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В XXI веке Арктический регион играет исключительную роль в геополитике. Богатейшие природные ресурсы (в том числе энергетические), развитие технологий, позволяющих эти ресурсы использовать, рост значения северных морских коммуникаций и другие факторы активизировали стремление ведущих государств занять в Арктике прочные позиции. При этом колоссальный потенциал Заполярья интересует далеко не одни арктические государства, но и те, границы которых лежат от него на значительном удалении. В этом свете особую значимость приобретают исследования, направленные на изучение континентального шельфа и уточнение его морских границ, анализ проблем, связанных с хозяйственной деятельностью человека в новых условиях, с акцентом на негативные последствия этой деятельности для экологии, в том числе на решение задач обороны, предупреждения и ликвидации техногенных катастроф, развитие человеческого капитала и сохранение историко-культурного наследия Арктики.

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PETER THE GREAT
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In the XXI century the Arctic region plays an exceptional role in geopolitics. The richest natural resources (including energy ones), the development of technologies that allow these resources to be used, the growing importance of Northern sea communications and other factors have intensified the desire of the leading states to take a strong position in the Arctic. At the same time, the enormous potential of the Arctic region is interesting not only for the Arctic States, but also for those whose borders lie far away from it. In this light, the research aimed at studying the continental shelf and clarifying its maritime boundaries, the analysis of problems associated with human economic activity in the new conditions, with an emphasis on the negative consequences this activity brings to the environment, including the solution of defense problems, prevention and elimination of man-made disasters, the development of human capital and the preservation of the historical and cultural heritage of the Arctic are of particular importance.

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**THE FOURTH INTERNATIONAL SCIENTIFIC CONFERENCE
"ARCTIC: HISTORY AND MODERNITY" (CONFERENCE
REVIEW)**

***Abstract.** The paper is devoted to the review of the Fourth International Scientific conference "Arctic: history and modernity" (2019). The goals and objectives of the conference are outlined, the topics are presented, the "statistics of the conference" (the number of participants, the geography of the conference and the number of sections and round tables, etc.) are given. It is concluded that as a result of the long-term work of the conference, a permanent platform has been formed that contributes to the development of a strategy for the Arctic region development and the creation of full-fledged international interdisciplinary scientific ties and scientific schools.*

***Keywords:** Arctic, scientific conference, interdisciplinary relations, scientific reports, international cooperation.*

Currently, one of the most pressing problems considered at a variety of socio-political and scientific-practical platforms is the problem of developing the Arctic, where many countries' geopolitical and economic interests intersect. Canada, Denmark, Norway, the United States and the Russian Federation (USSR) have a 370-kilometer exclusive economic zone near their coasts in the Arctic ocean. In addition, more than 20 countries declare their readiness to develop deposits on the Arctic shelf. India, China, South Korea, Brazil, Germany, Japan are among them.

Against the background of the increased interest in the Arctic in the modern world, it is urgent to convey a wide range of issues characterizing the historical, business, socio-political and other activities of Russia in the

Arctic region to a wide range of public. Issues of interaction between the Arctic countries in the conditions of modern realities and issues of public diplomacy are also important. In addition, until the second half of the 2010s, no significant efforts have been made by the Russian scientific community to develop and apply an interdisciplinary approach to the Arctic question that can unite representatives of technical and humanitarian specialties. At the end of 2015, teachers and scientists of Peter the Great St. Petersburg Polytechnic University undertook to solve this problem. In 2016, the first international scientific conference "The Arctic: history and modernity" was held, organized to form an international interdisciplinary platform for discussing and resolving a wide range of issues related to the Arctic region and creating an objective view of the Russian Arctic policy.

In 2019, the Fourth International Scientific Conference "Arctic: history and modernity" was held. The conference was held for the first time at two sites:

- April 17-18 at Peter the Great St. Petersburg Polytechnic University (St. Petersburg);
- April 23-25 at Murmansk State Technical University (Murmansk).

On the basis of Peter the Great St. Petersburg Polytechnic University 8 sections were held, which were attended by 417 specialists from 17 regions of Russia and 6 foreign countries (Germany, Italy, India, Poland, Syria, France). For the first time the conference was attended by heads and employees of 6 representative offices of the Arctic regions of the Russian Federation (Yamal, Komi, Yakutia, Arkhangelsk region, Murmansk region and Nenets Autonomous Okrug), employees of the Committee of St. Petersburg for Arctic Affairs and 4 Consuls General from the observing countries of the Arctic Council (France, Italy, Germany, Poland). 176 reports were heard.

On the basis of Murmansk State Technical University, 8 sections and 1 round table were held, in which 195 specialists from 8 regions of Russia and 3 foreign countries (Norway, Finland, Sweden) took part. Two Consuls-General from the Arctic Council member countries (Norway and Finland) made a welcoming speech at Murmansk site of the conference. 104 reports were heard.

Within the framework of the conference, 16 sections and 1 round table were held, 280 reports were heard, 612 specialists took part in the event. For comparison: in 2016, 346 specialists participated in the conference, in 2017 – 379, in 2018 it involved 357 people.

The conference proposes to consider a broad range of issues related to the Arctic region: the history of research and development in the Arctic, problems of military security and strategic stability, problems of ecological and industrial safety, oil and gas projects, international cooperation in the Arctic, the problems and prospects of economic development of the Arctic zone of the Russian Federation, historical-cultural heritage of the Arctic, tourism and its development prospects in the Arctic region, development of human capital in the Arctic, Arctic indigenous peoples and their sustainable development, the problem of Arctic energy supply, materials for the Arctic, education in the Arctic, shipbuilding and Arctic navigation, bio-resources of Arctic ecosystems, Arctic technologies and competences and mineral resources of the region.

The largest breakout session was devoted to problems and prospects of economic development of the Arctic zone of the Russian Federation: the two sites welcomed more than 60 reports on the development of transport and logistics systems in the region, [1] [2] [3] to the problem of the sustainable development of the region, [4] [5] [6] [7] were about oil and gas projects [8], etc.

According to the tradition, the conference consists of numerous sections on the history of research and development in the Arctic, the problems of which cover chronological periods from the iron age [9] to the history of XIX – XX centuries [10] [11].

This year the section devoted to the development of human capital was of special interest: it caused much discussion of the problem of the Muslim population migration in the Nordic countries and the impact of this process on the development of the region [12] [13] [14] [15].

Traditionally, the so-called "Youth section" is organized within the framework of the conference. Within the framework of this section, young scientists (students and postgraduates) have the opportunity to make a report on the issues of their interest, which contributes to the formation of entire generation of scientists engaged in Arctic problems.

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INTERNATIONAL COOPERATION IN THE ARCTIC

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UNDERSTANDING THE ENERGY DIPLOMACY OF NORWAY AND DENMARK IN THE ARCTIC

***Abstract.** The article is devoted to the phenomenon of economic diplomacy that contains different constituents including energy diplomacy. It also touches upon the characteristic features of economic diplomacy and explains the reasons for the growing importance of this phenomenon. Each country has its own approach to the problem of understanding economic diplomacy and economic interests. The research considers such an important element of economic diplomacy as energy diplomacy. The key issue of the article concerns the attempt to define the distinctive features of energy diplomacy that is conducted by Norway and Denmark in the Arctic. This region plays a significant role in the foreign policy of both of the states because of its advantageous strategic location, wealth of natural resources and etc. Norway and Denmark are interested in consolidating their strength and this can be observed by considering the results of their vigorous activity in the Arctic region. Both countries have their own strategies that reflect their views on the further development of the Arctic. The article also focuses on innovative and political initiatives that have been proposed by Norway and Denmark while conducting their energy dipvlomacy in the Arctic. In addition, the article outlines the legal aspect of cooperation between the Nordic countries in the Arctic region and examines the documents which are considered to be a legal framework for these states.*

Keywords: *economic diplomacy, Arctic, energy diplomacy, Norway, Denmark.*

The state of the Arctic region is closely related to the effects of global climate change. Different sorts of activities in the Arctic region depend on changes in sea temperature which can become a reason for fish migration. Ice melting opens up new transportation routes between the Pacific and

Atlantic oceans, and this can create new problems [1].

The role of the Arctic can also be observed within geopolitical terms, as it has a high potential to become an important source of energy in Europe. The seas in this region may become key junctions of the transit zone for the export of oil and gas.

The importance of the Arctic encourages responsibility of coastal states and creates the need for cooperation in this region which can be achieved through diplomatic channels [2].

It seems logical to consider the phenomenon of diplomacy and particularly of economic diplomacy.

For several decades researchers (S. Woolcock, N. Bayne [3], P. Sharp, [4] J. Wood, J. Serres [5]) have been trying to provide the most accurate interpretation of the term “diplomacy”. However, it contains such a wide range of interrelated components that it is impossible to cover all the features of diplomacy in a single interpretation. Therefore the meaning of “diplomacy” should be considered through the prism of several scientific theories.

The American researcher P. Sharp distinguishes three theoretical paradigms that are regarded as three lenses, through which diplomacy can be observed: the radical tradition, the rational tradition and the realist tradition [6]. According to the first approach, diplomacy is mostly associated with revolutionary changes in the country that make international processes assume more progressive forms. P. Sharp's rationalist tradition is based on the idea that states use their rationality to resolve emerging issues and search for answers to various challenges [7]. Within the framework of this approach, diplomacy is not examined in its pure form, since it is closely associated with the human behaviour, which is considered to be wise and virtuous. As for the realistic approach, this tradition defines diplomacy in terms of its close connection with the concepts of strength, struggle for

power and national interest. According to this concept, diplomacy and diplomats are regarded as elements of political power [8]. Characteristic features of the diplomacy of the Nordic countries should be studied within the framework of the rationalist approach, since this paradigm can reflect their main political ideals more accurately [9].

Economic diplomacy is one of the most important priorities of the state's foreign policy and its diplomacy, where the main goals and objectives referring to the economic field are determined. For many years economic interests have been one of the essential impetuses to promote international friendship and cooperation. Diplomacy definitely played a significant role in the process of achieving these goals.

Head of the trade and economic department of the Slovak Embassy in Latvia P. Baranay assumes that trade has become one of the key incentives to build international relationships [10]. Stable contacts between states and civilizations were gradually built because of the trade relations, and that laid a foundation for further cooperation based not only on the commercial activity.

With the help of economic relations, a state is able to exert significant influence on its partners (if it is financially powerful) and consolidate its strength in the world community. It goes without saying that economic intervention can sometimes be much more effective than a political or a military one.

