in this area — SOLAS and MARPOL. However, it would be wrong to believe that international norms and provisions of the Polar Code are higher than any national regulatory measures that are provided by the Arctic countries under art. 234 [12].

The gradual reduction of ice cover in the Arctic may raise the question of to what extent the wording of this article, namely “the presence of ice covering such areas for most of the year”, will correspond to the current situation in the region. Freeing the water area of the Russian EEZ from ice conditions may lead to the fact that the existing powers to control navigation on the NSR route will be considered by other countries as increasingly less legitimate.

On the other hand, it is necessary to take into account the fact that during the III Conference on the Law of the Sea (1973–1982), which resulted in the adoption of the above Convention, the concepts of "Arctic" and "ice-covered areas" were most likely considered as synonyms [13, Dremluga R.]. It is obvious that over the years of elaboration of the text of the Convention, in particular art. 234, none of the international experts could take into account the hypothesis of a gradual climate change in the Arctic towards its warming, as well as the associated legal consequences.

Article 31 “General Rule of Interpretation” of the 1969 Vienna Convention on the Law of Treaties states that “a treaty must be interpreted in good faith in accordance with *the usual meaning* (highlighted by me — G.P.) to be given to the terms of the treaty in their context, and in the light of the object and purpose of the treaty” [13].

[12] Banshchikova I. Mezhdu nami taet led? Polyarnyy kodeks i mezhdunarodnoe sotrudnichestvo v Arktike [Is the ice melting between us? Polar Code and International Cooperation in the Arctic]. URL: http://russiancouncil.ru/blogs/estoppel/33946/?sphrase_id=16814907 (accessed 12 May 2020).

[13] Venskaya konventsiya o prave mezhdunarodnykh dogovorov [Vienna Convention on the Law of Treaties]. URL: http://www.un.org/ru/documents/decl_conv/conventions/law_treaties.shtml (accessed 26 April 2020).

Accordingly, if we approach the reading of the provisions of art. 234 on the basis of a terminological approach only, it can be concluded that its effect extends only to areas covered with ice for most of the year, and vice versa — a fundamentally different regulation should be applicable to ice-free water areas. Despite the fact that such a model of reasoning has its own logic, the Vienna Convention of 1969 especially emphasizes the thesis of "usual" rather than terminological meaning. And from this point of view, the concepts of "ice-covered areas" and "Arctic Ocean" for many decades, both before and after the adoption of the 1982 Convention, were considered synonymous [13, Dremluga R.].

In addition to this justification, one more thesis can be put forward. According to it, the initiative of Canada to include the provisions of art. 234, supported by both the USSR and the USA, was motivated by the desire to finally legitimize at the international level those norms of national legislation introduced by this country, as well as by the USSR, on the regulation of Arctic shipping long before the adoption of the Convention. At the same time, it is important to note that the application of these norms was in no way associated with the presence or reduction of the ice cover in the Arctic [13, Dremluga R.].

Reduction of the ice cover in the Arctic may lead to the fact that the traditional routes of the NSR, now passing through the internal sea waters, the territorial sea and the exclusive economic zone of the Russian Federation, will become higher latitudinal. If this happens, the NSR route will completely run through the open sea, that is, it will be outside the zones of sovereignty and jurisdiction of the Russian Federation. In this case, Russia will no longer have any legal powers to control shipping, and the NSR route from the category of a national transport artery under its control may turn into an international shipping route. The need for compulsory provision of icebreaker and pilotage by Russia will no longer exist; navigation will be regulated by the International Maritime Organization (IMO) and regulated by the relevant international conventions. Such a scenario is, of course, still unlikely, since climate changes are most likely cyclical, but it cannot be completely ignored.

Conclusion

Thus, summing up the results of this and the previous publication, it should be noted that Russia's position in relation to the NSR is based on the use of an integrated approach based on a whole series of legal arguments. Each of them individually is not the main one and can, of course, be disputed to one degree or another. However, it is their joint use that makes this model the most stable and unshakable from a legal point of view.

So, firstly, Moscow continues to emphasize that the 1982 Convention is not the only legal regulator in relation to the Arctic. The legal regime here was formed long before its adoption and mainly on the basis of the domestic national legislation of the Arctic states and the norms of customary law. The NSR has never been used for international shipping, its straits cannot be consid-

ered international with the right of transit passage, and the arrangement of its route was a financial burden of the Soviet/Russian leadership. That is why the NSR route is qualified by Russia as a historically established transport artery, which is under its full state regulation.

Secondly, the use of the method of straight baselines led to the spread of the status of inland waters, in which the coastal state has the right to control all types of maritime economic activities over a number of Arctic waters, including key straits along the NSR. Special emphasis is placed here on the fact that these waters are classified as "internal" precisely on a historical basis (!). For many decades, with the virtually tacit consent of other states, except for the attempted passage of the US Coast Guard icebreakers in the 1960s, Russia has projected state sovereignty over these waters, and they have an extremely important economic and defense significance for the country.

Thirdly, this is the use of the norms and provisions fixed in art. 234 of the 1982 Convention, called the "Arctic exclusion" because it gives the Arctic states preferential rights in the control of shipping in order to prevent pollution of the marine environment. The position of the Russian Federation is that the priority of art. 234 above many other articles of the 1982 Convention allows it to introduce a single permissive regime for navigation along the NSR, regardless of which sea zones (territorial sea, EEZ) the passage itself takes place. And, in addition, it allows us to believe that these restrictions are equally applicable to both civilian ships and warships.

Moscow, of course, will never be able to completely abandon the national level of regulation of navigation on the NSR, since to a large extent this is a matter of ensuring its own security. It is in this vein that one should perceive the steps taken by Moscow to centralize the management of shipping along the NSR: from the creation of the NSR Administration in 2013 to the consolidation of management functions in the hands of Rosatom.

In the medium term, if the melting of the Arctic ice continues, and the number of participants in maritime activities in the region increases, then the number of potential security threats may significantly expand. New ones may be added to the already existing non-military challenges [14, Dynkin A.], including: piracy and armed robbery; terrorism acts; illegal trade or transportation of shooting, bacteriological, chemical and nuclear weapons; illegal transportation of narcotic drugs and psychotropic substances by sea; illegal movement of people by sea, including illegal migration. Already, some of these threats are successfully countered by the efforts of the Federal Security Service of Russia (illegal migration, drug smuggling, illegal import/export of flora and fauna). And it is quite obvious that any internationalization of the navigation regime along the NSR, which other, primarily non-regional countries may insist on, will in no way reduce risks and threats in the region, but will rather stimulate their increase.

It could only be assumed that, as the task of turning the NSR into an international transit route is achieved, the legal status of the NSR may be partially liberalized. This is due to the fact that the arrival of foreign shipping companies here will most likely require a partial revision of the

restrictions imposed by Moscow (permitting procedure for passage, fees for icebreaker and pilotage, special requirements for ships and crews). Finally, the growth of transit will inevitably call into question the status of the Russian Arctic straits, and Russia will have less reason to exclude them from the international category.

The United States has been and will remain Russia's main opponent in the regulation of Arctic shipping. Moreover, in general, they are ready to come to terms with the existing regime, but with one exception – so that any rules restricting navigation along the NSR would not be applicable to American warships and ships on state non-commercial service, including the icebreakers of the US Coast Guard.

Despite the fact that American politicians and the military often declare the need to intensify Washington's efforts to challenge Moscow's legal claims in the field of control over shipping along the NSR, including within the framework of the Free-dom of Navigation (FON) program, today it is possible that this is just rhetoric aimed at serving internal interests. Representatives of the US Navy and the Coast Guard (CG) need new ships and icebreakers, and the Russian threat is a good argument along the way.

The United States, of course, will never abandon the protection of navigation freedom throughout the entire World Ocean, as their economic and military-strategic interests require it, but the most balanced point of view is based on the fact that holding certain events within the framework of the FON program, except for diplomatic protest notes, it is still premature. The most dangerous thing for the United States is that in the event of any emergency, American ships (icebreakers) may need help. And such assistance can only be provided by the Russian side, which will undoubtedly completely devalue American efforts to protect freedom of navigation[14]. . In fact, any unsuccessful attempt at passage could be seen by other external actors, China, for example, as proof that the US cannot compete with Russia in the Arctic and that Moscow can safely restrict freedom of navigation in this maritime region[15]. Moreover, taking into account the closure of most of the Russian Arctic by air defense and anti-ship defense systems, any format of FON operations in the Russian Arctic can put our countries on the brink of an armed conflict, which neither side is interested in. Finally, regardless of the success or failure of FON, Russia has the right to view such American actions as a challenge to which it will be forced to respond. And this reaction, quite possibly, will concern an even greater tightening of the navigation regime along the NSR.

For the United States, the situation is also complicated by the fact that challenging Russian legal claims will inevitably be extremely negatively perceived by the closest American ally, Canada, which is defending the national level of navigation regulation on the Northwest Passage (NWP)

[14] Pincus Rebecca. Rushing Navy Ships into the Arctic for a FONOP is Dangerous. URL: https://www.usni.org/magazines/proceedings/2019/january/rushing-navy-ships-arctic-fonop-dangerous (accessed 12 April 2020).

[15] Auerswald David. Now is not Time for a FONOP in the Arctic. URL: https://warontherocks.com/2019/10/now-is-not-the-time-for-a-fonop-in-the-arctic/ (accessed 12 April 2020).

route. Of course, the United States still has the potential to use those countries that have more icebreaking capabilities than the United States themselves, for example, Sweden or Finland, to challenge Russian rules. However, a reasonable question arises here: what will the latter benefit from participating in such an American provocation? Therefore, it is more likely that China, which has two icebreakers and defends the principle of freedom of navigation in the Arctic [15, P. Gudev], will become the one that not explicitly, but indirectly, can support the US legal position.

In general, despite the first measure since the Cold War to protect freedom of navigation in the Barents Sea, in which the US Navy destroyers USS Roosevelt, USS Porter, USS Donald Cook and the British frigate HMS Kent were involved[16], as well as provocative statements by right-wing conservative American experts about the need to increase such operations in the Russian Arctic [17], the prevailing opinion remains unchanged: until the NSR has turned into a real transit route, there is no compelling reason for FON operations in Russian Arctic waters!

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[16] US Navy sails warship into Barents Sea for the first time in three decades. URL: https://edition.cnn.com/2020/05/04/politics/us-navy-barents-sea/index.html (accessed 20 May 2020).

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Coordination of International Organizations of the North-Arctic Regions: to the Program of the Presidency of the Russian Federation in the Arctic Council *

© **Boris Kh. KRASNOPOLSKIY**, Dr. Sci. (Econ.), Professor, Chief Researcher
E-mail: boriskrasno@gmail.com
Economic Research Institute, Far Eastern Branch, Russian Academy of Sciences, Khabarovsk, Russia

Abstract. Mechanisms for coordinating the activities of international interstate and macro-regional organizations of the North-Arctic regions, the implementation of which may be directly related to the program of the Russian Federation's Presidency of the International Arctic Council in 2021-2023, are proposed. Among these organizations, primarily the Arctic Council is an international forum, which operates on the basis of interstate government agreements of the highest level between the Arctic countries. But in recent years, the Arctic territories' activities at the macro-regional and regional levels, their regional and local governments have increased. How are the efforts of these top-level intergovernmental and regional communities and societies coordinated? For example, how is the interaction of the Arctic Council with the established sufficiently effective Barents / Euro-Arctic Council (BEAC) or the Northern Forum regulated and the newly created Bering / Pacific-Arctic Council (BPAC)? Do we need clear and well-coordinated mechanisms for this interaction and who should do it? The analysis concludes that a special task force is needed within the Arctic Council structure to develop mechanisms for coordinating its activities with similar macro-regional structures to make the process a coherent and focused one to address the priorities of the Arctic basin in the coming decades. The duration of this task force will depend on the outcome of the task at hand. This proposal is very timely, as it is possible to implement it during the presidency of the Russian Federation in the Arctic Council in 2021–2023.

Keywords: *international organization of the North-Arctic regions, Arctic Council, working groups of the Arctic Council, Barents / Euro-Arctic Council (BEAC), Bering / Pacific-Arctic Council (BPAC), "Northern Forum", Arctic Council Task Force, Russian Presidency of the Arctic Council in 2021–2023.*

Introduction

The development and strengthening of international relations of the North-Arctic countries and regions have always been on the agenda of the human community and our country in order to sustainable increase of their socio-economic potential and maintenance the ecological balance in this zone.

This is confirmed once again by the recently adopted decree No. 164, signed by the President of the Russian Federation on March 5 of 2020 "On the Fundamentals of State Policy of the Russian Federation in the Arctic up to 2035"[1]. It makes sense to cite the first two paragraphs from Article 16 of this decree in full, since they are most directly related to the topic of this article, namely:

"16. The main tasks in the development of international cooperation are:

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[1] Ukaz Prezidenta Rossiyskoy Federatsii «Ob Osnovakh gosudarstvennoy politiki Rossiyskoy Federatsii v Arktike do 2035 goda», № 164 ot 5 marta 2020 goda [Decree of the President of the Russian Federation "Basic Principles of Russian Federation State Policy in the Arctic to 2035", No. 164 dated March 5, 2020]. URL: http://static.kremlin.ru/media/events/files/ru/f8ZpjhpAaQ0WB1zjywN04OgKiI1mAvaM.pdf (accessed 10 May 2020).

a) strengthening of good-neighborly relations with the Arctic states on a bilateral basis and within the framework of multilateral regional cooperation formats, including the Arctic Council, the Coastal Arctic "Five" and the Barents / Euro-Arctic Region Council, building up the international economic, scientific, technological, cultural and cross-border cooperation, as well as interaction in the field of research on global climate change, environmental protection and effective development of natural resources in compliance with high environmental standards;

b) consolidation of role of the Arctic Council as a key regional association, coordinating international activities in the region" [2].

Today, the system of the major international platforms of the highest state and regional levels for discussing and finding solutions to important issues of the reclamation and development of the North Arctic spaces is undergoing certain changes. These processes have been actively discussed lately at various forums, conferences and symposia around the world. The 2019 was especially "fruitful" for these events [1, Zhuravel V.P.]. They showed how complex the issues of interstate and interregional coordination of joint efforts of the North Arctic countries and regions, with a view to their being sufficiently focused on the solution of problems of real priority and importance for all mankind.

The Arctic Council and its coordinating role

The development of the Arctic spatial formations of our country and the world Arctic has been the focus of much research work [2, Arctic: Development Strategy; 3, Arctic Space of Russia in the 21st Century; 4, Leksin V.N., Porfiriev B.N.; 5, Socio-economic Problems of the Russian Arctic; 6, Tatarkin A.I., Loginov V.G., Zakharchuk E.A.; 7, Heininen L.].

Recently, there have been very cardinal proposals for a radical modification of the entire system of relations between the largest states of the world — the USA, China and Russia in terms of solving Arctic problems by creating the so-called "Arctic League". This idea came from Irvin Studin, President of the Institute for 21st Century Problems. (Toronto). His article "How the New Arctic League Could Save the World after the Coronavirus Pandemic" was published on May 11, 2020 by the "South China Morning Post" in Hong Kong. In his article, the author emphasizes that the new structure could become the first large regional peacekeeping institution of the 21st century, which will enable Washington, Beijing and Moscow to unite under a common coordinating umbrella and turn the Arctic world space into a demonstration of interethnic friendly relations [3].

Returning to the problem of coordinating the activities of international organizations in the North Arctic regions, the role of the International Arctic Council should be noted first of all. As is known, it is the leading intergovernmental forum, as it is sometimes called, the "Arctic Parliament", promoting cooperation, coordination and interaction between the Arctic states, indigenous communities and the rest of the inhabitants of the Arctic in connection with the solution of

[2] Ibid, p. 10.
[3] Lukin Yu.F. Novaya «Arkticheskaya liga» kak instrument mirotvorchestva [The New "Arctic League" as a Peacekeeping Tool]. URL: http://www.arcticandnorth.ru/news.php?ELEMENT_ID=345418 (accessed 25 May 2020).

common Arctic problems [4]. It includes eight circumpolar countries — Russia, USA, Canada, Norway, Denmark (Greenland), Finland, Sweden, Iceland, and six working groups. The council also includes several expert and task forces. The effectiveness of their activities in specific areas is very high, as stated on the council's website. This council is an intergovernmental platform of the highest state rank.

In recent years, however, the activity of the North-Arctic territories of the macro-regional and regional levels, as well as local self-government bodies, has increased significantly. Their associations include not only regional representatives of the circumpolar countries, but also a number of countries that are not directly in the Arctic zone, but have a significant political and economic interest in the development of the Arctic basin. These are, for example, long-standing and active organizations such as the well-proven Barents Euro-Arctic Council (BEAC), mentioned above in the government decree, as well as the Northern Forum, in which the administrative bodies of the regions of the North Arctic countries of the world participate.

Both the Arctic Council and each of the currently existing macro-regional organizations of the North Arctic countries have their own working groups, which now number more than four dozen in total. As for the Arctic Council, according to the logic of its creation, it should be focused on discussing Arctic problems at the global level. Regional organizations study the development of specific macro-regional associations. But all these problems cannot be solved without a sufficiently clear coordination of the activities of all these organizations, without taking into account the general laws of the development of nature, man and society in the Arctic, which go far beyond the particular problems of each macro-regional association. And these coordination processes should, apparently, be under the auspices of the International Arctic Council and many other specialized international organizations, as well as set the main scientifically based line, which must be adhered to by both macro-regional and regional associations.

Nevertheless, at present, unfortunately, there are no such clear methodologies, tools and mechanisms of interaction between international intergovernmental, macroregional and regional North Arctic forums and associations. This is especially true for regional structures. In their practical activities, they act in isolation, sometimes contradict each other, make attempts to extract any special preferences for their associations from their activities, while not observing the basic leading principles and laws of the development of the Arctic zone as a single spatial formation that has very specific natural, ecological and socio-economic features.

The problems of coordination of the activities of intergovernmental and interregional forums should be in the sphere of work of their secretariats. However, the secretariats (by the way, their numerical composition is very small) are mainly aimed at solving the current organizational issues of these organizations. They are simply not in a position to carry out any strategic assessments and developments to improve the methodology and tools for their interaction.

[4] Arctic Council. URL: arctic-council.org/ru (accessed 10 May 2020).

In this context, there is a need to strengthen the role of the Arctic Council significantly in coordinating relationships between all the established and emerging international structures of the North Arctic countries and regions, which, apparently, is associated with the organization of a specialized substructure of this council. It should work out and propose a sufficiently clear and scientifically grounded methodology, mechanisms and tools for coordinating the activities of all these forums and associations to give this process a focus on solving both global and regional priority problems of the Arctic, and, if possible, with minimal costs for society.

Macro-regional organizations of the North-Arctic regions

Northern Forum. The development of international relations of the North-Arctic regions in recent decades is closely related to the creation of the "Northern Forum", an international non-political organization of the North-Arctic regions of the world. In the coming 2021, this organization will be 30 years old. It makes a significant contribution to the development of interregional international cooperation in the North-Arctic territories of the world. Today, the Northern Forum acts as an observer at the Arctic Council.

Recall that the "Northern Forum" was created in November 1991 in Anchorage, Alaska, USA at the international conference "Cooperation in a Changing World". Its "founding father" can rightfully be considered the Governor of Alaska, Walter J. Hickel, a businessman, statesman and public figure, who was a head of state administration twice in the periods 1966–1969 and 1990–1994. During his lifetime, this organization reached its maximum development. In 1995, it included 24 regions, and not only the North Arctic zone, but also a number of territories of countries that are not part of the Arctic zone of the world, but have political and economic interests in the Arctic basin.

Today, the Northern Forum includes 14 regions, 10 of which are the North Arctic subjects of the Russian Federation, and 4 are foreign territories[5]. The forum has more than two dozen working groups on various sectoral problems of both natural-ecological and socio-economic nature that are important for the North-Arctic zone of the world.

Unfortunately, the number of Forum participants, in comparison with 1995, has decreased by 10 territories. It is very important that the regions that left the Forum were active initiators of the creation of this organization. Their exit significantly reduces its possibilities as an influential international structure. These are the territories of Canada, Norway, Sweden, Japan, China, Mongolia, as well as 4 Russian territories. This also includes the regions of the countries belonging to the Arctic Council and the countries of the European zone and Northeast Asia, which can represent a source of large volumes of oncoming cargo traffic along the Northern Sea Route in the European-Asian direction, which is very important for Russia.

This reduction in the membership of the Forum is, apparently, due to the negative role of the introduction of all kinds of sanctions by a number of countries, including the Arctic, in relation

[5] Northern Forum. URL: https://www.northernforum.org/ru/ (accessed 10 May 2020).

to Russia. But among these reasons, one can also name insufficient attention to the activities of the Forum of the International Arctic Council, which, most likely, did not influence to the required extent on the neutralization of these sanctions, at least in the zone of the global Arctic, did not actively support the work of various macro-regional organizations, even despite the fact that they are part of its observers. Now the functions of their support are not at all included in the scope of his activities. Should he do it or not - this is a separate debatable question, which, in the author's opinion, needs a positive answer. This answer also correlates with the aforementioned paragraph of the decree of the President of Russia, which proposes to assign to the Arctic Council the role of a key association of the North Arctic countries and regions, coordinating international activities in the entire Arctic basin.

Barents Euro-Arctic Council (BEAC). Another very important and successfully functioning macro-regional organization in the European part of the Arctic zone of the world is the Barents Euro-Arctic Council (BEAC).

As noted, BEAC is an important platform for international cooperation, because the Barents region is the most populous and most economically developed region of the Arctic, which has a rich resource, scientific and innovative base [6]. It is very important that the experience of cross-border cooperation in the North-Arctic regions is practically unparalleled here [7]. Since its inception in 1993, BEAC has deservedly established itself as an authoritative interstate structure playing an important role in preserving northern Europe as a zone of stability and good neighborliness.

Fourteen regions cooperate within the BEAC, which are part of the four Arctic countries: Sweden, Norway, Finland and Russia. There is also an institute of municipalities — twin cities. The main executive decision-making body is a ministerial meeting that takes place every two years. BEAC has 14 working groups, which are the basis for carrying out the main activities in cooperation of the regions included in this organization in various areas of natural-ecological and socio-economic development [8].

BEAC participants note that this organization is often perceived as “the younger brother of the Arctic Council”. They believe that both of these organizations should complement each other. The author of this article adheres to the same point of view, but the question arises naturally — how and who will develop and propose this methodology for ensuring complementarity and interaction between the Arctic Council and the Council of the Barents / Euro-Arctic Region?

[6] Orlov I., Korchunov N., Vassvik R., Ivanov S. Talking Barents: perspektivy i formaty sotrudnichestva [Talking Barents: Prospects and Formats of Cooperation]. URL: https://roscongress.org/sessions/iaf-2019-talking-barents-perspektivy-i-formaty-sotrudnichestva/discussion/ (accessed 10 May 2020).

[7] Interv'yu Posla po osobym porucheniyam MID Rossii N.V.Korchunova mezhdunarodnomu informatsionnomu agentstvu «Rossiya segodnya», 29 noyabrya 2019 goda [Interview of the Ambassador-at-Large of the Ministry of Foreign Affairs of Russia Nikolai V. Korchunov to the international news agency "Russia Today", November 29, 2019]. URL: https://www.mid.ru/arkticeskij-sovet/-/asset_publisher/0vP3hQoCPRg5/content/id/3925387 (accessed 10 May 2020).

[8] Barents Euro-Arctic Cooperation. URL: https://www.barentscooperation.org/en (accessed 10 May 2020).

It is also emphasized that the BEAC is increasingly faced with new global challenges and threats that are not only local transboundary, but also of a regional nature: an increase in climate change, violation of borders, illegal migration, an increase in the volume of extraction of natural resources, increased industrial pressure on the ecological environment, and other risks. In this regard, it is important to continue work on developing a mechanism for collective response to such challenges. But we emphasize once again that this mechanism and the corresponding tools can be created and implemented only in close cooperation with the Arctic Council, which should be responsible not only for solving global problems of the entire zone of the world Arctic, but also for solving problems and developing organizations at the macro-regional level, one of which the BEAC is.

Bering / Pacific-Arctic Council (BPAC). In the past two years, a very promising project on the formation of a transboundary Russian-American Council of the Bering / Pacific-Arctic Region (BPAC) has been discussed [8, Voronenko A.L., Krasnopolskiy B.Kh., Fuhs P.]. This project is of rather great interest for many countries and regions, not only in the northern part of the Pacific Basin, but also in the European part of the North and Arctic zone and Northeast Asia. A number of publications of the Institute of Economic Research FEB RAS are devoted to the problems of the Far-Eastern and Pacific Arctic, as well as the project to create the BPAC [9, Krasnopolskiy B.Kh.; 10, Minakir P.A., Procapalo O.M.; 11, Minakir P.A., Krasnopolskiy B.Kh., Leonov S.N.].

The Institute initiated a discussion of the project last year at two very large international meetings of scientists and specialists in the field of studying the world Arctic basin.

The first meeting is the 24th meeting of the Russian-American Pacific Partnership (RAPP), which was held at the end of June 2019 in Khabarovsk[9]. . At this meeting, an Initiative Working Group was created, which was entrusted with working out this issue, trying to collect together all the scientific and applied rationale for the possibility and feasibility of creating a BPAC and to develop primary documents draft. The author of this article was included in this group by the order of Derek Norberg, Executive Director of RAPP, President of the Council on US-Russia Relations, as the coordinator from the Russian side.

The second meeting is the International Forum “Arctic: Present and Future” of the Association of Polar Explorers (ASPOL), which took place on December 5-7, 2019 in St. Petersburg[10]. A special session of the Forum “Prospects for Russian-American Cooperation in the Bering Region” was devoted to the creation of the BPAC, to the organization of which Korchunov N.V., Ambassador for Special Assignments of the Ministry of Foreign Affairs of the Russian Federation, made a huge contribution.

This session was moderated by Pogodaev M.A., Deputy Minister for Arctic Development and Northern Affairs of the Republic of Sakha (Yakutia). The participants in the discussion who made their reports were Korchunov N.V., Ambassador for Special Assignments of the Ministry of

[9] US-Russia Relations Council. URL: http://www.usrussia.org/home-russian (accessed 10 May 2020).
[10] IX Mezhdunarodnyy Forum «Arktika: nastoyashchee i budushchee» [The 9th International Forum “Arctic: Present and Future”]. URL: http://www.forumarctic.com/conf2019/ (accessed 10 May 2020).

Foreign Affairs of the Russian Federation, Senior Russian Official in the International Arctic Council; Krasnopolskiy B.Kh., Chief Researcher, IER FEB RAS; Krivorotov A., the member of the Expert Council of the Russian-Norwegian Scientific and Educational Consortium in the field of international energy business, member of the non-profit organization of the Russian International Affairs Council; Otke A.I., member of the Federation Council Committee on Social Policy, President of the Chukotka Indigenous Peoples Association; Fus P., President of the Board of Directors, Alaska Maritime Exchange (USA).

The increased attention to the Bering region and the Pacific Arctic is explained by the following.

As it follows from the natural and geographical realities, the world Arctic basin is based on two of its "supporting" sectors at the junctions with the Atlantic and Pacific basins in its development. The processes taking place in these "reference" zones in terms of the impact on the development of the entire Arctic basin, have a well-established equilibrium geographic and environmental impact. These "supporting" sectors have a very significant impact on the socio-economic development of the coastal Arctic territories, ensuring the livelihoods of both indigenous and newcomers, the development of sea freight along the Northern Sea Route, etc.

But the world community does not pay equal attention to these established proportions and processes.

In particular, with regard to the Atlantic sector, here in the international context, as shown above, a very effective Barents / Euro-Arctic Council (BEAC) has been created [12, Berkman R.A., Vylegzhanin A.N., Young O.R.].

As for the Pacific sector, no such international structures have been created here at all, although the problematic level of this very promising "intersection" of the Pacific and Arctic oceans at the junction of the Eurasian and North American continents is not lower than the "intersection" of the Atlantic Ocean and Arctic Basin [12, Berkman R.A., Vylegzhanin A.N., Young O.R.].

The resolution of the issue of creating a new Bering / Pacific-Arctic Region Council will eliminate this erroneous "bias" in the attention of the world community to these sectors. This will make it possible to establish permanent working contacts and exchange of information between these macroregional councils (BEAC and BPAC), which act as "outposts" of the Arctic zone of the Russian Federation (AZRF) in its West and East. This will also allow organizing their more coordinated and balanced interaction with the International Arctic Council and other already established international Arctic organizations.

Task Force of the Arctic Council

Certainly, any transformations in the system of interaction between the North-Arctic regions of the world have their own "pitfalls" and their own problems. First of all, as noted above, certain political and economic contradictions between the Arctic states, leading to increased military confrontation between them, as well as sanctions against the Russian Federation. This is es-

pecially true of relations between Russia and the United States, in particular — in the Bering region and the sector of the Pacific Arctic, where these largest Arctic states are bordering. The works cited in the list of references [14, Konyshev V., Sergunin A.; 15, Gudev P.].

In view of the above, it seems necessary to discuss the creation of the BPAC at a higher level in the international community of scientists and specialists in this field. In any case, it is necessary to try to establish good-neighborly and mutually beneficial cross-border relations in this sector of the world Arctic in the interests of both states. By the way, as for American scientists and specialists, especially from the state of Alaska, they perfectly understand the role of Russian researchers in solving various problems and the entire zone of the global Arctic, and the Bering / Pacific region in the transboundary sector of Russia and the United States at the junction of the Eurasian and North American continents. They constantly emphasize in their works the need to establish a fairly close coordination of research and practical activities between our countries in the Arctic zone and its regions [11].

But here again the question arises: how will the elaboration of the problems of establishing clearer coordination between the North Arctic regions, including the promotion of the initiative to create the BPAC, be further advanced? Who exactly, what structure will be involved in this, work with more specific evidence of the need and feasibility of implementing these ideas, with the preparation of the necessary primary documents on the mechanisms of their organization, for their implementation in the activities of interested regional and federal departments and public organizations of both countries, and so on. In this regard, there is a great need for a structure, preferably operating under the auspices of the Arctic Council, which will take over the implementation of these initiatives.

Here the next proposal arises.

The Arctic Council has six permanent working groups, and all these groups are aimed at solving problems of development of various sectoral sectors that are very important for the Arctic basin. Among the expert groups under the Arctic Council from 2015 to the present, there is only one group — the “Black Carbon and Methane Expert Group”, whose task is to assess periodically the progress of the Arctic Council's Framework Program for Action on Black Carbon and Methane. As you can see, there is no structure among the listed groups that would be engaged in improving the activities of the Arctic Council in terms of coordinating its cooperation with macro-regional and regional associations of the North Arctic territories.

[11] Alaska and the New Maritime Arctic. A Report to the State of Alaska Department of Commerce, Community and Economic Development. School of Natural Resources and Extension. University of Alaska Fairbanks. Fairbanks, Alaska, 2015. URL: https://www.commerce.alaska.gov/ (accessed 10 May 2020). Understanding the Arctic as a System (IARC Review, November 2019). International Arctic Research Center — IARC, University of Alaska, Fairbanks. URL: https://uaf-iarc.org/wp-content/uploads/2019/11/2019-annual-report_IARC.pdf (accessed 10 May 2020). Woodgate R & Peralta-Ferriz C. The Pacific Gateway to the Arctic: Recent Change in the Bering Strait — Observations, Driving and Implications. University of Washington, Seattle, USA. 2018. URL: psc.apl.washington.edu/HLD/Bstrait/Woodgate_BeringStrait_ASOF_Apr2018Final.pdf (accessed 10 May 2020).

But in the Arctic Council there are so-called Task Forces, which are appointed at the ministerial meetings of the participating countries to work on specific issues for a limited period of time, remaining active until they bring the desired results. Experts of the working groups and representatives of the Arctic states take part in the work of the task groups. There are currently no active task forces under the council. The previously created task forces have completed their work and are no longer functional.

And it is the groups of this category that may be of interest from the standpoint of the topic of this article.

Of course, the issue of expanding the very membership of the Arctic Council member states is not on the agenda either today or in the future. The composition of the Arctic countries that are included in it is determined by nature and is not subject to discussion. As for all other interested states, the list of observer countries is open to them. The observers also include representatives of the indigenous peoples of the North. All of them also have the opportunity to participate in various projects and initiatives being implemented in the Arctic Council.

But just this rather complex systemic situation in the structure and activities of the Arctic Council, which is constantly changing in time and space, serves as proof that the council should have some kind of permanent methodology to improve the coordination of its activities with regional associations.

It is for these purposes that it is proposed to create a temporary task force, which will be entrusted with the implementation of this task. Such a methodology should be developed and proposed for practical use to coordinate the activities of the Arctic Council with macro-regional associations of the territories of the North Arctic countries, in particular with the Northern Forum, the Barents Euro-Arctic Council (BEAC) and the newly created Bering / Pacific-Arctic region (BPAC). The finalization of the BPAC project should also be entrusted to this task group, since the newly created Russian-American council should enter the system of macro-regional forums and associations in the Arctic zone.

The Task Force in its activities will rely on the latest achievements of science and technology, on the results of research developments of scientific units of their countries and the involvement of leading scientists and specialists in the field of Arctic research, on the implementation of best practices in the implementation of projects for the development of the Arctic and etc.

Its task will be to take all the best in the international experience in the development of the Arctic spaces and to propose special mechanisms and tools for permanent coordination direct and feedback links between the Arctic Council and macroregional organizations of the North Arctic regions. So all these organizations, and not just BEAC, can be viewed as its “little brothers”, for the fate of which it should be responsible.

As the work is completed, the task group will cease to exist, transferring the developed methodology and the corresponding tools for permanent use to the Arctic Council and interregional forums, associations and organizations.

The task force for the development of a methodology for coordinating the activities of the Arctic Council will implement its functions through constant contacts with the working groups of all major interregional forums and associations. This will allow coordinating their efforts to address the priority problems of the North and the Arctic. Here we are not talking about any "violent" actions in contacts with regional structures, about direct interference in their activities, but only about deliberative, explanatory and coordinating actions in the interests of not only individual regions, but also the entire North Arctic basin of our planet as a single spatial formation.

A schematic diagram of interactions between the target group being created and these regional associations for solving its problems may look like this (Fig. 1).

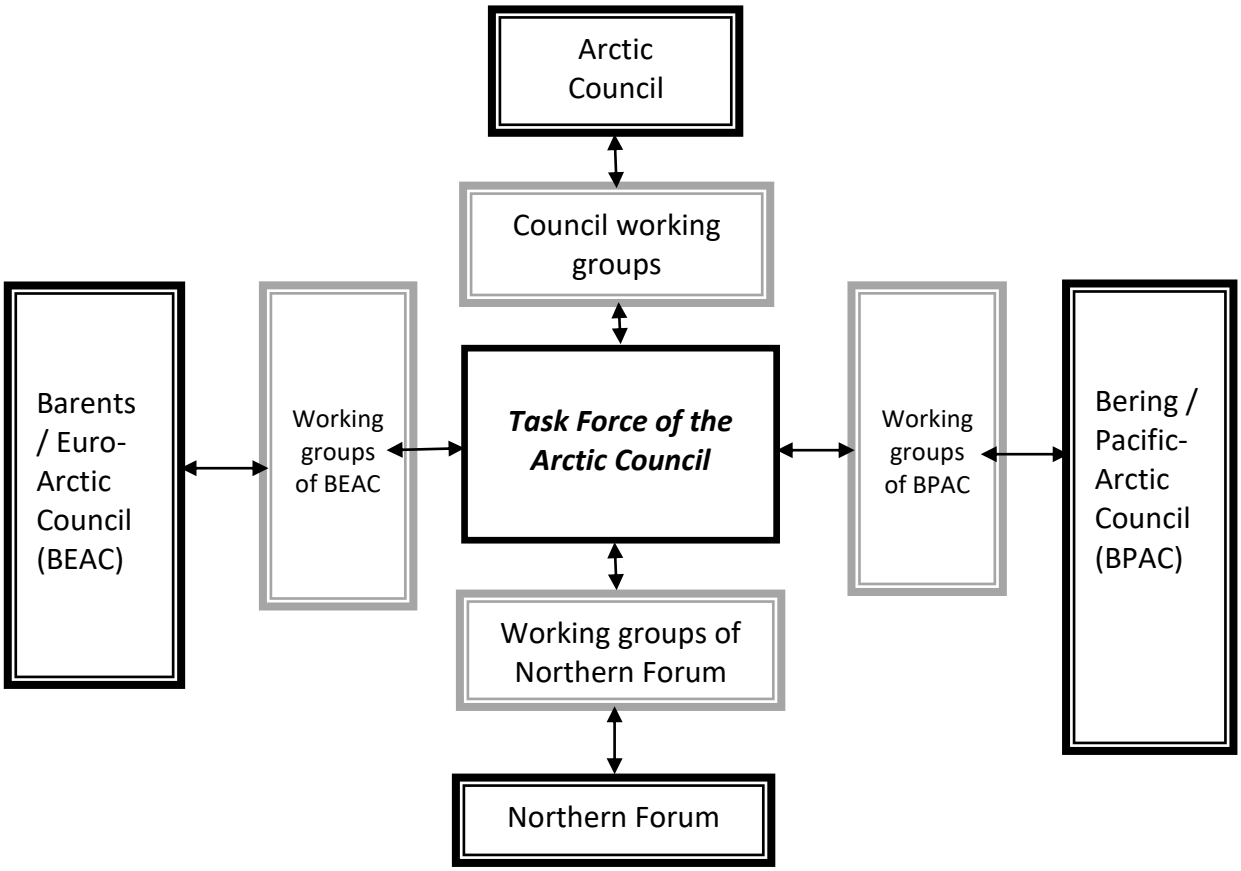

Fig. 1. Schematic diagram of the functioning of the task force to develop a methodology for coordinating the activities of the Arctic Council with macro-regional organizations.