Foreign researchers regard dependence of national economies on changes caused by globalization as a reason why economic diplomacy becomes such a significant tool [11]. In the context of globalization, economy becomes more sensitive to external phenomena, and its dependence on the conjuncture of worldwide political and economic processes is increasing.

Because of the fact that the percentage of foreign investments and

foreign trade in the GDP of many developed countries has been constantly growing and economic reforms based on market economy principles foster further integration into the world economy, we can observe rising interest in economic diplomacy that encourages multilateral cooperation between states and further making up of regional trade agreements.

Gradual significance of economic diplomacy resulted in entering the post-Cold War period after three fundamental changes that could be described as a 3-M phenomenon. The matter concerns multidisciplinary, multi-actor and multilevel dimensions [12]. A multidisciplinary approach to economic diplomacy considers the interaction between economics, politics and security, which reflects the new balance between geo-economics and geopolitics.

The second component of economic diplomacy is related to the multi-actor nature of this phenomenon. Economic diplomacy is no longer the exclusive prerogative of states because state and non-state actors that have influence on the decision-making process in the domestic police and act in the world as independent players are also its participants.

As for the multi-level approach to economic diplomacy, it focuses on the fact that economic diplomacy is conducted contemporaneously at the international, national and regional levels, which are closely interrelated [13].

Each state has its own approach to the problem of understanding economic diplomacy and its own economic interests. Some countries focus on the goal of preserving or achieving leadership, protecting sovereignty or territorial integrity [14]. Others attach importance to ideological or historical factors. However, the emphasis on pragmatic goals contributes to greater efficiency of economic diplomacy in the modern world.

The increasing influence of economic factors on world politics becomes the cause of the transformation of traditional diplomacy, with the

result that its various spheres, including energy diplomacy, become essential.

Considering the energy diplomacy of the Nordic countries in the Arctic, it is reasonable to define a number of certain features. According to O. Grigorjeva they are the usage of diplomatic tools to strengthen position of the Arctic Council, supporting international law rules to resolve arguable issues, implementation of the sustainable development policy [15]. Due to joint efforts, the countries of Northern Europe create conditions for the development of various strategies and projects in making of common system of cooperation in the sphere of natural resources management.

States are not the only participants in the key decision-making processes in the Arctic. Civil society and international organizations are also active players. The fact that representatives of official bodies, business and other groups are involved in the process of solving various problems in the Arctic region is considered to be an important feature of the transnational mechanism of the Arctic management.

However, O. Grigorjeva supposes that the transnational management system in the Arctic is not fully developed. Neither global organizations (for example, the UN), nor regional institutions (the Arctic Council, the Nordic Council) regulate the actions of the players in this region. The main driving force, according to the researcher, is the national interests of the Arctic and Subarctic states [16].

The Nordic countries rely on international law and their own national strategies and programs for the development of the Arctic during the process of conducting their energy diplomacy in the region.

The legal regime of the Arctic region is defined by the norms of international law, which were established in the 1982 UN Convention and the 2008 Ilulissat Declaration.

Five coastal states (Russia, Canada, USA, Norway and Denmark) agreed to cooperate in the Arctic region, to ensure the protection of the

marine environment and etc. [17]. The cooperation of coastal states and other interested parties in the Arctic region includes the collection of scientific data on the continental shelf, the implementation of measures to protect a unique ecosystem, scientific research, etc.

The supremacy of international law reduces a risk of conflicts in the Arctic. A good example of the development of multilateral relations in the region is the agreement signed on February 20, 2006 by Norway, Denmark and Greenland on the delimitation of the continental shelf and fishing zones in the area between Greenland and Spitsbergen.

In order to examine the characteristic features of the energy diplomacy of Norway and Denmark, it is reasonable to apply to their national strategies dedicated to the Arctic.

For example, the idea that a great number of natural resources in the region is a key factor for the state is clearly expressed in Norway's Arctic strategy [18]. In June 2012 the Norwegian Ministry of Petroleum and Energy announced a new licensing round for oil and gas exploration blocks. Of the 86 blocks on offer, 72 were located in the Barents Sea, north of the Arctic Circle [19]. The concentration of exploration blocks in the Arctic demonstrates the extent to which the country regards the region as critical to its future as a leading energy supplier.

In June 2017, the Norwegian government announced the 24th stage oil and gas licensing round. Norway also expressed a desire to reduce the number of negative effects of oil and gas activities in the Arctic [20].

The Royal Norwegian Ministry of Foreign Affairs emphasizes that natural resources of the Arctic region are strategically located because of the constantly growing demand for transatlantic liquefied natural gas [21]. They can also make a significant contribution to supplying Europe with pipeline gas. Besides, the role of the Barents Sea is growing because its resources can reduce dependence on imported supplies from the Middle East.

According to the Arctic Institute [22], the significant potential for future oil resources off the northern shores of Norway will have a lasting impact on the country's economy, but it can also affect the fragile Arctic environment in a negative way. One should not forget the importance of the treaty between Norway and Russia on the delimitation of the maritime border in the Barents Sea which can provide the basis for a further energy dialogue, exchange of data on the hydrocarbon exploration and new ways of partnership between Norway and the Russian Federation, and also usher a new phase of work of the Joint Fishery Commission. Cooperation in the Barents Sea may result in the development of trans-border offshore and coastal infrastructure and at the same time provide a trans-boundary management plan that takes into account the need to balance economic interests and the fragility of the Arctic nature.

Denmark has developed its own strategy, which emphasized the need to coordinate the energy policy in the region with the position of the authorities of Greenland and the Faroe Islands [23].

It is believed that the only reason why Denmark is an Arctic state is because Greenland is a part of the Kingdom. Because of Greenland Denmark has a unique opportunity to negotiate with such powers as Canada, Russia and the United States [24]. For the same reason Copenhagen seeks to build relations with Greenland, based on the principles of mutual respect. Strengthening ties with Greenland can have a positive effect on consolidating Denmark's strength in the Arctic region.

Relations with Canada are also of high importance for Denmark. Despite the existence of a certain kind of disputes, Canada, Denmark and Greenland are determined to take joint actions to solve border problems, as well as to cooperate in resource extraction.

In its official documents, the Kingdom of Denmark focuses on the development of renewable energy sources and onshore and offshore

exploitation, based on environmental friendliness.

By 2020, Denmark is going to increase the use of renewable energy sources by 30%. Greenland has a goal of supplying 60% of total energy consumption from renewable energy resources by 2020. The Faroe Islands also want to increase the use of renewable energy sources and start producing 75% of electricity based on renewable sources [25].

The oil exploitation in the Arctic provides Denmark with the opportunity to become less dependent on world markets.

Energy diplomacy that is conducted by Norway and Denmark in such an essential region as the Arctic has certain characteristic features.

Being the main "oil giant" of Northern Europe, Norway is determined to continue its oil and gas extraction in the region and enhance its position.

Denmark's role in the Arctic depends on its relations with Greenland. The Kingdom of Denmark is considered to be an important power in the Arctic region because Greenland is its part.

Despite the fact that Norway and Denmark are two different powers with their own view on the international situation, harmonization of their strategies can be observed in the Arctic.

The characteristic features of the energy diplomacy of both countries include their adherence to the principle of internationalization of space and endowing international institutions with a wide range of powers (for example, the Arctic Council); development of international legal mechanisms in order to ensure the establishment of the transnational mechanism for managing natural resources of the Arctic region, cooperation in the sphere of environmental protection.

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ARCTIC POLICIES OF CANADA AND THE UNITED STATES OF AMERICA

Abstract. *Russia has a huge territory in the high latitudes of Europe and Asia. Attention to the problems of the development of the Arctic is increased. Every year the interest to the study of the Arctic area increases as unexploited natural resources keep attracting the world community attention. Therefore, lately the Northern countries have been actively promoting their interests in the region, focusing mainly on the continental shelf, infrastructure and ecosystem protection. In this research the author reviews how the interest around the Arctic space has been developing in order to reach a better understanding of the relationship between Canada and the United States in the area. For this purpose, several strategies regarding the exploitation of their Northern territories are compared and the processes of their changes are traced. Then the author reviews budget expenses reflecting the difference in the extent of territory use across the North of the USA and Canada. It is notable that there is quite a few research on the topic done in Russia, considering that the mentioned countries are currently the leaders of the Arctic area development. This paper results into a conclusion on the extent of the US and Canada involvement, as well as the future perspectives of their relationship. The methods implemented in this article include historical analysis, comparison and projection.*

Keywords: *Arctic, USA, Canada, international cooperation, development of Arctic territories.*

Scientists studying the Arctic region distinguish three stages of the Arctic space development. These stages are called "the first, second and third division of Arctic".

The first division happened in the first half of the twentieth century, when Canada legally secured the Arctic territories – the Islands and the

adjacent water space. After that, the borders around the Arctic space started to form. In 1909, Canada officially claimed all the territories (continental and island) of the East of Northern Canada and the West of Greenland to be its possessions [3]. Then in 1925 the amendments to the law on the North-West territories were passed, establishing the position of the Northwest Territories Council Commissioner, who was responsible for the operations in the manufactory, trade and commerce. The amendments also set a restriction on any activity of the foreign subjects within the area of Canadian Arctic Waters without a special permission from the government [4].

In 1945, the U.S. President Harry Truman declared that the United States of America were entitled to claim the territory of the Arctic region, as well as that all the resources of the continental shelf were the property of the United States and, accordingly, under their control. However, sometime later, it was clarified in the White House press release that the continental shelf in this case is the bottom adjacent to the shore within 200 meters. Mr. Truman's statement was received by the international community well, as it contributed to the further development of the international law [5].

The second division of the Arctic refers to the second half of the twentieth century. It is distinguished by the fact that during this time there were attempts made to establish the legal regime in the Arctic. A regulation model of water space division in the Arctic Ocean and the continental shelf has begun its development to be approved by the world community [18].

In 1982, the United Nations Convention on the Sea Law adopted. However, due to some disagreements between the countries in 1994, another agreement was approved, where the economic aspects of interaction between countries were more elaborated. Yet still they had not been ratified by some countries [5], which lead to uncertainty. At the present stage, the international law does not give a clear definition of the international legal regime in the Arctic. This is partly due to the fact that its legal status depends

on the normative acts of the Arctic and Subarctic states, as well as the international law.

At the time when the laws on defining the boundaries of the continental shelf were being developed, a territorial dispute arose between Canada and the United States regarding the border in the Beaufort Sea, where gas and oil deposits were found. The Government of Canada refers to the 1825 Convention text, which says that the border can pass not only overland, but also across the sea, and emphasizes the existence of special circumstances: the centuries-old residence of Inuit in the North and their ownership of the Canadian coast. Be that as it may, the US is talking about a literal interpretation of the 1825 Convention, which excludes the possibility of its application to this situation, i.e. the principle of equidistance regulating the sea space, which the USA has leveraged in order to receive more territory. As experts noted, in the near future, the final resolution of the dispute is unlikely, as countries are not yet ready to weaken their legal positions related to the region so rich with natural resources [1].

The third division of the Arctic began in the twenty-first century. Countries are no longer interested in the division of Arctic waters, but directly in the continental shelf, which in its depths contains oil and gas fields. Accordingly, the interest in the Arctic region is rapidly increasing as the place is open for the foreign vessels to enter [3][20].

Today, the Arctic is a place where the struggle between countries is taking place using the “soft power” methods – that is, without any casualties, or military intervention whatsoever. This process involved not only the countries of the Arctic G-8, but also other countries capable of competing for gas, oil and transport routes [17]. Therefore, the competitive struggle for the development of natural resources and control over the Arctic space and communications between the economies of the United States, Norway, Canada, the EU, Russia, China and others is intensifying [2].

Canada is one of the most interested countries in the development of the Arctic. It has about 40% of the territories located above the Arctic circle. In this regard, the government of the state is highly interested in the development and security of the region. In addition, the Arctic circle is home to about 200,000 people, who are predominantly indigenous – Inuits and others. Therefore, Canadian government maintains good-neighborly relations with the indigenous population, as well as protects sustainable economic development in the North of Canada. Department of Public Safety and Emergency Preparedness highlights the following tasks related to the Arctic: to become a leader in the development and implementation of its foreign policy in the Arctic, including more active acts in the region; to continue to develop various opportunities for trade, for the introduction of innovative technologies that would be beneficial to the inhabitants of the North; to make the country a leader in Arctic research; to promote Canada's authority on Northern issues through an active advocacy policy [8].

Key strategies for the development of Northern Canada in the twenty-first century are “Canada’s 2009 Northern Strategy”, “Statement on Canada's arctic foreign policy of 2010” and “Arctic Policy Framework of 2016”.

Accordingly Canada’s 2009 Northern Strategy, the basic goals are: to ensure a military presence in the Arctic territories, to establish Canada's leadership in arctic researches , to promote social and economic development of the region to build a self-sufficient life of the indigenous population, to protect the ecosystem of Northern Canada and to adapt to climate change, and to give the regional government a large number of powers [9].

Statement on Canada's arctic foreign policy of 2010 said that life in the North should be stable, with strong laws, clearly defined borders, dynamic economic growth and trade, as well as developing Northern communities and a healthy ecosystem. In addition, there were 4 "pillars" of the Northern strategy: the sovereignty of the region, the socio-economic

development, the protection of the ecosystem and the involvement of indigenous people in the management of the region. Accordingly, the following policy goals were: securing international recognition for the full extent of our extended continental shelf; seeking trade and investment opportunities that benefit Northerners and all Canadians; contributing to and supporting international efforts to address climate change in the Arctic; strengthening Arctic science and so on.

In this Statement were identified areas that will require more detailed work in the future. These were an interaction with other countries in the international arena through membership in the Arctic Council or through other international institutions; an establishment closer and friendly relations with the main strategic partner in the Arctic (USA); a maintenance relations with other members of the Arctic eight [14].

The Prime Minister of Canada J. Trudeau announced about the development of a new "Arctic policy framework" in 2016, involving the inhabitants of the North, as well as municipal governments and indigenous peoples. The new policy had to replace Canada's 2009 Northern Strategy and Statement on Canada's arctic foreign policy of 2010. The beginning of this course was given by the joint commitments of the Prime Minister of Canada J. Trudeau and the U.S. President B. Obama at a press conference in Washington on March 10, 2016. They emphasized that special relations were maintained between two countries, were ready to continue cooperation in the field of energy development, protection of the Arctic ecosystem and leadership in it. Also they indicated that the USA and Canada should and will play a leading role in the global economy. And they would take steps to protect the Arctic and its peoples. Canada and the United States respect the decisions of the indigenous people of the North on climate change in the region [15].

A general model of leadership in the Arctic was presented, whereby a

partnership is being formed allowed to use various opportunities to confront the challenges posed by climate change in the Arctic. Canada and the United States called on other Arctic countries to adopt the 4 goals: a protection of biological diversity of the Arctic region; an using the knowledge by indigenous people about the North in the decision-making process regarding the Arctic; a creation a sustainable Arctic economy; a support of strong Arctic communities.

For greater interaction with the people of the North, the government of Canada will organize regional "round tables", where the authorities and the local population will develop an effective regional policy [15].

The government of Canada and the indigenous communities of the North have been able to identify existing problems that have been actively resolved in the implementation of the new policy. For example, there was a problem with the high cost of food for people living in isolated Northern communities. And their joint actions facilitated to a more detailed study of "Nutrition North Canada" [12]. The development of the Arctic part of Canada was gradually taking place, considering the interests of the Canadian population and the interaction with foreign partners, first of all, with the members of the Arctic eight.

The USA acquired the status of the Arctic state in 1867 after the purchase of Alaska. There were 3 waves of awakening of interest by the Arctic. In this regard, gradually the Arctic space began to acquire the following importance: strategic provision of comprehensive security, maintenance of sustainable development of the region, protection of the ecosystem, support for cooperation and interaction with other Arctic countries. The U.S. authorities would like to attract to participial in the socio-political life indigenous population in order to be aware of their problems and needs. Special attention was devoted to Arctic researches [16].

The main provisions of the American Arctic strategy were published

in 2013. They included equipping the region with weapons for the security of ships at sea, which contributes to the promotion of the U.S. security interests; establishing competent management of the region and strengthening international cooperation in the Arctic [7].

The Prime Minister of Canada J. Trudeau and the U.S. President B. Obama spoke at a press conference in Washington devoted to the Arctic. After that in April the United States presented a plan named “A Ten-Year Prioritization of Infrastructure Needs in the U.S. Arctic” [6]. Attention was focused on navigable waterways, transport infrastructure, information infrastructure, Quick Response Desk and rules of ship’s exploitation. It was needed to create an effective system of safety of the water boundary [6].

In 2019 a report was prepared by the congressional research service. The national science foundation asks to give more money for Arctic researches. Also the foundation is going to support 10 ideas aimed at long-term investments in science and technology. This includes financing research programs, cooperation in industry, with private foundations and various educational institutions, as the United States is committed to serious researches of Arctic natural resources [19]. Due to the future increase in the mobility of navigation a strategy will be developed of cleaning up oil spills and conservation an ecology in the region. It is planned to strengthen the coast guard, to develop combat operations to protect the territory and to reinforce the military presence in the region [10].

The USA is gradually increasing expenses on multilateral development of the Arctic. For example, it was allocated for the implementation of study’s programs of the territory \$110.58 million in 2018, and it is planned to allocate \$113.56 million in 2019. And it was allocated in 2018 \$36,11 million on the technical equipment needed in the researches, but in 2019 – \$39,33 million. Also the plan of infrastructure financing was adopted: \$45 million was allocated for 2019, \$11 million for 2020, \$18

million for 2021 and \$25 million for 2022 [11].

The government of Canada allocates funds for either 2 years or 5 years. For example, since 2015 for 5 years endorsed a plan for the implementation of \$58 million in infrastructure. Similarly, it was allocated \$34 million to provide meteorological and navigation services in the Arctic [13]. Compared with the United States, Canada is trying to invest in the development of the region a moderate amount of finance, because for a long time Canadians were cultivating the Northern lands. Therefore, now the government of Canada just maintains the pace of development of the Arctic in order to be a leader there. And the US is only now preoccupied the investments, that's why they spend more money.

In the twenty-first century Canada and the United States occupy a leading positions in Arctic space. Each country begins to develop its own strategies of the Arctic development, but in this case, Canada has more advantages, because it has been studying the region for longer, which provides the leadership in the Arctic. But when issues began to be raised about development of infrastructure, energy and the economy of the region, the USA started to position itself as an advanced Arctic power. Since March 2016, these countries have become partners and rivals, because no one wants to give up leadership in the region. But cooperation between the countries increases. So far, territorial controversy don't interfere the cooperation of countries, but at the same time the United States and Canada are strengthening their military presence and the coast guard, and various means of control that help to ensure their regional interests. Every year the USA increases financing of Alaska, which indicates the country's serious intentions to become a leader in the Arctic. Canada, on the other hand, has maintained the level of investment in the North. Nevertheless, Canada still holds a leading position in the region, but the situation may change.

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EAST-ASIA'S INTERESTS IN THE ARCTIC REGION

Abstract. *This paper touches upon main interests of three East Asian countries, namely China, South Korea, and Japan in the Arctic region. The rapid environmental changes and their implications are thought to have altered the position of these three states regarding the area. Now the Arctic provides new economic opportunities and benefits and, therefore, attracts stakeholders from other regions. The immense significance of Arctic for East-Asia can be accounted for several factors such as internal demand for natural resources, interest in new shipping routes, seeking incentives for domestic industries and businesses, striving to conduct environmental research, cooperation, security, prestige, and development of fisheries. Balances of these aims and concerns are defined by China, Japan, and South Korea in various manners. For instance, China is the most powerful actor among these countries and it concerns about its political capital that also means engagement with global issues as the Arctic. The article also demonstrates grounds and reasons for East-Asian involvement in the region's affairs. All three admit that extraordinary shifts in the Arctic environment request collective efforts. They also have to adopt the agenda of the Arctic states to obtain a right to explore the area. The speculations are embedded in the frameworks of neoclassical political realism.*

Keywords: *Arctic, East Asia, China, South Korea, Japan.*

Today the Arctic region faces with rapid climate changes which notwithstanding create golden opportunities for economic activities. Due to ice steadily declining, new shorter shipping routes in the Arctic Ocean are arising. As experts assert, usage of the Northern Sea Route will reduce delivery time and costs and lead to abatement of pollution [1][2]. More precisely, it is expected that the new sea route will be 40 % shorter than the route from Suez Canal, and a trip from Shanghai to Rotterdam is estimated

to be about seven days and 2750 miles shorter [3]. Navigational safety is another advantage since the current route through the Middle East is filled with some troubles caused by political instability and piracy. Moreover, the area is believed to be a storehouse of natural resources, including tremendous deposits of hydrocarbons and rare earth elements such as diamond mines in the Northwest Territories and the Yukon and an iron ore property on Baffin Island. Reportedly, there are 90 billion barrels of oil, 1699 trillion cubic feet of natural gas (approximately 30 % of the world's undiscovered conventional gas reserves) and 44 billion barrels of natural gas liquids in the Arctic region [3]. Another benefit stems from potentially increasing fish stocks, moving northward because of warming sea temperatures in the Arctic Ocean. Exploration of resources in The High North used to be extraordinarily difficult and expensive, but new environmental conditions and advanced technologies allow to pull it off.