By the way, one of the priorities of Iceland's current chairmanship of the Arctic Council in 2019–2021 was a task to strengthen the activities of the Arctic Council itself. It was emphasized that Iceland's chairmanship will be aimed at maintaining cooperation, which has always been a strong point of the Arctic Council. Thorough consultations between member states and permanent participants should have continued, and new opportunities for mutually beneficial cooperation with observers should have been explored [16, Zhuravel V.P.]. But, as can be seen, the support of the outlined types of cooperation of the Arctic Council in Iceland's program did not include strengthening cooperation with interregional and regional forums and platforms for constructive

dialogue on Arctic problems. There is an opportunity to take effective steps in this direction during Russia's chairmanship in the Arctic Council.

Conclusion

Thus, this article is based on the analysis of the existing interactions of international intergovernmental, macroregional and regional organizations of the North Arctic countries and regions, the proposal is substantiated to create a special unit of the Arctic Council — its temporary task group, which will be aimed at developing a methodology for coordinating the directions of its work with data associations. This seems to be extremely necessary for the world community due to the fact that the natural, ecological, political, and socio-economic processes taking place in the Arctic are constantly accelerating in their fluctuations and spatial transformations. And this is primarily reflected in the primary regional spatial formations. It is necessary to keep a "finger on the pulse" of these global and regional changes, to provide a certain lead in forecasts of their development, to anticipate emerging risks, to promptly adjust the directions of the activities of the Arctic Council and its working groups and coordinate them with international Arctic organizations at the regional level to neutralize all kinds of cataclysms in the world Arctic basin.

These are the tasks that should be solved by the created task force of the Arctic Council for development a methodology for coordinating its activities.

This proposal is quite relevant due to the possibility of its implementation during the Russian Federation's chairmanship of the Arctic Council in 2021–2023. By the way, due to the importance of this event, it seems that there is a need to open a special section in the journal "Arctic and North" to accommodate in it various proposals of scientists and specialists for the program of Russia's chairmanship in this council.

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"Dying" or "New Life" of Single-Industry Towns (the Case Study of Socio-economic Adaptation of Residents of Single-industry Settlements in the North-West of Russia) *

© Elena V. NEDOSEKA, Cand. Sci. (Soc.), Associate Professor, Senior Researcher
E-mail: nedelena@socinst.ru
Sociological Institute of the RAS — a branch of the Federal Research Sociological Center of the Russian Academy of Sciences, Saint Petersburg, Russia
© Nikolay I. KARBAINOV, Research Fellow
E-mail: n.karbainov@socinst.ru
Sociological Institute of the RAS — a branch of the Federal Research Sociological Center of the Russian Academy of Sciences, Saint Petersburg, Russia

Abstract. The article is devoted to the socio-economic adaptation of single-industry towns' population on the example of single-industry settlements in the North-West of Russia. The work's theoretical and methodological framework is the approaches of scientists who study the grassroots practices of survival of small towns and villages (seasonal work, commuting, a distributed way of life, the informal economy). The empirical base of the study are statistical data collected from the databases of EMISS, SPARK Interfax, the Foundation for the Development of Single-Industry Towns, websites of administrations of single-industry settlements in the Northwestern Federal District, as well as data from field studies collected by the method of semi-formalized interviews with representatives of administrations and deputies of city and regional councils, with ordinary residents of single-industry towns in Republic of Karelia, Leningrad and Vologda oblasts. The study's preliminary results are presented: first, an analysis of the contradictions in the management approach. Many single-industry settlements in the Northwestern Federal District do not meet the criteria according to which they are included in the official list of single-industry towns. Also, government support measures to rescue "dying" monotowns are ineffective. Secondly, empirical research results show that residents of single-industry towns have developed strategies for adapting to new socio-economic conditions of life, which are not associated with employment in a city-forming enterprise. These strategies include: 1) rotational work or seasonal work; 2) pendulum migration within spontaneous local agglomerations; 3) "distributed lifestyle"; 4) involvement in various spheres of the informal economy. Thus, single-industry towns "do not die" but survive primarily due to the population's grassroots economic practices.
Keywords: *single-industry town, North-West Federal District, survival strategy, economic practice.*

Introduction

The spatial structure of modern Russia is an administrative-territorial diversity, a special place in which is occupied by monotowns [1, Karbainov N.I., Nedoseka E.V., p. 146]. Today, the list of single-industry municipalities of the Russian Federation includes 321 single-industry towns, where, as of the beginning of 2020, 13.5 million people lived (about 9.2% of the population of Russia)[1]. The national average population of a single-industry town is about 40 thousand people. Most

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[1] Rasporyazhenie Pravitel'stva RF ot 16 aprelya 2015 g. № 668-r «Ob izmeneniyakh, kotorye vnosyatsya v perechen' monoprofil'nykh munitsipal'nykh obrazovaniy RF (monogorodov)» [Order of the Government of the Russian Federation of April 16, 2015 No. 668-r "On Changes to the List of Single-Industry Municipalities of the Russian Federation (Single-Industry Towns)"]. URL: https://base.garant.ru/70988888/ (accessed 04 October 2020).

of Russian monocities are small (54%). There are monocities in 61 out of 85 regions of Russia, but they are mostly concentrated in the regions of the Volga region and Siberia[2].

The problems of research of single-industry towns are distinguished by a wide range of subject areas and, in general, by increased attention from the academic community. Most of the works are devoted to the study of the problems and prospects of single-industry towns based on statistical data and analysis of economic indicators, as a rule, fixing the crisis phenomena that determine and support the discourse of "extinction". There is no single approach to the definition of a monotown either. As before, the prevailing opinions link the life of the settlement with the determining role of the city-forming enterprise [2, Lappo G.M.; 3, Turgel' I.D .; 4, Makarov A.N .; 5, Popovicheva N.E., Polyanin A.V .; 6, Gusev V.V .; 7, Kalmykov N.N .; 8, Veselkova N.V. et al.].

Monoprofiling and narrow diversification of employment spheres are interpreted as key problems of single-industry towns. Within the framework of this approach, the authors propose various classifications of types of diversification, based on the financial condition of the settlement, modeling the infrastructure of diversification [9, Antonova I.S.; 10, Sevastyanova A.E.]; scenarios for the development of single-industry towns [11, Zemlyanskiy D.Yu., Lamanov S.V.; 12, Kotov A.V.; 13, Manaeva I.V., Boltenkova Yu.V. et al.] and so on.

An important role in the research baggage is played by works that analyze foreign experience in the development of single-industry towns [14, Urozhaeva T.P., 15, Kulay S.V., 16. Gusev V.V.]; justification of measures of state support [17, Dmitrieva E.O.; 18, Petrina O.A.], increasing the investment attractiveness and the role of small business in the development of single-industry towns [19, Skorobogatova Yu.A., Baldina A.A.; 20, Dmitrieva E.O.]

We share the position of the authors Zamyatina N.Yu. and Pilyasov A.N. [21, Zamyatina N.Yu., Pilyasov A.N., p. 7–8], who emphasize that most of the work and management decisions are based on the "old arsenal of methodological research tools and instruments of state policy of the previous industrial era," without taking into account the new economic realities. The authors note: "Practically none of the authors ... raises the question of changing the very nature of a city-forming enterprise, which loses its socio-cultural impact on the local community and a single-industry city, but retains levers of financial and economic influence, including in providing employment."

An important methodological guideline for us is the research of sociologists, historians and anthropologists, who interpret monotowns in a broad context, taking into account the historical, settlement and cultural characteristics. From this point of view, monotowns "do not die", but are transformed, and the population adapts to the new economic and sociocultural conditions of life [22, Meerovich M.G.; 23; 24, Lyubovnyy V.Ya.].

The theoretical and methodological substantiation of the article was the approaches of sociologists who studied such social phenomena as migration for seasonal work [25, Plyusnin Yu.M.,

[2] ICSS analytical report. URL: https://icss.ru/vokrug-statistiki/obzor-rossijskix-monogorodov (accessed 04 October 2020).

Zausaeva Ya.D., Zhidkevich N.N., Pozanenko A.A.], which is presented as a mass phenomenon, not reflected in statistics, which is a grassroots practice of survival for the population of small towns and villages; pendulum migration [Shitov Y., Shitova Y., 26, Bugaev M.A.], as a key strategy of shuttle movement from a small town to agglomeration centers; distributed lifestyle [27, Kordonskiy S.G.], representing alternative economic practices of survival; informal economy [28, Barsukova S.Yu.]

The purpose of the article is to consider the key practices of socio-economic adaptation of the population of post-Soviet single-industry towns using the example of single-industry settlements in the Northwestern Federal District [3].

The empirical basis of the study is made up of statistical data collected from the databases of Unified Interdepartmental Statistical Information System, SPAMF Interfax, the Foundation for the Development of Single-Industry Towns, websites of administrations of single-industry settlements in the Northwestern Federal District. Besides, field research data collected by the method of semi-formalized interviews with representatives of administrations and deputies of city and regional councils, with ordinary residents of single-industry towns in the Republic of Karelia, Leningrad and Vologda regions was taken. A total of 72 interviews were conducted. An additional research method was the observation method. Interviews and observations were conducted in 2018–2019 within the framework of field research, where the main goal was to determine the opinions and visions of informants (experts) about the current situation, problems and changes taking place in monotowns.

The structure of the article is as follows. In the first section, we will show the contradictions of the management approach using the example of single-industry towns in the Northwestern Federal District of the Russian Federation. In the second section, we will consider some of the results of our study of the socio-economic situation in single-industry towns in the North-West of Russia.

Management approach: "from a bird's eye view"

For quite a long time there has been no single approach at the level of the highest executive bodies of power to understanding which settlements were classified as monotowns and which were not. In 2014, the Ministry of Regional Development of the Russian Federation proposed to consider a single-industry town as "a settlement (urban district), organizations and residents of which are not able to compensate for the risks of the external economic environment on their own, excluding the possibility of sustainable development of this settlement, which usually has a city-forming enterprise, which employs at least 25% of the working-age population of this settlement"[4]. Thus, the main criteria proposed by the Ministry are: 1) the presence of an enterprise or

[3] The object of the study was defined by us as an available sample and the main conclusions are not extrapolated to all settlements of the single-profile type of the Russian Federation.

[4] Postanovlenie Pravitel'stva ot 29 iyulya 2014 goda № 709 «O kriteriyakh otneseniya munitsipal'nykh obrazovaniy k monogorodam i o kategoriyakh monogorodov v zavisimosti ot riskov ukhudsheniya ikh sotsial'no-ekonomicheskogo

several enterprises operating within a single production and technological process, which employs more than 25% of the economically active population in the main job; 2) the presence of an enterprise or several enterprises operating within the framework of a single production and technological process, which account for more than 50% of the volume of industrial production; 3) additional criteria for assigning settlements to the category of single-industry settlements: the share of taxes and fees received by the budget of the municipal formation from an enterprise or several enterprises operating within a single production and technological process located in a settlement is at least 20% of the total the volume of taxes and fees received by the municipal budget from all organizations and enterprises.

In one of our publications, we noted that the above criteria are quite generalized and imply consideration of only quantitative characteristics, which is necessary for the formal endowment of the municipality with the appropriate status. These criteria are most often the number of people employed in the city-forming complex, the share of the city-forming enterprise in the total volume of shipment of the settlement [1, Karbainov N.I., Nedoseka E.V.].

Next, we will consider the contradictions of the management approach using the example of single-industry towns in Northwest Russia. Most of the single-industry towns in the Northwestern Federal District arose as a result of the policy of Soviet industrialization in the 1930s – 1950s. Initially, such settlements were mainly inhabited by special resettlement contingents and political prisoners; this is especially typical for the Murmansk and Arkhangelsk oblasts and the Republic of Karelia. These are relatively young settlements with a poorly rooted population and a short history of existence (with rare exceptions: for example, some settlements of the Novgorod and Vologda oblasts have a longer history). Industrialism, remoteness from the transport infrastructure, population variation in combination with northern natural and climatic conditions are inherently characteristic features of single-industry settlements in the Northwestern Federal District. The main sectors of the economy for the monotowns of the Northwestern Federal District continue to be metallurgy, the extraction of fuel and energy minerals, the extraction of other minerals and the timber industry.

Today there are 42 monotowns (about 15% of the total) in the North-West Federal District. Of the total number of single-industry towns in the Northwestern Federal District, 31 are classified as small (74% of the total number of single-industry towns), 1 — as medium (2%), 2 — as large (4%). According to regulatory documents (PP RF No. 709 dated July 29, 2014 [5]), in order to include

polozheniya» [Decree of the Government of July 29, 2014 No. 709 "On the Criteria for Classifying Municipalities as Single-Industry Towns and Categories of Single-Industry Towns Depending on the Risks of Deterioration of Their Socio-Economic Situation"]. URL: http://government.ru/docs/14049/ (accessed 02 October 2020).

[5] Postanovlenie Pravitel'stva RF ot 29 iyulya 2014 g. N 709 «O kriteriyakh otneseniya munitsipal'nykh obrazovaniy Rossiyskoy Federatsii k monoprofil'nym (monogorodam) i kategoriyakh monoprofil'nykh munitsipal'nykh obrazovaniy Rossiyskoy Federatsii (monogorodov) v zavisimosti ot riskov ukhudsheniya ikh sotsial'no-ekonomicheskogo polozheniya» [Decree of the Government of the Russian Federation of July 29, 2014 No. 709 "On the Criteria for Classifying Municipalities of the Russian Federation as Single-Industry (Single-Industry Towns) and Categories of Single-Industry Municipalities of the Russian Federation (Single-Industry Cities), Depending on the Risks of Deterioration of Their Socio-Economic Situation"]. URL: https://base.garant.ru/70707142/ (accessed 01 October 2020).

a municipality in the list of monotowns, the population in this entity should be at least 3 thousand people. Since the population of a number of towns is declining, and, in addition, some small settlements were included in the list of single-industry towns before this restriction came into force, at the moment there are 6 single-industry towns in the Northwestern Federal District with a population of less than 3 thousand people (settlement Vyartsilya, Muezerskoe urban settlement (Republic of Karelia); settlement of Sazonovo (Vologda oblast); settlement of Kizema (Arkhangelsk oblast); settlement of Uglovka and Krasnofarfornyy (Novgorod oblast) The largest single-industry town of the Northwestern Federal District in terms of population is the city of Cherepovets, Vologda oblast – 314.8 thousand people, the smallest is the Georgian rural settlement of the Novgorod oblast — 1.3 thousand people.

For a long time there was no unified approach in management practice to both understanding the place of single-industry towns in the spatial structure of the Russian Federation, and management strategies in relation to those crisis manifestations that have matured over the more than 30-year history of the new economic reality. In 2014, the main parameters were determined and the categories of single-industry towns were formed, taking into account the financial and economic situation of the city-forming enterprise, analysis of the situation on the territorial labor market and possible scenarios for the development of such municipalities. In particular, there are three such groups: the first category is red zone, the second — yellow and the third — green.

According to these criteria, most of the monotowns of the Northwestern Federal District (20) belong to the "yellow" zone — to cities with risks of worsening socio-economic situation; 18 monotowns are in the "red" zone — single-industry towns with the most difficult situation and 4 monotowns are in the "green" zone — a stable socio-economic situation (Fig. 1).

In fact, every region of the Northwestern Federal District has settlements classified as "red zone". In total, there are 18 monotowns of the North-West Federal District in a difficult socio-economic situation, proceeding from the logic of the economic and management approach, of which 6 are in the Republic of Karelia, 3 are in the Murmansk and Vologda oblasts, 2 are in the Arkhangelsk and Novgorod oblasts, 1 is in the Leningrad oblast and the Komi Republic.

Table 1

Indicators of the size of the able-bodied population of single-industry towns and the average number of employees of the city-forming enterprises of the "red zone" of the Northwestern Federal District [6]

	Monotown	Region	City forming enterprise [7]	Able-bodied population, people	Average number of employees of city-forming enterprises, people
Category 1. Single-industry municipalities of the Northwestern Federal District (single-industry towns) with the most difficult socio-economic situation (including problems of functioning of city-forming organizations)					
1	Kizema village	Arkhangelsk oblast	Dmitrievskoe separate subdivision of LLC PKP "Ti-	1 121	185

[6] The data were calculated by the author based on information from the Foundation of the Russian monotown.
[7] Enterprises that have gone through bankruptcy and closure procedures are italicized.

			tan"		
2	Onega	Arkhangelsk oblast	LLC "Onega LDK", OJSC "Onegales", OJSC "Onega-Energia", LLC "PKTS"	10032	763
3	Krasavino	Vologda oblast	Branch of GEP "Volog-daobl-kommunenergo"	2874	94
4	Sazonovo	Vologda oblast	JSC Glass Factory "Rusjam-Pokrovsky"	1339	12
5	Cherepovets	Vologda oblast	JSC CherMK "Severstal"	151963	22237
6	Pikalevo	Leningrad oblast	JSC "Pikalevskaya Soda"; JSC "Pikalevsky cement"; LLC "Pikalevsky Alumina Plant"	11343	2819
7	Kirovsk	Murmansk oblast	JSC "Apatite"	16081	5207
8	Kovdor	Murmansk oblast	OJSC "Kovdorsky Mining and Processing Plant"	9935	3642
9	Revda village	Murmansk oblast	LLC "Lovozersky Mining and Processing Plant"	4638	1100
10	Krasnofarfornyy village	Novgorod oblast	*LLC "Porcelain on Volkhov" (liquidated)*	783	
11	Pestovo	Novgorod oblast	Pestovo sawmill LLC "UPM-Kyummene Chudovo"	8369	н.д.
12	Suoyarvi	Republic of Karelia	CJSC "Zapkarelles"	4696	125
13	Kondopoga	Republic of Karelia	JSC "Kondopoga"; JSC "Kondopoga PPM"	16723	3316
14	Muezerskiy village	Republic of Karelia	*OJSC "Muezersky Lespromkhoz"*	1433	1
15	Nadvoitsy village	Republic of Karelia	*OJSC "Siberian-Ural Aluminum Company" branch "NAZ-SUAL"*	4541	100
16	Pitkyaranta	Republic of Karelia	LLC RK "Grant" Pulp Mill "Pitkyaranta"	5403	848
17	Pudozh	Republic of Karelia	*LLC "Pudozhlesprom" (liquidated)*	5038	
18	Emva	Komi Republic	LLC "LesServicePlus" and "Emva Development"	7161	30
Category 2. Single-industry municipalities of the Northwestern Federal District (monotowns) with risks of deterioration of the socio-economic situation					
19	Oktyabr'skiy village	Arkhangelsk oblast	OJSC "Ustyales", OJSC "Oktyabrsky DSK"	4937	33
20	Koryazhma	Arkhangelsk oblast	Branch of OJSC "Ilim Group"	19297	3463
21	Novodvinsk	Arkhangelsk oblast	OJSC "Arkhangelsk PPM"	20620	4117
22	Slantsy	Leningrad oblast	JSC "Slantsevo Cement Plant "Tsesla""; LLC "Peterburgcement"; LLC "Slantsy"	18464	1295
23	Nikel' village	Murmansk oblast	OJSC "Kola Mining and Metallurgical Company"	6949	1350
24	Monchegorsk	Murmansk oblast	OJSC "Kola MMC"	25642	7445
25	Zapolyarnyy	Murmansk oblast	OJSC "Kola Mining and Metallurgical Company"	8971	3308
26	Olenegorsk	Murmansk oblast	OJSC "OLKON"	17700	1870
27	Sokol	Vologda oblast	OJSC "Sokolskiy DOK", "Sokolskiy PPM", OOO "Sukhonskiy PPM"	17604	1402
28	Parfino village	Novgorod oblast	LLC "Parfinsky plywood	3646	714

			mill"		
29	Borovichi	Novgorod oblast	JSC "Borovichi Refractories Plant"	27135	4664
30	Uglovka village	Novgorod oblast	JSC "Uglovsky lime plant"	2078	353
31	Segezha	Republic of Karelia	JSC "Segezha PPM" (OJSC "Segezha PPM")	14590	1935
32	Kostomuksha	Republic of Karelia	JSC "Karelsky Okatysh"	16919	3290
33	Vyartsilya village	Republic of Karelia	CJSC "Vyartsilskiy hardware plant"	1704	210
34	Pindushi village	Republic of Karelia	JSC "Karelia DSP"	2489	353
35	Lakhdenpokh'ya	Republic of Karelia	*Lahdenpohskiy plywood mill "Bumex"*	3774	
36	Inta	Komi Republic	JSC "Mine"Intaugol'"	15353	179
37	Zheshart village	Komi Republic	CJSC "Zheshart Plywood Mill"	4648	1822
38	Vorkuta	Komi Republic	OJSC "Vorkutaugol'" (including OJSC "Mine Vorgashorskaya")	51598	6173
Category 3. Single-industry municipalities of the Northwestern Federal District (monotowns) with a stable socio-economic situation					
39	Severodvinsk	Arkhangelsk oblast	OJSC "PO "Sevmash"", OJSC "CS "Zvyozdochka"	100974	38601
40	Syas'stroy	Leningrad oblast	OJSC "Syas'sk Pulp and Paper Mill"	6948	1960
41	Severoonezhsk village	Arhangelsk oblast	OJSC "SOBR"	2498	447
42	Pechory	Pskov oblast	LLC "Euroceramics"	5148	839

Source: The table was compiled by the authors on the basis of statistics from municipalities, the Foundation for the Development of Single-Industry Towns, the SPARK system[8].

If we rely on the criteria of the Ministry of Regional Development of the Russian Federation, then a number of settlements included in the list of single-industry towns do not correspond to one or more criteria (Table 1). So, for example, only 17% of mono-cities of the Northwestern Federal District meets the first criterion (25% of the economically active population of a monotown should be employed in a city-forming enterprise): Zheshart (39.2%), Severodvinsk (38.2%), Zapolyarnyy (36.9 %), Kovdor (36.7%), Kirovsk (32.4%), Monchegorsk (29.0%), Syas'stroy (28.2%) and Pikalevo (24.9%). In most single-industry towns of the Northwestern Federal District (78.5%), the average indicator of the employed population in city-forming enterprises in relation to the economically active population is 14.7%. The list of single-industry towns also includes settlements where city-forming enterprises went bankrupt or suspended their activities (about 34% of the entire "red" zone). Thus, the urban-type settlement Krasnofarfornyy, the urban settlement of Lakhdenpokh'ya, the urban settlement of Pudozh, the cities of Pestovo and Nadvoitsy were virtually left without city-forming enterprises.

In 2015, a new support tool was proposed for single-industry towns in the form of the opportunity to create zones with a special tax regime and mandatory payments from extra-budgetary funds on their territory, the so-called territories of advanced socio-economic develop-

[8] Enterprises that are either in the stage of bankruptcy or liquidated as of 01 January 2020 are italicized in the table.

ment (TASED or TOR). There are 11 such zones in the NWFD. Information on residents and the number of jobs created by them is presented in Table 2.

Table 2

Data on the number of residents and jobs in the TASED NWFD, 2020

Subject of TASED	Resident name	Number of jobs provided by residents
Cherepovets city	LLC "Bakery" Schaslivochnaya" (former short name of the resident of LLC "YugFinance") LLC "Mechanica" LLC "Fibroplit" LLC "ChTK "Novy" LLC "TD "Russian Tea" LLC "ChSZ" LLC "ChMK" LLC "Plant NARTIS" LLC "CHEK" LLC "Technoperspektiva" LLC "Teplovoy Element" LLC "Vologda Milk Plant" LLC "Stroy Beton"	430
Nadvoitsy city	LLC "Russian Radiator" LLC "TDM" LLC "Spetskroy" LLC "KU Data Center" LLC "Nadvoitskiy carborundum plant"	181
Pikalevo city	LLC "PITEK" LLC "RemAvtoPik" LLC "F. Skrupskoy"	175
Kirovsk city	JSC "PO" Complex " LLC "NITRO SIBERIA ZAPOLARE" LLC "Reman" LLC "UMPTEK" JSC "PO" Complex" LLC "TG Service"	120
Kostomuksha city	LLC "Laplandia Trans" LLC "INVEST GROUP" LLC "BORYU" LLC "NS ENGINEERING"	93
Borovichi city	LLC "Vilina"	89
Uglovka settlement	LLC "Valdai cosmetics" LLC "SIL-Plast"	52
Kondopoga city	LLC "KLEZ-Astar" LLC "TKK-T"	36
Emva settlement	LLC "LesServicePlus"	26
Onega city	LLC "RodArktur"	19
Pechory city	-	-

Source: The table was compiled on the basis of data from the SPARK system, the Foundation for the Development of Single-Industry Towns, the official websites of the administrations of single-industry settlements.

As follows from the table 3, TASED includes the monotowns of the Republic of Karelia, where it has been possible to create about 300 new jobs, but the question how much this meets the needs of settlements in the field of employment of the population remains open. The most successful project in the Northwestern Federal District, according to the estimates of the Foundation for Single-Industry Towns of the Russian Federation, is the single-industry town of Cherepo-

vets: the territory has achieved significant success in diversifying the spheres of economic activity and moving away from mono-dependence of city-forming enterprises. TASED of Cherepovets accommodates 13 active residents, and the maximum number of jobs has been created here in relation to other TASED zones in the Northwestern Federal District. As follows from the table, residents cannot meet the employment needs of most single-industry towns.

Thus, we can see that an important part of the existing survival practices of the mono-urban population is slipping away from official statistics. This serious limitation also has its consequences in the process of making management decisions. As shown above, even taking into account the existing list of single-industry settlements, most of them simply do not meet the stated criteria. This problem is extrapolated to settlements that, for some reason, do not fall into the lists of single-industry towns, while having all the necessary set of criteria, for example: the city of Boksitogorsk (Leningrad oblast), the city of Apatity (Murmansk oblast), and others. Getting on the "list" is weakly correlated with the normatively defined criteria.

Looking from below: the role of spontaneous socio-economic practices

The gradual decline in the economic importance of the city-forming enterprises led to serious consequences of a crisis, from which the residents of single-industry towns emerged in different ways. The capitalist reality of the 1990s turned out to be more alien and difficult to overcome for them than in settlements of another type. Special economic, political, social conditions, a special territorial identity have developed here, which have been interpreted in the works of such researchers as Chirikova A.E., Ledyaev V.G. [29], Kotov A.V. [12], Pilyasov A.N. [30], Davydov D.A. [31], Karbainov N.I., Nedoseka E.V. [1], Zhigunova G.V. [32] and others.

Transformational processes of the 1990s affected the state of mono-profile towns in different ways: in most cases, city-forming enterprises continued to function, which to a certain extent supported the illusion of relative stability. The processes of privatization, change of owners, sales markets and re-profiling of production, although alarming, were not comparable to the closure of the entire enterprise.

As part of our empirical study, a survey among representatives of municipal authorities (heads of administrations, deputy heads for various issues, deputies of city councils) was carried out. The main problems of realizing the economic potential of the studied territories, according to the informants, were:

- unattractiveness of the territories for young people — as the main resource of the settlements. The respondents indicated that young people, seeing difficulties in self-realization due to limited opportunities to obtain the desired level of education, medical care, profession, as well as to satisfy their cultural needs, do not consider the territory of their native settlement as a promising place. Indeed, this assumption finds its confirmation in the data of official statistics. Data on the migration loss are presented in table 3.

Table 3

Migration decline in the population of single-industry settlements in the Northwestern Federal District from 2000 to 2020

№	Settlement name	% of migration loss from 2000 to 2020	№	Settlement name	% of migration loss from 2000 to 2020
1	Cherepovets	-3%	22	Pikalevo	-23%
2	Kostomuksha	-7%	23	Zapolyarnyy	-23%
3	Pestovo	-9%	24	Segezha	-25%
4	Vyartsilya	-9%	25	Parfino	-25%
5	Pos. Oktyabr'skiy	-10%	26	Kirovsk	-25%
6	Sokol	-13%	27	Olenegorsk	-25%
7	Novodvinsk	-13%	28	Onega	-26%
8	Syas'stroy	-13%	29	Emva	-26%
9	Severoonezhsk	-16%	30	Zheshart	-29%
10	Pindushi	-18%	31	Krasavino	-29%
11	Krasnofarfornyy	-19%	32	Pitkyaranta	-30%
12	Pudozh	-19%	33	Kovdor	-32%
13	Koryazhma	-19%	34	Lakhdenpokh'ya	-32%
14	Slantsy	-20%	35	Kizema	-32%
15	Borovichi	-20%	36	Muezerskiy	-33%
16	Severodvinsk	-21%	37	Nikel'	-33%
17	Kondopoga	-21%	38	Pechory	-34%
18	Monchegorsk	-21%	39	Nadvoitsy	-35%
19	Revda	-22%	40	Uglovka	-37%
20	Suoyarvi	-23%	41	Vorkuta	-41%
21	Sazonovo	23%	42	Inta	-51%

Source: UISIS data

According to informants' estimates, one of the most active migration groups is youth from 16 to 25 years old. The informants indicated human capital loss in the territories of their settlements. With regard to the ongoing optimization of social institutions, the number of social infrastructures (schools, hospitals, cultural and sports institutions) is constantly declining or disappearing. An important methodological note is that only the "tip of the iceberg" is included in the official statistics, as the informants noted, it is not possible to estimate the real migration losses of the population due to fixing only the registration rates at the place of residence. Thus, about 1.5 thousand of the economically active population of Pikalevo city work outside the settlement.

With regard to social infrastructure facilities in monotowns, the memory of the decisive financial role of the city-forming enterprise in maintaining these institutions is still fresh. Even with a stable financial situation of enterprises, social initiatives are usually directed at workers in city-forming enterprises, which aggravates inequality in single-industry towns. The heads of municipalities pointed to a rather weak connection with the management of enterprises, pointing out their real inaccessibility, since most decision-makers do not live in the territory of the settlement, as well as insignificant interest in dialogue with the municipal authorities. New company owners are interested in efficiency and profit, the only connection with the regional society is the assessment

of the population in terms of an effective or ineffective labor force. In this sense, the case of one of the monotowns of the Republic of Karelia is interesting, where a conflict of interests arose related to attracting shift workers to the city-forming enterprise, to whom the company provided housing and jobs (thereby avoiding taxes and additional northern payments, according to informants), practically ignoring the resources of the local population. According to the head of the administration, this issue was directly resolved with the company's management, as it led to a serious aggravation of the situation in the town[9].

- limited opportunities in decision making. Substantial dependence on the verticals — regional and federal authorities. These restrictions, according to representatives of municipalities, significantly affect the volume of budgets (this is especially typical for settlements with actively operating enterprises) and powers. We noticed that the relationship between the budget and the fundamental quality of life of the settlement was not found: the average budget of a single-industry town of about 20-25 thousand people is about 90 million rubles, the budget of Koryazhma is fundamentally different, which in 2019 was 1,1 billion rubles. It should be noted here that most of the budgets of single-industry settlements in the Northwestern Federal District remain deficient.
- low entrepreneurial activity of the population. According to the informants, the existing system of grants is poorly justified. Thus, grantees are mainly focused on the implementation of projects in the service sector in those segments of the economy that are not significant and promising due to market saturation. As a rule, these are hairdressing and numerous educational services. An important remark from the side of the informants was an indication of the proliferation of regional and federal trade networks, in comparison with which individual entrepreneurship cannot withstand competition.
- lack of offers from potential residents. The search for residents and the selection of existing proposals according to the criteria of compliance with the TASED is a serious obstacle to the realization of the economic potential of the territories. Despite a number of preferences that TASED promises in the field of financial support and a special tax regime, not all organizations, even those that started working in the zone, were able to use them in full.

Nevertheless, despite the statistics of settlements that are far from optimistic economic indicators, within the framework of our empirical study, we were able to identify the following strategies for adapting the population of single-industry towns in North-West Russia to new socio-economic conditions, which are spontaneous grassroots survival practices.

1. Migration for seasonal work or rotational work. A common strategy for survival in the post-Soviet economic conditions, especially for residents of small towns, is seasonal work [25]. The

[9] For ethical reasons, the article does not include the name of the monotown and the city-forming company.

results of our empirical study also showed that a significant part of the residents of single-industry towns began to leave in search of work in large cities (in the North-West of Russia, primarily to Saint Petersburg) and to the "North".

2. Circular migration within spontaneous local agglomerations. The creation of spontaneous local agglomerations is a common practice for settlements of this type. They are, for example, Boksitogorsk, Pikalevo, Tikhvin in the Leningrad oblast; Segezha, Nadvoitsy and Kondopoga with Petrozavodsk in the Republic of Karelia; Monchegorsk, Apatity, Kirovsk in the Murmansk oblast, etc. The circulation of the labor force within the local agglomerations is a characteristic feature of the everyday life of single-industry towns. Such satellite towns, located in close proximity either from each other, or at a relative distance from the regional or district center, are in a more stable position in relation to isolated settlements. So, for example, Krasavino, Inta, the villages of Sazonovo, Krasnofarfornyy, Pindushi, Severoonezhsk do not have a developed infrastructure [33, Golivtsova N.N., p. 14], which greatly aggravates the socio-economic situation of the settlements. The emerging local agglomerations play an important economic and leisure role in the life of satellite territories. The discrepancy between the place of residence and place of work is a fairly common practice, under which entire market segments (renting out housing, private taxi, etc.) are actively formed and operate successfully.

3. Distributed lifestyle. An important survival strategy both for Russians in general and for residents of single-industry towns in particular has become what Simon Kordonskiy calls "a distributed lifestyle" [27]. As S. Kordonskiy notes: "The life of most families in Russia is divided between a city apartment, a summer residence, a cellar, a barn and a garage. Most often, a family in an ordinary city has a city apartment, a dacha house with a plot of land in a suburb or village, a bathhouse, a poultry house (pigsty, cowshed), a cellar (shed) in the city where food products produced at the "dacha" are stored, a car (and a garage), the main function of which is to provide communication between a city apartment and a summer cottage. The garage can be combined with a cellar (shed). In the village, the functions of a house and a summer residence are combined, and there is — except for the garden plot — also mowing, land "for potatoes", as well as forest and river lands used under unclear conditions" [27, Kordonskiy S.G., p. 23]. A distributed lifestyle began to take shape in single-industry towns back in Soviet times, but it flourished especially in the 1990s. Many residents of single-industry towns have, in addition to city apartments, summer cottages both in the suburban area, and in neighboring villages. For example, some residents of Pikalevo buy houses in the villages of the Boksitogorsk region and use them either as a dacha or as their main place of residence. In the latter case, they explain that there is a bad ecological situation in Pikalevo, while in the village "air is clean". Vegetables and even pigs, poultry and other animals are grown at dachas and in village farmsteads. For truck farming, plots of land are also used right next to the apartment buildings. We saw such a picture in Luchki, a suburb of Slantsy. Small vegetable gardens were planted right next to the houses. An interesting example of a distributed

lifestyle is in Syas'stroy. Residents of damaged houses were relocated to new houses, and they built sheds on the illegally seized land near their new homes.