To illustrate the dependency of East Asian countries on foreign raw materials, Japan is the world's largest importer of liquefied natural gas (LNG) and the third-largest importer of oil, and South Korea is the second-largest importer of LNG and the sixth-largest importer of oil. As regards China, despite its position as the world's fourth-largest producer of oil, it is also the second-largest importer. And China's domestic demands for energy are forecast to increase due to urbanization and a growing middle class [4].

From a legal standpoint, there is no comprehensive treaty regulating all Arctic matters, instead, the United Nations Convention on the Law of the Sea (UNCLOS), the Spitsbergen Treaty, the Charter of the United Nations, and other agreements establish several legal regimes. And it should be noted that East-Asia countries participate in many of them. China, Japan, and South Korea highlight the importance of these legal instruments and claim that all disputes in the process of Arctic exploration ought to be resolved under international law. According to the UNCLOS, no one owns the North Pole,

and the waters and airspace of the Arctic are unambiguously part of the global commons [5].

These new challenges and prospects inserted the Arctic in the global agenda. The area is no more exclusively European or North American concern, given worldwide climate transformation. But more importantly that the plenty of unproven resources coupled with more advantageous transport options attract non-arctic states, intending to manifest their right and capacity to take part in the region's affairs.

China. In 2018 China has adopted Arctic White Paper in which it outlines aims, principles, and strategies in its arctic activities. It is claimed: «Geographically, China is a "Near-Arctic State", one of the continental States that are closest to the Arctic Circle»[5]. Also in accordance with the policy paper, China is an important Arctic stakeholder driven by scientific, economic, and geostrategic interests in the region. The significance of both the area for China and the country's involvement in the governance of the Arctic can be attributed to an overwhelming environmental impact of the region and China's aspiration along with its capacity to contribute to the Arctic development. In China's view the Arctic region is a territory in which non-arctic countries are permitted to carry out navigation, resource extraction, and research under international law. But the paper has an evident commercial inclination highlighting China's ambitions to develop shipping routes, hydrocarbon exploration and exploitation, fishing, and tourism.

The White Paper underlines the state interests: «China's policy goals on the Arctic are to understand, protect, develop and participate in the governance of the Arctic, so as to safeguard the common interests of all countries and the international community in the Arctic, and promote sustainable development of the Arctic [5]. » To begin with understanding and scientific dimension, Chinese decision-makers consider that the Arctic is a sign of climate change and, therefore, it should be scrutinized. They are

concerned with the forecast, implying that future environmental shifts will aggravate the existing problems such as water shortage, poverty, and environmental degradation and influence China significantly. For this purpose, the authorities ensure that Chinese scholars and institutions conduct a scientific evaluation of climate changes and participate in Arctic regional forums and conferences, organize research expeditions. For instance, in 2004 China built the Arctic Yellow River Station in Ny-Ålesund in the Spitsbergen or in August 2019 Chinese scientists set off for the 10th Arctic expedition [13]. Moreover, Beijing calls for environmental protection and supports endeavours of the coastal states via a commitment to relative terms of international agreements.

Besides, China strives to increase its participation in the region's affairs in order to enhance its international political status and simultaneously declares the multilateral nature of cooperation. Through officials' statements and the policy paper, it repeatedly highlights the authorities' commitment to intergovernmental institutions and international law relating to the Arctic issue. As Chinese vice foreign minister Mr. Kong Xuanyou said, the Chinese side endeavours to work together with all relevant parties, and, in the spirit of mutual respect and win-win cooperation, to continue to promote the steady and orderly development of international governance of the Arctic [6].

Nevertheless, economic interests are the core of the engagement with Arctic. For example, the region provides new opportunities for shipping. China plans to collaborate with vested countries to build and maintain "Polar Silk Road" abiding treaties and important legal instruments, including the UNCLOS, the International Code for Ships Operating in Polar Waters (Polar Code) which clarify the rules of free navigation in the Arctic Ocean. Domestic enterprises can engineer appropriate infrastructure and carry out international voyages. The government encourages tourism in the region,

supporting corresponding agencies and organizations, awareness of Chinese citizen and appeals to security in the Arctic.

As China is used to buying foreign natural resources and given energy needs are growing, the Arctic region provokes its great attention. Chinese companies often invest in extraction, shipping, and financial institutions there. For example, China LNG Shipping Holdings and Sinotrans Shipping created joint ventures with international partners to operate specialised ice-strengthened LNG carriers to ferry LNG from the Arctic region [7].

Thus, it can be stated that China's interests in the region are multifaceted. They are based on economic and geopolitical benefits and ecological concerns.

South Korea. Unlike China, South Korea government does not proclaim its long involvement in Arctic affairs since it has started its notable activity in the area only in the early 2000s. In 2013 South Korea issued «A Master plan for Arctic Policy» in which 4 major goals (Strengthen International Cooperation, Encourage Scientific and Technological Research Capacity, Pursue Sustainable Arctic Businesses and Secure Institutional Foundation) are stated [12]. Under the Plan participation in the Arctic Council, its Working Groups, Task Forces, and other institutions enables Seoul to cooperate with the Arctic states and promote its interests. To maintain Arctic partnership, Korean policy-makers frequently visit the coastal states and demonstrate their aspiration to collective efforts in the region. Former President Myung-bak Lee was in Russia in 2008, 2010 and 2012, in Norway and in Greenland and expressed his country's attention to the Arctic development. Furthermore, South Korea recognizes its status as a non-Arctic state and presents itself as a reliable partner in relations with the coastal states.

There are several scientific institutions in The Republic of Korea which contribute to comprehension of novel phenomena in Arctic e.g. Korea

Polar Research Institute (KOPRI), the Korea Maritime Institute (KMI), the Korea Institute of Ocean Science and Technology (KIOST) and so on. Generally, South Korea sees a lot of advantages in dramatic climate changes in the Arctic, which, nonetheless, should be taken regarding the maintenance of biodiversity and environmental sustainability. Korean experts suppose that these ecological shifts can be turned into “Arctic Bonanza”. Given the stagnation of the Korean economy, the region may provide an incentive to the shipbuilding industry, access to necessary commodities and create jobs for the young generation. Along with energy cooperation and buying of resources, South Korea is able to construct icebreakers for commercialized sea routes. For example, Daewoo Shipbuilding & Marine Engineering (DSME) recently won a contract for up to 16 ARC-7 ice-class tankers for shipment of LNG from Russia’s Yamal Project [3].

Extraction of oil and gas is also in the spotlight of Seoul since the Arctic Ocean is a reservoir of these minimally exploited resources. The country is almost entirely dependent on foreign natural resources. Taking into account that South Korea imports fossil fuels only by sea, usage of the North Sea Route will obviously reduce costs. Another benefit is connected to fisheries. South Korea is thought to export or catch by distant water at least half of all consumed fishes [8]. And for this reason, the Arctic Ocean with its fishing opportunities attracts South Korea.

The cited pieces of evidence prove that South Korea seeks chances for domestic businesses to take part in Arctic exploration and benefits, favours economic activity and cooperation in the Arctic to give impulse to internal growth.

Japan. For a long time, Japan's interest in the North was centred upon continuous disputes with Russia over Sakhalin and Kuril Islands and the Arctic have been perceived as distant and exotic. However, melting Arctic ice and novel advantages have created excellent chances for Japan too. It is

stated in Japan's Arctic policy paper that global warming in the Arctic is beyond national borders and should be treated as a planetwide issue [8]. The Japanese government underlines its key role in the Kyoto Protocol and the Aichi Biodiversity Targets and the fact that it was the first non-arctic state, who built an observation station in the Arctic and joined the International Arctic Science Committee (IASC). The main Japan goals in the Arctic entail conduct of environmental investigations, use of sea routes, and extraction of resources.

With regard to the ecological issue, Japan believes that dramatic climate shifts in the Arctic affect Japan significantly. As China, it supposes that the situation in the Arctic demonstrates future environmental conditions across the globe. Therefore, Japan is intended to take part in the region's development and assist Arctic countries as well as the Arctic Council through up-to-date technologies and scientific knowledge. From Japan's perspective, environmental concerns and economic benefits intercross, thus the exploitation of resources and maritime activities ought to be carried out on the basis of biodiversity preservation and under international law. To move in that direction, in 2011 the Japan Consortium for Arctic Environmental Research was established as a platform for coordination of Japan's the Arctic research activities which include funded projects aimed at innovations and creation of advanced technologies, participation in conferences and scientific institutions, initiatives with research stations, elaborations of policy recommendations and so on.

The thawing of ice facilitates to open of new sea routes that are able to deliver great profit. For instance, the navigation route between Yokohama and Hamburg via the Arctic would be 38% shorter than the route via the Suez Canal [10]. But it is also a challenge to Japan because today it doesn't possess proper vessels for this purpose.

Besides, since Japan lacks fossil fuel and experiences an energetic

crisis, it depends on The Middle East import. Hence, Japanese authorities strive to guarantee energetic security and diversify its oil and gas suppliers. Given melting Arctic ice relieving the process of resource extraction, the Arctic region provokes Japan interest. To exemplify the situation, several Japan companies support Greenland Petroleum Exploration Co., Ltd, or Mitsubishi holds a small percentage of the shares in Baffin Island Iron Mines Corporation's massive Mary River property on Baffin Island [9]. Another opportunity is related to fisheries due to future potential fish stock is estimated as growing.

Overall, Japan's interest in the Arctic is increasing, especially concerning natural resources and other economic benefits such as sea routes and fisheries, but Japan is also engaged with the environmental issue and future implications of changes in the area.