4. Informal economy. Informal economies play an important role in the life of single-industry towns. They are, for example, private taxi service, private repairs and construction works, tutoring, and so on. Residents of single-industry towns are also involved in such spheres of the informal economy as gathering, hunting, fishing and others. Clearly, in most cases, these incomes are not taxed.

An important note is that the socio-cultural and economic space of the monotowns of the Northwestern Federal District is not homogeneous, these are very different settlements, which can be divided into three main groups: 1. Monotowns of the Arctic zone of the Russian Federation, the obvious specificity is the remoteness and inaccessibility of settlements, and weak embeddedness. The strategies of migration for seasonal work and rotational work methods are most evident here. 2. Monotowns of the Leningrad oblast, where the proximity of St. Petersburg is a key characteristic that determines the strength of agglomeration trends, where circular migration is a common practice. 3. Single-industry towns located in the Vologda oblast, Novgorod oblast and the southern part of the Arkhangelsk oblast, are characterized by a high embeddedness of the population, which manifests itself in the active use of the potential of the territories through tourism and a distributive lifestyle.

Conclusion

Thus, the criteria for classifying settlements as single-industry towns does not correspond to the reality (the average level of employment of the economically active population at the city-forming enterprises does not meet the 25% level stated in the criteria, and on average does not exceed 15%). It is important to note that city-forming enterprises in a significant number of settlements in the red zone are "dead souls" that are in the stage of bankruptcy or liquidated. Attempts to diversify employment through the introduction of zones of special economic and tax regimes, as evidenced by the data, is a long-term measure. The number of new jobs, even in the aggregate, is far from the real needs of the population of single-industry towns. The termination of work or a decrease in the volume of production of a city-forming enterprise, as well as a reduction in the number of employees at these enterprises, do not lead to the "death" of single-industry towns. The data of empirical research showed that representatives of the administrations of single-industry towns are clearly oriented in the main problems of settlements, but limited powers in decision-making leave them hostages of situations where adherence to the formality of instructions and regulations does not correlate in any way with an improvement in the quality of settlements life, since the remaining residents of these settlements were able to adapt to new social and economic conditions. The results of the interviews and included observations allowed us to determine survival strategies, grassroots practices of the population, which spontaneously integrates into the new economic realities that rarely fall into the management vision.

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Trust in Ultima Thules: Social Capital and Renewable Energy Development in Iceland and Greenland *

© Aliaksei PATONIA, MPP, MSc
Email: aliaksei.patonia@oxfordenergy.org; zerbstalex@gmail.com
Oxford Institute for Energy Studies, Oxford, United Kingdom

Abstract. Iceland — an independent republic — and Greenland — an autonomous country within Denmark — represent two nations with similar geographical, economic, and historical backgrounds. Isolated from the continents, both are significantly affected by an adverse climate, making their economies dependent on trade and import. Nevertheless, despite their similarities, their national energy patterns differ substantially. Specifically, Iceland covers most of its energy mix with local renewables, whereas Greenland meets most of the energy demand with imported hydrocarbons. This paper investigates the reasons for Greenland lagging behind Iceland in terms of developing renewable energy resources. It hypothesises that, apart from the commonly-mentioned geographical, institutional, and cultural factors, the difference in social capital level has significantly contributed to the countries' divergent energy strategies. In this sense, Iceland's higher social capital stock stimulates its renewable power progress, whereas Greenland's lower social capital level hampers it. To examine this hypothesis, the article constructs a 'social capital tripod', which assumes specific geographical, institutional, and cultural factors to be linked to renewable energy development through social capital. The findings demonstrate that Greenland, being dependent on hydrocarbon import, has a significantly lower expected level of social capital than Iceland, which runs mostly on renewables, therefore generally aligning with the research hypothesis.
Keywords: *Iceland, Greenland, renewable energy, social capital, geography, institution, culture.*

Introduction

Iceland – an island country located at the juncture of the Arctic and Atlantic Oceans, with an area of about 103,000 km^2 and an approximate population of 335,000 – is considered Europe's least densely-populated country[1]. Similarly, placed in the same region between the Atlantic and Arctic Oceans, Greenland possesses an immense territory of 2,166,086 km^2 with about 56,500 inhabitants and thus is regarded as the most sparsely-populated country in the world[2]. With adverse climates and a significant percentage of their territories covered with glaciers, agricultural activities in both countries are limited, pushing most settlements closer to the coastline. As a result, the Icelandic Norse population historically developed fishing, while the Greenlandic Inuit one focused on marine mammal hunting, with both activities taking a significant share of their modern economies.

According to Kristjansdottir [1, Kristjansdottir H.], Greenland and Iceland's specific geographical features have affected their historical and economic development. In the opinion of Hart [2, Hart G.], remote location and adverse climate significantly contributed to isolation, preventing

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[1] Statistics Iceland. Mannfjöldaþróun 2018 [Population Development 2018]. URL: file://cfs/users/aip4/Documents/Downloads/download.pdf (accessed 17 July 2019).
[2] Statistics Greenland. Population. URL: http://www.stat.gl/dialog/topmain.asp?lang=en&subject=Population&sc=BE (accessed 06 July 2019).

countries and territories from being reached by goods and technologies. Thus, in the opinion of Kristjansdottir [1, Kristjansdottir H.], both nations used to be some of the least economically developed, with the mentioned traditional activities prevailing before a period of modernization after the Second World War (*WWII*) spurred economic and population growth. This period also corresponded with Iceland's obtainment of fully-fledged independence, moving from a Danish colony with limited home rule to a modern democratic republic[3]. Similarly, according to Gad [3, Gad U.], Greenland's shift towards independence from Denmark started in the early post-war period and led to the establishment of the national government (*Naalakkersuisut*). Hence, both countries have significant geographical, cultural, economic, and governmental similarities.

Despite these similarities, Iceland and Greenland's energy patterns are completely different. Currently, Iceland's energy mix is mostly comprised of locally-generated electricity and heat, with a small amount of hydrocarbons imported primarily for transportation purposes[4]. According to *Orkustofnun* [4, Orkustofnun], the National Energy Authority of Iceland, three quarters of the national electrical power is produced by Iceland's hydroelectric plants, leaving the remaining part to local geothermal stations. Greenland's energy mix, in contrast, relies mostly on imported oil and gas, since, in the opinion of Gad [3, Gad U.], the country's few hydropower and waste incineration plants are unable to meet local needs. Indeed, most of the country's total energy consumption consists of foreign hydrocarbons, leaving less than 20 percent to nationally-generated power[5]. Thus, despite significant similarities, Iceland and Greenland paradoxically demonstrate opposite renewable energy development trends.

Aim, objectives, and research hypothesis

As seen above, renewable energy development patterns in Iceland and Greenland differ significantly. Here, producing most of its power from renewables, Iceland represents an almost unique sustainable paragon. In contrast, generating some renewable energy with its small-scale hydroelectric plants, Greenland is still primarily dependent on imported hydrocarbons[6]. In this respect, the *aim* of this research is to investigate why, despite all the similarities, Greenland is not developing renewables as actively as Iceland.

Attempting to explain the reasons behind the divergence in the two countries' energy strategies by means of geographical, institutional, or cultural factors, traditional theories demonstrate significant shortcomings. This article thus views *social capital* as an alternative prerequisite for renewable energy development that might incorporate the advantages of the geography, institution, and culture paradigms. In particular, demonstrating the positive influence of substantial

[3] Witherall R. From Fish to Aluminium: Iceland Turns Attention to Energy Intensive Industries. *Aluminium Today*, 1998, vol. 10, iss. 5, pp. 1-32.
[4] Smiths C., Justinussen J., Bertelsen R. Human Capital Development and a Social License to Operate: Example from Arctic Energy Development in the Faroes Islands, Iceland and Greenland. *Arctic Energy*, 2016, 1 (1), pp. 122-131.
[5] Statistics Greenland. Greenland in figures 2018. URL: http://www.stat.gl/publ/en/GF/2017/pdf/Greenland%20in%20Figures%202017.pdf (accessed 21 August 2019).
[6] Taagholt J., Brooks K. Mineral Riches: A Route to Greenland's Independence. *Polar Record*, 2016, 52 (3), pp. 360-371.

social capital stock on renewable energy development described in the previous research, the paper assumes geographical, institutional, and cultural traits to be proxy indicators of social capital, and thus potential barometers of national renewable energy development. It thus *hypothesises* that low levels of social capital in Greenland and high levels in Iceland contribute to the limited renewable power progress in the former, and extensive power progress in the latter.

To examine this, the article's key *objective* is *to estimate the social capital stock in each of the countries and compare them*. However, generally describing social capital as a form of capital utilising social relations for the achievement of specific advantages, Inaba [5, Inaba Y.] acknowledges the breadth of this notion. Hence, to avoid ambiguity in accomplishing the research aim, the paper has a further *objective*: to *generate its definition by identifying its key components*. Presuming that specific geographical, institutional, and cultural features influence the components of social capital differently, the research strives to *examine which of these features can influence the defined social capital components and in what way.* Finally, *to measure the current magnitude of these proxy indicators*, the article also estimates social capital levels in Iceland and Greenland..

Outline

To achieve its aim, the research first reviews the key theoretical frameworks, attempting to explain the renewable energy disparity of Iceland and Greenland – i.e. the geography, institutions, and culture hypotheses. Having identified their key advantages, it then demonstrates the inability of any of them to fully clarify reasons for difference in energy development between the viewed countries. With such a conceptual gap, the research subsequently introduces the concept of social capital, arguing that it can become a junction between the geographical, institutional, and cultural approaches, on the one hand, and renewable energy progress, on the other, ultimately forming a 'social capital tripod'.

Due to the complexity of the notion of social capital, the study's next section discovers the key social capital components and incorporates them into the definition elaborated for this paper. Then, these components are aligned with the geographical, institutional, and cultural proxies so that the 'social capital matrix' is formed. This 'matrix' is then used to analyse Icelandic and Greenlandic social capital stock. Specifically, comparing the countries' geographical, institutional, and cultural indicators, the research estimates the ultimate social capital level in each. Subsequently, comparing the expected social capital levels in Iceland and Greenland, the research provides evidence to either support or refute the research hypothesis.

In the final part, the paper demonstrates the possibility for the 'social capital tripod' to be further utilised in the analysis of current and estimated future renewable energy trends, potentially explaining renewable energy development failure in areas suitable for its development. Apart from showing the advantages of the concept, the final part also defines its significant limitations and presents an alternative theory, attempting to explain the energy situation in Iceland and

Greenland. In conclusion, the research provides suggestions for further improvement of the 'tripod' approach.

Literature review

Classical theoretical frameworks. According to Acemoglu [6, Acemoglu D., p.27], 'the two main candidates to explain the fundamental causes of differences in prosperity between countries are geography and institutions'. Specifically, the institutions hypothesis' proponents ascribe societal success to the presence of 'good institutions that encourage investment in machinery, human capital, and better technology' [ibid, p.28]. Here, Acemoglu and Robinson [7, Acemoglu D. and Robinson J.] recall the Democratic Republic of Congo – a poor country with abundant natural resources, but malfunctioning institutions. Alternatively, supporters of the geography paradigm assume that 'not only can unfavourable geography cripple states; it can also slow the development and diffusion of technology' [8, Sachs Sachs J., p. 145]. To illustrate these tenets, the case of dry sub-Saharan Africa is mentioned by such researchers as Diamond[7]. Due to the existence of real-life examples supporting both frameworks, there is major 'ongoing debate in the growth empirics literature: the "institutions vs. geography" debate' [9, Kourtellos A., Stengos T., and Tan C., p.1].

To reconcile the theories, an alternative approach was introduced: developing the ideas of Weber on the Protestant ethic fostering economic progress, Shi et al [10, Shi S. et al, p. 281] highlighted *culture*'s importance for national development, suggesting, that 'commercial culture has a significantly positive impact on economic performance'. Trying to bridge the gaps of geographical and institutional approaches, this *cultural hypothesis* adds the element of personalisation, complementing the previous frameworks and presenting researchers with a third option for the analysis of national development. Since, according to Moe [11, Moe E., p. 1730], 'there is a strong and well-documented correlation between energy… and economic growth and development', energy development is usually examined against these theories. This paper thus investigates renewable energy progress in Iceland and Greenland with respect to these three frameworks.

Geography. When applied to the energy development of Greenland and Iceland, the geography hypothesis traditionally ascribes the success of Iceland's renewable energy strategy to its geographical uniqueness. Specifically, according to Kristjansdottir [1, Kristjansdottir H., p. 43], 'in most parts of Iceland it is possible to find geothermal resources', which makes this energy source suitable for use in many sectors: e.g. municipal heating, electricity generation, agriculture, and aquaculture. That is why this source currently provides about 66 percent of Iceland's primary energy supply[8]. In the opinion of Gudmundsson [12, Gudmundsson J., p.127], this is because 'Iceland is probably unique in its geothermal potential', as it is one of the most tectonically active places on the planet, located on the border of the North American and Eurasian tectonic plates.

[7] Diamond J. Guns, Germs, and Steel: *The Fates of Human Societies*. New York, W.W. Northon & Company, 1999.
[8] Arnorsson S., Axelsson G., Saemundsson K. Geothermal Systems in Iceland. *Jokull*, 2008, 58 (1), pp. 269-302.

In contrast, Greenland is entirely placed on the North American Plate and does not have equally powerful geothermal fields. As the research of Franco, Fettweis, and Erpicum [13, Franco B., Fettweis H., and Erpicum M.] shows, most Greenlandic springs generate water of low or medium temperature (below 60°C), hampering their industrial utilisation. Additionally, according to Stevens, Alley, and Parizek [14, Stevens N., Alley R., and Parizek B.], Greenland's full geothermal potential cannot be utilised, since most of its fields are currently covered by the Greenlandic ice sheet (about 80 percent of the island's territory). Thus, though Iceland and Greenland have similar locations, their physical geography differs significantly enough not to allow the latter to develop geothermal energy.

Despite representing arguments highlighting the uniqueness of Icelandic geothermal development, the traditional geography hypothesis does not explain why Greenland does not develop alternative green energy sources. In the opinion of Partl [15, Partl R., p. 544], 'the enormous mass of ice covering Greenland, combined with steep mountain gradients to the sea, makes hydropower a promising resource'. Specifically, the island's total hydropower capability is estimated at between 100 GW and 1 TW, 'not only satisfy[ing] the energy needs of Greenland itself, but… also allow[ing] for large-scale energy export'[9]. Thus, despite the lack of industrially exploitable geothermal fields, Greenland could potentially cover its energy demand with hydroelectric power, popular in the Nordic countries.

In fact, most of the electricity generated in Norway and Iceland comes from hydropower plants; indeed, estimate about 98 percent of Norwegian electricity is estimated to be generated by water[10]. Similarly, about 75.5 percent of Icelandic electricity is produced by the same means, leaving the remaining 24.5 percent to geothermal sources [4, Orkustofnun]. This covers most of the primary energy consumption in both countries[11]. In Greenland, however, about 80 percent of the consumed energy still comes from imported hydrocarbons[12]. Given the nation's extreme demand for its own energy sources, lack of conditions for geothermal development cannot explain failure to utilise geographical advantages favouring hydroelectric power. Thus, traditional tenets of the *geography hypothesis* do not reflect Greenland's complex energy situation.

Institutions. Proponents of the institutions hypothesis view Iceland's renewable energy success through the prism of coordinated national energy policy that integrated all the country's power producers and consumers into one system. Indeed, the development of all energy-related projects in Iceland is regulated by the governmentally-developed Master Plan for Hydro and Geothermal Energy Resources (Master Plan) introduced in 1999, 'modelled on the Norwegian Master

[9] La Roche. The Greenland Hydropower as a Source of Electrolytic Hydrogen. *International Journal of Hydrogen Energy*, 1977, 2 (4), pp. 405-411.
[10] Birkedal M., Bolkesjø T. Determinants of Regulated Hydropower Supply in Norway. *Energy Procedia*, 2016, 87 (1), pp. 11-18.
[11] Sovacool B. Contestation, Contingency, and Justice in the Nordic Low-Carbon Energy Transition. *Energy Policy*, 2017, 102 (1), pp. 569-582.
[12] Statistics Greenland. Greenland in figures 2018. URL: http://www.stat.gl/publ/en/GF/2017/pdf/Greenland%20in%20Figures%202017.pdf (accessed 21 August 2019).

Plan for Water Resources' and originally set up for preliminary evaluation of the impact of the suggested energy undertakings[13]. Incorporating all separate energy-producing and consuming entities into the unified grid controlled by the national transmission operator Landsnet, the Master Plan became the main document managing Icelandic national energy development[14].

In contrast to Iceland, Greenland's energy development strategy is defined by the '*Kingdom of Denmark Strategy for the Arctic 2011-2020*' (hereinafter 'Strategy') elaborated by the Danish Government for Denmark itself, Greenland, and the Faroe Islands[15]. Having identified the main areas of concern in the region, the Strategy section on Greenland mostly covers mineral exploration and extraction. In the opinion of Wilson [16, Wilson E.], this document generally repeated the provisions of the Mineral Strategy of Greenland 2004 later included in Greenland's oil and mineral strategy 2014–2018. According to the researcher, although these two documents were initiated and adopted by Naalakkersuisut, they focus solely on minerals and do not cover renewables [ibid].

Such an insufficient presence of the renewable energy question on the national agenda is described by proponents of the *institutions hypothesis* to be the direct consequence of the absence of Greenlandic statehood – i.e. dependence on Denmark. According to Lyck and Taagholt [17, Lyck L., Taagholt J., p. 59], this political reliance is greatly augmented by the economic one – 'capital inflow from Denmark' in the form of government support for the island's scattered settlements. In the opinion of the researchers, Naalakkersuisut may have failed to prioritise the development of national energy strategy due to lack of internal funding.

In addition to the lack of national energy development strategy, Greenland's state-controlled national grid does not connect all households to the state energy producers (e.g. the five existing hydroelectric power plants), offering half of the population the option to generate energy by incinerating waste or imported hydrocarbons[16]. Although this could potentially be explained by unfavourable geographic conditions, neither the geographic nor the institutions hypothesis explains why off-grid systems have not been actively developed in Greenland. In the opinion of Boute [18, Boute A., p. 1029], implementation of such energy solutions in isolated Arctic communities could 'reduce the economic, social and environmental cost of electricity supply'. Additionally, together with mineral endowment, this could augment Greenland's economic grounds for independence.

The Isle of Eigg in the Scottish Inner Hebrides vividly illustrates the success of an isolated island community that managed to cease energy dependence on imported hydrocarbons by investing in small-scale renewables. Although the island does not have any separate institutionally-supported energy development strategy, it meets all its demands, with solar, wind, and hydro-

[13] Thorhallsdottir T. Strategic Planning at the National Level: Evaluating and Ranking Energy Projects by Environmental Impact. *Environmental Impact Assessment Review*, 2007, 27 (6), p. 576.

[14] Orkustofnun. Master Plan for Hydro and Geothermal Energy Resources in Iceland. URL: http://www.nea.is/geothermal/master-plan/ (accessed 22 July 2019).

[15] Ministry of Foreign Affairs of Denmark. Kingdom of Denmark strategy for the Arctic 2011-2020. URL: http://um.dk/en/foreign-policy/the-arctic (accessed 21 July 2019).

[16] Nukissiorfiit. NukiFakta. URL: http://www.nukissiorfiit.gl/nukissiorfiit/?lang=da (accessed 18 September 2019).

power providing 'a reliable 24-h electricity supply to the islanders' [19, Chmiel Z., Bhattacharyya S., p. 578]. In Greenland, such small-scale solutions could be the most financially-feasible alternative[17].

Similarly to the Isle of Eigg, the fist renewable energy initiatives in Iceland were not started by the government. In fact, the first small-scale hydropower plant was built by a local entrepreneur about 20 years before the first governmental renewable energy project [1, Kristjansdottir H.]. Although Greenland's isolated communities may lack funds for such investments, they could have applied for financial support from the Danish block subsidy[18]. Hence, the *institutions hypothesis* and the absence of the national renewable energy strategy does not fully explain the country's situation.

Culture. The hypothesis attributing difference in energy development to culture mostly focuses on Greenlandic indigenous identity and consequent differences in traditional ways of living between the Icelandic Europeans and Greenlandic Inuit. Indeed, according to Corcoran et al [20, Corcoran P. et al, p. 106], 'the Inuit culture is the most pure hunting culture in existence'. Apart from reindeer, walrus, reindeer, seal, and narwhal hunting, fishing constitutes the biggest sector of the country's national economy[19]. In this respect, according to Mazza [21, Mazza , p. 319], energy development endangers 'the safety of both the existence of indigenous peoples and their right to preserve traditional cultures and differentiated economies'.

In contrast to Greenland, Iceland possesses a more diversified economy with more power-intensive industries. There, aluminium production was added to traditional fishing after WWII. In 2016 the Central Bank of Iceland stated that these two industries generated about half of the national income[20]. Additionally, most Icelanders are European descendants of Norse and Celts (about 96 percent), whereas most Greenlanders are indigenous Inuit (about 88 percent)[21]. This could determine the specifics of Greenland's development as a traditional society not requiring greater energy intensity, and not posing threat to their way of life. Alternatively, industrialised

Iceland would strive for energy-intensive production that does not endanger any industries.

Hansen et al, find mining, rather than renewable energy development, the major threat to traditional indigenous culture, as, due to its great scale and magnitude, it has caused 'dramatic changes to life and culture, not only at the local community level, but also to Greenland in general' [22, Hansen et al, p. 25]. Indeed, Greenland is extremely mineral-rich, with resources potentially

[17] NORDREGIO. Green Growth in Nordic Regions. URL: http://www.nordregio.se/Global/Green%20growth%20in%20Nordic%20regions%2050/NordicGreenGrowth-pages.pdf (accessed 18 October 2019).

[18] Smiths C., Justinussen J., Bertelsen R. Human Capital Development and a Social License to Operate: Example From Arctic Energy Development in the Faroes Islands, Iceland and Greenland. *Arctic Energy*, 2016, 1 (1), pp. 122-131.

[19] IIED. Energy and Minerals in Greenland. URL: http://pubs.iied.org/pdfs/ 16561IIED.pdf (accessed 19 January 2020).

[20] Central Bank of Iceland. Economy of Iceland. URL: https://www.cb.is/library/Skraarsafn---EN/Economy-of-Iceland/2016/Economy_of_Iceland_2016.pdf (accessed 19 December 2019).

[21] Statistics Iceland. Population by Sex, Municipality, Citizenship and Age: 1 January 1998-2017. URL: tp://px.hagstofa.is/pxen/pxweb/en/Ibuar/Ibuar__mannfjoldi__3_bakgrunnur__Rikisfang/MAN04208.px (accessed 06 December 2019) *and* Statistics Greenland. Greenland in figures 2018. URL: http://www.stat.gl/publ/en/GF/2017/pdf/Greenland%20in%20Figures%202017.pdf (accessed 21 August 2019).

extractable through open-pit mining[22]. As surface mining is an extremely large-scale undertaking, the currently existing small hydropower plants pose a significantly lower threat to the traditional indigenous way of life than the extractive activities affecting the region[23].

If Greenland finally initiates development of renewable energy projects, the threats and concerns for the indigenous communities, existing industries, and other stakeholders could be eliminated or minimised through strategic environmental assessment. Such a process is currently being implemented and regulated in Iceland by the Master Plan. For instance, after a thorough assessment process, Kárahnjúkar Hydropower Project was constructed in an area 'widely considered to be peripheral both geographically and economically' [23, Newson S., p. 162]. Since, the country has the lowest population density on the planet, most hydropower projects could have been constructed in isolated places, not threatening the indigenous way of living. As this has not been the case, the traditional tenets of the cultural hypothesis do not fully explain the situation.

Alternative approach: The social capital framework. As seen, although each of the traditional theories has some reasoned arguments in favour of its specifically-highlighted factors (geography, institutions or culture), none of them flawlessly explains Greenland's passive renewable energy development. Here, an alternative approach could potentially develop their advantages and integrate them into a single, more comprehensive framework. This paper argues that the theory of social capital could bridge these three paradigms, ultimately connecting them to the prospects of renewable energy development.

According to Hauberer, the social capital concept was first introduced in the nineteenth century and significantly developed in the 1980s by Bordieu and Coleman who first 'systematically' used it [24, Hauberer J., p. 35]. Generally described as 'resources embedded in relationships among actors', the concept represents a broad framework uniting personal motivation for cooperation and productive results of such interactions [ibid, p.50]. Though most papers on this topic relate it to the political dimension and investigate its effect on civil society and peoples' interactions with the government, several pieces of recent research align this notion with sustainability.

In their exploration of social capital's agricultural impact, McShane et al find it 'important for farming sustainability' [25, McShane C. et al, p. 154]. Later, investigating people's reaction towards pro-environmental policies of the government, Cilona finds social capital 'certainly an important element to develop and to support sustainable policies' [26, Cilona T., p. 219]. In addition, Nanetti and Holguin conclude that social capital 'facilitates the pursuit of sustainable development' [27, Nanetti R., Holguin C., p. 7]. Thus, assuming renewable energy to be part of broader sustainable development, high level of social capital could be aligned with greater prospects for renewable power progress. Since the geography, institutions, and cultural hypotheses per se fail to explain the current renewable energy situation in Iceland and Greenland, this article fills this conceptual

[22] IIED. Energy and Minerals in Greenland. URL: http://pubs.iied.org/pdfs/ 16561IIED.pdf (accessed 19 January 2020).
[23] Rasmussen R. Formal Economy, Renewable Resources and Structural Change in West Greenland. *Groupe d'Etudes Inuit et Circumpolaires (GETIC) et l'Association Inuksiutiit katimajiit inc.,* 2000, 24 (1), pp. 41-78.

gap by integrating these frameworks into the concept of social capital ultimately affecting renewable energy development.

Social capital: Literature gap and integration of geography, institutions, and culture. As described, this study combines the traditional theories related to renewable energy production through the social capital framework. Although separate papers represented above have already linked specific tenets of each to this form of capital, a comprehensive study aligning all three under one umbrella theory is lacking. That is why this research bridges this literature gap, forming the 'social capital tripod', which is subsequently aligned with renewable energy development by the already-established links described above (see Fig. 1).

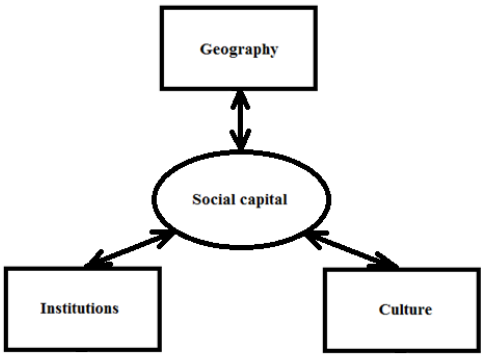

Fig. 1. Social capital tripod

Regarding the geography hypothesis, some conditions related to the *socio-geographical dimension* are assumed to significantly affect social capital. Specifically, Johnston, Karageorgis, and Light [28, Johnston M., Karageorgis S., Light I., p. 1479] highlight *population growth* as a 'powerful contributor to social capital'. Similarly, studying population decline in the Netherlands, Elshof and Bailey [29, Elshof H., Bailey A., p.73] suggest that 'it is likely that consequences of population decline impede on preconditions for social capital'. Thus, it could be implied that diverging population indicators have different effects on social capital in Iceland and Greenland.

In addition to population growth, some researchers mention *distance* and *discontiguity between settlements* as an alternative set of factors negatively influencing social capital stock. Indeed, as the results of the research conducted by Westlund, Rutten, and Boekema [30, Westlund H., Rutten R., Boekema F., p. 965] show, 'social capital diminishes continuously with distance'. That is why investment in infrastructure appears to be important because 'borders and barriers make distance discontiguous and… social capital is affected by these discontinuities' [ibid, p. 966]. It could thus be assumed that potentially more discontiguous Greenland has lower level of social capital than presumably better-connected Iceland.

Despite the shortcomings of the traditional tenets of the *institutions hypothesis*, this framework is also aligned with social capital through the effect of institutions on societal health and wellbeing. This is because violence and social capital have 'the opposite direction of associa-

tion'[24]. Specifically, according to Rosenfeld, Messner, and Baumer [31, Rosenfeld R., Messner S., Beumer, E., p. 283], the role of law enforcement agencies is important, as 'depleted social capital is associated with high levels of *homicide'*. Hence, if found, a higher number of homicides in Greenland in comparison to Iceland could potentially indicate its lower social capital level.

In addition to homicides, Recker and Moore [32, Recker N., Moore M., p. 78] also imply that countries with 'higher rates of social capital, diversity, and population density experience lower *suicide rates*'. In this connection, suicide rates are an important indicator of the inefficiency of governmental institutions potentially affected by 'reduced funding for mental health services and reduced donations to community charitable support organization'[25]. Thus, another indication of different levels of social capital in Iceland and Greenland could be their diverging suicide indicators.

Finally, the *cultural hypothesis* could potentially be connected to social capital and explain the differences in Icelandic and Greenlandic renewable energy patterns by means of two specific characteristics: *alcohol consumption* and *migration traits of the population*. In the first case, extreme *alcohol consumption* is 'strongly associated with reduced indicators of social capital'[26]. Here, cultural traits are mostly associated with the Inuit people traditionally having low alcohol tolerance, usually leading to 'sharply increasing levels' of consumption[27]. At the same time, social capital is 'positively associated with the probability of regular, but not binge drinking'[28]. Thus, if Greenland's alcohol consumption is significantly higher than Iceland's, this could indicate lower Greenlandic social capital. Alternatively, medium-level consumption would potentially be associated with its high stock.

With regard to the *migration traits*, Spina [33, Spina N., p.1] finds out-migration 'a threat to social capital in sending communities'. In this respect, traditional nomadic and semi-nomadic communities are assumed to have lower levels of social capital due to seasonal population movements[29]. Thus, identifying nomadic traits within Greenland and Iceland could provide information for evaluating their respective social capital levels, with the one possessing stronger nomadic traits having presumably lower social capital stock and vice versa.

Social capital: Definitions and main components. Although the notion of social capital has become popular in recent decades, it is still a broad concept, with different researchers understanding its main traits differently. Hence, Lin, Fu, and Hsung assume that 'without a clear concep-

[24] Dinesen C. et al. Violence and Social Capital in Post-Conflict Guatemala. *Pan American Journal of Public Health*, 2013, 34 (3), p. 162.
[25] Hawton K., Haw C. Economic Recession and Suicide: The Association is Clear but Government Response May Limit Its Extent. *British Medical Journal*, 2013, 347 (79), p. 9.
[26] Theall K. Social Capital and the Neighbourhood Alcohol Environment. *Health and Place*, 2009, 15 (1), p. 323.
[27] Aage H. Alcohol in Greenland 1951-2010: Consumption, Mortality, Prices. *International Journal of Circumpolar Health*, 2012, 71 (1), p. 2.
[28] Koutra K. Social Capital and Regular Alcohol Use and Binge Drinking in Adolescence: a Cross-Sectional Study in Greece. *Drugs-Education Prevention and Policy*, 2014, 21 (4), p. 299.
[29] Petersen R. *Settlements, Kinship and Hunting Grounds in Traditional Greenland: a Comparative Study of Local Experiences from Upernavik and Ammassalik*. Copenhagen, Danish Polar Center, 2003.

tualization, social capital may soon become a catch-all term broadly used in reference to anything that is "social"' [24, Hauberer J., p. 34]. In order not to be misled, this paper conducts a comparative analysis of the most-used definitions of social capital in academic literature, then identifying the main components of this concept and presenting an alternative definition, used in this paper.

The six analysed definitions of social capital were chosen according to the popularity of research papers where they were mentioned in the three 'most patronised scholarly databases by respondents' – i.e. ScienceDirect, Scopus, and Google Scholar[30]. The selection was also based on the highest indicators of the authors' research impact indices: h-Index, i10-Index, and FWCI Index – the three most popular[31]. The combination of these criteria could be shown as follows (see *Table 1*):

Table 1

Definitions of social capital and respective authors

Authors	Definition	Number of citations per database as of 1st of August 2019			Author-level research impact indices		
		ScienceDirect[32]	Scopus[33]	Google Scholar[34]	h-Index[34]	i10-Index[34]	FWCI index[33]
Bourdieu [34, Bordieu P., p.248]	'The aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition'	309	127	38617	249	645	n.a.
Coleman [35, Coleman J., p. S98]	'A variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors'. 'Social capital inheres in the structure of relations between actors and among actors'.	0	n.a.	39022	72	143	n.a.
Lin [36, Lin N., p. 19]	'Investment in social relations with expected returns in the marketplace'	76	n.a.	8961	54	87	n.a.
Portes [37, Portes A., pp. 6-7]	'The ability of actors to secure benefits by virtue of membership in social networks or other social structures' (p. 6). 'Accumulation of obligations from others according to the norm of reciprocity' (p. 7).	0	4391	13735	113	315	51.32
Putnam [38, Putnam R., p. 19]	'Connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them'	n.a.	n.a.	16676	80	183	n.a.
Woolcock [39, Woolcock M., p. 153]	'The information, trust, and norms of reciprocity inhering in one's social networks'	39	1801	5894	43	81	136.75

[30] Ahenkorah-Marfo M. Domain Analytic Approach to the Use of Academic Databases by Graduate Students. *International Information and Library Review*, 2017, 49 (1), pp. 1-10.

[31] Bertoli-Barsotti L., Lando T. A Theoretical Model of the Relationship between the H-Index and Other Simple Citation Indicators. *Scientometrics*, 2017, 111 (3), pp. 1415-1448.

[32] ScienceDirect. Peer-reviewed Journals, Articles and Book Chapters. URL: http://www.sciencedirect.com/ (accessed 01 August 2019).

[33] Scopus. Authors and papers. URL: https://www.scopus.com/freelookup/form/author.uri (accessed 01 August 2019).

[34] Google Scholar. Citations. URL: https://scholar.google.com/intl/en/scholar/citations.html (accessed 01 August 2019).

As seen, the most popular definition of social capital, which highlights *networks* and *relationships* (underlined), was proposed by Bourdieu [34, Bordieu P., p. 248]. While repeating the importance of social networks, the second most popular definition, suggested by Portes [37, Portes A., pp. 6–7], added social structures and reciprocity. In addition to mentioning reciprocity, relations, social structures and networks, definitions by Coleman [35, Coleman J., p. S98], Putnam [38, Putnam R., p. 19], and Woolcock [39, Woolcock M., p. 153] integrated the component of trust (trustworthiness). Finally, the most recent one generated by Lin [36, Lin N., p. 19] also underlined the importance of social relations. Hence, although the viewed definitions mention the same factors, none of them incorporates all five components of social capital. Filling this gap and integrating all of them will reach one of the *research objectives* and give us the following picture (see *Fig. 2*).

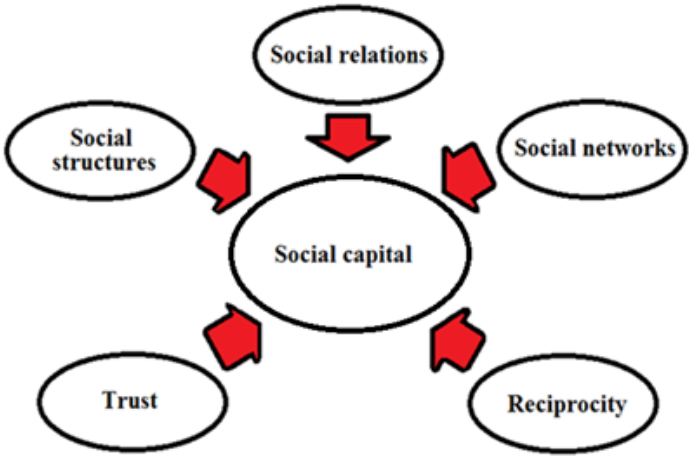

Fig. 2. Components of social capital.