China, as well as South Korea and Japan, possesses an observer status in the Arctic Council that is perceived as respect and recognition of these countries' legal interests in the region. Their goals are concentrated upon resources and economic opportunities such as shipping and stimulating national business. All three energy-poor countries are large consumers of raw materials. They have developed fisheries, therefore, they share the same economic expectations about the Arctic. All of them concern about dramatic climate change in the region touching upon their environmental conditions. And they have to adopt the importance of other issues, for example, the empowerment of indigenous peoples which are on the agenda of the coastal states. East-Asian countries carry out research in these fields and make massive investments considering it as a requisition to get free access to resources and an effort to make commercialization of the area more profitable and not because of their scientific altruism.

Japan and China have engaged in international research projects in the Arctic for some time. South Korea is motivated to penetrate in the region

more actively by two other countries. Climate changes in the Arctic entail the elimination of some natural barriers that have sparked non-arctic states, including those in East-Asia, to involve in the regions' affairs. However, the challenges and hindrances are still real because of difficult climate conditions, there are some doubts about whether this Arctic excitement is reasonable.

Rising involvement in the region is the common trend among these three countries. Nevertheless, they continue to search for an independent way to achieve their goals in the Arctic. Moreover, bilateral relationships with the Arctic states became the most popular strategy, since three countries' activity in the Arctic is thought to be competitive. Furthermore, an East Asia state – a coastal state relation is deemed as more privileged than those within an umbrella of the Arctic Council, where an observer state is deprived of decision-making. Above all, the three countries proclaim that Arctic affairs is the global issue and should be addressed on a cooperative basis. In contrast, collaboration in the framework China-Japan-South Korea as one East Asian front may fruit more than unilateral actions. The excellent example is Russia's Sakhalin-II project in which South Korea having designed a drilling and production platform and Japan having made pipes cooperate [11]. Another example is the meeting in Yokohama in August 2014 where representatives of China, Japan, and South Korea consent to collaborate in the Arctic Ocean.

There is also the concern about security in the Arctic. Whereas South Korea calls for permanent demilitarization of the area asserting it can benefit all participants and Japan is anxious about possible China naval presence, jeopardizing turning into a military operation, China is only one from Asian states who is able to threaten Russian claims in the Arctic that is believed to be the potential source of constant tensions in the region. China is one from East-Asia who has the evident political expectation for the Arctic,

anticipating entrenchment of its power and influence in the world community. However, China, Japan, and South Korea declare their respect for sovereign rights of the coastal states and commitment to international law relating to the Arctic issue.

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THE SPREAD OF ISLAM AND MUSLIM COMMUNITIES IN THE COUNTRIES OF NORTHERN EUROPE: A STUDY IN THE NATIONAL HISTORIOGRAPHY

Abstract. *The article examines how the national science describes the modern formation and trends towards transformation of confessional space in the countries of Northern Europe, including St. Petersburg.*

Keywords: *confession, Islam, Northern Europe, St. Petersburg, Russian historiography.*

As K.V. Gorina notes, "confessional space includes the totality of all religions, creeds in a particular territory, the distribution areas of which can be considered as independent subspace." By subspace, the author means religion, namely Orthodoxy, Islam and others, which are expressed in the development of religious and territorial realities. Thus, this is a qualitative characteristic of the territory, which is a religious system consisting of faith bearers, religious infrastructure and attributive-ritual part [4, p. 9,12-13].

Considering within this context the study in the national science of the modern formation and trends towards the transformation of confessional space in the countries of Northern Europe, it is necessary to notice the importance and relevance of this topic. First of all, Russian researchers are interested in studying the confessional life of Russia and St. Petersburg in particular (the author of this article refers to St. Petersburg as a part of Northern Europe). This interest is due to the revival of religious life in the country after the collapse of the USSR and the disappearance of religious

dictatorship and official atheism.

It is necessary to pay attention to the representatives of humanitarian geography, who have recently been deeply involved in the sphere of demonstration of religious life and its influence on the transformation of the sociocultural space, and moreover, the researches are interfaith. This article will focus on studies of Islam, but I would also like to note the results of research in the field of Christianity. O.A. Balabeikina's research "The St. Petersburg diocese: the historical geography of Orthodoxy" [1] in which the author studied the territorial features of the organization of the Russian Orthodox Church's confessional space within the St. Petersburg diocese, stands out.

In addition, for the first time in science, the economic aspects of the ROC were analyzed using the example of the St. Petersburg diocese.

The special merits of the researcher include theoretical development and practical grounding of the method of characterizing the confessional space. Thus, at a regional level, intra-confessional types of flock are distinguished: stable, formal, factual; the author's algorithm of its calculation is developed to characterize the confessional composition of the territory. As the researcher herself notes, this "technique has great potential for characterizing the inner confessional space of any religion or confession in a certain territory" [1, p. 17]. So, O.A. Balabeykina made a special contribution to the development of confessional geography methodology. Noting the researcher's work, the article "Traditional Christian confessions in Finland: the territorial aspect" [2, p. 56-62]. should be taken in account. In this work she examines the process of formation and features of church-administrative division, as well as the placement of the cult infrastructure of Christian confessions in Finland. The author also analyzed the statistical data from the archive of the Finnish Orthodox Church.

Speaking about the topic of Islam in Northern Europe, especially in

St. Petersburg, it is necessary to mention the representatives of history, cultural studies and philosophy, who also refer to this issue. Moreover, it should be emphasized that St. Petersburg was originally formed as a multi-ethnic city, for which cultural variety, including the religious one is typical. Islam is no exception, this religion has always been represented in the Northern capital, which is especially significant for researchers.

It is necessary to pay attention to the article by A.I. Matochkina, dedicated to Muslim education, its history and modern condition in St. Petersburg. The researcher points out that the Islamic community has to solve all the tasks and problems that it faces independently. The same holds for education and "apparently, its organization will continue to be sporadic, and the situation will not change until Muslim organizations and associations appear in the city, which will take the initiative and begin to lobby for the interests of Muslims in a dialogue with state authorities" [7, p. 69]. An article by A.N. Tagirjanova [8, p. 382-390] is devoted to the history of Muslims in St. Petersburg from the XVIII century up to the present day in general.

T. G. Tumanyan's article "Islam as a socio-cultural factor of migration processes in St. Petersburg" [9, p. 101-105], where some aspects of socio-cultural problems of labor migration, primarily its religious component, are touched upon, is very interesting. The role of mass media in the formation of public consciousness in the issue of migrants in the city is also researched and the degree of veracity of the events covered and the statistics given is revealed. The mass media often cite overstated and unverified statistics on the number of migrants, which can not contribute to the development of a correct and adequate representation of the confessional and ethnic situation in St. Petersburg. In addition, the researcher draws attention to an important problem that the sharply sprawling Muslim community had to face, and which affected the socio-cultural life of the city. Due to the lack of religious infrastructure and mosques, prayer rooms (musalla) which are often

organized on a national basis, spread more frequently, this can lead to a "certain "enclavization" of migrants, and in turn, hardly contributes to the efforts of the authorities aimed at the socio-cultural adaptation of labour migrants." What is more, some prayer rooms, which are not controlled by faith-based institutions, become a center for the spread of radical views [9, p. 104].

Next, it is necessary to address to the problem of the spread of Islam and Muslim communities in the region of Northern Europe. This issue is especially significant, because as K. Yu. Eidemiller notes, Islam in Northern Europe is the most dynamically developing religion. According to the data of the researcher, "in this very region since about the end of the 70-ies of XX century the number of Muslims on average for every 10 years is steadily doubling" [10]; this fact makes the topic particularly relevant.

This problem is also closely related to the phenomenon of migration, which has become an integral part of global problems. Large-scale migration flows cover a huge number of countries and, accordingly, a large number of people - bearers of different cultures. In this regard, at the moment the most important is migration from the regions of South-West Asia, North and East Africa to European countries. The mass demonstrations and the wave of coups d'etat that have swept the Arab world since 2010, traditionally referred to as the "Arab spring", are important events in this process that have recently intensified a powerful new round of migration. These events have contributed to a sharp increase in Islamic migration to the European Union. For example, the Muslim population of Sweden increased by 2% between 2011 and 2014 and is now at least 7% [13]. Such processes require comprehension and extensive analysis from representatives of the scientific community.

Until recently, the role of representatives of humanitarian geography in this matter was insignificant. However, this problem was addressed by

K.Yu. Eidemiller, who examined the role of Muslim communities in the transformation of the sociocultural and political space of the Nordic countries in the late XX - early XXI [13] centuries at the intersection of disciplines - geography and history. First of all, the researcher determined the process stages of Muslim migration to the region, identifying three stages:

1) until 1975, which was not registered as the stage of Muslim migration,

2) from 1975 to 1995 – the time of national legislation, during this time period, Muslim migration acquires a pronounced military character,

3) from 1995 to the present, the nature of migration has not changed much and is determined by the EU norms and national legislation [12]. Of the obvious advantages of the researcher, it is also worth noticing the improvement of methodology for studying religious space: the structure and composition of the Muslim space in the countries of Northern Europe, for which Islam is historically not a traditional religion, are revealed. K.Yu. Eidemiller also proposed an interpretation of the concept of “Muslim community” from a geographical point of view, which can be applied to any geographical space, “whether it is a world, region, country or city” [12].

The researcher also referred to the influence of Islam and Muslim communities in some countries of Northern Europe. Thus, as of 2013 in Denmark, the Muslim population is 4.7% of the total population, and it is the largest religious minority in the country [12]. Considering the situation of the Muslim community in Denmark, on its place in political life is especially highlighted. One of the main problems in this regard is the lack of an authorized organization that would represent the entire Muslim population of Denmark. Basically, this is a totality of small religious organizations; more serious ones were supplanted from Danish political life in the early 2000s. All this is somehow connected with the so-called "cartoon scandal"

(2005-2006), which grew into an international conflict. As K. Yu. Eidemiller notes, "the return of Muslim organizations in Denmark to public life of the state and to "big-league politics" is still being limited, as it is associated with fears of new disputes and conflicts in this society" [11].

Speaking about Sweden, we should notice that in this very country the Muslim community is the largest and at the same time very diverse culturally and nationally. According to the data provided by K.Yu. Eidemiller, the largest cluster of the Muslim population of Northern Europe is concentrated in the Swedish agglomerations: in Stockholm and Uppsala - 50%, Gothenburg - from 10 to 15%, in Malmo - 5-7% [13]. However, there is racial and religious discrimination in Swedish society, as well as problems connected with the immigration policy of the state, which lead to clashes and conflicts.

S.Yu. Dianina attempted to analyze the integration of Muslims into Scandinavian society from a socio-philosophical perspective. Even though the Nordic countries have one of the best social programs in Europe, the attitude towards Muslim migrants is still based on the "we-they" principle. The researcher cites various existing theories explaining the functioning of such a scheme, in particular "representatives of another culture are often perceived as "strangers", and therefore bearers of threat and another culture, that can harm their own culture, which will cause the loss of the meaning of life". It remains clear that governments cannot find a balance between respect for human rights, preservation of culture and ethnicity, which leads to conflicts in society [5, p. 34]. Another interesting article by S. Yu. Dianina examines the perception by the indigenous society of Sweden of information about Islam and representatives of the Muslim community in the QMS. The researcher analyzed the diverse content of the QMS and revealed the complexity of intercultural dialogue. In particular, important conclusions were made: the Swedish QMS actively promote the development of

Islamophobia in the mass consciousness through the formation of a deliberately distorted image of Islam. It is also necessary to establish the activities of mass communication and provide quality and objective information about Islam for a more successful integration of Muslim migrants into Swedish society [6, p. 127-135].

If we touch upon any other studies related to Denmark and Sweden, then we can note the article by S.V. Borodai "Islam in modern Europe: demography, integration, prospects" [3, p. 24], which is a general overview of the situation of Muslims in the EU countries of the so-called "first echelon of Islamization", which includes two countries of Northern Europe. Thus, from the data characterizing the situation of Muslims in Sweden and Denmark, we can note the existing discrimination in labour market on the basis of religion. From the survey of Muslims on the issue of religious discrimination, the highest percentage is observed precisely in the Scandinavian countries: in Sweden-61%, followed by Denmark-51%. The researcher explains this phenomenon by employers' prejudice against religion, meaning Islam [3, p. 125].

The situation of the Muslim community in Finland is worth mentioning. It should be recognized that the number of Muslims in Finland is controversial, but K. Yu. Eidemiller estimates their number from 70 to 80 thousand people, i.e. 1.7 – 2.1% of the total population of the country [12]. The vast majority of Muslims are migrants and their descendants, but there is also an autochthonous Muslim population in Finland, primarily "Finnish Tatars". Moreover, the most important fact about Finland is that it was here that the first officially functioning Islamic political party in the EU (the "Islamic Party of Finland") appeared, the registration process of which was delayed for two years by the Finnish government.

In Norway, the Muslim population is also the largest confessional minority and is approximately 180 thousand people, of which only 112

thousand recorded their belonging to any Muslim community [12]. In Iceland, the situation is slightly different: the Muslim community here is one of the smallest in the world, in 2013 its number was 770 people, which falls short of 0.1%, unofficial statistics say about 0.24% and 1.5-1.7 thousand people, respectively [12].

To conclude, the study of the spread of Islam and Muslim communities in the countries of Northern Europe, it is necessary to pay attention to a number of important conclusions made by researchers. In all the countries of Northern Europe, except Iceland, Islam became the second religion in the number of adherents, thereby displacing Catholicism. K. Yu. Eidemiller predicts that by 2025-2030 the number of Muslims in the region will reach 10% of the total population, if the current trend of increasing the number of people professing Islam continues. The researcher's attention is also riveted to the fact that the Muslim population is concentrated in the largest agglomerations and at the same time, authorities at the regional level do not solve the problem of integrating Muslim migrants into European society, which can lead to adverse consequences, including serious inter-religious conflict [12], "which is able to change the religious, ethnic, and perhaps the administrative-territorial map of Europe." [12] At the same time S.V. Boroday argues that full assimilation of Muslims is impossible, religious identity will remain in any case, and it will be dominant, but "a sense of patriotism and belonging to European culture will grow" [3, p. 45].

So, the processes connected with the increase in the number of Muslims in the countries of Northern Europe are significant and require deep and comprehensive analysis by researchers of various scientific disciplines.

To sum up, the information mentioned above, the processes connected with the increase in the number of Muslims in the countries of Northern Europe are significant and require a deep and comprehensive analysis by researchers of various scientific disciplines. This research field is very

promising and is one of the most important, as it is necessary to adequately represent and forecast the situation in the region, to model solutions of possible problems that are directly related to the formation of a new confessional space, which, in turn, leads to the transformation of the socio-cultural and political space of the European countries.

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THE DEVELOPMENT PROSPECTS OF TOURIST INFRASTRUCTURE IN THE CITIES OF EXTREME NORTH

Abstract. *In the modern globalizing world, the issue of tourism is becoming increasingly important, as it becomes not only a private affair of individuals, but also falls into the category of soft power. In Russia, the level of tourist development is largely determined by the regional features and the level of infrastructure development, however, the northern part of the country is of a crucial importance for this study. Tourism here is closely related to ecology, economic development, cultural features, scientific and educational sphere and a number of other key issues. This work is aimed at highlighting these relations and formulating offers for their development or regulation. In the course of the study, actual types and routes of tourism were regarded in order to help in illustrating statistical data. Also hereafter the experience of Western European countries (Norway and Denmark) is being analyzed, in order to understand whether it can be implemented in the case of Russia at various levels of interaction or not. The article reveals the results and consequences of ongoing governmental and non-governmental measures. In some cases, the influence and participation of the local population in shaping suitable tourist environment is considered. In general, this work is of great importance in understanding the essence of the processes taking place in the Arctic and subarctic region and can serve as the basis for a deeper analysis of the situation in tourist sector in the Far North region of the Russian Federation. The study also explains the expansion of the tourist industry in order to preserve current economic situation at the same level by redistributing the share of profits from the resource-extraction sector to the tourist sector.*

Keywords: *Arctic, Extreme North, tourism, Nordic countries, monotowns.*

At first glance, the Extreme North of Russia is not a potentially profitable tourist destination. Due to their isolation, cities of the Russian north not only do not have the necessary infrastructure, but they are also very expensive tourist destinations. Most of the settlements in this region are monotowns (single-industry towns), which does not contribute to the development of tourism, since the infrastructure is not socially-based. However, according to polls, the Extreme North seems to the majority of respondents (77%) an attractive route [5]. This is largely due to the uniqueness of such phenomena as northern lights and the polar day. Moreover, the tourist wave could compensate the out migration from the region, due to the development of service sector, which at the moment seems extremely limited (this is very important in shaping domestic state policy in connection with the commitment to industry). In addition, the diversification of the local economy, in particular, the development of the tourist sector, is an alternative source of income, an urgent need for which is experienced by most cities in the Extreme North. Since, unlike beneficiary regions, the major part of local budget in monotowns (due to the focus on resource extraction) goes to regional centers, which cripples the development of northern cities.

In accordance with the relevance of the analyzed problem was set the following goal: to determine the main prospects and directions for the development of tourism infrastructure in the cities of the Extreme North. To achieve this goal, the following tasks were solved:

- to identify statistical indicators of tourism development in the Extreme North region nowadays;
- to determine the potential of tourist industry in Russia in the Extreme North region;
- to evaluate and work out the ways to develop the type of tourism mentioned above, taking into account an experience of the

countries of Northern Europe.

The starting point of the study relies on the potential of the tourist market of the Extreme North of Russia. In this connection, in the first place, the most interesting types of tourism in the region and those most profitable ones for municipalities have been statistically identified [20].

The first of them is adventure tourism, which implies a certain part of extreme and possibly special physical preparation and skills from the tour participants [10]. The next type of tourism is ethnographic [5]. In this case, an important component is an exploration of culture and history of native peoples [14]. Russian tour operators have favorable conditions for organizing this type of tours. About 30 indigenous peoples who have preserved the authentic lifestyle live in the Arctic part of the country [4]. The total number of their representatives is about 50 thousand people. Evaluating different regions of the country according to the level of ethnographic resources, we can note the following: the highest rate (0.94 out of 1) is in the Chukotka district and the Shuryshkarsky district. While the lowest (0.2-0.4 out of 1) is in the Purovsky district, Dudinka and Lovozero district [13].

The list of the most desirable types of tourism includes historical [5]. It involves visiting historical monuments, sightseeing coverage of life in the village in the context of country's or world's history [2]. Within the historical tourism can be distinguished such a specific type as "dark tourism", which focuses on mines and industrial facilities. Which are considered not only as part of the Soviet heritage, but also as a negative example, confirming the importance of ecology and sustainable development. Foreign tourists are surprised by the fact that so far the primary industry and heavy industry are the main sources of income for northerners. In this case, most villages of the Far North, for example, the urban-type village of Nickel, can become tourist destinations [3].

It is important to mention that many respondents mentioned

educational tourism, which is reflected in trips with the aim of obtaining specific knowledge, having an educational program [9]. It is to be supposed that the successful implementation of educational tourist programs could help solve the problem of population outflow, as it would attract new groups of people aiming at establishment of a number of formal and informal ties and contacts in the cities, which could consequently encourage this new groups to return back again. In addition, the exchange of knowledge always gives impetus to infrastructure development.

In accordance with the mentioned above, there have been selected some routes that correspond to each of the declared types of tourism. So, as for the historical tour, the New Port of Yamal region is suitable, on its territory is located an extended (more than 1 km) ice caves labyrinth, which was once excavated manually. This historical monument has no compatibles in the world. Another option is the Diamond Way tour in Yakutia [5].

As for ethnographic tours, these include excursions in Yamal and Khanty-Mansiysk, where open-air museums are located, the illustrate the heritage of Prince Taishin and Torum Maa respectively [5]. Interesting places exist not only in large areas, but also in small villages, for example, in Gornoknyazevsk there is an ethnographic complex that reflects the original appearance of an ancient village [1]. Travelers' attention there is attracted not only by folk festivals, household items and traditional costumes, but also by more extreme leisure activities - life among the community of indigenous peoples, including participation in their everyday life, which even over time has not undergone significant changes. Tourists prepare traditional dishes with natives, set up tents made from animal skins and participate in shamanistic rituals [5].

An example will also be given for an adventure route - a cruise in the Arctic including visit to the Russian base "Barneo", which is only 100 km from the North Pole [5].

Speaking about educational tourism it has good potential for its development and it is necessary to mention for example, unique national Nenets school located in the Yamalo-Nenets Autonomous District [1]. In addition, there are 7 national cultural centers within the territory of the same district, which could also become educational tourism bases in the future. At the same time, it is important to note that ethnography of this area as an educational course does not have wide popularity and experimental value, that is why, in order for the north of the country to become a center of innovations and knowledge sharing, a wider selection of educational areas with a practical focus is required. For example, management of travel industry in the Arctic region, environmental studies or sustainable development of the North.