According to Coleman [35, Coleman J., p. S98], it should also be noted that 'social capital is *productive*, making possible the achievement of certain ends that in its absence would not be possible'. Hence, combining the components of this notion with this characteristic, another *research objective* could be reached by producing the following definition of social capital: *social capital* is a productive form of capital comprised of social structures, connections, relations, and networks based on trust and reciprocity. As this definition integrates the most important parts of the concept, it is used for the purposes of this research.

Social capital: Geography, institutions, culture and their effect on the main components.

As seen in part II.2.A, the 'social capital tripod' aligns social capital with the two specific indicators of each of the traditional theories – i.e. population growth rate and distance/ discontiguity for geography, number of homicides and suicides for institutions, alcohol consumption and nomadic traits for culture. Part II.2.B, in its turn, described the social capital itself comprising five key elements: social relations, networks, structures, trust, and reciprocity. Hence, it could be assumed that, depending on the level and degree of each indicator, each respective social capital component will be affected in a specific way. Here, implementation of the 'traffic light' colour code, where 'green' indicates positive changes in social capital components, 'red' stands for the negative

ones, and 'yellow' for the ones of potential probability of changes, provides the following picture of the effects on social capital (see Table 2):

Table 2

'Social capital matrix': Major influence of indicators on main components

Factors	Indicators	Level / degree	Social relations	Social networks	Social structures	Reciprocity	Trust	General impact on social capital
Geography	*Population growth rate*	High	Bigger number of stimuli for developing social relations	Greater opportunity for networking	More favourable conditions for solidifying social structures	Possibility for reciprocity to be hampered	Potentially adverse effect on trust in case of high population growth	Moderately positive
		Low	Smaller number of stimuli for developing social relations	Lower opportunity for networking	Less favourable conditions for solidifying social structures	Possibility for reciprocity to be spurred	Potentially positive effect on trust (if population growth is low)	Moderately negative
	Distance, discontiguity/ communication between settlements	Big / bad	Unfavourable conditions for interaction	Low possibility for networking	Greater barriers for establishing and developing solid social structures	Unfavourable conditions for achieving significant level of reciprocity	Less favourable conditions for establishing trust	Significantly negative
		Small / good	Favourable conditions for interaction	High possibility for networking	Greater potential for developing solid social structures	Favourable conditions for achieving significant level of reciprocity	Favourable conditions for establishing trust	Significantly positive
Institutions	*Number of homicides*	Big	Adverse conditions for establishing and developing social relations	Potentially less favourable conditions for networking	Potentially less favourable conditions for forming social structures	Low level of reciprocity	Low level of trust	Moderately negative
		Small	Favourable conditions for establishing and developing social relations	Potentially more favourable conditions for networking	Development of comprehensive social structures is potentially encouraged	High level of reciprocity	High level of trust	Moderately positive
	Number of suicides	Big	Low level of social relations/interaction	Less favourable conditions for networking	Unfavourable conditions for creating and developing strong social structures	Low level of reciprocity accompanies big number of suicides	Low level of trust within community/ society	Significantly negative
		Small	Potentially higher level of social relations/interaction	Potentially more favourable conditions for networking	Favourable conditions for developing strong social structures	Small number of suicides accompanies high level of reciprocity	Greater level of trust within community/society	Moderately positive
Culture	*Alcohol consumption per capita*	High / low	Extremely high consumption and total abstinence deteriorates productive social relations	High and extremely low consumption hampers productive networking	Less favourable conditions for social structures with high alcohol consumption and total abstinence	Extremely heavy and low alcohol consumption creates less favourable conditions for reciprocity	Risky and no alcohol consumption is associated with lower trust level	Significantly negative if extremely high and low consumption and binge drinking
		Moderate	Moderate consumption encourages social relations	Moderate consumption stimulates networking	Moderate consumption facilitates social structures	Moderate social alcohol consumption encourages reciprocity	Moderate alcohol consumption fosters trust-binding	Significantly positive in case of medium consumption

	Nomadic/ semi-nomadic cultural traits	Yes	Adverse effect on developing social relations outside community	Limited conditions for social networking	Barriers for creating solid social structures	Unfavourable conditions for reciprocity outside community	Unfavourable effect on trust towards strangers associated with distance and lack of direct interaction	Significantly negative
		No	Greater potential chance to develop relations outside community	Greater conditions for social networking	Potential absence of barriers for solidification of social structures	Greater chance to ensure and develop reciprocity outside community	Potential lack of barriers for trust development	Moderately positive

As seen from the 'matrix', a *high population growth rate* has '*moderately positive*' impact on social capital, whereas *low population growth* rate predominantly *hampers its development*. This is due to the fact that, population growth spurs interactions between people, ultimately forcing them to create binding social structures, networks, and relationships [35]. However, the effect of this factor on trust and reciprocity is not absolutely clear, since 'population growth has the potential to destabilize both racial and national orders' and thus can hamper both factors [36]. Nevertheless, despite having some presumably negative effect on social capital, *population growth* is still considered '*moderately positive'* for its development (three 'green' cells and two 'yellow' ones).

In contrast to the mentioned population factor, *distance between settlements* and *infrastructural discontiguity inversely relate* to the *social capital stock*. Indeed, high level of these factors is associated with impeded networking, hampered relations, and lower trust [37]. Similarly, social structures and reciprocity are easier established with lower distance and greater contiguity. Thus, greater distance between settlements and discontiguity are associated with lower social capital levels, and vice versa (see the respective 'green' and 'red' cells) [38].

With respect to institutional factors, the number of *homicides* is '*moderately negatively*' associated with social capital in the case of a *large* number, and '*moderately positively'* if the number is *small* (three 'red' and two 'yellow' versus three 'green' and two 'yellow' cells). In Greenland, reciprocity, trust, and social relations either suffer or benefit most from the high or low murder incidence, respectively [39]. However, as the case of Iceland demonstrates, networking and social structures may not produce any significant differences in the case of increased homicides [40].

In the opinion of some researchers, a large number of suicides in such Nordic countries as e.g. Finland signifies low level of personal reliance on governmental institutions and social struc-

[35] Jacobs-Crisioni C., Koomen E. Population Growth, Accessibility Spillovers and Persistent Borders: Historical Growth in West-European Municipalities, *Journal of Transport Geography*, 2017, 62 (1), pp. 80-91.
[36] Abascal M. Us & Them: Black-white Relations in the Wake of Hispanic Population Growth'. *American Sociological Review*, 2015, 80 (4), p. 791.
[37] Kang L., Jiang Q., Tan C. Remarkable Advocates: An investigation of Geographic Distance and Social Capital for Crowdfunding'. *Information and Management*, 2017, 54 (3), pp. 336-348.
[38] Bogino-Larrambebere M. Non-Motherhood: Between Distance and Reciprocity in Kinship Relationship. *Quaderns de l'Institut Catala d'Antropologia*, 2016, 21 (2), pp. 60-76.
[39] Christensen M. et al. Homicide in Greenland 1985-2010. *Forensic Science, Medicine, Pathology*, 2016, 12/1, pp. 40-49.
[40] Baumer E., Wright R., Gunnlaugsson H. Crime, Shame, and Recidivism. *The British Journal of Criminology*, 2002, 42 (1), pp. 40-59.

tures, and low level of trust and reciprocity [41]. Others, however, fail to prove that low suicide rate has a significantly positive impact on networking and solidification of social structures, while proving this for the high suicide rate [42]. Thus, while being associated with an *absolutely negative effect on social capital* in the case of a *high number* (five 'red' cells), a *low number of suicides* is '*moderately positive'* for social capital stock (three 'green' and two 'yellow' cells).

Analysing alcohol traits in nine different countries, Nelson and McNall conclude that both extremely high and low alcohol consumption prevent social structures from being formed, trust from being solidified, and networks from being established [43]. Moderate alcohol consumption, in their opinion, however, fosters all these parameters. Similarly, a case study of US schools demonstrates that relations and reciprocity are strengthened with moderate alcohol consumption, weakening with extremely high and low consumption [44]. Thus, *extremely high and low alcohol indicators* are associated with *low social capital*, whereas *medium* ones with *high social capital*.

Finally, studying the nomadic culture of the Bajo people in the Philippines, Highfield demonstrates that migratory cultural traits generally prevent social relations from being established and developed [45]. In the opinion of the author, these features also hamper networking and reciprocity. However, absence of migratory traits may not always foster trust-building and the development of social structures. Thus, the presence of *nomadic traits in a culture* is *'significantly' negatively* associated with *social capital* (five 'red' cells), whereas *absence* of them is '*moderately positively'* affiliated with it (three 'green' and two 'yellow' cells).

As demonstrated, all five social capital components are differently influenced by each specific geographical, institutional, and cultural factor. Specifically, depending on the magnitude of these factors, the effect on each is either '*significantly* positive/negative' (all the cells are 'green'/'red') or '*moderately* positive/negative' (most cells are 'green'/'red'). Integrating and presenting the all in a single matrix not only bridged the mentioned conceptual and literature gap, but also met the *research objective* of examining how specific factors effect particular social capital components, providing an effective analytical tool to be deployed in this research (see *Part III*).

Methodology, analysis, and limitations

The research *method* of the current study presupposes the use of the *'social capital matrix'* (see *Part II.2.C*) comparing six forms of indicators in both countries – i.e. with two for each of the

[41] Titelman D. et al. Suicide Mortality Trends in the Nordic Countries 1980-2009. *Nordic Journal of Psychiatry*, 2013, 67 (6), pp. 414-423.
[42] Bae J. et al. Current Interventions, Strategies, And Networking Of Adolescent Suicide. *Journal of Korean Medical Association*, 2013, 56 (2), pp. 100-110.
[43] Nelson J., McNall A. Alcohol Prices, Taxes, and Alcohol-Related Harms: a Critical Review of Natural Experiments in Alcohol Policy for Nine Countries. *Healthy Policy*, 2016, 120 (3), pp. 264–272.
[44] Long E., Barrett T., Lockart G. Network-Behaviour Dynamics of Adolescent Friendships, Alcohol Use, and Physical Activity. *Health Psychology*, 2017, 36 (6), pp. 577–586.
[45] Highfield R. Marine Nomad. *New Scientist*, 2011, 211 (2820), pp. 24–25.

integrated frameworks: the geography, institutions, and culture hypotheses. Here, population growth, homicide, suicide, and alcohol consumption rates are the quantitative indicators used, whereas connectivity/discontiguity and nomadic/semi-nomadic cultural traits represent the qualitative ones. The major sources of quantitative information for the research are national statistical databases – *Statistics Iceland* for Iceland and *Statistics Greenland* with its subdivision *Statbank Greenland* for Greenland – and the datasets of international organisations – the World Bank, Organisation for Economic Cooperation and Development (OECD), and United Nations Office on Drugs and Crime (UNODC). Similarly, the qualitative data are obtained primarily from the reports of international intergovernmental forums and national and regional scientific bodies: the Arctic Council, Circumarctic Ragnifer Monitoring and Assessment Network (CARMA), Iceland Road and Coastal Administration (IRCA). Finally, the analysis of both types of data is augmented with in-depth studies of specific topics conducted by such researchers as Aage[46] and Mortensen[47].

As discussed, the six qualitative and quantitative proxy indicators are analysed against the 'social capital matrix'. There, depending on the level or presence of specific factors, their general influence on social capital is determined. For instance, in the case where Greenland appears to have a high suicide rate, the general impact of this factor will be defined as '*significantly negative*' (see the right-hand column of *Table 2*). Similarly, if Iceland's population growth is high, the overall estimated effect on the country's social capital is '*moderately positive'*.

Having obtained all the results, the paper summarises them, identifying the expected level of social capital in Iceland and Greenland by the prevailing type of effect on social capital stock – i.e. greater number of either 'moderate' or 'significant' impacts for the country. For example, if the number of 'moderately positive' effects in Iceland exceeds the number of 'significantly positive', the country's final estimated social capital level will be 'moderately high'. Alternatively, if the indicators demonstrating 'significantly negative' impact on Greenland's social capital outnumber those with 'moderately negative' effect, the overall social capital level will be estimated as 'significantly low'.

Although the matrix demonstration facilitates analysis of the expected social capital levels in Greenland and Iceland, it is based on a specifically-tailored definition of social capital and its respective components (see *Part V.1.B*). This potential definitional bias adds to the limitations imposed by the study timeframe. Here, further research should increase the reliability of its results over time. Finally, and most importantly, while revealing indirect links between the geographical, institutional, and cultural indicators and social capital stock, the analysis and framework per se do not demonstrate causality or correlation between the proxy indicators and the ultimate social capital level. This is the case because of the non-statistical nature of the study, owing primarily to

[46] Aage H. Alcohol in Greenland 1951-2010: Consumption, Mortality, Prices. *International Journal of Circumpolar Health*, 2012, 71 (1), p. 2.
[47] Mortensen B. Exploiting Hydropower in Greenland: Climate, Security of Supply, Environmental Risks and Energy-Intensive Industries. *The Yearbook of Polar Law*, 2015, 6 (1), pp. 36-62.

time constraints. Statistical analysis conducted in further research could thus potentially augment the significance of the current paper and its approach.

Findings and analysis

Geography. As described in Parts II and III, this section demonstrates the findings regarding proxy indicators of social capital related to the 'tripod' concept. By doing this, it meets the research objective of measuring their current magnitude. Section IV.1, specifically, focuses on the two features related to the geographical conditions: population growth and distance/discontiguity between settlements. Having demonstrated the difference between the two countries, this section elaborates potential prerequisites for such divergence. The paper then analyses their presumed impact on overall social capital levels in Iceland and Greenland.

Population growth. For the past three decades, Iceland has exhibited a relatively steady population growth rate, whereas Greenland's has fluctuated only slightly, not showing extreme dynamics[48]. Within the studied period, however, despite the overall difference in general trend in favour of Iceland, this country's population experienced a dramatic decline in 2008-2009, coinciding with relative Greenlandic growth (see *Fig. 3*). Such decline in Iceland's population growth could be explained as a result of the global financial crisis and 'collapse of the Icelandic banking system in 2008'[49]. Specifically, this dramatic effect on the country's economy and society could owe to the high degree of the internationalisation of the Icelandic economy. Additionally, Sigujonsson and Mixa note banking to be 'among the structural factors' within Icelandic society, highlighting its significant economic contribution[50].

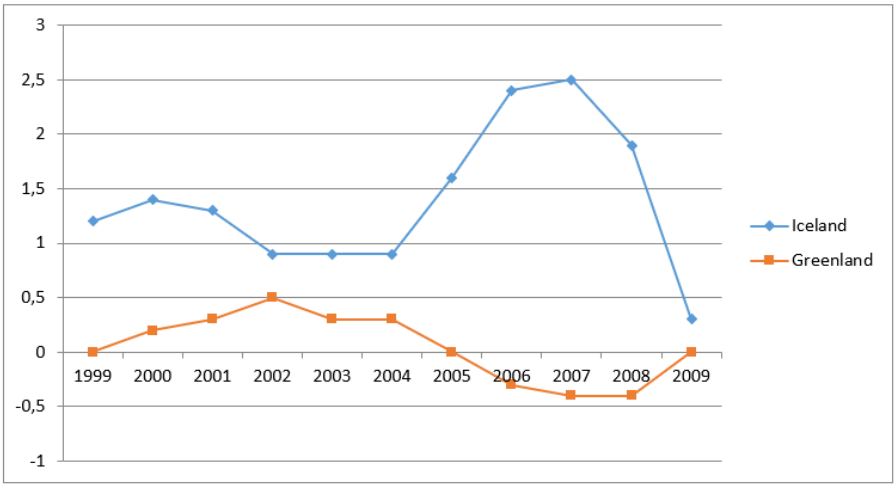

Fig. 3. Population growth rate in Iceland and Greenland (1999–2009).

[48] World Bank. Population Growth (annual %). URL: http://data.worldbank.org/indicator/SP.POP.GROW (accessed 17 December 2019).
[49] Ingimundarson. A Crisis of Affluence: The Politics of an Economic Breakdown in Iceland. *Irish Studies in International Affairs*, 2010, 21 (1), p. 57.
[50] Sigujonsson T., Mixa M. Learning from the 'Worst Behaved': Iceland's Financial Crisis and the Nordic Comparison. *Thunderbird International Business Review*, 2011, 53 (2), p. 222.

Indeed, even in 2016 — eight years after the crisis — the Central Bank of Iceland, assumed the level of the banking sector in the entire economy to be close to 13 percent [51]. Thus, 'when the Icelandic banking system collapsed in October 2008, it spelled the end of a six-year economic boom'[52]. The population decline of 2008-2009 is thus mostly assumed to be the result of this economic turmoil rather than a specific social policy.

At the same time, as the cases of Finland, Iceland, and Greece show, most indicators of population health and growth in all three countries 'continued improving after the Great Recession started' [53]. In Greenland, however, despite some temporary shifts towards slow population growth, the situation never changed dramatically. One of the most important factors influencing this was that 'infant mortality rates remain[ed] high as compared with those among populations in the neighbouring regions' [54]. Here, it means that Greenlandic population cannot increase due to the almost unchanging number of people of reproductive age. In this respect, the economic factors happen to be of secondary importance. Thus, the short-term population increases, are fostered by professional migration, as 'lacking a skilled workforce in Greenland, the government invited professionals from Denmark to contribute to the modernization process' [55].

That Greenland experienced some population growth despite the global financial crisis, in turn, could be explained through low international exposure of the country's economy, in general, and slow development of its financial sector, in particular. Indeed, according to the Naalakkersuisut, all services (including banking) constitute just below ten percent of Greenlandic economy [56]. The effect of any financial turmoil in principle is therefore unlikely to affect the country's population.

In summary, the population growth rate patterns between 1999 and 2009 confirm the general population dynamics in both countries. Specifically, population in Iceland keeps *growing*, while Greenland is relatively stable, with periods of *very slow growth and decline* changing each other. Using the 'social capital matrix', it could thus be assumed that extremely low population growth rate in *Greenland* and high population growth rate in *Iceland* signify '*moderately' low* social capital stock in the former (three 'red' cells and two 'yellow' cells in *Table 2*) and '*moderately*' *high* stock in the latter (three 'green' and two 'yellow' cells in *Table 2*).

Distance between settlements, discontiguity and communication. Greenland's unique geographical conditions with natural barriers in the form of fjords, mountains, and most of the terri-

[51] Central Bank of Iceland. Economy of Iceland. URL: https://www.cb.is/library/Skraarsafn---EN/Economy-of-Iceland/2016/ Economy_of_Iceland_2016.pdf (accessed 19 December 2019).
[52] Ingimundarson. A crisis of affluence: The politics of an economic breakdown in Iceland. *Irish Studies in International Affairs*, 2010, 21 (1), p. 60.
[53] Tapia-Granados J., Rodriguez J. Health, Economic Crisis, and Austerity: a Comparison of Greece, Finland, and Iceland. *Health Policy*, 2015, 119 (7), p. 941.
[54] Friborg J. et al. A Population-Based Registry Study of Infant Mortality in the Arctic: Greenland and Denmark, 1973-1997. *American Journal of Public Health*, 2004, 94 (3), p. 452.
[55] Hamilton L., Rasmussen R. Population, Sex Ratios and Development in Greenland. *Arctic*, 2010, 63 (1), p. 49.
[56] Naalakkersuisut. Economy and Industry in Greenland. URL: http://naalakkersuisut.gl/en/About-government-of-greenland/About-Greenland/Economy-and-Industry-in-Greenland (accessed 19 January 2020).

tory covered with ice limit transportation to boats and dog sleds, completely excluding railways and roads between towns [3, Gad U.]. Developing infrastructure 'in such a discontiguous structure would necessitate vast capital expenditure and enormous technical difficulties' [40, Carruth S., p. 71]. As a result, urban and regional infrastructure development there represents the 'repetition of many small infrastructures rather than a continuous, extendable armature' [ibid, p. 68]. Due to the almost complete impossibility of reaching most of the destinations by land, then, connectivity between the settlements is low and endangered in adverse weather.

Apart from discontiguity and consequently low connectivity, distance between Greenlandic settlements dramatically affects communication as, in most cases, it is greater than in other countries. Indeed, some of the smaller settlements have accessibility radii of 50 km, while the bigger ones could be reached only by travelling some 100-150 km (see *Fig. 4*):

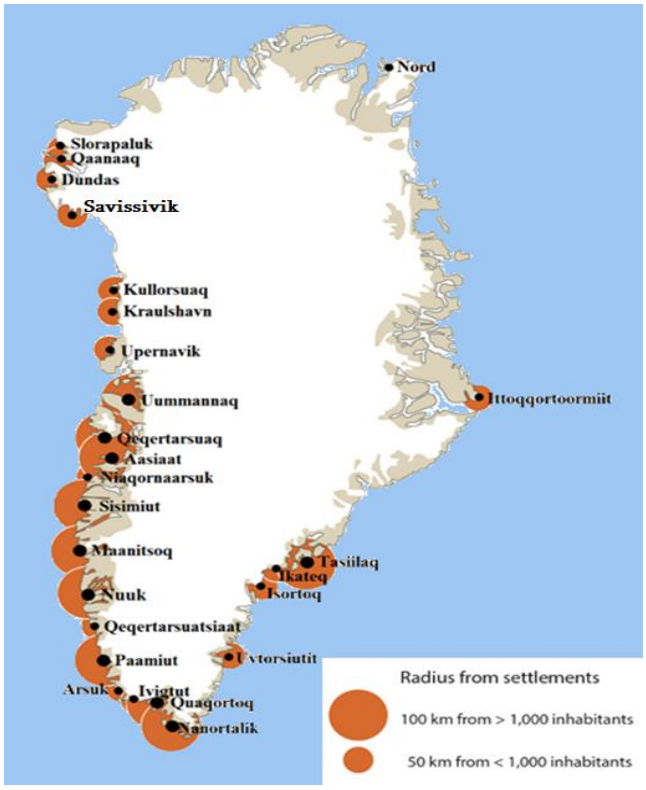

Fig. 4. Greenland's main settlements and approximate distance between them [57].

As seen, although water transport can facilitate movement between Greenlandic settlements, the distance between them is still considerable. In addition, natural factors such as icebergs may also hamper transportation along the coast, pushing the vessels towards the sea, thereby increasing 'the risk of being caught in bad weather' [58]. Discontiguity and long distance thus both inhibit Greenlandic communication.

In the opinion of Kristjansdottir [1, Kristjansdottir H.], Iceland, in contrast, represents a country with quite similar natural challenges (e.g. fjords and mountains), but milder climatic con-

[57] Arctic Council. Arctic Biodiversity Assessment: Status and trends in Arctic biodiversity. URL: http://arcticlcc.org/ assets/resources/ABA2013Science.pdf (accessed 16 July 2017).
[58] Hamilton L., Rasmussen R. Population, Sex Ratios and Development in Greenland. *Arctic*, 2010, vol. 63, no. 1, p. 49.

ditions: leaving most of the territory in the subarctic zone, the Arctic Circle only passes through the Island of Grimsey. With about ten percent of the terrain covered with glaciers, the country's technical and engineering problems related to infrastructure construction are assumed by the researcher not to be of the same magnitude as those of Greenland. On the other hand, 'a challenging terrain, and unpredictable weather has made road infrastructure improvements a key component in regional development strategies'[59]. Given the complete absence of railroads, the country possesses an *extensive road network* substantially supported by governmental investments[60]. Hence, currently, most Icelandic settlements are linked by either primary or local access roads, significantly *increasing connectivity* between the cities, towns, and villages (see *Fig.5*):

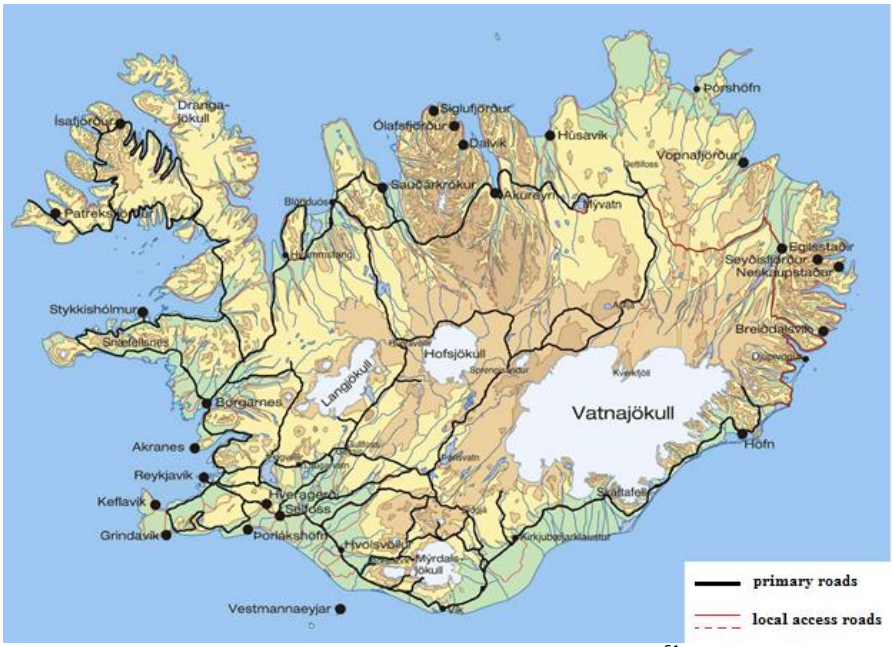

Fig. 5. Iceland's main settlements and roads [61].

Apart from low discontiguity, the greatest distance between two separate settlements in Iceland is 922 km (between Ísafjörður and Höfn), with the average being about 300 km. Although the second set of numbers looks similar to the ones in Greenland, the main difference is that, due to the well-developed road network, most towns and villages could be reached within a few hours, with lower risk associated with potentially adverse weather conditions. In contrast, the biggest distances between settlements in Greenland are measured in thousands of kilometres, with almost no available transportation. Connectivity between Icelandic settlements is thus far better than in Greenland, ultimately improving communication between citizens.

To summarise, the official data confirm the assumption that the complicated geographical pattern of Greenland increases discontiguity of its landscape, creating greater challenges for its transportation and infrastructural development, exacerbated by extremely large distances be-

[59] Bjarnason T. The Effects of Road Infrastructure Improvement on Work Travel in Northern Iceland. *Journal of Transport Geography*, 2014, 41 (1), 2014, p. 229.
[60] Karlsson V. Interregional Migration and Transportation Improvements in Iceland. *International Regional Science Review*, 2015, 38 (3), pp. 292-315.
[61] IRCA. The Road System. URL: http://www.road.is/vefur2.nsf/Files/RoadSystem2017/$file/vegakerfid2017-enska.pdf (дата обращения 16.01.2020).

tween settlements and lack of infrastructure. In contrast, multiple roads, smaller distances, and less discontiguous terrain in Iceland significantly improve connectivity in that country. Thus, viewing these indicators through the social capital matrix would demonstrate that, applicably to *Greenland*, they have a '*significantly negative*' influence on *social capital* (five 'red' cells in *Table 2*), whereas, in the case of *Iceland*, they demonstrate a '*significantly positive*' one (five 'green' cells in *Table 2*).

Institutions. As in the previous section, this one views two quantitative indicators of the success of governmental institutions in Iceland and Greenland: homicide rate and suicide rate. In addition to the graphical representation of the statistical data, this part explains potential disparity causes. Finally, the implications of this divergence on Iceland and Greenland's social capital are provided.

Homicide rate. Regarding the homicide rate, Iceland's situation differs dramatically from that of Greenland, boasting one of the planet's lowest crime rates – stemming from 'communitarian social organization, a reliance on shaming, plus a healthy dose of social exclusion that reinforces both the strength of communitarian ties and the effect of shaming'[62]. In practice this appears to positively affect the homicide incidence: according to the UNODC, the number of homicides per 100,000 inhabitants within the researched decade was extremely low, with 2003, 2006, and 2008 registering no cases [63].

Greenland's overall criminal statistics, in contrast, are notorious, demonstrating one of the highest murder rates globally. Indeed, despite slight decrease in recent decades, its homicide rate is 'markedly higher compared to… Denmark and northern Europe'[64]. Graphically, juxtaposition of homicide rate statistics within the researched timeframe proves this disparity (see *Fig. 6*):

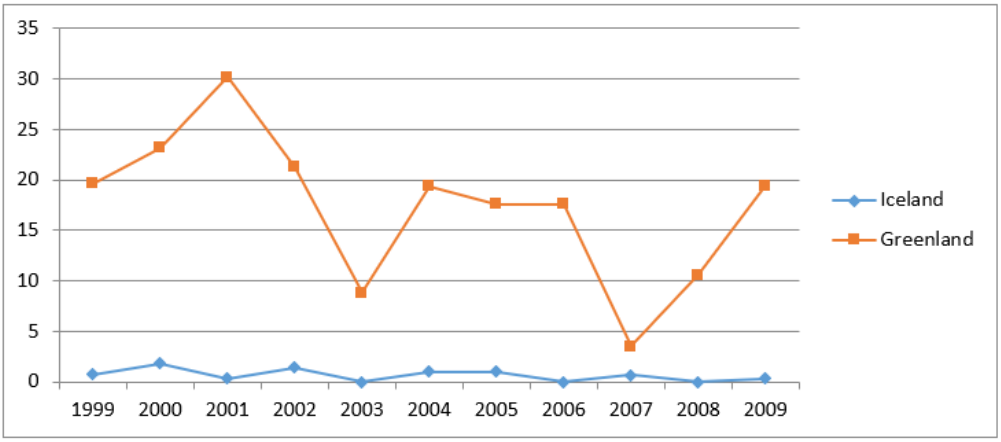

Fig. 6. Homicides per 100,000 inhabitants in Iceland and Greenland (1999–2009) [65].

Here, although there were some decreases in the number of homicides in Greenland in 2003 and 2007, the general pattern of the country's murder rate is markedly different from that of

[62] Baumer E., Wright R., Gunnlaugsson H. Crime, Shame, and Recidivism. *The British Journal of Criminology*, 2002, 42 (1), pp. 54.
[63] UNODC. Homicide Counts and Rates. URL: https://data.unodc.org/#state:0 (accessed 06 February 2020).
[64] Christensen M. et al. Homicide in Greenland 1985-2010. *Forensic Science, Medicine, and Pathology*, 2016, 12/1,p.40.
[65] Ibid.

Iceland. Such difference could potentially be explained by specifics of Greenland's law enforcement system, making the country 'the only place in the world where one does not punish people for anything'[66]. In this sense, 'there is no penal code, only a criminal code', and 'there are no prisons, only institutions', so that the system presupposes that perpetrators 'are "helped" rather than punished' [67]. Hence, this perception of the penitentiary system is an exception, rather than the rule.

In Iceland, in contrast, 'prison or punishment has never been seen as care, welfare or treatment' [68]. In this sense, Iceland's five prisons resemble those in other Nordic countries. However, being guided by the idea that 'small institutions function better in many aspects than large ones', all the penitentiary institutions in the country are very small (up to 87 prisoners), with the total number of places being 138 for the whole island [69].

Although Lappi-Seppälä claims the biggest achievement of prison reforms in most of the Nordic countries to be 'fewer offenders under supervised control, lower levels of fear and punitive demands, less serious violence, and fewer property offenses', homicide statistics generally demonstrate insignificant success of these policies in Greenland [70]. Iceland, however, could be taken as an example of effective undertakings in this respect. Since, according to Baumer et al, homicide indicators mostly relate to institutional factors and well-functioning national social programmes, the current trends are assumed to last for the foreseeable future, unless dramatic reforms change the law enforcement systems in both countries [71]. As, in the social capital matrix, a high number of murders is considered '*moderately negative*' for the *social capital* stock, *Greenland*'s level of social capital is *low* (three 'red' and two 'yellow' cells in *Table 2*). However, *Iceland*'s social capital stock should thus be *high* because of the low homicide rate, considered to '*moderately positively*' impact this feature (three 'green' and two 'yellow' cells in *Table 2*).

Suicide rate. As with homicides, the two countries' suicide patterns differ. In particular, Greenland's suicide rate appears to be one of the highest in the world, with the incidence dramatically increasing among the Inuit. This is particularly alarming, as they form the core of Greenlandic society[72]. Specifically, suicides are a major public health problem in the countryside. That is why

[66] Lauritsen A. Greenland's Open Institution – Imprisonment in a Land without Prisons. *Journal of Scandinavian Studies in Criminology and Crime Prevention*, 2012, 13 (1), p. 47.
[67] ibid, p. 48.
[68] Baldursson E. Prisoners, Prisons and Punishment in Small Societies'. *Journal of Scandinavian Studies in Criminology and Crime Prevention*, 2000, 1 (9), p. 9.
[69] ibid, p. 7.
[70] Lappi-Seppälä T. Penal Policies in the Nordic Countries 1960-2010. *Journal of Scandinavian Studies in Criminology and Crime Prevention*, 2012, 13 (1), pp. 85.
[71] Baumer E., Wright R., Gunnlaugsson H. Crime, Shame, and Recidivism. *The British Journal of Criminology*, 2002, 42 (1), pp. 40-59.
[72] Statistics Greenland. Greenland in figures 2018. URL: http://www.stat.gl/publ/en/GF/2017/pdf/Greenland%20in%20Figures%202017.pdf (accessed 21 August 2019).

researchers draw a parallel between such a special geographically-driven suicide pattern and its instigators[73].

Geographically, most traditional Greenlandic communities happen to be located in small settlements rather than bigger towns, potentially explaining the geographical disparity between the suicide rate increase in urban areas and the countryside [74]. Indeed, in the opinion of the researchers, since modernisation of Greenland began in the 1950s, most of the indigenous communities were affected by the transition from traditional subsistence activities (mostly hunting) to the employment-based market economy. In this respect, in the comparative case study of the indigenous population of Alaska and Greenland, Bjerregaard and Larsen demonstrate that in both countries significantly higher suicide rates are registered among the unemployed population which traditionally engage in subsistence hunting and fishing [75]. Thus, in the opinion of the researchers, such a dramatic shift towards modernisation could spur suicidal thoughts among the indigenous population, which is not adapting well to the conditions of the modern world.

In Iceland, given the total absence of indigenous communities, the situation is more promising. In particular, during the period 1980–2009, 'Iceland had the lowest suicide rates for all ages' in the Nordic countries [76]. Although this group of states is usually considered to be at high suicide risk, in the global list of countries by suicides, Iceland takes a medium position, with an average number of suicides per 100,000 inhabitants [77]. In the opinion of Lester, this owes primarily to the 1980s alcohol laws, allowing the consumption of strong beer. Following the argument of the author, authorized procurement of medium-strong alcohols rather than spirits provided adequate psychological relaxation for the Icelandic population [78].

In Greenland, after the absolute consumption peak in the 1970–1980s, similar alcohol-related law reforms were introduced, leading to a significant decrease in pure alcohol consumption [79]. However, this indicator remains higher than in many Nordic countries, and is mostly associated with heavy rather than social drinking [80]. According to Bjerregaard and Lynge, such disparity is an important contributor to an increased likelihood of suicide [81]. Indeed, comparing the suicide rates in Greenland and Iceland gives the following picture (see *Fig. 7*):

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[73] Bjerregaard P., Lynge I. Suicide: A Challenge in Modern Greenland. *Archives of Suicide Research*, 2006, 10 (2), c. 209-220.
[74] ibid.
[75] Bjerregaard P., Larsen C. Time Trend by Region of Suicides and Suicidal thoughts Among Greenland Inuit. *International Journal of Circumpolar Health*, 2015, 74 (1), pp. 1-8.
[76] Titelman D. et al. Suicide Mortality Trends in the Nordic Countries 1980-2009. *Nordic Journal of Psychiatry*, 2013, 67 (6), pp. 418.
[77] OECD. Suicides. URL: https://data.oecd.org/healthstat/suicide-rates.htm (accessed 07 March 2020).
[78] Lester D. Effect of Changing Alcohol Laws in Iceland on Suicide Rates. *Psychological Reports*, 1999, 84 (3), pp. 1158-1159.
[79] Bjerregaard P. Development of a Public Health Programme in Greenland. *Scandinavian Journal of Public Health*, 2005, 33 (4), pp. 241–242.
[80] ibid.
[81] Bjerregaard P., Lynge I. Suicide: A Challenge in Modern Greenland. *Archives of Suicide Research*, 2006, 10 (2), pp. 209-220.