Noting the variety of possible and existing routes in the Far North of Russia, it is impossible not to emphasize the fact that among all the Arctic states, Russia is in the most favorable position. This is due, first of all, to the fact that most of the Arctic region belongs to its territory. At the same time, it is fair to mark that the vastness and diversity of space creates difficulties with the transportation supply and infrastructure in general [7]. However, a number of experts believe that this drawback can be easily compensated by a more effective use of the transport system and an appropriately formulated advertising company [1]. Within this context connection between the two passages seems to be a promising project (navigable Northern Sea Route and Northern Latitudinal Railway) [12]. Many experts note that Russian tour operators should first work at branding, for example, to represent this region as one of the religious centers including pilgrimage routes or to represent it in terms of maritime history (trade, battle history, gastronomic sea festivals, and other) [3].

Another major tourist problem in the Extreme North is the high price, for example, the average cost of a sea cruise in the Russian Arctic is 300-750

thousand rubles (excluding the cost of tickets to get to the place of departure). The high cost is affected by the expensiveness of freight for tour operators [6]. Tours in the Extreme North are especially disadvantageous for residents of Europe and the Western part of Russia, since Kamchatka and Chukotka, located in the east of the country, are considered to be the most promising for the development of tourism. However, this can make them attractive for tourists from Asia [7].

Along with the foregoing, it is also necessary to highlight such an aspect as tourism within the region. Life in the Extreme North involves a sedentary lifestyle and absence of active outdoor activities, which consequently forms a certain way of thinking, and this contributes to the fact that young northerners do not strive for staying in their native cities. This as a result affects the economic welfare of cities [21]. It is important to note that, generally, average data confirms the fact that domestic tourism is becoming more popular (this is due to the decline of domestic currency unit value and foreign policy problems), as a result the tour operator and the authorities of the northern regions have a potential client base and developing domestic tourism is becoming profitable [11].

The next stage of the study is to appeal to the experience of the Nordic countries. The point of the growing popularity of northern tourism is illustrated by the statistic indicators of these countries. In addition, these states are the main destinations of northern tourism, and therefore the value of their experience is invaluable for research.

The most popular travel site, Tripadvisor, called Tromsø (the Norwegian city beyond the Arctic Circle) the best place for adventure tourism. This is evidenced by the numbers - over the past 9 years the number of bookings in the city has increased by 66% [15]. The increase in the number of Asian tourists is especially remarkable. In 2016, the north of Norway was visited by 7000 travelers from China, a year later this number increased by

almost 2.5 times [16]. This is only a specific case, if we analyze the north of Norway as a whole, we can note the fact that according to the data for 2018, 285814 tourists were registered here, which is almost 3000 more than a year ago.

Next, it is important to analyze the main indicators that determine the popularity of northern Norway among tourists. In terms of ethnographic tourism, the northern regions are of a great importance (especially Finnmark), where the Sami live. Considering a different aspect of history, it should be said that for many tourists military tourism is associated with objects of the period of the Second World War (for example, the Blood Road - a road built by prisoners). Moreover, northern Norway is famous for a number of unique actions and events: the northernmost dog sledding race and the Arctic Race of Norway (cycling race, which runs beyond the Polar Circle). The success of Norwegian northern tourism is also explained by the potential of natural resources. Over the past 10-15 years, the role of fishing tourism in Norway has grown significantly, its most common form is independent leisure: rental housing and boats, a frequent venue for the Lofoten Islands.

Aiming at credibility of the study, the following example considered (Greenland), unlike Norway, has a poorly developed transport system and is significantly located far from other states.

In fact, only the value of South Greenland for tourism in Denmark is recognized, however, for many tourists the main drawback is the fact that this area is not located in the North. Since the southern part has a more limited potential for hunting and fishing, and also does not have a number of other tourist attractions (for example, dog sledding).

Among all the countries of the world, it is Russia that demonstrates the greatest growth dynamics in the number of tourists traveling to Greenland. Comparison of data for 2015 and 2016 shows an increase of 56%,

while with the exception of the Russian Federation the second higher indicator is not more than growth by 22% [19]. And despite the fact that the part of Russians among all tourists in Greenland remains extremely small, the rapidly growing popularity of this direction allows us to conclude that the Russians are interested in the northern tourist destinations and the high cost of air tickets is not a sufficient deterrent (the flight remains quite expensive). Local experts explain the attractiveness of northern Greenland for tourists as follows: for mature travelers this place becomes "one of the last frontiers", something new and extreme, incomparable with their previous experience [18]. In the modern world, people are quite portable and the proportion of those who managed to visit the most popular tourist places is growing. Perhaps because of the search for diversity, the Extreme North is becoming an increasingly visited destination.

To summarize everything mentioned above, a number of recommendations should be made for the Russian tourist industry in the Extreme North. The main problem of this industry is the less-developed infrastructure, however, taking into account the experience of Greenland, we can say that this obstacle can be overcome with the help of smart marketing policy. In addition, the spread of charter flights to underpopulated areas could be another possible solution. In case of such flights, companies may not take into account the population and destination, so companies are more willing to agree on a route, and therefore less populated regions become more accessible [17]. In addition, it is necessary to provide a well-directed use of the ethnographic, historical and natural potential of the northern regions, for example, ensuring greater accessibility of national parks and reserves [6]. It is also impossible not to emphasize that the socio-geographical development of the Arctic region is a complex and costly task, that is why it should be resolved not by individual states, but by the international community [8]. A good example in this context is the creation

of an integral Barents Euro-Arctic transport zone (an international multimodal transport structure running from the Norwegian province of Finnmark to the Nenets Autonomous Okrug of the Russian Federation). Building such a system will naturally give an impetus to the development of tourism in the Extreme North as a whole. However, a promising project requires significant investments from the Russian side, since most of it is located on the territory of the Russian Federation. At the same time, it is necessary not to underestimate the importance of cooperation, so at the moment, on the Norwegian part of the road, a “smart” system is being tested, which tracks the condition of roads using special sensors. In the future, it is planned to apply these technologies throughout the entire transport zone.

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THE ARCTIC-XXI: MILITARY BUILD-UP OR CROSS-BORDER LIAISON?

Abstract. *The Arctic region is the finest piece of a globe; a center of geopolitical, strategic and economic interests of the world leading countries; a region that causes an increasing interest among countries connected with its development and exploitation; a field of political discussions and international cooperation. The main tendency of this process is directly explained by climate change with arising trade and economic benefits. This, in turn, destabilizes relations between states involved in its development and seeking for control of the territory. The emerging political agenda entails one of the most vital issues of our time: 'Will it be the military confrontation or the rational interaction?' The way relations between states in the Arctic region are currently being conducted is a kind of indicator of maturity, experience and responsibility of modern society. Therefore, the main subject of this study is the identification of the nature of relations among Arctic states. To study the problem the systematic analysis method was used, including the study of foreign policy doctrines and strategies of the Arctic states, the development level of technical equipment and military potential of the polar states, as well as the processes of international cooperation in various fields by means of bilateral and multilateral agreements (including intergovernmental and non-governmental organizations). Within the study the probabilistic-statistical method was also used since the political vector in one region often depends on actions taking place in a completely different field of international interaction. Thus, the Ukrainian crisis will be considered as the factor of increased political tensions in Arctic region.*

Keywords: *Arctic region, Arctic states, militarization, cooperation, interaction.*

Introduction. The geopolitical situation around the Arctic is extremely controversial due to its real and perspective resources. Similarly, the geopolitical conditions and trends that determine current international

relations in the world in general and in the Arctic region in particular are complex and extremely contradictory. The political agenda of countries participating in the process of development, study and exploitation that is being formed around the object of study leaves open the question of 'cooperation or confrontation'. Now it is the one, who regulates the policy of a large number of states and will shape it for, at least, next two decades.

Studying the material chronologically made it possible to track how fluctuated the political priorities of various states involved in Arctic issues and with it moods, forecasts, research topics have been varied over time and in terms of a changing context. The Arctic is meaningful in the scientific community: there are studies in the meteorological, ecological, geological, historical, economic, political spheres. The opinion of specialists is divided into two key positions: 'The Arctic is an arena for long-term and geopolitical rivalry' [1] and 'The Arctic is a field for cooperation and soft/positive security'.

Arctic race. From the very beginning, poorly discovered and, moreover, territories that were difficult to access were arousing only scientific interest of northern states right up to the middle of the 19th century. After successful expeditions to the North Pole, more solid reason to develop arctic coastal territories and arctic waters appeared - states' interests met, and from the end of 19th century dividing process (equally to struggle for Africa), so-called 'first arctic race' [2], began. The events of the beginning of the 20th century were more and more warming up the contradictions between the states: the decision of the Presidium of the USSR Central Executive Committee, which set the sectoral division of the Arctic territories and determined therefore the losing position of the USA comparing to the USSR and Canada, what naturally did not meet American interests. Later, bipolar confrontation determined the strategic importance of the Arctic. The collapse of the USSR replayed the scenario in the history of the development

of relations in the Arctic region. The tendencies to ‘joint reduction of the threat’, as well as the elimination of nuclear submarines in the Arctic Ocean (which was a base of the powerful atomic military potential of the Soviet Union) were formed. Later, other countries joined the Cooperative Threat Reduction Program - thus, by 2006, a mechanism of real cooperation between the Arctic countries in the field of arms control and in the environmental sphere appeared. However, rivalry for establishment and extension of sectoral boundaries in the region (which was increasingly perceived as a confrontation between Moscow and other Arctic states, including the USA), became increasingly acute. Now, subjects defending their interests in the Arctic can be divided into three groups: Russia, NATO Member States, non-regional participants.