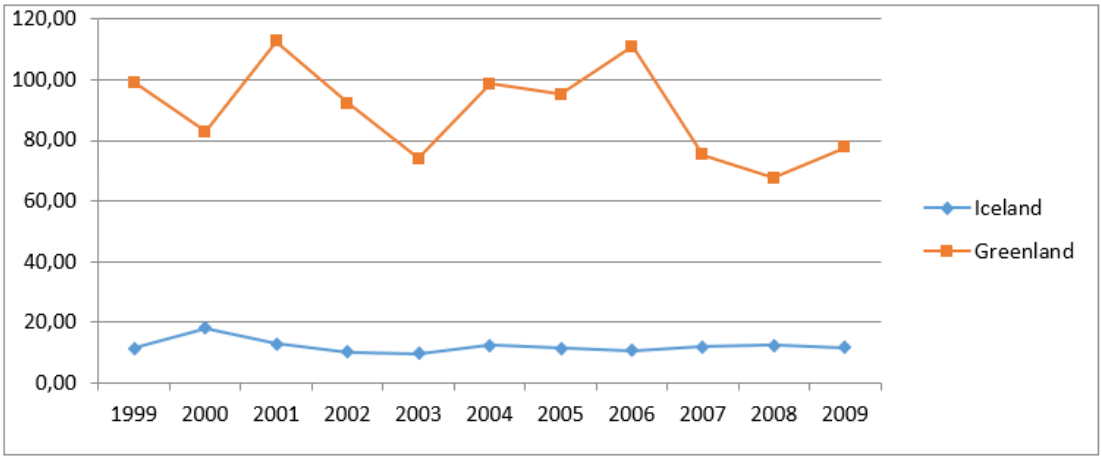

Fig. 7. Suicides per 100,000 inhabitants in Iceland and Greenland (1999–2009) [82].

As seen in *Fig. 7*, within the studied period (1999-2009) *Greenland*'s *suicide rate* appears to be several times *higher* than Iceland's. According to the social capital matrix, such conditions have a marked *negative* influence on the country's *social capital* (five 'red' cells). *Iceland*, in turn, has a relatively low *suicide rate*, which should have a *'moderately positive'* impact on its *social capital stock* (three 'green' and two 'yellow' cells).

Culture. This part focuses on Iceland and Greenland's cultural features, taking alcohol consumption per 100,000 inhabitants and presence of nomadic/semi-nomadic features as key indicators. Apart from graphically demonstrating the difference between the countries, it provides suggestions of their presumable cause. Finally, it reveals how these disparities supposedly create differences in the countries' social capital stock.

Alcohol consumption. Greenland's alcohol consumption is higher than in many Nordic countries. However, the current consumption rate is significantly lower than three decades ago, when it was two times higher than that of Denmark [83]. Such decline can signify the success of an efficient legislative and economic policy introduced by the government and alcohol prices raised far above the Danish ones primarily through taxation. Since in the foreseeable future this fiscal approach of Naalakkersuisut is not expected to change dramatically, Greenlandic alcohol consumption decline will likely continue[84].

Alternatively, in the case of Iceland, alcohol consumption rose slightly since the 1970-1980s, when overall prices for spirits were lowered[85]. The short-term increase, however, almost stabilised in the studied period (see Fig. 8). Although Fig 8. demonstrates a declining trend in Greenland and a rising trend in Iceland, the real effects of these patterns are not comparable, as the Icelandic increase is driven mostly by increasing adolescent alcohol consumption of soft alcohols, not the case

[82] OECD. Suicides. URL: https://data.oecd.org/healthstat/suicide-rates.htm (accessed 07 March 2020).
[83] Aage H. Alcohol in Greenland 1951–2010: Consumption, Mortality, Prices. *International Journal of Circumpolar Health*, 2012, 71 (1), p. 2.
[84] Bjerregaard P. Development of a Public Health Programme in Greenland. *Scandinavian Journal of Public Health*, 2005, 33 (4), pp. 241-242.
[85] Jonsson R., Kristjansson S. Alcohol Policy and Public Opinion in Iceland, 1989-2012. *Nordic Studies on Alcohol and Drugs*, 2013, 30 (6), pp. 539-549.

in Greenland[86]. Greenlandic teenage alcohol abuse is a serious problem, especially concerning the Inuit population. Evidence shows that this is primarily related to the usually lower alcohol tolerance threshold, lower education indicators and high unemployment [87]. Thus, although the average alcohol consumption in Greenland is decreasing due to high taxes, the teenage one is not falling [88].

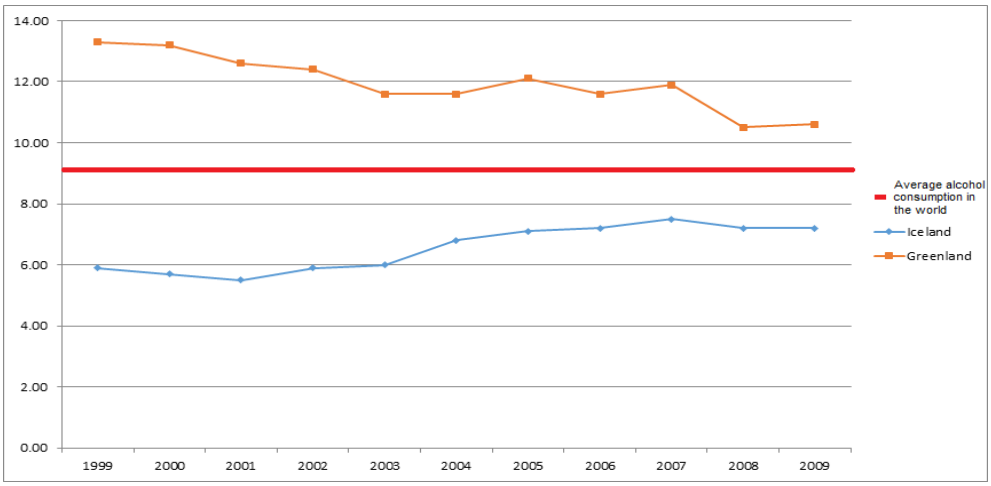

Fig. 8. Alcohol consumption per capita (litres of pure alcohol/year) in Iceland and Greenland (1999–2009) [89].

Avoiding a situation similar to the one in Greenland was one of the drivers for increasing Iceland's legal drinking age from 18 to 20 [90]. In contrast, Greenlanders can purchase beer and cider from age 16, and strong alcohol from 18 [91]. Though both countries' alcohol prices are high, Greenland does not exercise a monopoly approach regarding alcohol sales within the country, as despite a state monopoly on alcohol import by the state-controlled KNI A/S, spirits and beer can be purchased in regular supermarkets [92]. Additionally, large volumes of home-brewed alcohol minimise the effect of extremely high-priced alcohol in shops and bars [93]. Thus, relative alcohol accessibility could explain the contrast between Iceland and Greenland within the same timeframe (see *Fig. 8*).

As described above, Iceland's alcohol industry is orchestrated by ATVR – the state-controlled monopoly that operates the Vínbúð chain – the only specialised stores where strong

[86] Asgeirsdottir T., McGeary K. Alcohol and Labour Supply: The Case of Iceland. *European Journal of Health Economics*, 2009, 10 (4), pp. 455-465.
[87] Aage H. Alcohol in Greenland 1951-2010: Consumption, Mortality, Prices. *International Journal of Circumpolar Health*, 2012, 71 (1), p. 2.
[88] Bjerregaard P. Development of a Public Health Programme in Greenland. *Scandinavian Journal of Public Health*, 2005, 33 (4), c. 241-242.
[89] OECD. Alcohol Consumption. URL: https://data.oecd.org/healthrisk/alcohol-consumption.htm (accessed 08 March 2020).
[90] Ibid.
[91] Aage H. Alcohol in Greenland 1951-2010: Consumption, Mortality, Prices. *International Journal of Circumpolar Health*, 2012, 71 (1), p. 2.
[92] Bjerregaard P. Development of a Public Health Programme in Greenland. *Scandinavian Journal of Public Health*, 2005, 33 (4), pp. 241-242.
[93] Aage H. Alcohol in Greenland 1951-2010: Consumption, Mortality, Prices. *International Journal of Circumpolar Health*, 2012, 71 (1), p. 2.

beverages can be purchased [94]. That is why, although most of the Nordic countries have binge drinking tendencies, Iceland mitigates this by lowering alcohol accessibility [95]. Since, binge drinking still appears to be a big problem in Greenland, this could contribute to the overall alcohol consumption pattern represented in Fig. 8. Thus, analysing this indicator in the countries through the prism of the 'social capital matrix', it could be said that *Greenland* possesses a *low* level of *social capital* associated with *high alcohol consumption* (five 'red' cells). In contrast, *Iceland*, whose *alcohol consumption* approaches the *average* global rate, likely has *high social capital stock* (five 'green' cells).

Nomadic and semi-nomadic traits. Regarding nomadic traits of national culture, Greenland and Iceland represent two different responses to global modernisation. In particular, despite the Danish attempt to make Greenlandic society follow the rules of a market economy and integrate into the employment-based production system, a large proportion of the population still engages in traditional subsistence activities [96]. In the opinion of Gad [3, Gad U.], given the lack of well-developed industries and high unemployment, with some support of fishing, traditional hunting appears to be their natural substitution inherited ancestrally. In this respect, Greenland's lower overall education level could also be considered as an unemployment-fostering factor stimulating further engagement with traditional activities [97].

In addition to the absence of large-scale industries and unemployment, Carruth [40, Carruth S.] highlights discontiguity and small size of most Greenlandic settlements as catalysts for hunting. Indeed, Corcoran et al [20, Corcoran P. et al, p. 106] calling the Inuit culture the 'most pure hunting culture', states that, geographically, non-urban areas predominantly comprise the indigenous population in contrast to e.g. Nuuk, with a large number of Danish expatriates. Indeed, 'when we speak of a traditional settlement in the Greenlandic hunting society, we mean a winter settlement that was occupied from August/September until April/May' [98]. In that sense, a great deal of the populations of small towns have semi-nomadic traits, migrating with or towards the population of their respective hunted animals [99].

Apart from traditional small-scale fishing along the coast of the major settlements, Greenlanders mostly hunt seals, narwhals, Atlantic walruses, and reindeer [100]. The traditional way of hunting entails, then, not only relocation to summer hunting facilities, but also chasing prey for

[94] Arnarsson A., Kristofersson G., Bjarnason T. Adolescent Alcohol and Cannabis Use in Iceland 1995-2015. *Drug and Alcohol Review*, 2017, 1 (1), pp. 1-9.
[95] Osterberg E., Karlsson T. Trends in Alcohol Consumption and Violence in the Nordic Countries 1960-2000. *Contemporary Drug Problems*, 2011, 38 (2), pp. 311-330.
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[100] Hendriksen K., Jørgensen U. Hunting and Fishing Settlements in Upernavik District of Northern Greenland Challenged by Climate, Centralization, and Globalization. *Polar Geography*, 2015, 38 (2), pp. 123-145.

dozens of kilometres along the coast or over the open terrain [20, Corcoran P. et al]. Thus, graphical representation of the summer distribution of key hunted animals gives a general perception of the Inuit population's presumable seasonal migration traits to adjacent settlements (see *Fig. 9*):

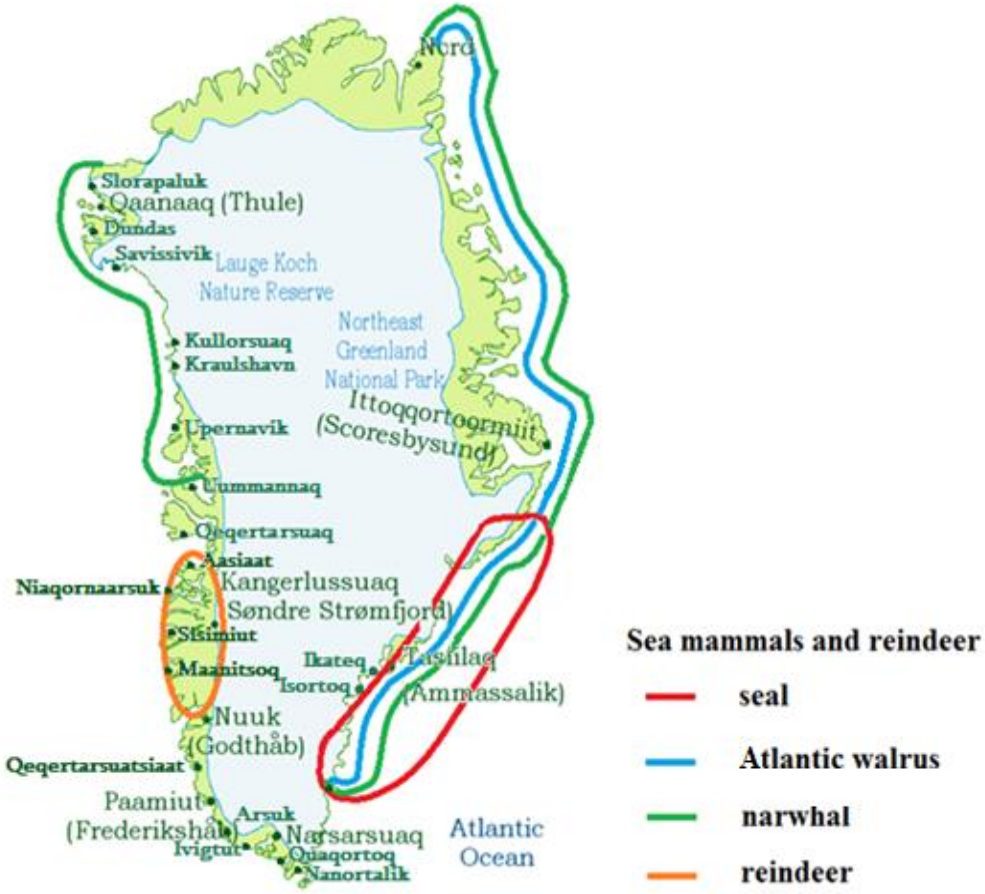

Fig. 9. Main summer distribution of the key hunted marine mammals and reindeer in Greenland (June – August) [101].

Although not all Greenlandic Inuit live seasonal semi-nomadic lives, this traditional cultural feature is still very strong [102]. In contrast to that, Iceland – a country with no indigenous population – represents a successfully modernised society with no significant hunting tradition [103]. Aside from the absence of the traditional subsistence communities, a substantial shift from fishing to aluminium production decreased overall need for seasonal mobility [104]. In particular, increasing employment in remote areas by means of industrial relocation (e.g. aluminium smelter in Reyðarfjörður) with the accompanying infrastructural development (e.g. establishment of such regional universities as, e.g. the University of Akureyri), significantly decreased urban migration

[101] CARMA. Circumpolar Distribution. URL: https://carma.caff.is/carma-interactive-map/circumpolar-distribution (accessed 17 January 2020), WWF. Seals in Greenland. URL: http://awsassets.wwfdk.panda.org/downloads/seals_in_greenland__wwf_report __dec_2013.pdf (accessed 17 March 2020) and WWF. Mapping the Changing Arctic landscape. URL: http://wwfarcticmaps.org/ (accessed 17 March 2020).

[102] Hendriksen K., Jørgensen U. Hunting and Fishing Settlements in Upernavik District of Northern Greenland Challenged by Climate, Centralization, and Globalization. *Polar Geography*, 2015, 38 (2), pp. 123-145.

[103] Witherall R. From Fish to Aluminium: Iceland Turns Attention to Energy Intensive Industries. *Aluminium Today*, 1998, 10 (5), pp. 1-32.

[104] Karlsson V. Interregional Migration and Transportation Improvements in Iceland. *International Regional Science Review*, 2015, 38 (3), pp. 292-315.

within the country [105]. As a result, during the ten-year period 1998–2008, population growth was observed in all the regions with the exception of two sparsely-populated ones in the North-West.

In summary, analysing the situation against the social capital matrix yields the following results. Specifically, substantial strength of the hunting traditions and a semi-nomadic way of living in Greenland has a '*significantly negative*' effect on social capital (five 'red' cells in *Table 2*). On the other hand, absence of indigenous nomads and relatively low migration tendencies in Iceland have a '*moderately positive*' impact on social capital (three 'green' and two 'yellow' cells in *Table 2*). Thus, it could be assumed that *Greenlandic social capital* should be *low*, and *Icelandic*, *high*.

Summary

As demonstrated, Greenland and Iceland have different conditions for developing social capital. In particular, all of Greenland's associated indicators either moderately or strongly affect social capital in a negative manner. In contrast, Iceland's indicators are strongly or moderately affiliated with social capital. However, since the magnitude of the combination of factors is different in each case, the social capital stocks in Greenland and Iceland are diverging (see *Table 3*):

Table 3

Summary of the main indicators of social capital, their nominal effect on it, and its expected overall level in Iceland and Greenland

Factors	Indicators	Country			
		Iceland		Greenland	
		Indicator's level	Nominal effect on social capital	Indicator's level	Nominal effect on social capital
Geography	*Population growth rate*	High	'Moderately positive'	Low	'Moderately negative'
	Distance between settlements and discontiguity	Low distance/ low discontiguity, good connectivity	'Significantly positive'	High distance/ high discontiguity, bad connectivity	'Significantly negative'
Institutions	*Number of homicides*	Small	'Moderately positive'	High	'Moderately negative'
	Number of suicides	Small	'Moderately positive'	High	'Significantly negative'
Culture	*Alcohol consumption per capita*	Moderate	'Significantly positive'	High	'Significantly negative'
	Nomadic/ semi-nomadic traits	No	'Moderately positive'	Yes	'Significantly negative'
Expected overall level of social capital		'Moderately' high		'Significantly' low	

Here, Iceland's expected level of social capital is 'moderately high' due to the greater presence of specific factors having a 'moderately positive' effect on its stock – i.e. high population growth rate, small number of homicides/suicides, and absence of nomadic cultural traits. On the other hand, the predicted overall social capital level in Greenland is 'significantly low' due to the prevalence of the indicators having 'strongly negative' effect on it: the country is characterised by large distances between its settlements, accompanied by bad connectivity and high discontiguity. Additionally, with a significant proportion of its population following a semi-nomadic lifestyle,

[105] Bjarnason T., Edvardsson I. University Pathways of Urban and Rural Migration in Iceland. *Journal of Rural Studies*, 2017, 54 (1), pp. 244-254.

Greenland experiences high alcohol consumption and suicide incidence. Thus, although Iceland's presumed social capital level is not extremely positive, it potentially provides a better background for developing renewables than Greenland, where estimated social capital is negative at its utmost.

As demonstrated, the *findings* generally *support the research hypothesis*, linking higher estimated Icelandic social capital stock with the country's advanced renewable energy development, and connecting the predicted lower level of social capital to the inhibition of Greenlandic green power progress. The research *aim* is thus achieved, with the supporting evidence explaining the countries' diverging energy patterns in the face of geographical, cultural, and economic similarities. However, the paper's non-statistical nature leaves the findings their demonstrative role, rather than proving direct causation correlation between the 'tripod' components and social capital level. Thus, further research should be augmented with statistical analysis.

Apart from analysing the energy industry's current situation, the 'tripod' concept could be used for planning scenarios of future renewable energy development. For instance, Greenland's currently decreasing alcohol consumption and rising population could potentially be augmented by governmental reform of law enforcement and other governmental institutions, aiming to lower suicide and homicide rates [106]. Additionally, with the increased urbanisation and infrastructural development arising from technological advances and overall climatic tendencies (thawing glaciers), the interconnections between the communities would be strengthened [107]. As the 'social capital tripod' shows, if such significant processes take place, all three pillars (geographical, institutional, and cultural) will be strengthened, leading to increased social capital stock and creating favourable conditions for implementation of renewable energy initiatives.

Reconciliation of the main frameworks explaining overall economic growth and renewable energy development (i.e. the geographical, institutional, and cultural hypotheses) appears to be one of the main benefits of the 'social capital tripod'. Although the idea of a similar amalgamation of the geography and institutions hypotheses was represented before and the concepts of binding culture to geography and institutions to culture were further supported, none of the approaches united all three. Here, the current approach integrates the key ideas of each, allowing for the augmentation of their main advantages, rather than contrasting their key deficiencies. This unified approach bridges the literature gap while explaining and predicting renewable energy scenarios.

Another advantage of applying the 'tripod' is its relative simplicity of measuring its indicators. Specifically, as seen, all the data obtained for analysis are of secondary nature – i.e. no primary data gathering took place. Although this may be regarded as a potential shortcoming, obtaining primary information by means of interviews and surveys is also associated with time shortages, sample size and interviewee biases. Indeed, measuring social capital by interviewing focus-groups on their trust towards their neighbours or their government, etc. – i.e. some of the most common

[106] Frantzsen E. Indefinitely Sentenced to Denmark – The Return to Greenland. *Journal of Scandinavian Studies in Criminology and Crime Prevention*, 2012, 13 (1), pp. 57-68.
[107] Hendriksen K., Jørgensen U. Hunting and Fishing Settlements in Upernavik District of Northern Greenland Challenged by Climate, Centralization, and Globalization. *Polar Geography*, 2015, 38 (2), pp. 123-145.

ways to evaluate social capital – may potentially be negatively perceived by the participants. This, in turn, will either distort the information or reduce the sample size so that the results could not be applied to the whole region or country: using secondary data avoids these disadvantages.

Although the 'tripod', in general, and the 'social capital matrix', in particular, make it easier to estimate expected levels of social capital in a country by means of viewing specific geographical, institutional, and cultural features and tendencies, this approach may potentially be criticised as too generic. Even if the 'social capital matrix' demonstrates that the presumable effect of each factor on social capital has its special magnitude (e.g. population growth has 'moderate' impact, whereas discontiguity has 'significant' one), the exact level of social capital in a country or region cannot be measured by this tool. Although potentially useful for strategic planning, then, its applicability for the numerical risk and cost and benefit analyses in its current form are limited.

To address this shortcoming, many researchers suggest utilisation of a universal social capital index rather than a broad holistic matrix. However, although some scholars introduced a nation-wide survey-based social capital index for each territorial unit, the variables used (e.g. political participation, group membership, voter turnout, etc.) were heavily criticised for not being applicable to all countries (e.g. China, where low political participation is still associated with generally high social capital). This ambiguity concerning the social capital measurement could owe primarily to its uncertain definition. Thus, although this study attempted to produce an integrated definition of this notion by incorporating the key features mentioned by the six most cited researchers of the issue, insights from other authors could highlight alternative traits. In this sense, the method implemented to generate the definition of social capital is personally biased.

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Internationalization of Vocational Education in the Arctic Council Member-States' Universities [*]

© Maria A. PITUKHINA, Doc. Sci. (Polit. Sci), Leading Researcher
E-mail: maria.pitukhina@gmail.com
Karelian Research Centre, Russian Academy of Sciences, Petrozavodsk, Russia

Abstract. Nowadays, the potential for international cooperation in the Arctic is concentrated within the framework of such an influential international structure as the Arctic Council, where Russia is presiding over soon in 2021–2023. The article is devoted to international cooperation evaluation of 15 Arctic universities from 7 Arctic Council member-states with a student contingent of at least 3,600 people (2 in the USA, 1 in Iceland, 5 in Russia, 2 in Finland, 2 in Sweden, 2 in Norway, 1 in Canada). It seems possible to evaluate international cooperation potential between Arctic universities through the prism of 10 quantitative indicators, including the number of international students admitted to the university; number of courses taught in English; number of educational programs for international students; a number of foreign scientists invited to the university, etc. We can evaluate both academic mobility within the Arctic universities and vocational education internationalization due to accumulated statistical data.
Keywords: *academic mobility in the Arctic, vocational education, monitoring, internationalization, international cooperation in the Arctic.*

Introduction

The Arctic has its own specifics both in terms of its special geographical position and difficult natural and climatic conditions, and in terms of special institutional norms and organizational forms. Recently, the potential for international cooperation in the Arctic has been concentrated within the framework of an influential international structure — the Arctic Council, in which Russia will chair in 2021–2023. Tempus fugit, and on March 5, 2020, the Strategy for the Development of the Arctic Zone of the Russian Federation for the period up to 2035 was approved by the Decree of the President of the Russian Federation [1]. Norwegian Foreign Minister Ine Eriksen stressed that Sweden, Norway and Finland are also planning to adopt their new Arctic strategies in 2020 at the Arctic Frontiers conference in Tromsø in January 2020 [2]. The country's Arctic strategy is a tool for articulating its geopolitical interests in the Arctic.

At the same time, we note that science and education act as one of the tools to ensure geopolitical interests in the macroregion [2, Pavlenko, Podoplekin]. Thus, the Kiruna Declaration notes not only an increase in the infrastructural presence in the Arctic, but also a large-scale in-

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[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 "Basic Principles of Russian Federation State Policy in the Arctic to 2035"]. URL: https://www.garant.ru/products/ipo/prime/doc/73606526/ (accessed 25 May 2020).

[2] Arctic Frontiers 2020. URL: https://www.youtube.com/channel/UCRzEu-bKXMSorGUlqdBsphw (accessed 25 May 2020).

crease in the research factor[3]. Universities are becoming a tool that stimulates integration processes in the Arctic zone. The realities of globalization and growing international interdependence are driving changes in education in terms of what and how they teach in educational institutions around the world. Schools, colleges, institutes and universities are increasingly committed to developing international cooperation. All universities in the world, without exception, including the Arctic ones, take part in internationalization in such areas as:

- establishment of friendly relations with foreign universities, students, teachers and staff;
- development of the competencies of graduates with the knowledge, skills and abilities necessary for work and life in the modern world at the international and intercultural levels;
- improvement of the quality of education and research and introducing intercultural innovation in education and training[4].

The study is developing a tool for assessing the potential of international cooperation in the Arctic macro-region — *the Barometer for assessing the potential of international cooperation in the Arctic*, including an integral assessment of international cooperation in the macro-region as a whole and the geographical distribution of the intensity of cooperation in the regional context.

Description of indicators for the Barometer

The Barometer for assessing the potential for international cooperation in the Arctic is a convenient infographic tool that makes it possible to familiarize all to whom it may concern with the situation in the field of international cooperation.

The methodology of *the Barometer for assessing the potential for international cooperation in the Arctic* includes a list of 10 quantitative indicators used to analyze international cooperation of Arctic universities:

- the number of implemented projects within the BEAC, NCM, AC over the past 5 years;
- the share of foreign students in the total share of students;
- the presence of large universities and research centers that carry out Arctic research;
- the number of teachers and scientists invited to implement educational programs, conduct research;
- the proportion of students sent to study at foreign universities;
- the number of foreign students admitted to the university;

[3] Kirunskaya deklaratsiya po sluchayu VIII Ministerskoy sessii Arkticheskogo soveta 15.05.2013 [Kiruna Declaration of the 8th Ministerial Session of the Arctic Council, 15 May 2013]. URL: https://www.mid.ru/foreign_policy/ecology/-/asset_publisher/9jm0ASADm3qm/content/id/110270 (accessed 25 May 2020).

[4] Pestsov S.K., Tolstokulakov I.A., Labyuk A.I., Kolegova E.A. Mezhdunarodnoe sotrudnichestvo v Arktike: interesy i strategii stran Aziatsko-Tikhookeanskogo regiona [International Cooperation in the Arctic: Interests and Strategies of the Countries of the Asia-Pacific Region]. URL: http://www.ras.ru/FStorage/Download.aspx?id=890c363f-f2dd-4a4f-bfb3-8499d3cb665e (accessed 25 May 2020).

- the number of educational programs (bachelor's and master's) in English for foreign students;
- number of courses in English;
- number of international partnerships and university memberships;
- the total number of PhD programs with foreign universities.

Quantitative data on 10 indicators was collected from 3 types of open sources:

- a database on projects in the field of economy, innovation, environmental and social spheres, supported by BEAC, NCM and the Arctic Council;
- websites of large Arctic universities (5 Russian and 10 foreign universities with a student number of at least 3 600 people[5]);
- website of the University of the Arctic - an international organization uniting 174 participants, including higher education institutions and other organizations, mainly from the Arctic countries.

Thus, the main focus of the international cooperation of the University of the Arctic, as can be seen from Fig. 1, falls on Northern Europe (Fig. 1). It should be emphasized that Finland plays the greatest role in the establishment and development of the University of the Arctic, which is also noted in the 2010 Barrows Declaration: "We are pleased to note the continuing development of the University of the Arctic, express our gratitude to Finland for the administrative support of the University and we will inspire the Arctic states and other partners to support the development of key programs of the University" [6].

[5] Arctic University in Tromsø. URL: https://en.uit.no/startsida; Yukon College. URL: https://www.yukoncollege.yk.ca/; Lapland University. URL: http://www.ulapland.fi/EN; Murmansk State Arctic University. URL: http://www.mshu.edu.ru/ ; Murmansk State Technical University. URL: http://www.mstu.edu.ru/; Nord University. URL: http://www.nord.no/en; Petrozavodsk State University. URL: https://petrsu.ru/en; Northern (Arctic) Federal University named after M.V. Lomonosov. URL: http://narfu.ru/; North-Eastern Federal University named after M.K. Ammosov. URL: http://www.s-vfu.ru/; Luleå Technical University. URL: https://www.ltu.se/?l=en; University of Alaska Anchorage. URL: https://www.uaa.alaska.edu/; University of Alaska at Fairbanks. URL: https://www.uaf.edu/; University of the Arctic. URL: http://ru.uarctic.org/universitet-arktiki; University of Iceland. URL: http://english.hi.is/; University of Oulu. URL: http://www.oulu.fi/university/; Umeå University. URL: http://www.umu.se/english (accessed 25 May 2020).

[6] Barrows Declaration 2010. URL: http://russiancouncil.ru/common/upload/Arctic%20Anthology%20Vol%203.pdf (accessed 25 May 2020).

Fig. 1. Visualization of international cooperation at the Arctic University: 1) institutions participating in Arctic cooperation; 2) partners who are not participants in Arctic cooperation; 3) leaders of Arctic cooperation.

As follows from Fig. 1, Russia is significantly behind in terms of the number of contact points, which indicates the insufficient and even sluggish international activity of the Russian Federation in the field of science, education and human capital development.

However, in order to gain a deeper understanding of the international activity of Arctic universities, we will consider each of the 10 proposed indicators separately.

Indicator No. 1 "The number of projects implemented within the BEAC, NCM and the Arctic Council for 2012–2017". Data on the number of projects implemented within the framework of such international organizations as BEAC, NCM and the Arctic Council for 5 years were obtained from the materials accumulated in the form of a database (Fig. 2).

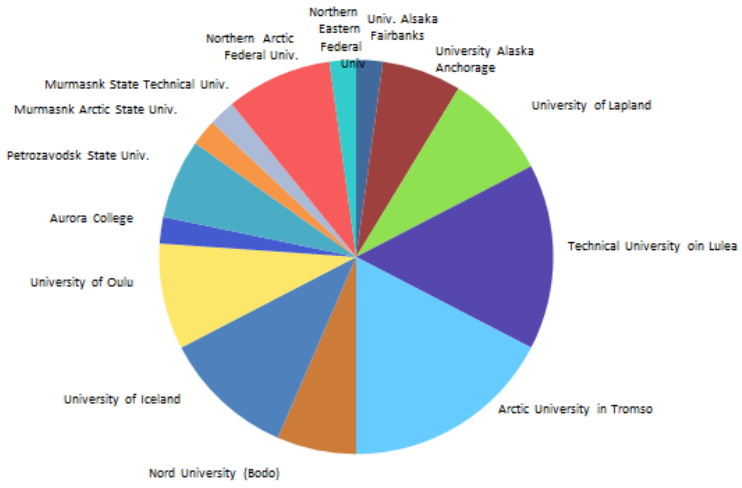

Fig. 2. Number of projects implemented under BEAC, NCM and the Arctic Council over the past 5 years, 2012–2016

As it follows from fig. 2, the largest number of projects within the framework of international organizations is implemented by the Arctic University in Tromsø, Norway (8 projects) and the Technical University in Luleå, Sweden (7 projects). This is followed by the University of Iceland, the University of Oulu, the University of Lapland and NArFU (Russia) with 4 projects, respectively.

Indicator No. 2 "The share of foreign students from the total share of students" is presented in fig. 3. As follows from fig. 3, the leader in the number of foreign students is the University of the Arctic in Tromsø (Norway) with 10%, the second place belongs to the University of Iceland — 8.34%, followed by the University of Lapland (Finland) — 6.4%. Russian Arctic universities, with the exception of PetrSU (4.05%) and NArFU (4%), are very much "sagging" in this indicator.

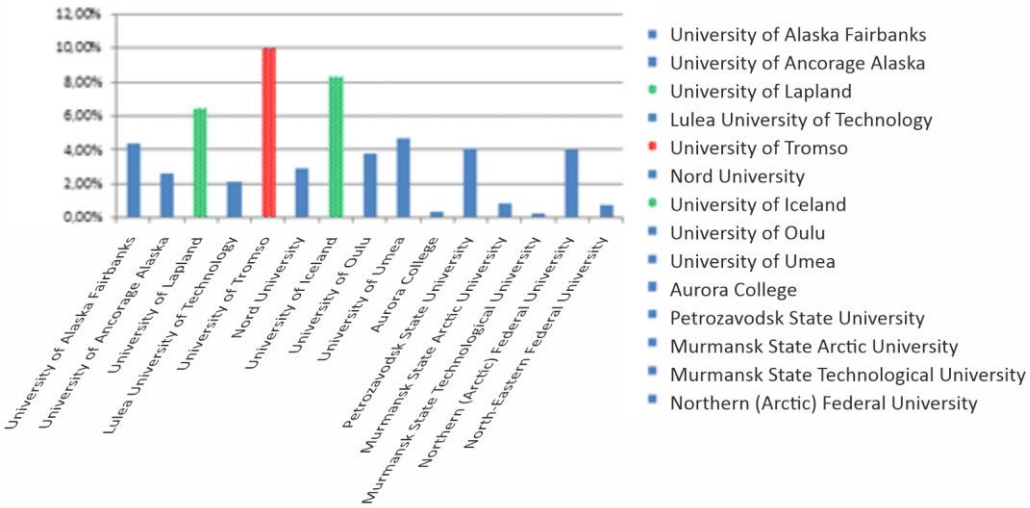

Fig. 3. *Share of foreign students out of a total proportion of students, 2017*

Indicator No. 3 "The presence of large universities and research centers, implementing Arctic research". The research focuses on 15 Arctic universities located beyond 66 degrees north latitude, that is, beyond the Arctic Circle (66 °33'44 " (66.5622°) north of the equator).

Also, the focus of the study is only on large universities (not branches) with a student number at least 3.600 people (table 1). Thus, the largest Arctic university is Umeå University with a student number of 31.500 in 2017, followed by the University of Alaska in Anchorage (20.000 students), NEFU (19.970 students), NArFU (17.228 students) and the University of Oulu in Finland (16.000 students).

Canada is an exception in some way, with only 2 colleges beyond 66 degrees north latitude: Aurora College and Yukon College. We analyze data from Aurora College only, as it is a college-university because it offers a bachelor's degree in Social Work.

Table 1

Number of students of Arctic universities 2017

Arctic University name	Number of students
Umeå University	31 500
University of Alaska in Anchorage	20000

NEFU	19970
NArFU	17228
University of Oulu	16000
University of Iceland	13782
Luleå Technical University	13000
Arctic University Tromsø	12000
Northern University (Bodø)	12000
PetrSU	11230
MSTU	11000
University of Alaska at Fairbanks	9870
Lapland University	4685
MAGU	3626
Aurora College	559

IT technologies play an important role in the internationalization of Arctic universities, including their websites. Most of the websites of Arctic universities are developed in English (table 2). Exceptions are Russian universities, as well as the Technical University in Luleå (Sweden) and the Arctic University of Tromsø (Norway).

Table 2

Main language of the Arctic universities' websites

Arctic University name	The language of the Arctic universities' websites
University of Alaska at Fairbanks	English
University of Alaska Anchorage	English
Lapland University	English
Luleå Technical University	Swedish
Arctic University Tromsø	Norwegian
Northern University (Bodø)	English
University of Iceland	English
University of Oulu	English
Umeå University	English
Aurora College	English
PetrSU	Russian
MAGU	Russian
MSTU	Russian
NArFU	Russian
NEFU	Russian

A deeper understanding of indicator No. 3 “The presence of large universities and research centers, implementing Arctic research” will also help to study the number of mentions of cooperation with Russian universities in the news over the past year (fig. 4). The news feeds of 10 foreign Arctic universities were analyzed for mentioning Russia in them.

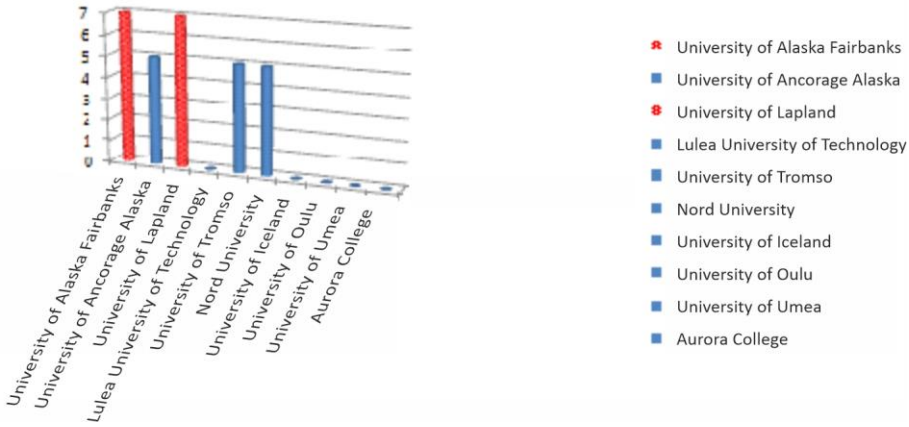

Fig. 4. Mentions about cooperation with Russia in the university's news feed for the year, 2017

As follows from fig. 4, the leaders in the number of mentions of cooperation with Russia are the University of Alaska at Fairbanks (USA) and the University of Lapland — they have 7 mentions per year. The second place is shared by the University of Alaska at Anchorage (USA), the Arctic University in Tromsø (Norway) and Bodø Northern University (Norway) — they have 5 mentions per year. That means an obvious interest in Russian research from the United States and Norway. The number of references to Russia is reduced to zero in the remaining 5 foreign universities taking part in this study.

Indicator No. 4 “The number of teachers and scientists invited to implement educational programs, conduct research”. The undisputed leader in this indicator is the Northeastern Federal University, which invited 72 foreign scientists in 2017, PetrSU ranks second (37 scientists), and the University of Iceland — 35 scientists (Fig. 5).

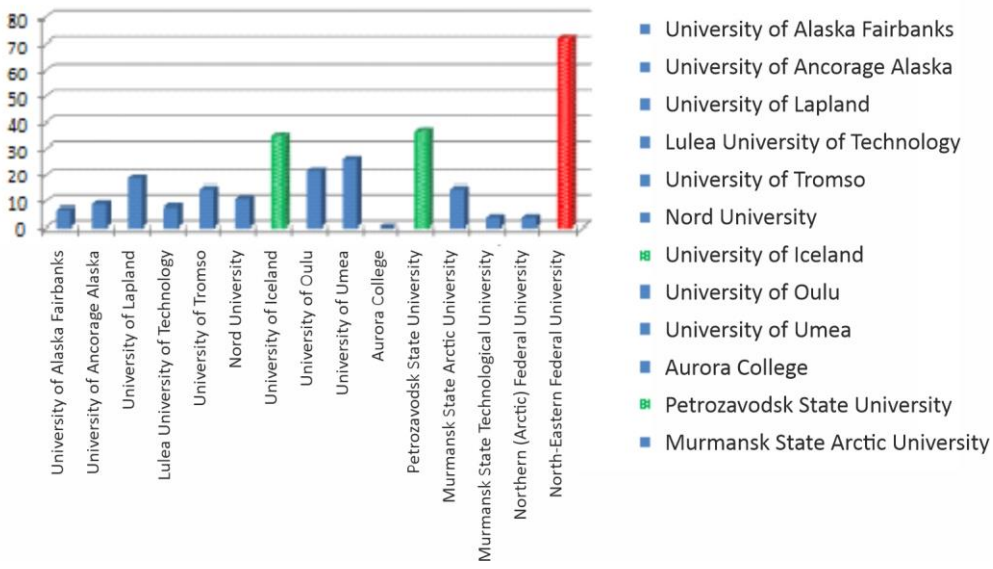

Fig. 5. The number of teachers and scientists invited to implement educational programs, conduct research, 2017

Indicator No. 5 “The proportion of students sent to study in foreign universities” is shown in fig. 6. Quantitative data were collected for 5 Russian Arctic universities, since they are mostly

closed and are not in the public domain. This type of indicator refers to “specific” or hard-to-find indicators. For example, no such indicators could be found on the websites and reports of foreign Arctic universities.

The obvious leader in student exchange among Russian universities is NArFU, which sent 368 students abroad in 2017.

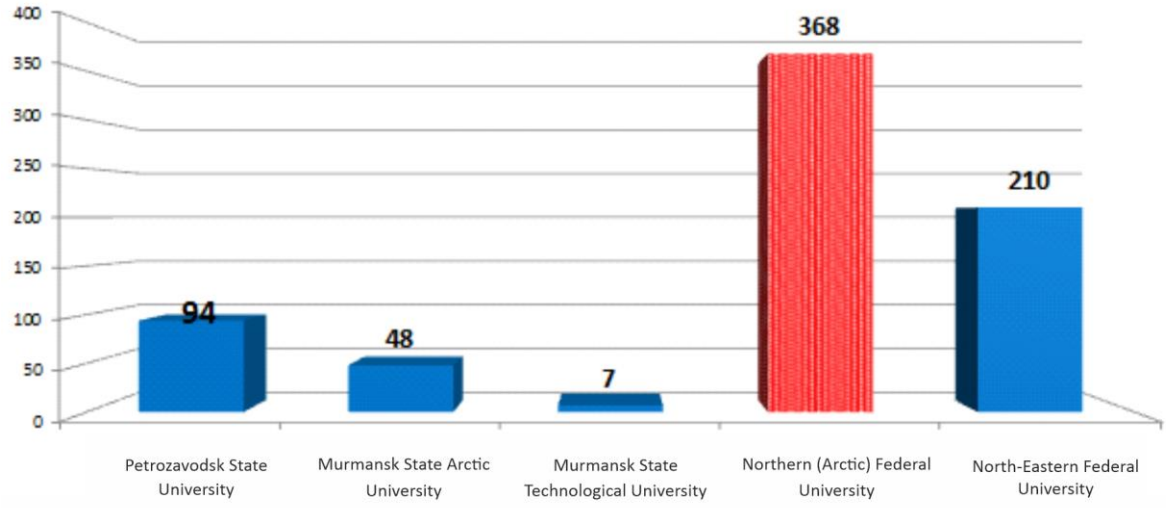

Fig. 6. The proportion of students sent to study in foreign universities, 2017

A broader understanding of the exchange of students within the Arctic universities of the studied countries is given in fig. 7. Infographics from the UArctic website indicate significant student flows in the following areas:

- from Norwegian universities to Russian ones;
- from Finnish universities to Canadian ones;
- on the mutual exchange of students between the USA and Canada;
- on the mutual exchange of students between Canada and Norway.

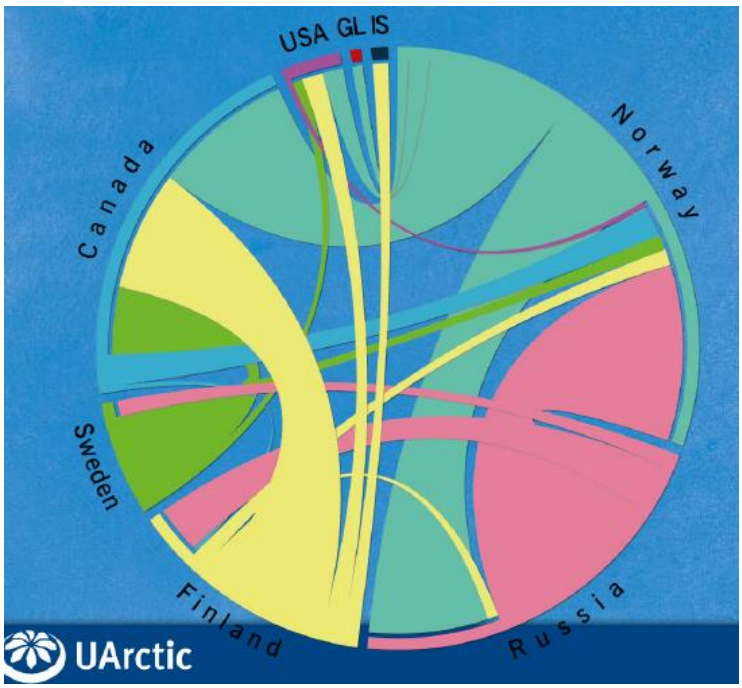

Fig. 7. Vectors of student exchange in Arctic universities in 2017

Quantitative indicator No. 6 “The number of foreign students admitted to the university” is formalized in table 3, which shows that the largest number of foreign students is accepted by the Arctic universities of Northern Europe: Umeå University, Tromsø Arctic University and the University of Iceland. NArFU (706 students) and PetrSU (455 students) dominate among Russian universities.

Table 3

Number of international students admitted to Arctic universities in 2017

Arctic University name	Number of foreign students admitted to the university
Umeå University	1480
Arctic University Tromsø	1200
University of Iceland	1150
NArFU	706
University of Oulu	600
PetrSU	455
University of Alaska in Anchorage	524
University of Alaska at Fairbanks	428
Northern University (Bodø)	350
Lapland University	300
Luleå Technical University	270
NEFU	146
MSTU	35
MAGU	32
Aurora College	2

Indicator No. 7 “The number of educational programs (bachelor's and master's degrees) in English for foreign students” is shown in fig. 8. The obvious leader in terms of the number of study programs in English is the University of Iceland — 49 programs, the second place belongs to Umeå University, Sweden (39 programs) and the Arctic University of Tromsø, Norway (35 programs). NArFU is the leader among Russian universities — 7 training programs in English.

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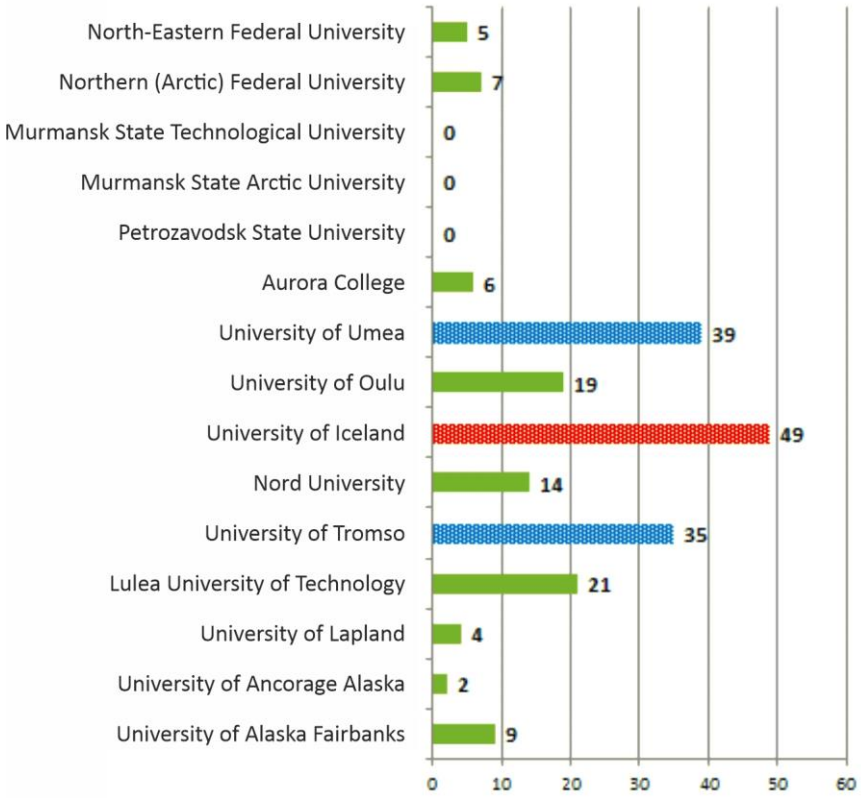

Fig. 8. Number of educational programs (bachelor's and master's) in English for international students, 2017

Indicator No. 8 “Number of courses in English” reflects the level of internationalization of a university. Thus, at the University of Iceland, 500 courses are taught in English, at the University of Oulu — 486 courses, and at the University of Tromsø — 350 courses. The Russian leader again is NArFU — 66 courses (fig. 9).

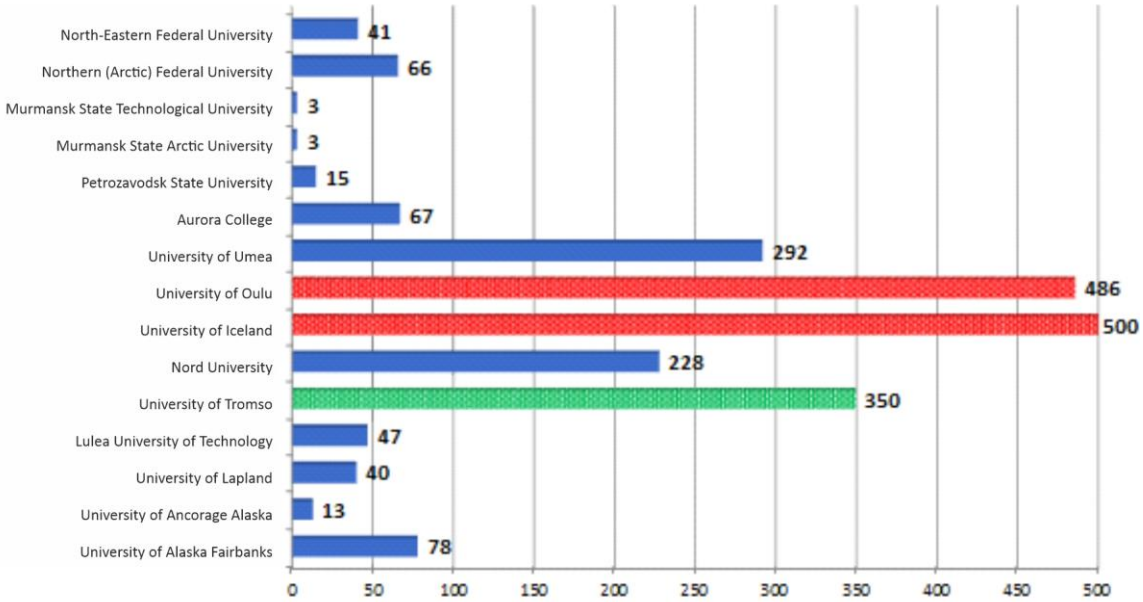

Fig. 9. Number of courses taught in English at Arctic universities in 2017

Indicator No. 9 “Number of international partnerships and university memberships” is clearly presented in fig. 10. The largest number of partnerships and memberships, as one of the

signs of internationalization, have Umeå University (564 agreements), the University of Iceland (400 agreements) and NEFU (142 agreements).

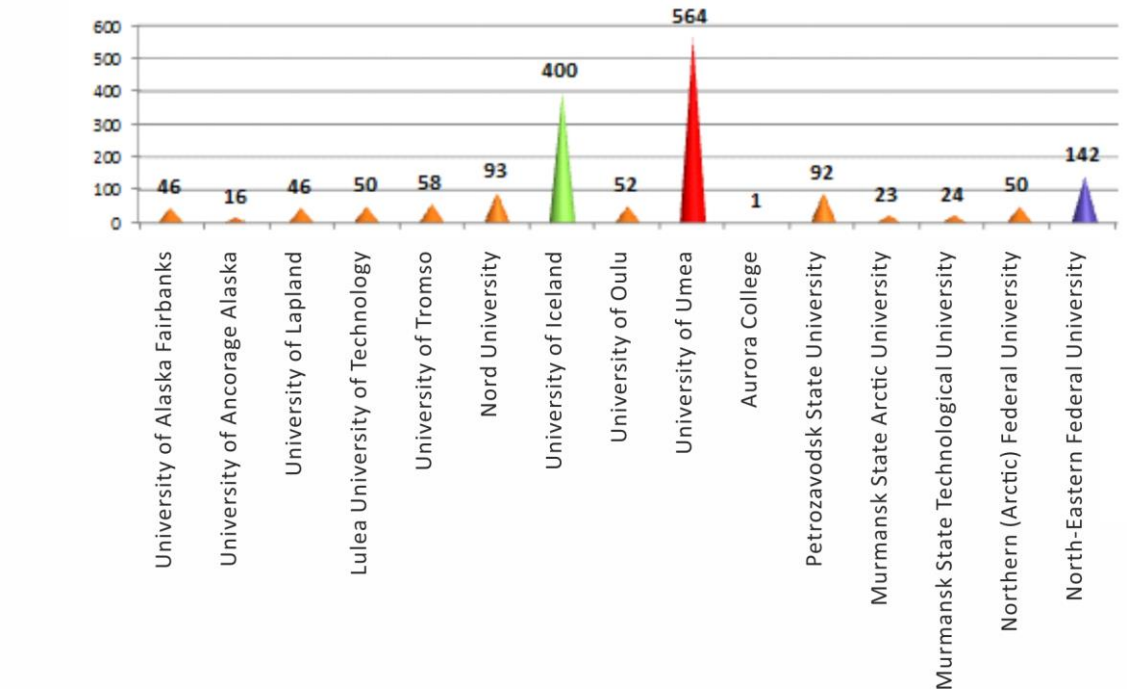

Fig. 10. Number of international partnerships and university memberships in 2017

Indicator No. 10 “The total number of PhD programs with foreign universities” reflects the highest degree of internationalization, as it gives an idea of the system of joint training of highly qualified scientific personnel within the framework of PhD programs.

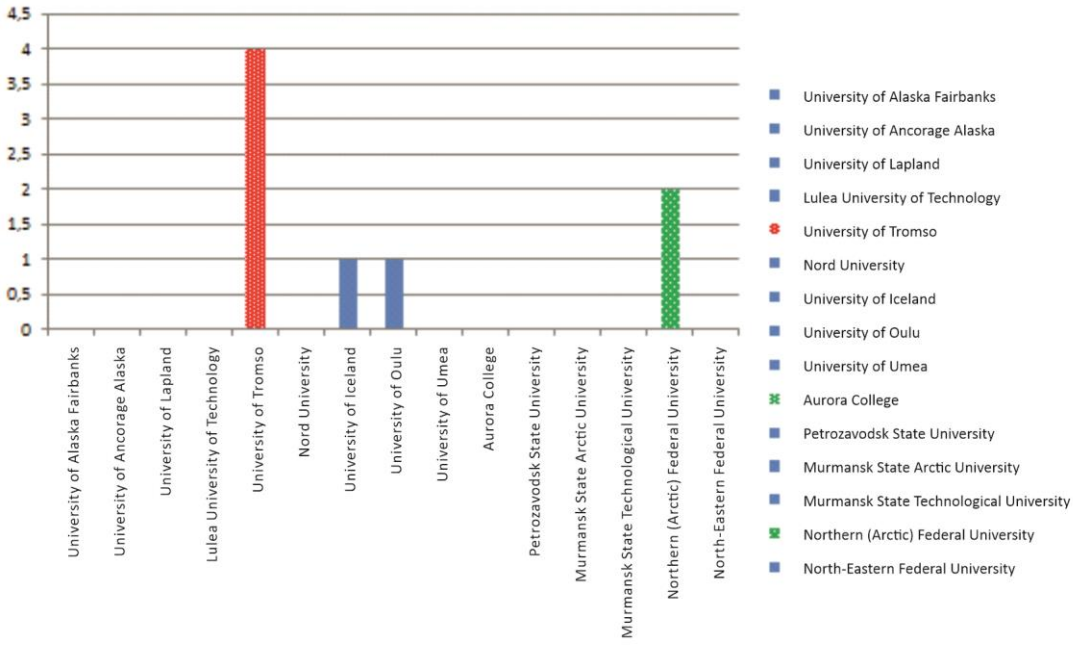

Fig. 11. The total number of PhD programs with foreign universities in 2017.

As follows from fig. 11, the leader is the University of Arctic Tromsø with 4 PhD programs, followed by NArFU with 2 PhD programs, the University of Iceland and the University of Oulu have 1 PhD program respectively.

Thus, within the framework of the study, a list of 10 indicators was formed, quantitative indicators for the selected indicators were accumulated and analyzed in the context of 15 large Arctic universities in 2017.

Barometer for assessing the potential of international cooperation in the Arctic

The clustering methodology of the Arctic macroregions is based on the research of A. Pilyasov, who identifies four models of the Arctic economy — Canadian, American, European and Russian [1, Zamyatina, Pilyasov].

The basis for clustering the Arctic regions in assessing the potential of international cooperation is a list of 10 indicators for internationalization, including the number of projects implemented within the BEAC, NCM, AC; the presence of large universities and research centers that carry out Arctic research; the share of foreign students in the total share of students; the number of teachers and scientists invited to implement educational programs, conduct research; the proportion of students sent to study at foreign universities; the proportion of foreign students studying at the university; the number of educational programs in English for foreign students; number of courses in English; number of international partnerships and memberships; the total number of PhD programs with foreign universities.

The quantitative indicators of 10 indicators were ranged using points from 1 to 3, where 1 point would correspond to a low potential for international cooperation, 2 points — an average potential, 3 points — a high potential. Thanks to the point ranking, it was possible to identify low / medium / high potential for international cooperation between various universities in the Arctic (table 4). In addition, the results of the last ranking of world universities in the top 100 were taken into account in the implementation of the point ranking, which included only Moscow State University among Russian universities.

As a result of 10 different indicators scoring, a table 4 was formed which demonstrates low / medium / high potential for international cooperation of various universities in the Arctic. If the sum of the university's points is less than 15, this indicates its low potential for cooperation in the international sphere, 15–20 points — the medium potential, over 20 points — the high potential.

Table 4

Assessment of the potential for international cooperation in the Arctic

Arctic University name	Potential for international cooperation
University of Alaska at Fairbanks	low
University of Alaska in Anchorage	low
Lapland University	medium
Luleå Technical University	medium
Arctic University Tromsø	high

Northern University (Bodø)	medium
University of Iceland	high
University of Oulu	medium
Umeå University	high
Aurora College	low
PetrSU	medium
MAGU	low
MSTU	low
NArFU	medium
NEFU	medium

Obviously, the Arctic of America (USA and Canada) shows low potential for international cooperation, the Arctic of Europe is high / medium, and the Arctic of Russia is medium / low. In general, the potential for international cooperation in the Arctic is at an average level.

For a more complete visualization of the potential of international cooperation, a map of the Arctic is proposed, which makes it possible to understand which regions of the Arctic are interested in international cooperation and which are not (fig. 12).

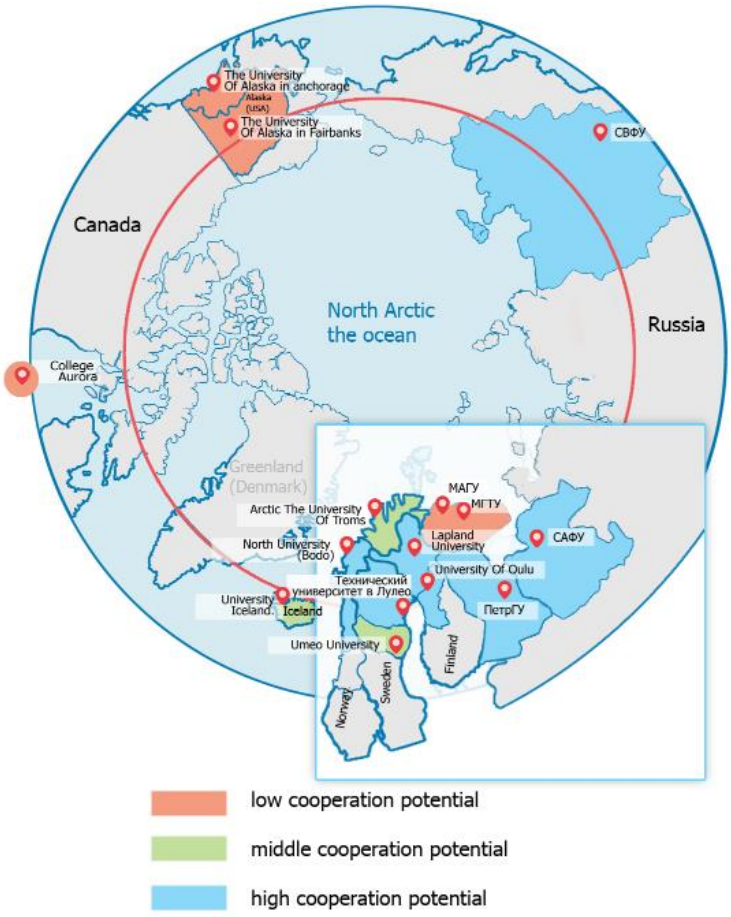

Fig. 12. Barometer for assessing the potential of international cooperation in the Arctic

Conclusion

The study of fifteen Arctic universities among the member countries of the Arctic Council in 2017 showed different levels of internationalization of higher professional education. The American Arctic (USA and Canada) showed low potential for international cooperation, the European Arctic — high / medium level, and the Russian Arctic — medium / low. It is advisable to make the following global conclusion for Russia: it is necessary to implement an optimal transition from low to medium potential for the universities of the Murmansk oblast (MASU and MSTU); from an average potential to a high one for 3 universities of the European North of Russia (PetrSU, NArFU) and the eastern part of the Russian Arctic (NEFU). Recommendations for Russian universities to move to the next level of internationalization may include the following provisions: conclude more agreements with foreign universities; diversify the vectors of student exchange and increase the volume of student exchange; develop training programs in English (bachelor's, master's); create a joint training program (PhD program); invite more foreign scientists, researchers; lead projects within the framework of international Arctic organizations (NCM, BEAC, Arctic Council); introduce courses in English into training.

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Assessment of the Comfort of the Urban Environment as a Factor in the Social Well-Being of Citizens of the Arkhangelsk Oblast *

© Olga N. RUSSOVA, Cand. Sci. (Philos.), Associated Professor
E-mail: o.russova@narfu.ru
Northern (Arctic) Federal University named after M.V. Lomonosov, Arkhangelsk, Russia
© Tatyana S. SMAK, Cand. Sci. (Sociol.), Sociologist-Analyst
E-mail: smaktanya@gmail.com
Public Opinion Research Center of Arkhangelsk Oblast, Arkhangelsk, Russia
© Ivan A. TARASOV, Project Manager
E-mail: tarasovivanan@gmail.com
Regional charity NGO "Arkhangelsk centre of social technologies "Garant", Arkhangelsk, Russia

Abstract. Since 2016, Russia has been implementing the priority federal program "Formation of a Comfortable Urban Environment". During this period, significant funds have been spent and hundreds of improvement projects implemented in the urban environment in both large and small cities across the country. How did these improvements affect the subjective assessment of the urban environment among citizens? Are the residents involved in the development of these projects, or are they indifferent to these topics? Is there a difference in assessing the quality of the urban environment by the citizens between small and medium cities, company towns and multifunctional metropolitan areas? The article is a partial analysis of a comprehensive study's data, "The Formation of a Comfortable Urban Environment in the Arkhangelsk Oblast". The survey was conducted among residents of 5 cities of the Arkhangelsk oblast (n = 793). The methodology for assessing social well-being is used. The cities studied are varied in the typology of size and the dominant form of employment. The results of the study demonstrate the interest of residents in implementation projects. Assessment of the current urban environment is recorded as moderately unsatisfied. Moreover, there is no fundamental difference in assessments of the urban environment's current conditions in the opinions of residents of small and single-industry towns and citizens of a large, regional center city.

Keywords: *city, urban environment, social well-being, urban environment quality index, urban transformation, types of cities.*

Introduction

Modern cities are centers of development, accumulating technology, finance, infrastructure, and qualified personnel. One of the factors in attracting these resources is a high-quality urban environment. Comfort of living is one of the most significant factors in ensuring the competitiveness of settlements, regions and the country as a whole. The urban environment is not only landscapes, but also the qualitative state of its natural and man-made components, the level of development of information exchange, the nature of the dominant symbolism [1, Dridze T.M., p. 131]. But if a quarter of a century ago, the famous Soviet sociologist Tamara Dridze believed that people and the urban environment do not occupy an insufficient place in predictive social design, today the situation has changed, despite the fact that perception of the city as an object of management are developing slowly, possessing tremendous inertia. At the same time, the urban envi-

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ronment as the focus of civilization has been evolving for five thousand years, sometimes with stops, often with backward movements [2, Glazychev V.L., p. 259].

In this sense and in this connection, we imagine the city as a social laboratory. According to Robert Park, civilization and social progress in our modern cities have acquired the character of a kind of controlled experiment [3, p. 4].

One of such social experiments is the implementation of the priority federal project "Formation of a comfortable urban environment". The main goal of the program is to create conditions for the systematic improvement of the quality and comfort of the urban environment throughout Russia through the annual implementation (in the period from 2017 to 2020) of a set of priority measures to create a modern comfortable urban environment, the implementation of 400 complex improvement projects and training of 2.000 specialists by 2020[1].

Integral index of urban environment quality

There are various methods and ratings to assess the state of cities as a whole and its individual components, which differ in the degree of differentiation of indicators and an emphasis on social, cultural, political, economic, environmental or other parameters. Global City Indicators Programme, City Blueprint, European Green Capital Award, European Green City Index and others are among the foreign indicators. Among the numerous Russian approaches to assessing and rating cities, it is important to note the general index of cities attractiveness of the Ministry of Regional Development of the Russian Federation (up to 2014) and the integral index of the urban environment quality of the Ministry of Construction of the Russian Federation.

For several years, the Ministry of Construction of the Russian Federation has been determining the quality level of the urban environment of municipalities. The methodology for calculating the integrated index is used for this purpose, based on the indices of the quality of the urban environment [2]. The results of the Index formation are used in the implementation of the provisions of the Decree of the President of the Russian Federation of May 7, 2018 No. 204 "On national goals and strategic objectives of the development of the Russian Federation for the period up to 2024", the national project "Housing and the urban environment", as well as to determine the amount of subsidies from the federal budget to the budgets of the constituent entities of the Russian Federation to support state programs of the constituent entities of the Russian Federation and municipal programs for the formation of a modern urban environment.

[1] Strategicheskoe napravlenie razvitiya «ZhKKh i gorodskaya sreda» [Strategic Direction of Development "Housing and Communal Services and Urban Environment"]. URL: http://www.minstroyrf.ru/trades/gorodskaya-sreda/strategicheskoe-napravlenie-razvitiya-zhkkh-i-gorodskaya-sreda/ (accessed 26 December 2019).

[2] Rasporyazhenie Pravitel'stva RF ot 23 marta 2019 g. N 510-r «Metodika formirovaniya indeksa kachestva gorodskoy sredy» [Order of the Government of the Russian Federation of March 23, 2019 No. 510-r "Methodology for the Formation of the Urban Environment Quality Index"]. URL: http://static.government.ru/media/files/wbRiqrDYKeKbPh9FzCHUwWoturf2Ud0G.pdf (accessed 26 December 2019).

The urban environment is characterized by a combination of natural, architectural, planning, environmental and other factors that form the habitat in a certain territory and determine the comfort of living in this territory. In this document, the concept of "urban environment" is used in relation to cities, urban districts, urban settlements, as well as rural settlements.

The Ministry of Construction of the Russian Federation, together with the state company “Dom.RF” and the “Strelka” consulting bureau, calculated the quality indices of the urban environment of 1.114 municipalities for 2018. The index represents the digital value of the state of urban environment of the settlements, assessed from quantitative and measurable indicators of comfort in the territory concerned.

When calculating the city index, the maximum and minimum absolute values in the data array are determined (in each of the climatic and size groups) and a fixed absolute value is determined for each point. The cities are divided into ten climatic and size groups for the correct compilation of scales for assessing the city index and their correct comparison. Two indicators are taken into account while assigning a city to the corresponding group: the geographical location of the city (constant factor) and the population of the city (updated annually).

Climatic groups are determined by the following parameters: cities located on the territory of a conventionally comfortable climate, and cities located on the territory of an uncomfortable climate.

For several years of using the methodology for calculating the urban environment quality index, the approaches and the number of indicators have changed. The technique has been adjusted and refined several times. Today, the final index includes an assessment of six spaces on six criteria. The spaces include housing, road network, green spaces, public and business infrastructure, social and leisure infrastructure, city-wide space. Each of the spaces is assessed according to the following criteria: safety, comfort, environmental friendliness and health, identity and diversity, modernity and relevance of the environment, management efficiency. Thus, there are 36 indicators with a value from 0 to 10 points; the maximum possible value of the city index is 360 points. Information on 19 indicators is taken from open sources: information from search and information mapping services, data from a geographic information system, space images of territories, social networks. The remaining 17 indicators are taken from statistics agencies and executive authorities.

According to the calculations of the indices of urban environment state of 1.114 settlements made by the Ministry of Construction of the Russian Federation in 2018, the average value of the quality index of the urban environment in the country was 163 points. The share of cities with a favorable urban environment at the end of the year is 23%[3]. That is, 262 settlements are

[3] Minstroy Rossii obnarodoval pervyy v strane indeks kachestva gorodskoy sredy [The Ministry of Construction of Russia published the country's first urban environment quality index]. URL: http://www.minstroyrf.ru/press/minstroy-rossii-obnarodoval-pervyy-v-strane-indeks-kachestva-gorodskoy-sredy/ (accessed 26 December 2019).

characterized by a favorable urban environment, and the environment in the remaining 852 cities is described in the index as unfavorable.

In large cities in uncomfortable climatic zones, a favorable environment has been formed in three cities of the Arctic region — Murmansk (zonal base for the development of the Arctic), Norilsk and Severodvinsk (regional (areal) base for the development of the Arctic), lower indicators in this group of cities are in Petropavlovsk-Kamchatskiy, Yakutsk and Nefteyugansk.

Table 1

Urban environment quality index[4]

Characteristics[5]		Arkhangelsk	Severodvinsk	Kotlas	Novodvinsk	Koryazhma
Population		349.7 thous. — large city	183.3 thous. — large city	61.8 thous. — middle city	38.4 thous. — small city	36.7 thous. — small city
Geographic location		relatively comfortable climate	severe climatic conditions	relatively comfortable climate	relatively comfortable climate	relatively comfortable climate
Spaces	Accommodation and surrounding area	21	32	26	35	42
	Street and road network	32	38	25	25	38
	Green spaces	19	35	24	25	23
	Social and business infrastructure and the surrounding area	22	22	21	19	19
	Social and recreational infrastructure and the surrounding area	25	31	35	28	31
	Citywide space	31	27	23	33	30
Final score		150	185	154	165	183

Among the cities of the Arkhangelsk oblast that participated in the study “Formation of a comfortable urban environment in the Arkhangelsk oblast” [6], two cities, Severodvinsk and Koryazhma, scored more than 50% of the maximum possible number of points, which, according to the methodology, characterizes the environment in these cities as favorable. In Arkhangelsk, Kotlas and Novodvinsk, less than half of the maximum number of points was scored — the environment is characterized as unfavorable.

[4] Rasporyazhenie Pravitel'stva RF ot 23 marta 2019 g. N 510-r «Metodika formirovaniya indeksa kachestva gorodskoy sredy» [Order of the Government of the Russian Federation of March 23, 2019 N 510-r "Methodology for the Formation of the Urban Environment Quality Index."] URL: http://static.government.ru/media/files/wbRiqrDYKeKbPh9FzCHUwWoturf2Ud0G.pdf (accessed 26 December 2019).

[5] Indeks kachestva gorodskoy sredy [Urban Environment Quality Index.] URL: https://индекс-городов.рф/#/regions/3 (accessed 26 December 2019).

[6] The study was carried out in April 2019 within the framework of the RFBR grant 18-411-290010 “Models of communicative management in the development of urban space (on the example of the Arkhangelsk oblast). A survey among the population of the Arkhangelsk oblast over 18 years old (Arkhangelsk, Severodvinsk, Koryazhma, Kotlas, Novodvinsk). A combined method of collecting information: field research in older age groups and an online survey on the NArFU questionnaire platform in youth and middle age groups. The sample size is 793 respondents. The statistical error does not exceed 4.5%.

The main task of the Index is not to rank cities, but to find the problems that need to be solved in order to launch the renewal of cities and track the effectiveness of urban development programs. By 2024, the goal is to increase the average value of the urban environment index by 30% and halve the number of cities with an unfavorable urban environment. It is planned to spend more than 300 billion rubles to create a comfortable urban environment[7]. Thus, the assessment of the quality of the urban environment contributes to an increase in the efficiency of using the city's resources and sets the directions for long-term development strategies. However, the index becomes a real development tool only if it takes into account the needs of the population, the rhythms of cities, which allow us to consider the city as an integral system. When considering a city as an integral system, it is necessary to comprehend the spatial framework with physical elements of the city both natural landscape and created by people, in which all elements of city existence change at different rates.

Analysis of data from a comprehensive study "Formation of a comfortable urban environment in the Arkhangelsk oblast"

In one of the sociological conceptualizations of the city as an independent phenomenon, the key parameter that distinguishes a city from a non-city is its size, expressed in terms of population. It is the number of residents with a number of other characteristics that determines the qualitative transition from rural to urban lifestyle, expressed in a greater number of daily interactions with other people, greater personal independence, etc. The foundation of this tradition was laid by G. Zimmel [4], and then the Chicago School developed it.

The echo of this approach is still being heard in those systems and indexes that rank cities by population. A classic example is the system for assessing cities of the Ministry of Construction and the Integral Index of the Urban Environment Quality discussed above. This method certainly made sense in an era when the status of the city gave certain tax or other privileges; or in the era of the capitalism formation, when the number of workers could unambiguously indicate the role and place of the city in the system of division of labor; or in the Soviet period of the planned economy, when the supply of the city with goods and services was partly determined by its size. However, now studies using big data show, that, for example, the number of phone calls in large cities is disproportionately higher than in rural areas, which indicates some qualitative change with an increase in the number [5, Bettencourt L.M.A., Lobo J., Helbing D., Kuhnert C., West G.B.]

Another characteristic, which is partly complementary, is the form of employment. The urban population is characterized by a variety of forms of activity from commercial, administrative and industrial in the late 19th–early 20th centuries to the service sector and the "creative" economy at the beginning of the 21st century. The general idea that the form of sociality depends on the form of labor can be clearly traced back to Karl Marx and further among the Enlightenment

[7] Sreda dlya zhizni pochti 77% gorodov Rossii priznana neblagopriyatnoy [The living environment for almost 77% of Russian cities is recognized as unfavorable]. URL: https://www.rbc.ru/business/01/11/2019/5dbc369b9a7947df3790d55a (accessed 26 December 2019).

thinkers. However, this logic in relation to cities and urban lifestyles opens the question of whether there is a significant difference between urban sociality, for example, in an oil-producing monotown and a typical multifunctional regional center.

It can be assumed that the ways of life of the urban dwellers of a large administrative and commercial center of the agglomeration will differ significantly from similar markers of a small industrial monotown. Consequently, their requests regarding the urban environment will also differ — the number of social institutions, parks and recreation areas, the state of public infrastructure, etc. The level of satisfaction is expected to be different under otherwise equal conditions.

Nevertheless, the data of the research "Formation of a comfortable urban environment in the Arkhangelsk oblast" did not reveal such regularities.

The complex research focused on residents of several significantly different cities: Arkhangelsk (the largest city of the Russian Arctic, an agglomeration center with administrative, commercial, partly industrial and logistics functions), Severodvinsk (a large city with a predominantly industrial significance, a single-industry town), Kotlas (a small town of administrative importance), Novodvinsk and Koryazhma (small industrial monotowns). The analysis of the results is presented in three groups: Arkhangelsk, Severodvinsk and medium and small towns. One of the markers of social well-being is the satisfaction of urban residents with various indicators of the comfort of the urban environment.

The urban environment is an integral phenomenon that is created due to the action of many factors. An important factor in assessing the quality of the urban environment for the population is the safety of the city (including the safety of its life support and the safety of the urban environment, public and personal safety). The level of satisfaction with the safety of the urban environment among residents of the region capital is significantly lower than among residents of small towns. Only every fifth resident of Arkhangelsk positively assessed this criterion.

Table 2

Safety satisfaction (lack of open sewer hatches, broken street lights, pits on roads, etc.)

	Arkhangelsk	Severodvinsk	Medium and small towns
Yes, satisfied	3.2	5.3	4.2
Rather satisfied	15.7	29.1	43.5
Rather not satisfied	33.7	33.6	31.8
No, not satisfied	46.4	31.4	18.2
Difficult to answer	1.1	0.7	2.3
Index [8]	-61.2	-30.7	-2.3

Environmental safety is often understood as the state of protection of the natural environment and vital human interests from the possible negative impact of economic and other activities, natural and man-made emergencies, and their consequences. At the same time, the ecological safety of the territory is an essential component of public safety, therefore, the municipal authorities, especially in cities with an unfavorable ecological situation, must develop and implement

[8] The indices are calculated according to the formula: k = A–B, where A is the sum of the "positive" rating (upper limits of the rating scale), B is the sum of the "negative" rating (lower limits of the rating scale).

a local environmental policy, linked to the environmental policy of the state and aimed at protecting the environment from adverse technological influences. The survey participants showed low satisfaction with the parameter of preserving and improving the environment: 88% of respondents in Arkhangelsk and 86% of respondents in Severodvinsk are not satisfied and rather dissatisfied with this indicator, the situation in small towns is calmer.

Table 3

Satisfaction with environmental safety (preservation and improvement of the environment)

	Arkhangelsk	Severodvinsk	Medium and small towns
Yes, satisfied	1.7	1.8	3.4
Rather satisfied	8.1	10.7	16.9
Rather not satisfied	30.5	34.9	29.6
No, not satisfied	57.2	51.3	46.1
Difficult to answer	2.5	1.3	4.0
	-77.9	-73.8	-55.4

For the formation of a safe urban environment and the image of the city, the architectural and spatial organization of the security of public facilities and the formation of a "protective space" in the city, which should have clearly defined and identifiable boundaries, are of great importance. Within such a space informal observation of the events taking place in it is conducted [6, Ilyina I.N., p. 74].

Table 4

Satisfaction with having conditions for pleasant, safe, comfortable walks (footpaths, sidewalks, street lighting, benches, etc.)

	Arkhangelsk	Severodvinsk	Medium and small towns
Yes, satisfied	5.6	8.4	10.9
Rather satisfied	19.6	20.4	30.8
Rather not satisfied	26.0	34.1	28.9
No, not satisfied	47.4	36.5	28.1
Difficult to answer	1.5	0.5	1.3
Index	-48.2	-41.8	-15.3

An important contribution to the overall safety of the city is made by transport safety, including the safety of the dangerous goods transport and road safety.

Table 5

Satisfaction with the presence of a developed transport system (road junction, parking, public transport, etc.)

	Arkhangelsk	Severodvinsk	Medium and small towns
Yes, satisfied	10.1	10.5	6.8
Rather satisfied	29.1	32.1	25.5
Rather not satisfied	30.6	30.0	34.4
No, not satisfied	28.5	26.5	28.1
Difficult to answer	1.6	1.0	5.2
Index	-20.0	-13.9	-30.3

The availability and variety of social facilities is one of the competitive advantages of cities over villages and large cities over small ones. When assessing social well-being, satisfaction with the availability of such facilities is an important indicator. Research data of this characteristic are contradictory: on the one hand, the dynamics of satisfaction in all observed settlements has the same direction — a negative index; on the other hand, there are obvious differences in the types of cities: the greatest satisfaction is observed in small towns, the least level is in Arkhangelsk, while Severodvinsk occupies the middle position.

Table 6

Satisfaction with comfort (availability of various social facilities for different categories of the population)

	Arkhangelsk	Severodvinsk	Medium and small towns
Yes, satisfied	4.2	6.5	7.7
Rather satisfied	30.2	37.1	36.3
Rather not satisfied	31.5	36.6	39.3
No, not satisfied	31.2	18.4	11.3
Difficult to answer	2.9	1.4	5.4
Index	-28.3	-11.4	-6.6

One of the main trends in the transformation of cities is the priority development of public spaces, which are increasingly acquiring the status of multifunctional. In modern cities, where the development of the service sector and creative activities is intensifying, public spaces are easily transformed, adapting to given functions (recreation, trade, competitions, social events). Developed public spaces create a high quality of life in the city.

Table 7

Satisfaction with the modernity of the environment (availability of modern street, park, social and leisure, and public and business infrastructure)

	Arkhangelsk	Severodvinsk	Medium and small towns
Yes, satisfied	6.2	4.2	4.1
Rather satisfied	16.4	14.2	17.7
Rather not satisfied	36.2	37.7	43.2
No, not satisfied	38.7	42.3	33.6
Difficult to answer	2.5	1.6	1.5
	-52.3	-61.6	-55.0

The presence of unique cultural sites in the city is an important condition for the successful development of tourism and the building of local identity. Often, but not always, the presence of such places is associated with a long or special atypical history of the settlement. Our data indicate that these assumptions are confirmed in case of the surveyed cities.

Table 8

Satisfaction with the presence of unique cultural objects (monuments, landmarks, art objects, etc.)

	Arkhangelsk	Severodvinsk	Small towns
Yes, satisfied	10.4	4.8	2.2
Rather satisfied	37.4	20.4	26.6
Rather not satisfied	27.8	35.3	32.9

No, not satisfied	20.8	35.4	34.9
Difficult to answer	3.5	4.1	3.4
	-0.9	-45.4	-39.0

According to modern theories, elements of the natural environment, as well as public spaces, are important infrastructural objects in the city. They not only fulfill ecological and recreational functions, but also have the ability to be an infrastructure for grassroots civic engagement. In the case of the studied cities, we see that the satisfaction with the presence of such spaces is inversely proportional to the size of the settlement, which, apparently, is associated with the greater integration of small cities into the natural landscape.

Table 9

Satisfaction with the saturation of urban space with various elements of the natural environment (parks, squares, recreation areas, etc.)

	Arkhangelsk	Severodvinsk	Medium and small towns
Yes, satisfied	4.5	6.7	6.0
Rather satisfied	14.5	14.2	23.9
Rather not satisfied	29.5	32.7	34.3
No, not satisfied	50.2	45.0	32.1
Difficult to answer	1.3	1.3	3.7
	-60.7	-56.8	-36.4

Residents' assessment of the protection of public spaces from harmful environmental factors is not a typical element measured by the social well-being index. However, in our case, this factor must be taken into account, since, on the one hand, it indicates the demand of residents for the presence of such objects, and on the other hand, determine insufficiency if their number.

Таблица 10

Protection of public spaces from harmful environmental factors (noise, dust, gas pollution, etc.)

	Arkhangelsk	Severodvinsk	Medium and small towns
Yes, satisfied	3.2	2.4	1.0
Rather satisfied	10.6	14.9	14.0
Rather not satisfied	31.2	39.2	38.6
No, not satisfied	51.4	41.3	40.1
Difficult to answer	3.6	2.3	6.3
	-68.8	-63.1	-63.8

Conclusion

In all the cases, the answers of the respondents, grouped according to the territory, indicate the presence of common trends. At the same time, the presence of some peculiarities in the observed cities should be mentioned. All indices of the urban environment safety among residents of small towns are significantly higher than among residents of Arkhangelsk and Severodvinsk. Also, residents of small towns are satisfied with the presence of green spaces: parks and squares to a greater extent than residents of Arkhangelsk and Severodvinsk. At the same time, residents of the region capital are more satisfied with the availability of public and business infrastructure and the presence of cultural objects, and residents of Severodvinsk — with public transport.

All this allows us to say that the urban environment in each of the studied cases occupies a similar position in the social well-being of the townspeople. Of course, each city has its own specificity, rather related to its planning decisions, geographical location or historical development. But this does not change the whole picture — residents of cities and towns with different forms of employment impose the same requirements on the urban environment and assess the state of affairs in approximately the same way.

Therefore, it suggests that the emergence of a special form of urban life is proceeding differently than it was during the time of the classics of sociology. The difference between a city and a non-city is, apparently, not in the number of inhabitants and not in the prevailing form of economic activity, but in something else. Following Julie-Anne Boudreau [7, Boudreau J.-A.], one can try to find the foundations of the phenomenon of cities in special political relations and places of their concentration. But it is necessary to abandon a number of classical ideas for this.

One of the main results of the federal project “Comfortable Urban Environment” is that even after the completion of large-scale funding, it will not cease to exist as a trend, and in the long term, ideas for the development of the urban environment as a public space will remain.

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Axiological Preferences of Residents of the Karelian Arctic in the Modern Sociocultural Situation *

© Irina M. SUVOROVA, Doc. Sci. (Cultur.), Associate Professor, Professor
E-mail: suvormih@list.ru
Petrozavodsk State University, Petrozavodsk, Russia

Abstract. The study aims to identify the hierarchy of value dominants in the axiosphere of the Karelian Arctic residents, which has developed under the influence of natural, social, economic, and cultural-historical factors. The methodology used is complex and includes sociological, economic questionnaires, focus groups, and in-depth interviews. The study's cameral stage is based on an analysis of the empirical stage results conducted during a comprehensive scientific expedition of scientists of Petrozavodsk State University to two Arctic regions of Karelia in the summer of 2019. The most important in the study is the cross-cultural approach, based on comparing the results of a survey of respondents - the Karelian Arctic residents with the "general cultural profile" of S. Schwartz and identifying the level of validity of the applied psychological methodology. During the study, the author's hypothesis about features in the axiological preferences of the inhabitants of the Arctic zone at the level of dominant indicators is confirmed. At the stage of analysis and synthesis of the empirical stage results, the relationship of preserving human capital in the Arctic regions of Karelia with the identified value dominants of residents' health and safety is established. Special attention is paid to the influence of the current socio-cultural situation on the formation of the axiosphere of the inhabitants of the Arctic zone, and the conclusion is also made about the need for an integrated scientific approach in determining the prospects for the development of society in the Arctic regions.

Keywords: *Arctic, Karelia, value, axiosphere, cross-cultural approach, socio-cultural situation, human capital.*

Introduction

The study of the value preferences of contemporaries has become an urgent scientific topic in the humanities of the 20th century. The famous methods of studying the values of M. Rokich, A. Maslou, R. Inglehart, S. Schwartz and others were tested on a large scale [1, Schwartz S., p. 23–47] by the end of the last century. These axiological studies were applied to individual societies, countries and cultures, covering large territories and communities of people. Some researchers, such as R. Inglehart [2], built a kind of axiological chronotope with respect to a specific society (for example, Russian before and after perestroika revolution), which made it possible to trace the dynamics of value preferences over a certain period of time. However, there is very little axiological research on the inhabitants of such sparsely populated areas as the Arctic (in particular the Russian Arctic), both at the turn of the century and in modern science.

Nevertheless, both in the Russian and in the international scientific community it is now recognized that sustainable development of the Arctic region is impossible without ensuring the social well-being of residents, as evidenced by the "Fundamentals of State Policy of the Russian

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Federation in the Arctic Zone up to 2035"[1] adopted in 2020. In the "Fundamentals", as well as in many modern concepts (for example, in V.P. Fedorov's megaproject "Give the Arctic!" [3]), the task of increasing the population of the Russian Arctic (including through labor migration) and improving living conditions of the inhabitants of the region is updated. However, the implementation of this large-scale and complex task requires not only knowledge of the natural, climatic and economic characteristics of the territory, but also understanding of the psychological characteristics of local residents, which are reflected in their value priorities. The author of this study assumes that the value sphere of the Arctic inhabitants, as a special natural-climatic and socio-economic zone, has its own specific characteristics, which can be analyzed on the basis of obtaining empirical data. An interdisciplinary analysis of the empirical data obtained on the identified axiological preferences of the inhabitants of the Arctic can be practically used in the preparation of specific programs for the regions on economic, medical, educational and socio-cultural development.

Research interest in this topic in modern humanities is relevant from the point of view of political science, conflictology, economics, sociology. Thus, individual economic studies on the territory of the Russian Arctic were associated with axiological topics. For example, Maksimov A.M., Ukhanov A.V. considered the socio-cultural component of entrepreneurial potential in the Arctic regions of Russia (Arkhangelsk Oblast and Yamalo-Nenets Autonomous Okrug), linking it with the personal value dominants. "The authors of the article formulated a hypothesis that there is a specific set of values characteristic of individuals with a high propensity for entrepreneurship and distinguishing them from the rest of the population of a certain territory" [4, Maksimov A.M., Ukhanova A.V., p. 736]. However, the hypothesis put forward, according to the authors, was not confirmed in the course of the study, and it turned out that entrepreneurs "do not differ from the rest of the population in terms of value orientations" [4, p. 739]. The reasons for the negative verification of their hypothesis, according to scientists, are the universal human significance of terminal and instrumental values for all respondents, probably the weak sensitivity of the Rokeach method to cultural differences, as well as the influence of globalization processes on contemporaries. This experience shows how closely economic research can be connected with the study of the value orientations of respondents and how difficult the analysis of empirical data is.

However, the culturological approach to the study of value preferences assumes a complex character, as it is due to a number of interrelated problems. Firstly, it is the problem of the influence of topos (literally: places) on the formation of the axio-sphere (value sphere) of the respondents. Secondly, it is the problem of preserving human capital on the territory of the Russian Arctic in the conditions of the Far North. Thirdly, it is the problem of the influence of the modern sociocultural situation on the formation of people's value orientations in the context of globalization. The set of personal value orientations can be represented in the form of an axiosphere as a com-

[1] Ob Osnovakh gosudarstvennoy politiki Rossiyskoy Federatsii v Arktike na period do 2035 goda. Ukaz Prezidenta Rossiyskoy Federatsii ot 5 marta 2020 g. № 164 [Basic Principles of Russian Federation State Policy in the Arctic to 2035. Decree of the President of the Russian Federation of March 5, 2020 No. 164]. URL: http://static.kremlin.ru/media/events/files/ru/f8ZpjhpAaQ0WB1zjywN04OgKiI1mAvaM.pdf (accessed 17 July 2020).

plex structured system of a hierarchical type, which, despite its constant variability, is a stable motivator of human activity. Thus, the value dominants in the axiosphere of the personality direct individual's activity into an active channel, forming his way of life and his own human capital. The analysis of the axiosphere of the Karelian Arctic inhabitants, taking into account the stated problems, was possible thanks to the comprehensive scientific expedition of the Humanitarian Park of the leading university of the Republic of Karelia — Petrozavodsk State University — in July 2019 to Loukhskiy and Kemskiy municipal districts belonging to the territory of the Arctic zone.

Research methodology

The scientific research was carried out in two stages in 2019–2020. The first stage of collecting empirical material for a comprehensive study was carried out among the full-aged residents of the two indicated areas. The comprehensive methodology used the Schwartz questionnaire, in-depth interviews, focus groups and questionnaires. Since the cross-cultural approach presupposes a comprehensive study of the socio-cultural situation [5, Suvorova I.M.], the study included the tools of sociology, economics, history (factor analysis, self-education questionnaire, “Labor motivation” questionnaire and others).

The second stage of cameral processing of the obtained empirical data included generalization and analysis of a complex nature, taking into account the influence of the sociocultural situation on the personal value preferences of the respondents, as well as the use of a cross-cultural approach in assessing the validity of the “general cultural profile” according to the method of Sh. Schwartz.

The respondents included 130 residents of cities and villages of Loukhskiy and Kemskiy districts, aged 18 to 68, of which 97% were workers. The number of selected respondents corresponds to a representative ratio of 100 respondents per 20.000 inhabitants. Since the project of the Humanitarian Park “Ways of preserving human capital as an urgent problem of the Republic of Karelia” assumed the study of working citizens, the overwhelming majority of respondents were from among those employed in various social spheres and industries.

The influence of the Arctic specifics on the value dominants of its inhabitants

Despite the fact that the Arctic, as one of the most climatically vulnerable regions of the world, has become the subject of active scientific research, it is still “the focus of numerous and not fully understood processes and feedbacks operating in the climate system with participation of air masses, sea ice, specific stratification of the Arctic Ocean, cryosphere and terrestrial biota” [6, Zaikov K.S., Kondratov N.A., Kudryashova E.V., Lipina S.A., Chistobaev A.I., p. 7]. The specific natural characteristics of the region also include “a long period with negative air temperatures, a short growing season, specific photoperiodicity. The consequence of these natural features is a whole range of economic problems, for example: increase in the cost of the industry and infrastructure development, energy costs increase, imposition of special requirements for the communal systems of settlements, the mono-resource nature of the economy. Natural extremeness is

enhanced by the peripherality of the Russian Arctic region, the dispersed and poorly studied raw material and fuel deposits on land and in the waters of the Arctic Ocean, the remoteness of industrial centers from coastal supply bases, national and foreign sales markets, insufficient development of transport, energy and information and communication infrastructure" [6, p. 10].

The territory of the Karelian Arctic, where a comprehensive axiological study was carried out, includes three regions: Loukhskiy, Kemskiy and Belomorskiy. Loukhskiy municipal district is the largest in terms of territory in the Republic of Karelia and the most northern, while the Kemskiy and Belomorskiy municipal districts have the longest sea coastline. Natural-climatic and socio-economic conditions in these areas are fully consistent with the above description. The scientific study found that the awareness of being in extreme natural conditions is directly reflected in the axiosphere of the respondents. Analysis of the questionnaire results on labor motivation (the author is Candidate of Economic Sciences, Associate Professor of PetrSU Konev I.P.) showed that respondents put the value of health in first place among all the value orientations presented for choice. Among the factors influencing the state of health, respondents indicated nutrition (62%), healthy lifestyle (52%), absence of stress (47%), ecological situation (37%). Scientists from the Institute of High Biomedical Technologies of PetrSU have found that the decisive factors that reduce life expectancy and aggravate the quality of life are the length of northern daylight hours and the lack of a number of minerals in the body. "Scientists of PetrSU carried out a study in which they studied the content of macro- and microelements in the body of the inhabitants of Karelia, having analyzed the composition of their hair. Then they compared the results obtained with those of the residents of the middle zone of the Russian Federation. It turned out that the majority of young people (20–25 years old) who took part in the study had a deficiency of calcium, magnesium, sodium, as well as the vital microelements cobalt and iodine. People over 60 years old had excess toxic mercury and lead in their hair and a deficiency of more than 10 elements, including calcium, magnesium, zinc, iron, and so on." [2].

Consequently, residents of the Arctic region are more susceptible to the adverse impact of natural and climatic conditions on their health than residents of neighboring regions of central Russia, which means that the priority of the value of health for them is unconditional. This conclusion correlates with the result of the analysis of the axiological research according to the method of Sh. Schwartz. The same respondents identified security, which in this methodology includes reliability, harmony and stability of society, relationships and oneself, family and state security, public order, cleanliness, mutual utility as an unconditional dominant value at the level of normative ideals and at the level of individual preferences. It can be assumed In this case that the respondents' sense of danger from natural and climatic conditions is intensified by instability associated with socio-economic risks, therefore, preserving health and increasing their own safety are valued by the inhabitants of the Karelian Arctic most of all. In turn, health and safety are part of human capital, the preservation of which is an urgent problem for the entire Russian Arctic.

[2] PetrSU website. URL: https://petrsu.ru/news/2019/52559/utchenye-petrgu-sozd#t20c (accessed 12 July 2019).

The problem of human capital preservation on the territory of Russian and Karelian Arctic

Human capital issues, explored in the works of foreign scientists of the 20th century T. Schultz, G. Becker, L. Turou, J. Kendrick, entered the national humanities in the post-perestroika period. But even today this issue has not lost its relevance in various fields of science: in sociology — Krutiy I.A. and Krasina O.V. [7, p. 127–130], in economic psychology — Roshchina Ya.M. [8], Avey J.B. and Luthans F. [9, p. 677–693], Elliot A.J. and Covington M.V. [10, p. 73–92], in political psychology — Yuriev A.I., Selezneva A.V., Dobrynin E.P., Burikova I.S. [11]. Each scientific interpretation of the concept of human capital takes into account its multifactorial nature. But first of all, the concept of human capital is directly related to the demographic factor. Actually, on the territory of the entire Russian Arctic "as of January 1, 2018, the total resident population of the Arctic regions of the Russian Federation was 7.800 thousand people, which is 23% less than in 1989. The following should be noted among the leading ethnosocial trends: negative migration balance , the intensity of migration exchange, due to the widespread use of the rotational work method" [12, Sokolova F.Kh., Zolotarev O.V., Maksimova L.A., Sibiryakov I.V., p. 138]. A similar trend is observed in the territory of the Karelian Arctic. In particular, in the Loukhskiy municipal district, the northernmost in Karelia, according to the local administration, there were 11.459 residents in January 2019, which is 10.5% less than in 2014 and 45% less than in 1989 In the Kemskiy municipal district; according to the local administration, the number of inhabitants in January 2019 was 14.561 residents, which is 12.1% less than in 2014 and 25.3% less than in 2007.

Such a negative demographic trend is complicated by the ethnographic component, because "there is a significant representation of autochthonous ethnic groups in the Arctic zone, as evidenced by the constitutional and legal status of territorial entities. Note that 6 of the 9 Arctic regions of Russia were created the national component taken into account: the Republic of Karelia, Komi and Sakha (Yakutia), the Nenets, Yamalo-Nenets and Chukotka Autonomous Districts. The Arctic is the territory of the original habitat of the Karelians, Komi, Yakuts, 18 out of 47 indigenous small-numbered peoples of Russia live there" [12, p. 135]. According to local administrations, representatives of the small peoples of Russia live together on the territory of the Loukhskiy and Kemskiy municipal districts (in the Kemskiy district — 5.8% of the Karelians and 0.9% of the Finns of the total number; in the Loukhskiy district — 12.8% of the Karelians of the total number residents). Moreover, in terms of demographics, the negative trend in the number of small peoples in the territory of the Karelian Arctic has also persisted over the past 20 years.

Of course, the preservation of human capital is directly related to investments in education and self-education [13, Armstrong M.], healthcare [14, Vidal-Salazar M., Hurtardo-Torres N., Matias-Reche F. p. 2680–2697], safety [15, Zacharatos A., Barling J., Iverson R.D., p. 77–93], consumer needs, career guidance and culture. All of these are components of the general sociocultural situation in the study area.

The problem of the modern socio-cultural situation influence on the formation of value orientations of the inhabitants of the Karelian Arctic

The socio-cultural situation in the Karelian Arctic has significant differences from other regions of the republic. Economic trends in the two neighboring Arctic regions (Kemskiy and Loukhskiy) are also multidirectional: according to local authorities, the number of enterprises in the Kemskiy region has grown from 317 to 335 over the past 5 years, while it has decreased from 249 to 183 in Loukhskiy region during the same time, considering the fact that the status of the Arctic territory implies preferential taxation and conditions for investment in development, as well as a number of privileges in the socio-economic sphere. Business entities in such industries as logging, woodworking and mining, annually lose professionals due to labor migration. Of course, in addition to the harsh natural and climatic conditions, this negative trend is influenced by socio-cultural reality. The current socio-cultural situation on the territory of the Karelian Arctic is significantly conditioned by historical aspects, the analysis of which reveals the peculiarities of culture, in the context of which the formation of our contemporaries took place.

Thus, the history of the Kemskiy district, located on the shores of the White Sea, is associated with the Pomor culture and the Solovetskiy Monastery, which was territorially subordinate to Kem until 1930. According to Konkka A.P., “the ancient Baltic-Finnish ethno-cultural basis, as well as the influx of population from the western volosts that continued for centuries and the processes of acculturation and assimilation associated with this, could not fail to be reflected in the anthropological composition, language and traditional culture of local residents, created under the specific for Slavic population orientation towards sea crafts and the dissidence, which was especially strong here, have their own, in many respects unique cultural environment, which makes it possible to single out the Pomors as a separate ethnic group” [16, Konkka A.P., p. 43]. The tourist attraction of Kem today is due to the status of a historical city with its architectural landmark — the restored Assumption Cathedral of the 18th century and the possibility of relatively fast and convenient transportation to the Solovetskiy Monastery.

The history of Loukhskiy district is associated with the Sami and Karelian tribes living on its territory in the deep past, and since the XII century — Russians, who were traditionally for these latitudes engaged in hunting, fishing, and since the 16th century — in salt production. Most of the cultural heritage sites In Loukhskiy municipal district (103 out of 141) have archaeological status and are presented in open spaces. Loukhskiy district is also famous for its ethnocultural traditions associated with local storytellers, whose art is reproduced in numerous folklore festivals. The greatest tourist attraction of this area is presented by its natural reserves and parks, which are remarkable for their scale and originality. However, the flow of tourists is not very large due to the underdeveloped infrastructure.

According to local administrations, the decrease in the socio-cultural infrastructure over the past decades in the Karelian Arctic is evidenced by the fact that the number of secondary schools and kindergartens, sports schools, centers of culture and creativity has decreased. An

analysis of the questionnaire on labor motivation revealed that only 6% of the population are satisfied with the sports infrastructure of their area, only 12% of respondents can realize their talents and abilities, and only 21% of respondents attend local cultural events. Consequently, despite the rich historical and cultural traditions, the modern inhabitants of the Karelian Arctic do not find self-realization in the cultural life of their region. A similar state of affairs in the sociocultural sphere found its expression in the axiological preferences of the respondents.

An analysis of results of the empirical study of Sh. Schwartz method revealed that one of the most unclaimed values at the level of individual preferences among the inhabitants of the Karelian Arctic is the value of tradition, which in this context is interpreted as acceptance and observance of customs and ideas of traditional culture and religion, modesty, piety, moderation. A similar trend was noted in 2016 by colleagues from Arkhangelsk: "Some (12%) of the respondents suggest a selective approach to traditions. A minority of the respondents (14%) believe that rituals and traditions are not necessary, and at the same time, a significant part of this minority is young people. Although the respondents aged 18 to 44 are mostly in the position of preserving traditions" [17, Tamitskiy A.M., Zaikov K.S., p. 1409].

This tendency shows the discrepancy between the axiosphere of the inhabitants of the Russian Arctic and the so-called "general cultural profile" of Sh. Schwartz, which was revealed in the course of testing his methodology in 83 countries. This fact allows us to apply a cross-cultural approach in the overall assessment of the axiosphere of the inhabitants of the Karelian Arctic in this study. The purpose of this approach is to validate the study based on a comparison of the "universal set of values" of Sh. Schwartz and the value sphere of the inhabitants of a particular region, in this case — the Karelian Arctic. This study reveals the degree of validity, that is, the measure of the axiosphere conformity of the Arctic zone respondents to the "general cultural profile" of Sh. Schwartz.

Values in the "universal set of values" of Sh. Schwartz are distributed according to the principle of decreasing as follows: "kindness, independence, universalism (understanding of the other person, high appreciation of the other person, concern for the well-being of all people and nature, wisdom, breadth of thinking, social justice , equality, universal peace, a world of beauty, unity with nature), safety, conformity (refraining from actions that could harm other people, public order or accepted social norms, politeness, obedience, self-discipline, respect for parents and elders), achievements, hedonism, stimulation (excitement, novelty, striving for deep experiences), traditions and power" [18, p. 48]. According to the author of the methodology, the ranking of values in the axiosphere of the respondents is constant, despite religious, ethnic, political and other cultural differences.

The thirty years' research experience of Sh. Schwartz showed that the top three priority values include kindness, independence and universalism, and the last three positions are taken by hedonism, stimulation and power, which, according to the author, fully contributes to the best functioning of society. "Sh. Schwartz postulated that all individual values are based on the basic

conditions of human existence (one or more): a) the needs of the organism, b) the desire for social interactions, and c) the need to belong to a group" [18, p. 47].

The analysis of results of Sh. Schwartz's questionnaire among the inhabitants of the Karelian Arctic is presented, as the methodology implies, at two levels: at the level of normative ideals and at the level of individual preferences. The results at both levels of the methodology are similar for the residents of the Kemskiy and Loukhskiy districts in terms of the absolute value of security (which has already been discussed) and the most unclaimed value of power, which in this context involves achieving social status or prestige, control over people and resources , social power, wealth, image maintenance. This result shows a certain personal and social infantilism against the background of active political and economic processes in the Arctic as a whole. The accompanying factors of this situation were noted by the Arkhangelsk scientists: "The presence of an ideological and spiritual vacuum, the decline of spiritual life, negative socio-economic conditions of the population, which lead to fears and phobias, disappointment in life" [17, Tamitskiy A.M., Zaikov K.S., p. 1409] can hardly be motivators for power realization. However, the result of this value reveals the coincidence of the axiosphere of the inhabitants of the two Karelian districts with the "general cultural profile" of Schwartz; therefore, it is not an exception and confirms the validity of the method.

The same confirmation of the questionnaire's validity was found at the level of normative ideals among respondents from both Arctic regions in a set of less-demanded values (power, stimulation and hedonism). However, power, hedonism and the already mentioned traditions were among the three most unclaimed values at the level of individual preferences, which confirms the validity of the questionnaire by 66%.

In the choice of the most preferable values at both levels of the respondents of the two districts, the already mentioned security is leading, which distinguishes the axiosphere of the inhabitants of the Karelian Arctic from the "general cultural profile" of Sh. Schwartz and which is a consequence of natural and socio-economic factors. The other two values differ in both areas and levels. Thus, kindness and conformity were in demand in the Kemskiy district, both at the level of normative ideals and at the level of individual preferences, which coincides with the Schwartz profile by 33%. According to The All-Russian Public Opinion Research Center, "Three quarters of our compatriots (76%) consider themselves kind with varying degrees of confidence. Our compatriots also characterize their surroundings as kind people — this is the opinion of three quarters of Russians (75%), more often this opinion is held by Russians aged 18–24 (83%) and over 60 (62%)." In this respect, Russians as a whole do not differ from other macro- and micro-ethnic groups and cultures, confirming the validity of Sh. Schwartz's method.

In Loukhskiy district, among the values in demand at both levels, respondents also indicated universalism in addition to kindness and safety, which, according to Sh. Schwartz's method, presupposes harmony with people and nature, and universal well-being. It can be assumed that, living far from all urbanized centers, the inhabitants of this Arctic region value their harmony with the harsh northern nature, feeling this direct connection every day. This assumption is confirmed

by the analysis of the questionnaire on work motivation, where 71% of respondents indicated that they spend their free time fishing, hunting and relaxing in nature with their family.

Conclusion

Thus, the comparison of the axiosphere of the Karelian Arctic inhabitants with the "general cultural profile" of Sh. Schwartz confirmed the validity of this method in the Kemskiy district by 66%, and in the Loukhskiy district by 83%. This result shows that the value preferences of the Arctic region inhabitants have significant differences from the "general cultural profile", which, according to the author of the methodology, is characteristic of all modern ethnic groups and cultures. This axiological difference is due to a number of natural-climatic and socio-economic problems. Consequently, it confirmed the idea that a person feels unprotected, at the same time feeling danger and adapting to this danger (47% of respondents indicated the absence of stress as the main factor affecting health) in the conditions of the Arctic zone and even today, in conditions of developed technologies. It becomes clear that in the era of globalization processes, the Arctic zone requires a special attitude both in the ecological, economic, political and social directions. In practical terms, the results of this study show that health-preserving programs are especially relevant in the Arctic, which will involve not only modern medical technologies, but also a developed physical culture and sports infrastructure. In the long term, the satisfied need for preserving health can increase the level of personal safety of the Arctic inhabitants, which will qualitatively affect the behavior model and lifestyle of people. In general, the conducted cross-cultural study showed that the problem of preserving human capital in the territory of the Karelian Arctic is essentially reflected in the axiological preferences of its inhabitants, and the solution to this problem is possible only with an integrated scientific approach taken into account.

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Eastern Murman: Social Aspects of Colonization in the Materials of Expeditions and Travel Notes of the 2nd Half of the 19th — Early 20th Centuries *

© Elena Yu. TERESHCHENKO, Dr. Sci. (Cult.), Associate Professor
Email: tereschenko.elena@masu.edu.ru; ter_elena@inbox.ru
Murmansk Arctic State University, Murmansk, Russia

Abstract. The article discusses several social aspects of the colonization of Eastern Murman (everyday life, daily work, religious beliefs, schooling, leisure). The historiographic analysis made it possible to identify the specifics of the local (everyday) history of the Kola Peninsula colonization. In the works of A.P. Engelhardt, A.G. Slezskinsky, S.Yu. Witte, S.O. Makarov, V.I. Nemirovich-Danchenko, K.K. Sluchevsky, D.N. Ostrovsky, A.K. Engelmeyer, V.I. Manotskov, A.K. Sidensner, N.V. Romanov, “Materials on the statistical study of Murman” and other sources provide facts from personal and family biography, the circumstances of resettlement to the Murmansk coast, living conditions, home furnishings, especially the education and upbringing of children. The descriptions of the migrants’ lifestyle recorded in the materials of expeditions and travel notes allow us to conclude that the colonists’ socio-cultural adaptation in Eastern Murman, the creation of a human habitat, was primarily associated with the development of the institution of the family. In general, the history of colonization is a unique experience in the development of the Arctic — one of the most productive in world history, which is vital for understanding the Russian North’s geography.
Keywords: *Arctic, Kola North, Eastern Murman, colonization.*

Introduction

Great importance has always been attached to studying the experience of the Arctic territories development. Particular attention is drawn to the Murmansk coast, where a colonization project was implemented; as a result of it new settlements were founded on this territory, where more than 300 thousand people live now.

There were no permanent settlements on Murman until the middle of the XIX century. In 1868, Alexander II approved the “Regulations on the granting of privileges to the settlers of the Murmansk coast” [1, Engel'gardt A.P., p. 90]. As early as the following year, 46 families arrived to this territory, and according to data from 1899, 40 colonies were formed on the Murmansk coast with 2.185 residents [2, Statistical Studies of Murman. Colonization, p. 13]. Orthodox churches and chapels were built, schools, trading posts, commercial enterprises were opened, and sea trade was developing in the colonies.

The global problems of the development of the Arctic territories are widely presented in the theoretical literature and the media [3–8]. The colonization of the Murmansk coast of the Barents Sea, the implementation of state policy are devoted to the works of Ushakov I.F., Orekhova E.A., Davydov R.A., Korotaev V.I. The local specificity of the Arctic territories development in the field of family history, biographical research is considered in the works of Fedorova P.V., Razumova I.A. Nevertheless, the analysis of migrants’ way of life from the standpoint of the histo-

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ry of everyday life requires more careful attention: during this period, permanent settlements appeared for the first time on the Murmansk coast and new ways of life arose in the extreme conditions of the north.

Methodology

"The history of everyday life is a branch of historical knowledge, the subject of which is the sphere of human everyday life in multiple historical, cultural, political, ethnic and confessional contexts" [9, Pushkareva N.L., p. 6].

The so-called "historical-anthropological turn" in the awareness of the events of the past begins in the second half of the twentieth century, changing the view on social history. A single universal picture of the world breaks up into many private, no less significant, phenomena. Theories of everyday life are formed in sociology and history. M. Maffesoli introduces everyday phenomena into the sphere of scientific analysis from a postmodern position [10, Maffesoli M.], N. Elias shows that everyday life is an integral part of any social group, and the historical process is the interaction of various social practices (labor, education, politics and so on)[1], H. Lefèbvre considers subjective experiences as part of general models of reality [11, Lefèbvre H.]. French historians M. Blok, L. Fevr, F. Brodel' include various everyday phenomena (everyday life, housing, clothes, fashion, money, etc.) in the range of research problems and move from political history to the study of history in the context of psychological, demographic and cultural factors [12, Brodel' F.].

Scientists have proved that a special meaning, a system of values, and a cultural code are hidden in the history of everyday life. This is clearly shown with examples from Russian culture by Lotman Yu.M. [13, Lotman Yu.M.]. Scientific publications under the general title "Microstorie" began to appear at the end of the twentieth century. Scientists (K. Ginzburg, D. Levy and others) believed that the history of the private, individual is associated with a common identity and deserves close attention of researchers. In contrast to local history and ethnography, the history of everyday life focuses on the analytical part of the study, changes in the value system and the role of specific individuals in shaping a general picture of the world.

The main research method in this article is historiographic analysis. The object of analysis is the local (everyday) history of East Murman during the transition from temporary seasonal camps to permanent settlements. The collected complex of narrative information can be used in the future to clarify the features of the development of the Arctic territories.

The sources of historiographic analysis are essays, travel notes, memoirs compiled by travelers, writers Nemirovich-Danchenko V., Sluchevskiy K., Ostrovskiy D., Engel'meyer A., L'vov E. Colorful descriptions of everyday life, work, leisure, education, as well as short dialogues with local residents can be seen here. These sources present the author's assessment of the life of the migrants, figurative digressions, attention to the private. Brief mentions of the colonies of the Mur-

[1] Elias N. Ponyatie povsednevnogo // O protsesse tsivilizatsii. Sotsiogeneticheskie i psikhogeneticheskie issledovaniya. SPb., 2001 [Concept of the Everyday. *On the Process of Civilization. Sociogenetic and Psychogenetic Research*. Saint Petersburg, 2001]. URL: http://ecsocman.hse.ru/text/19175716 (accessed 10 August 2020).

mansk coast are given in the materials of Makarova S.O., Knipovich N.M. A special group of sources is the publications of officials who visited the Kola North (Minister of Finance Vitte S.Yu. Arkhangelsk Governor Engel'gardt A.P.), as well as geographical and socio-economic descriptions of the Murmansk coast, compiled by order of the Imperial Russian Geographical Society, the Imperial Free Economic Society of the St. Petersburg Academy of Sciences, the Arkhangelsk Society for the Study of the Russian North, the St. Petersburg Imperial Society to promote Russian merchant shipping, the Main Hydrographic Department of the Marine Ministry, the Committee for Assistance to the Pomors of the Russian North, provincial administrations. The descriptions of the provinces were compiled according to a specific plan, which, as a rule, indicated the population size, types of economic activities, religion, education ("Murman", A.G. Slezskinskiy, "Materials on statistical research of Murman" edited by Romanov N.V.). All the listed sources are unique testimonies of the life of settlers, written by the participants of the expeditions on the basis of reliable data and from the words of the colonists, confirming that permanent settlements were formed on the site of seasonal settlements, with a certain number of houses, specific residents and families.

Colonies of East Murman

East Murman is the territory of the Barents Sea coast to the east of the Kola Bay up to Cape Svyatoy Nos. According to the census of 1608, there were 29 settlements. The most significant settlements at the beginning of the 17th century were in Gavrilovo and Teriberka. Permanent settlements appeared only in the second half of the 19th century.

According to the materials of the statistical study of East Murman and the Kola Bay in 1902, there were 25 settlements (encampments and colonies) on this territory: Vostochnaya Litsa, Kharlovka, Zolotaya, Rynda, Shel'piny, Gavrilovo, Golitsyno, Teriberka, Malo-Olen'e, Zarubikha, Tyuvaguba, Tryashchina, Shcherbinikha, Zakhrebetnaya, Zelentsy, Srednyaya Guba, Vaenga, Gryaznaya Guba, Roslyakova Guba, Belokamennaya, Krasnaya Shchel', Sayda-Guba, Vodvora or Olen'ya Guba, a colony at the Toros Islands, Kildin Island [14, Materials on Statistical Research ..., p. 1]. Unlike villages and settlements widespread throughout Russia, the main types of settlements on the Murmansk coast were camps and colonies — seasonal and permanent fishing settlements on the sea coast.

This article will focus on ten colonies of the East Coast (Vostochnaya Litsa, Kharlovka, Rynda, Shel'piny, Gavrilovo, Golitsyno, Teriberka, Zolotaya, Zarubikha, Malo-Olen'e) and the Kildin colony (Fig. 1).

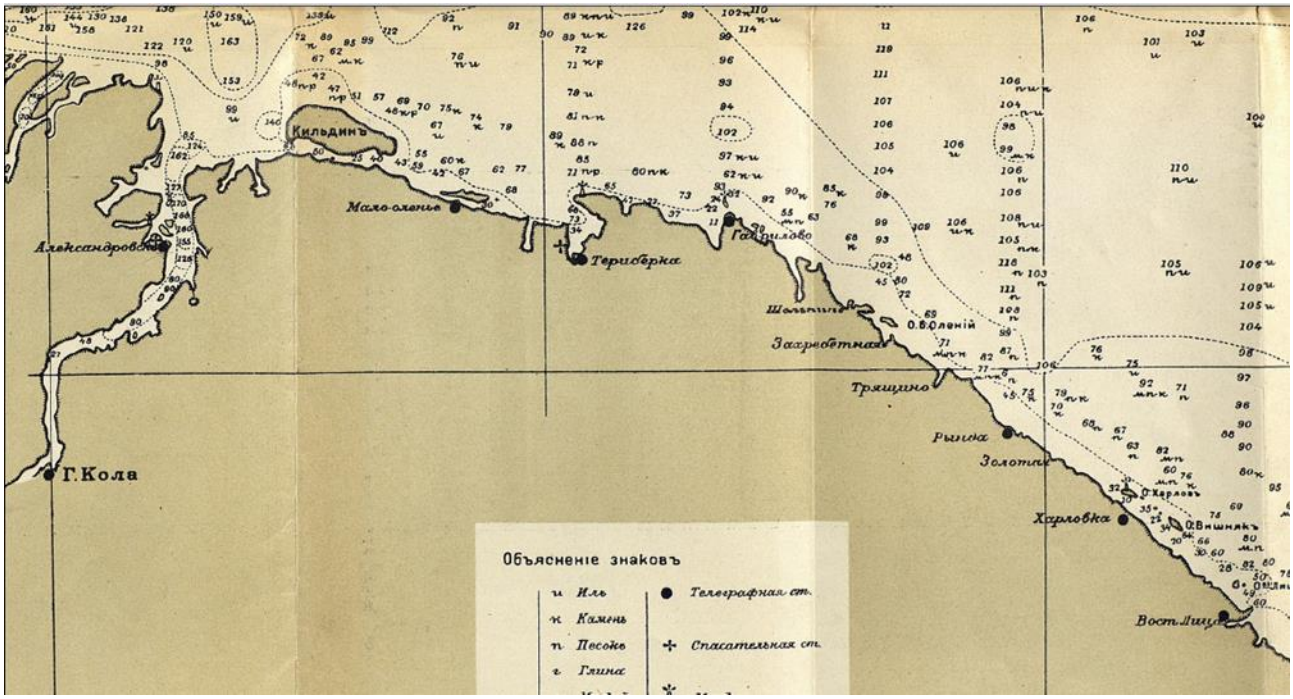

Fig. 1. East Murman. Fragment of a map from the book by Sidensner A.K. “Description of the Murmansk Coast” (St. Petersburg: Main Hydrographic Department of the Marine Ministry, 1909).

Before making an overview of the colonies of East Murman, we outline a number of social aspects that we will consider. They are home life, daily work, religious beliefs, schooling, and leisure. We will pay special attention to the indication of specific surnames and names, family ties. In general, the history of everyday life includes a wide range of phenomena; however, the specificity of a given area in the period under study makes it possible to analyze only those phenomena that are recorded in the sources. In particular, ethnographic expeditions to study the Russian population were not carried out here, since the colonization was of a temporary nature. For the same reason, the internal (stationary) artistic culture (fairy tales, legends, applied art) was practically not recorded.

From the descriptions, we learn the time of the creation of the first colonies. It is important that the specific names of the first settlers are indicated: Vasiliy Naumov, Dmitriy Dmitriev, Ivan Petrov, Il'ya Tarnakh, Eftyukov, Ivan Red'kin, Dmitriy Semenov, Eremey Borodkin, Ivan Erikson. The choice of a place for settlement, as a rule, depended on the fishing grounds. Colonies were often formed not far from the encampments, where industrialists gathered every spring to catch cod, halibut, and hunt sea animals. According to Fedorov P.V., the colonization of Murman was a deeply Russian phenomenon, a consequence of the tradition of the development process, which from time to time passed to new stages — from a seasonal form to a permanent population and from a rural to an urban way of life, “the result of an internal, distinctive process, during which various forms of life of the Russian population arose in Murman” [15, Fedorov P.V., p. 42].

Let us cite the data indicated from the words of the colonists from “Materials on the statistical study of Murman” and the book by A. Slezskinskiy “Murman”. In some cases, they do not coincide (Persons, Shelpins) or clarify each other (Rynda). “According to the colonists, the colony of

Litsa was founded in 1880. The first who settled there was a peasant from the Kemskiy district, Kandalakshi village, Foma Redkin" [16, Slezskinskiy A.G., p. 8]. "The first colonist who lived here for the winter was a peasant from the village Kandalaksha, Kemskiy district, Vasiliy Naumov" [14, Materials on Statistical Research of Murman, p. 4]; the first man who came to Shelpino in 1890 and "settled there without permission was the Finnish Il'ya Tarnakh; and the previous year the peasant of the Onega district Eftyukov settled down" [16, Slezskinskiy A.G., p. 8], "the first settlers of the colony were the Daarnak family: Wilhelm with his wife, Marya Ivanovna" [14, Materials on Statistical Research of Murman, p. 87]; colony Kharlovka was formed in 1894, the first who came there was a peasant of the Kemskiy district from the village of Pot'bozero Dmitriy Dmitriev [16, Slezskinskiy A.G., p. 13]. "The first who settled in Rynda, in 1875, was the peasant of the Kemskiy district of the village of Chernoretskaya Ivan Petrov" [16, Slezskinskiy A.G., p. 17]; "The first colonists were Ivan Petrov and Fedor Lipaev – now dead. Later — Pavel Lopinov and Kornil'ev" [14, Materials on Statistical Research of Murman, p. 48]. "Gavrilovo is one of the oldest Murmansk colonies formed in the 1940s; its founder was a peasant of the Kemskiy district, a Karelian, Ivan Red'kin" [16, Slezskinskiy A.G., p. 31]. Colony Kil'din was founded in 1880 by the Norwegian Ivan Erikson. "Since this Norwegian settled on Kil'din, no one wanted to move there; so, he has been on Kil'din for 15 years alone, as if he were the sovereign face of the island" [16, Slezskinskiy A.G., p. 45].

Further Zolotaya colony arose in 1898, when the first colonist, Aleksey Vasil'evich Ivanov-Anikeev, a peasant of Tungudskaya volost, Kemskiy district of the Mashozero village settled there; the second colonist Matveev settled in August of the same year; Malo-Olen'e, as a colony, has existed since 1898, the first settler there was Karelian Lukkoev from the Ukhta volost; Zarubikha's first permanent resident was the peasant of the Notozero churchyard, Yakov Fedorov Abalyaev, who lived there until his death in 1893; the first to express a desire to resettle in Teriberka were the peasants of the Ion'gam volost of the Kemskiy district — Savin and Semenov [14, Materials on Statistical Research of Murman, p. 30, 180, 192, 137].

Further in the history of the settlement of East Murman, the names of the settlers (wives, children, brothers) were preserved. So, in the spring of 1881, Foma Red'kin arrived in Vostochnaya Litsa with a family of seven. Vasiliy and Ivan then settled in Gavrilovo, then in Golitsyno. Then Fedor Nemchinov from Kandalaksha with his family, Fedor Semyonov from Pongama, Sergey Zhidkikh from Kandalaksha settled in Litsa. The sources also describe individual events from family history. So the fate of the Lukkoev family from Malo-Olen'e was very dramatic: the head of the family died, leaving his wife with two children. She went to winter in Kola, then in Vardø. The widow of Lukkoev returned to Malo-Olen'e with her new husband Eremey Borodkin and his two children. Arseniy Simakov's wife could not survive the first winter and died of scurvy, leaving four children, and he moved to Teriberka. Stepan Lopintsev from Zarubikha waited ten years for the promised allowance, then he went to the Kola groundlings [14, Materials on Statistical Research of Murman, p. 5, 6, 180, 181, 193]. Restoring family-related structures is an important scientific task, the solution of which will make it possible to personify history and requires further study.

In the studies of East Murman it is possible to find names, place of birth, number of children and individual episodes from the life of the colonists Anan'in, Strelkov from Kharlovka, P.M. Ivanov and An.St. Evstigneev from Shel'pina, Stepan Lopintsev, Andrey Polezhaev, Ponomarev, Mednikov from Zarubikha, Dem'yan Kharchev. These data supplement and clarify statistics. In particular, the petty bourgeois Kononov, who was assigned to the Teriberian colonists in 1870, "is known throughout the seaside for his knowledge and experience in skipper business, which he acquired partly in one of the local skipper schools, and partly during repeated skipper's trips to England, Spain, to the shores of the Mediterranean Sea" [17, Polenov A.D., p. 24]. The surnames of the colonists are also recorded in the "Questionnaire Survey of Murmansk Fisheries " conducted by the Pomor department of the Arkhangelsk Society for the Study of the Russian North and published in 1913. Here you can get acquainted with the answers of the colonists Kolyshnev M.G. from Rynda, Korol'kov I.S. from Gavrilovo, Pakulin A.I. from Teriberka and others [18, Questionnaire Survey, p. 12].

There are many references to the appearance and character of the colonists In the works of writers who visited Murman. Sluchevskiy K. in the book "Around the North of Russia", characterizing the appearance of the inhabitants of Murman, describes "their coarse clothes, their dark hats, boots, bast shoes, bare feet" [19, Sluchevskiy K.K., p. 294]; Nemirovich-Danchenko V. I. in the book "The Country of Cold" characterizes the hunters as "a hardy and beautiful tribe, brave, smart and enterprising" [20, Nemirovich-Danchenko V. I., p. 95]. Some episodes about the inhabitants of the Far North can be found in the books of Prishvin M. and the memoirs of Korovin K. A brief description is given in the well-known book by Lvov E. "On the Cold Sea: A Trip to the North", which describes the expedition of the Minister of Finance Witte S.Yu. in summer of 1894 for the construction of an ice-free port. "In Teriberka, a purely Russian colony begins to settle, and several dozen families have already settled here firmly..." The Minister of Finance was greeted by about 800 people, the inhabitants of the camp and the colony "all stocky men with thick beards, with gray, intelligent and energetic eyes ... They behaved with a kind of calm natural dignity that inspires respect" [21, L'vov-Kochetov E.L., p. 113].

Colonist lifestyle, daily activities, domestic life

The settlers experienced a lot of difficulties: the lack of warmth, firewood, timber, lack of communication, schools, and churches. Besides, it was a big problem to get the loans and permission to settle.

Speaking about the difficulties of colonization, many authors express the hope that this process will develop. Makarov S.O. writes in his book "Ermak in the Ice": "The government is doing everything to revive the Murmansk coast; a steamer from Arkhangelsk arrives weekly to Varde, and there are telegraph stations at many points [22, Makarov S.O., p. 58]. Dolinskiy V.L. clarifies about the methods of colonizing the Murmansk coast in a report to the Imperial Free Economic Society in 1867: "The inclination of Russians and even their strong desire for resettlement and, in

general, for movement, is very well known to each of us, both from history and from the modern course of events" [23, Conversations about the North of Russia, p. 239]. The writer and publicist Engelmeyer A. notes that "Murman is a great country of the future, it is a whole area of inexhaustible wealth and ice-free harbors. This is an immense soil for Russian colonization" [24, Engelmeyer A.K., p. 69].

At the same time, there are sharply negative characteristics: "Colonization of this coast is even more vital incongruity"; "In reality, these benefits turned out to be very small, at least for the Russian colonists" [25, Manotskov V.I., p. 144, 150]. "In general, it should be said that all the privileges granted to the Russian colonists by the Regulations of 1868 turned out to be insufficient in comparison with the obstacles and troublesome formalities that had to be overcome when obtaining the right to resettlement" [26, Sidensner A.K., p. 18]. Many researchers point out that government colonization measures must take into account local conditions. "Concerns about settling in are not just limited to giving the colonist an allowance or building a good hut for him," it is necessary "that these huts are located in an area convenient for life, for organizing an economy," reported Shavrov N.A. at a meeting of the St. Petersburg Imperial Society for the promotion of Russian merchant shipping [27, Shavrov N.A., p. 70].

The harsh living conditions of the colonists are confirmed in the sources by specific examples. In particular, in the Zolotaya colony, the house of the widow Matveeva was a small shed made of planks, adapted for living in the summer. In winter, the Matveevs lived in the camp of a single industrialist. According to the colonist Anikeev-Ivanov, the cost of building a house, despite its insignificance, is very high: "There are no workers, you work all by yourself and instead of fishing you sit by the hut." The first years In Teriberka were very difficult for the settlers; "They sold everything at home and became impoverished because of hunger; in the new place they received only 150 rubles, and then three times. There was no home or livestock. The husband (Savin) traded at sea, the children were small. The desertion in winter was also hard: no church, no people." The first winter In Malo-Olen'e was snowy: "From the house door we had to climb a snowy staircase 1 sazhen high; the windows also had to be torn off after each snowstorm. Once, traveling with the whole family to Teriberka for reindeer, we got lost in a blizzard, escaped in a snow pit under the shroud (under their clothes) for 3 days and 3 nights and almost died from the cold. When we returned home, we barely found our hut: it was completely covered with snow" [14, Materials on Statistical Research of Murman, p. 81, 82, 137, 180]. But their unsettled life was compensated by their firm spirit and desire to live and work there.

The main economic activity in all colonies is fishing. Almost all sources consider this issue. Families in Murman gradually settled down and found profitable occupations. They caught cod, haddock, halibut, catfish, and flounder. The main fishery (cod) started in March and ended in early October. In autumn, the colonists knitted nets, renovated houses, and cut firewood. Women in the summer were busy with housekeeping, collecting lichen. "Women are mainly engaged in baking bread, and partly (for the most part along with bread-baking) unwinding bales and washing

clothes [28, Romanov N.V., p. 14]. In Vostochnaya Litsa, two years later, the Red'kin family moved to a new house. "He gets his livelihood sustenance from the animal trade, ... salmon catch", Wilhelm Daarnak from Shelpino: "The means of subsistence were: fishing in summer, the guard of Savin's trading post — in winter. In the spring we hunted with Savin on his nets. His wife ... supports existence by fishing and selling milk in summer, leasing barns to industrialists, selling wool from sheep and deer for meat" [14, p. 6, 87].

Each family has its own circumstances of settling on the Murmansk coast. Basically it is the need and desire for free fishing activities. The first colonists said: "You will never come here from a good life", "They ate the bark, people got swollen and died", "We went unwillingly, like into exile," but then they come here "from bondage", hoping for a better life [29, Preliminary Report, p. 1]. Dmitriev D. "had to drive out of the house of the Kemskiy district: his house burned down, then the cattle fell. I chose Kharlovka because I had lived here for years and previously, had acquaintances with industrialists, and could count on their help." In Colony Zolotaya, according to Anikeev, "he was forced to move by necessity: a large family, but there is not enough land for cultivation, and even that land is bad; mowing is bad. Every year I went to Murman, spent 20 rubles on the road. I thought: if I move, there will be no transportation". In Malo-Olen'e, the son of a psalmist from Vorzogor "used to live in "someone else's work", visited, by the way, St. Petersburg!" In Zarubikha, "the peasant Ponomarev from Kolezhma, Kemskiy district went to fishing or hunting from the artel, the family is large, there was no support, and therefore he decided to "pisat'sya" [14, p. 20, 31, 181, 193].

The descriptions of the colonists' houses and the general impression of scientists and travelers from the colonies are of special interest. On the one hand, the participants of the expeditions talk about the harsh climate, on the other hand, about the solidity of the buildings and the security of the inhabitants. Here is how Slezkinskiy A. describes one of the colonies: "Opposite the mouth of the river Kharlovka colony and camp Kharlovka are located. The high rocky shores around, without any flora, they look somehow mysterious, scary. At the foot of these gloomy giants some huts are seen — people live there and it becomes extremely creepy for them; one cannot help thinking, how do they live here, side-by-side with the constantly raging Arctic Ocean? " [16, Slezskinskiy A.G., p. 12]

Many colonists began to live in barns and dugouts. A dugout was built in the following way: the frame was made of a row of thin timber-racks driven into the ground; all the construction was lined with wide pieces of turf, laid horizontally one on top of the other, so that the soil layer reaches a thickness of 0.7 meters. The gaps between the racks were sheathed with boards, but more often there was soil between the racks. There was no ceiling in most cases. There was only a binding of horizontal logs instead, between them the roof was visible, they were supported by a binding of poles. The roof had four sloping surfaces, covered with turf on the outside. "A dugout always smells of soil. But the main disadvantage of a dugout is dampness; there is less dampness in old dugouts, but in new ones, where the sod has not dried out yet, it is very damp, and since the

dugout often has to be corrected, replacing old pieces of sod with new ones, the dampness in dugouts does not disappear" [2, p. 116].

However, after a few years, researchers noted that the colonists' huts were new, they generally live prosperously. In Vostochnaya Litsa "the huts are exceptionally wooden, durable, and comfortable"; the settlement of Rynda "looks decent, and some huts even show to the prosperity of the owners"; in Gavrilovo "the colonists are financially secure. Their houses are solid, good, they have no shortage of life supplies", in Galitsyno "the houses in the colony are decent; the colonists live without poverty — there is enough bread, fish, and forests"; in Teriberka "in general, the colonists' huts are good. Their comfortable life attracts many immigrants" [16, Slezskinskiy A.G., p. 11, 17, 32, 37, 42]. In the Kil'din colony "the house of the Norwegian colonist Ivan Erikson is an example of Murmansk buildings. The house is wooden, two-storey, with a porch, a balcony and a flagpole, without foundation, covered with sod. The house is warm, the family is large, growthy, healthy, friendly. They live prosperously and neatly" [30, Ostrovskiy D.N., p. 99].

"A typical house of a colonist is 3–4 sazhens in one and the other direction and 3–4 arshins heights. As a rule, at first there was a small hut without a canopy and outbuildings, then a canopy was attached to it; behind them a new, equally small or larger hut, barn and other outbuildings were made. In Rynda, all the colonists had small wooden, one-story houses. Only one house had four windows on the facade, the rest had three and two windows. One colonist has a house covered with turf for warmth. Some houses are sheathed on the outside. Houses are built at a considerable distance from each another. It's clean and dry outside in summer. There are few commercial camps near the colonies. In Shelpino, the house of the colonist Daarnak differs sharply from others. This is the typical house of a middle-class Finnish colonist. Outside, it is a long quadrangular building in which living space and some others are located under one roof. In Teriberka, the houses are small, one-story, with three windows along the facade, rarely more. Sometimes they are sheathed with boards. Colonists with livestock built premises for livestock under the same roof with a house. Barns are often attached to houses, often separately. All houses have separate kitchens" [14, p. 111, 50, 89].

The researchers left us a description of the interior of the colonists' house. A typical large house has two, sometimes three rooms in addition to the kitchen. The entrance to the rooms is often through the kitchen. In Rynda, the walls inside the houses are either painted or covered with wallpaper. "In general, the interior of some people resembles a peasant hut with long benches on the walls, an unpainted table in the front corner; the interior of others looked like the furnishings of a poor room in a provincial town: wooden, bungle-made chairs are painted like tables and walls. There are no painted floors." In Shelpino, colonist Daarnak has a hallway in the middle of the building, on one side there are two rooms for living, on the other — outbuildings. The first room from the entrance is the kitchen, which is also the dining room. It is illuminated by two windows. "There is a large Russian stove, which is heated daily in winter and for baking bread, etc. In addition to it, there is a fireplace, which is heated daily for warmth, cooking food, coffee. The room

next to it is a bedroom and living room — this is the “clean half”. It is illuminated by one window.” In Teriberka, the houses of the colonists are usually divided into two halves by partitions. “The furnishings of wealthy colonists are somewhat reminiscent of the city: chairs, tablecloths. But, as a general rule, in old houses benches along the walls can be found. Not all of them have beds. All family members sleep side by side in one room” [14, p. 50, 89, 140].

Religious traditions, schooling, leisure time

The inhabitants of East Murman are practically all Russian, Orthodox, with the exception of Kil’din. That is why the shore was called “Russian”. The Orthodox colonist population of East Murman was concentrated in the parishes of Lovozerskiy, Gavrilovskiy, Teriberskiy. An important source for studying the social history of Eastern Murman is the registers of birth, containing official records of acts of birth, marriage and death.

The Lovozerskiy parish included the colonies of Rynda, Zolotaya, Kharlovka and Vostochnaya Litsa. The entire parish stretched for at least 300 miles. There is one priest and one psalmist for this huge space. There were churches in Rynda and Kharlovka, in Vostochnaya Litsa — a chapel. The Gavrilovo parish included the colonies of Gavrilovo, Golitsyno, Shel’piny, Zakhrebetnaya and the Tryashchina camp. There is a church and a chapel in Gavrilovo; there is a chapel in Shelpino. The church in Gavrilovo was built in 1895, and the parish was opened at the same time. Both chapels are very old (in Gavrilovo it was founded in 1797, in Shelpino it has existed for over 200 years). The Teriberskiy parish was founded in 1886, it includes Teriberka, Malo-Olen’e and Zarubikha. In winter, communication is hampered by “bad weather, lack of roads, lack of stations and supplies” [2, Statistical Studies of Murman. Colonization, p. 76].

In Rynda the colonists are all Russian, Orthodox, moved from the Kemskiy district. A small church was built in the colony, and a church service is performed by a local priest. “The temple is visited by the worshipers fervently, especially in winter, when the colonists are less busy”, in Kharlovka “the colonists from Karelians, Orthodox, have a church, which was built not for them, but for the newcomers Pomors.” Both the colonists and especially the industrialists are mostly Old Believers, but there is no strict adherence to their rituals. More colonists and few industrialists go to church. Not everyone goes to confession; partly due to the fact that the priest cannot come to the colony in winter, and in the summer everyone is busy with fishing. In the Kil’din colony “all the colonists are Russian, from the Norwegians, they speak exclusively Norwegian, they have no relations with the Russian colonists, and they do business in Norway” [16, Slezkinskiy A., p. 13, 19, 45].

Primary education in the settlements of East Murman was provided to children in Teriberka, Gavrilovo. In Vostochnaya Litsa, Kharlovka, Golitsyno, residents generally did not know how to write, there were no schools for children, in Rynda there were literate residents, but no education was provided for children. In East Murman, 78 men and 24 women, 18 boys and 3 girls were literate. The most literate among the colonists are those who have recently migrated, who have

managed to learn at the place of their former residence. Their children, who were born on Murman, in most cases, remain completely illiterate, despite their relative prosperity [2, p. 19].

In Vostochnaya Litsa, "the colonists are all almost illiterate; besides, there is no one who brings a letter here; even the lower ranks do not enter it, because the colonists are exempted from military service"; in Kharlovka "no adults knows literacy, but it is very difficult to imagine that it would penetrate to their children", in Rynda "there are some literate colonists, but they learned it not in the colony, but at home and they cannot pass the literacy to the new generation, so children grow illiterate"; in Gavrilovo "the church has a literacy school, where 6 boys study. This good deal is conducted by a priest and a sexton for free, and teaching aids are bought by the parents"; in Golitsyno "some of the colonists are literate and it is those who moved there from Gavrilovo, but the younger generation grows illiterate" [16, Slezkinskiy A., p. 10, 14, 19, 32, 37].

In Teriberka, the literacy school "exclusively educates the children of local colonists. The Law of God is taught by a local priest, other subjects — by a psalmist. The priest was educated at home, and the psalm-reader was dismissed from the first class of the theological seminary. There were students in the school: 10 boys in 1898/99. The course is two years. School time is from early October to early April. The school, according to the priest, does not need anything. But the local colonists complained that the school teaching is very sloppy: "scampish learning": they teach for one day, but do not teach for two days. And they teach little: the boys will gather and run for about an hour in front of the school; then they study for an hour, and then they go home to have dinner. After lunch they have a new rush and classes again for no more than an hour, and then back home. The test of two students, Neronin, who studied for two years, and Sinyakov, who studied for 3 years, gave the following results: the first was reading in syllables; Sinyakov did not read very quickly either. Both count poorly. They know little of prayers [14, Materials on Statistical Research, p. 144].

In their free time (late autumn and winter), young people gather in the evenings for sitting-round and for fun. For this purpose, they usually rent a hut from one of the colonists who do not live there during the winters. "The Appendix to the Description of the Gavrilovo colony" describes how the colonists spent the winter of 1899–1900: "A family (7 people) occupies 2 small rooms in winter. Apart from the most basic necessities like cooking, mending clothes, preparing firewood, etc., the widow and the children have no other activities" [14, Materials on Statistical Research of Murman, p. 127].

Festive culture is the opposite of everyday culture; however, all elements of the holiday (festive clothing, food, rituals, songs) in the colonies practically do not differ from everyday life. They don't go fishing on holiday. In the summer, on holidays, they are going to play pitching pennies. In Rynda, on holidays, they rarely go to the sea, although in the evening they catch bait. "They even caught it during the Transfiguration day, on their patronal feast day. This is explained partly by the fact that there are many Old Believers among industrialists, and partly by the fact that there is little bait here. There is not much drunkenness. It also does not strike the eyes be-

cause there are few people and they are dispersed over a significant area." "In winter there is black bread for eating; white bread is on holidays." In Teriberka, holidays are considered as days of rest. "They don't go fishing, unless they are at sea on holidays. There are no entertainments in summer. By the evening of a holiday they are already starting to work — they catch the bait, bait the longlines. Generally speaking, the population is modest and reserved — even industrialists. Nine statisticians worked on a holiday (conducted interviews) and none of them can complain of rudeness even from the drunk people" [14, p. 51, 112, 140, 141].

Thus, the descriptions of the life of the settlers (everyday activities, the atmosphere at home, the circumstances of entering the area, religious traditions, schooling, leisure time) preserved in the materials of expeditions and travel notes allow us to see the important role of an individual and family in the processes of adaptation to extreme conditions of the north. The stories from the life of the colonists give an emotional coloring to the events taking place and form a sense of belonging and mental appropriation of territory. The process of the formation of colonies (building houses with adjacent outbuildings, everyday activities) is a unique experience in the development of the Arctic territories. In general, the reconstruction of the typical helps to determine the motivation of a particular person and his family to live in the north, the evolution of the value system and possible scenarios for the future.

Conclusion

The phenomenon of the origin of cultural localization in a new place described in the article could not be formed: the colonization project in the Soviet period was implemented in a different format. It is all the more important to study the problems and results of this project, as well as new scientific research and discussions based on the reading of primary sources. The formation of the regional integrity of East Murman took place gradually, following the settlement by people from different regions. The new territory was appropriated not only officially (through the accrual of benefits) or symbolically (by building churches), but also in the minds of the settlers themselves. The analysis of the corpus of scientific texts and materials of expeditions makes it possible to analyze the memories of eyewitnesses about the specifics of adaptation, family history, events and the surrounding space during the study period, and the collection of data about specific people mentioned in the sources is a preparatory stage for a large-scale study of demography and family-related structures of the Murmansk coast.

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Ответственный секретарь — Кузнецова Елена Геннадьевна. E-mail: e.g.kuznetsova@narfu.ru
Редактор — Грошева Татьяна Евгеньевна. E-mail: t.grosheva@narfu.ru
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Registration certificate Эл No. ФС77-42809 from November 26, 2010
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Founder — Northern (Arctic) Federal University named after M.V. Lomonosov
Address of the founder: Naberezhnaya Severnoy Dviny, 17, Arkhangelsk, 163002, Russia
Address for correspondence: “Arctic and North” journal, Naberezhnaya Severnoy Dviny, 17, Arkhangelsk, 163002, Russia
E-mail address of the editorial office: e.g.kuznetsova@narfu.ru

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