Russia: ‘The Arctic is our home, our future’ [3]. Russia’s military activity in the Arctic is now increasing. However, from Russian point of view, all the actions meet the needs of national interests’ protection. From other arctic states’ point of view, Russian policy in that region is defined as ‘aggressive’ [4] and the Arctic crisis in 2007 (connected with Russia’s polar expedition - ‘Arktika-2007’, led by Chilingarov) can be the most striking example, confirming this. Since the end of the 2000s the Russian position regarding development and presence in the Arctic region was initially set in the document ‘Foundations of the state policy of the Russian Federation in the Arctic for the period up to 2020 and further perspective’(2008) [5], and later the document ‘Strategy for the development of the Arctic zone of the Russian Federation and ensuring national security for the period up to 2020’ [6] was written. Analyzing priority directions of the Arctic zone development and national security, it can be concluded that legally the Russian Federation confirms its interests to ‘protect their own national (economic, strategic and environmental) interests’ [7] in the region by means of ensuring the security of its state borders, as well as by international

cooperation. It's not a secret that a military base [8] is being built up for these purposes: creation of Russian Arctic forces (The Northern Fleet); construction of warships, submarines, nuclear submarines (Alexander Nevsky, Vladimir Monomakh); building of strongholds and military bases (Arktichesky trilstnik); creation of unmanned aerial vehicles' units of coastal troops on the basis of the motorized rifle brigade of the coastal forces of the Northern Fleet (anti-aircraft missile system 'Pantsir-SA'), etc. However, in author's opinion, the main motive of this militarization process is clearly revealed in the words of Vladimir Titov (First Deputy Minister of Foreign Affairs of the Russian Federation) that in terms of intensification of contradictions and the development of 'negative security' scenario, the Russian Federation just wants to be sure it will be able to 'take all the political and military-technical measures' [9] to ensure state's security.

Revitalization of NATO. The Arctic region is more and more becoming a zone of NATO influence. It happens because all the members of the Alliance, realizing their state-owned vital interests, are trying to prove their rights in the region and to ensure security of their territories. That is clearly expressed in words of Jürgen Hardt (spokesman of Bundestag faction CDU/CSU for foreign affairs): 'Russia is now discreet...But we need to be really vigilant'. Separately these states usually don't have much power, so it's much easier for them to act as a united front - one bloc. The fact is that four of five Arctic countries (Russia, Canada, USA, Norway, Denmark-Greenland) are members of the Alliance. It's should be considered that political confrontation in the Arctic region strongly depends on even extra regional actions. Thus, issues dated years before 2014 clearly conclude that there are no significant changes of balance of power in the region and that the 'last world reshaping' is conducted exclusively at the diplomatic and informational level. But after the crisis situation in Ukraine in 2014, choosing between two scenarios of the Arctic region development - 'positive

security’ and ‘negative security’ [10] - the second one seems to be more real. Moreover, the status of the Arctic region develops into an ‘object of geopolitical rivalry’ [11]. Coming back to Arctic region and building up the new security system (where NATO is going to be a ‘forum for dialogue on military issues’ [12]) is now the official vector of NATO policy. These goals stated by the Alliance are strongly supported by actions taken. There are three main directions of military-political actions of Russia’s opponents in the Arctic: 1) military exercises to maintain combat capability and to test the combat readiness of the Arctic troop units – ‘Cold Response’ [13] in Norway, Operation NANOOK in Canada’s sectoral arctic waters and building a military base for submarines in the Arctic village of Yellowknife, ‘Loyal Arrow’ in Sweden, ‘Arctic Challenge Exercise - 2015’ on the Scandinavian peninsula involving Air Force and Navy of NATO; 2) development of military bases and the strengthening of the security mechanisms of actors — united operational system ‘North’ (Canada), deployment of American missile defense system ‘Globus II’ (Norway), the concentration of groups in bases Elmendorf-Richardson and Eielson (Alaska), patrolling the Arctic submarines (by UK) and others; 3) consolidation with countries out of the Alliance - creation of regional collective military cooperation - NORDEFCO [14] (Finland, Sweden, Denmark, Iceland, Norway), aimed at strengthening the military positions of the participating countries. This does not directly indicate the situation of confrontation with Russia or the official transition to the new “cold war”, but expresses fears about the growing military base of the Russian Federation and positioning it as a threat to national security.

Non-regional participants. Not only states that have the status of ‘northern’/‘arctic’ are interested in development of (mainly economic) potential of the Arctic region, there are also countries that are completely unrelated to the Arctic. Along with Russia, Canada, USA, Norway, Denmark

[Greenland] countries such as China (first of all), Sweden and Finland (as part of the mentioned above NORDEFCO), South Korea, Japan, Singapore, Italy claim on economic benefits, resource pantry and one of the shortest, most convenient and most profitable sea trade routes [15]. Through the prism of militarization, only a few of them can be viewed. As mentioned earlier, the actions of Sweden and Finland are showing the return of Cold War tools within the framework of the organized regional “mini-NATO” – NORDEFCO. China, in turn, acts as the only possible ally of the Russian Federation, and this support from the PRC seems to be possible out of the military sphere. China's priorities are to prove its accessory to the region and the ability to conduct its own policy there (based on the trade, not on the military presence). The rest of the states interested in the development of the arctic region adhere to a moderate policy and try to build diplomatic, cultural, economic, ecological bridges with other actors, rather than to increase their military potential for further use in the arctic zone.

The Arctic is a territory of dialogue. The key factor of any cooperation is the actors' level of trust and confidence. Considering that certain political conflicts only raise the level of disagreements and claims for each other, indefinitely pushing the perspective of agreement back, in that situation of the Arctic region the cooperation leverage can be found. For instance, the Russia-NATO Council that was created to work in a form of interaction suspended its working process only 2 times [16]: in 2008 and 2014 years. Thus, we can say that the fact of existence of such organizations even in the military sphere (equally to private bilateral relations between subjects and intergovernmental and nongovernmental organizations) express the readiness of states to cooperate, cope with challenges and meet the threats of military confrontation, to have a ‘political dialogue in any time and on any matter’ [17]. We shouldn't forget the common interest of all involved states in sustainable development of the Arctic region that have comparatively fragile

ecosystem. There is a necessity to form the open and balanced security architecture of the Arctic. Experts agree on the opinion that ‘the Arctic can be a modern model of interaction for the entire world community’ [18] – and in the author’s opinion, this idea can be really successful, because throughout the entire history of international relations, humankind has accumulated vast experience in mutual relations and learned a lot from so many conflict situations, and now it has an excellent opportunity (in the context of a legally non-formalized division of a valuable region) to resolve issues in a civilized and peaceful manner.

Bilateral relations. It’s one of the main mechanisms for resolving controversial issues between states, that takes into account both characteristics of a region and the interests of each state. The strength and effectiveness of such method are based on the fact that states usually are not ready to put their national interests below the obligations in certain supranational structures (even when diplomatic relations are getting worse). Thus, Canada generally is trying to defend its national interests and that makes it related to Russia and forms some opportunities to develop bilateral interaction between them. The authors Konyshev V.N. and Sergunin A.A. come to the conclusion that ‘Russia and Canada, being rivals in the question of the division of the Arctic spaces, share a number of common principles that make their cooperation possible even in this problematic sphere’ [19] - which, in the author’s opinion, can be a good basis for peaceful resolving the arctic issue. The other key arctic subject that is going to build bridges with its regional neighbours is Finland. The position of the country in this matter was clearly stated by the Minister for Foreign Affairs of Finland Alexander Stubb in a speech delivered in June 2010: “The Arctic is a region of cooperation and there is no alternative to international cooperation”. Another example of strengthening tendency of the Arctic development by means of bilateral relations is the Russian-Norwegian conference ‘The potential of

sisterhood - for effective development of northern territories' [20]. Value of this conference (in context of militarization of the Arctic region after some diplomatic crises between political actors) is increases and meets some long-term interests of both Russia and Norway. Moreover, it lays a solid foundation for sustainable development of the Arctic.

Intergovernmental and nongovernmental organizations. Majority of different scientific issues related to the Arctic is aimed at shaping a strategy for the sustainable development of the region, and also prove the idea of the need for broad international cooperation in the region to solve all known problems of the Arctic. In turn, some specialists (from the non-arctic position - PRC, Singapore): Marc Lanteigne [21], Frédéric Lasserre, Linyan Huang, Olga V. Alexeeva [22], Zhuravel V.P., Danilov A.P. [23], conclude that it's necessary to fully internationalize the region. There are a number of scientific organizations, institutes, that make an indisputable contribution to the development of the Arctic region - the International Committee on Arctic Sciences, the North American Arctic Institute (Canada), the Norwegian Polar Institute, the French Polar Institute and many others. The fact of the existence and activities of mentioned above organizations shows us that political agenda has not yet fully penetrated into the scientific sphere and cooperation has been established (not a large-scale, but very weighty). We cannot say that scientific and political sphere are totally disconnected - on the contrary, the perspective of developing political relations based on joint researching is the best prospect of the development of the region. Steps towards a similar formation of international relations in the Arctic were taken during the creation of such organizations as the Arctic Council, the Barents Euro-Arctic Region Council (BEAC), the Northern Forum International Organization of the Northern Regions and etc. From a scientific and research point of view, this vector of development is a good basis for the development of both political dialogue and an effective legal system [24].

Conclusion. Potentially perspective (macroeconomically, geopolitically, strategically) Arctic region is now the region of totally controversial and reactionary states' policy, what is expressed by squiggly development of diplomatic relations between states involved into arctic issues - specifically by switching from processes of military build-up to 'strategic warming', resuming of diplomatic interactions and back.

The idea of militarization of the Arctic region and moving toward the phase of the 'new cold war' is supported by majority of experts, thereby confirming the thought that the security climate in the region depends on potential threats, states' conflicting interests in the other political scenes, which create a mistrust atmosphere in the Arctic. On the other hand, realizing that security of this sphere also directly depends on actions and efforts of arctic states, will lead to consolidation of powers and to strengthening of regional institutes which will help to ensure the security of the Arctic.

That is why it's still quite difficult to define the character of relations between arctic states. Of course, states' position of ensuring national security will not allow them to wage an all-out war (in a classical sense), even in terms of sharp diplomatic cooling in other different regions. However, in terms of pending questions of a formal dividing of the Arctic, probably, the military capacity will play the major role in defining the regional hegemon. A potential base (quite solid) for cross-border liaison already exists at the scientific level, but it requires the serious political and legal support to ensure the sustainable and effective development of the Arctic.

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THE ROLE OF UNITED NATIONS CONVENTION ON THE LAW OF THE SEA IN NORWAY'S ESTABLISHMENT AS AN ARCTIC STATE

Abstract. *This article is dedicated to United Nations Convention on the Law of the Sea that was signed into law in 1982. This event had become one of the most important marks in international law's establishment. For the first time in history an overall systematization and standardization of international norms of countries' interaction in the seven seas took place, and today's look of law of sea had been. The article also states that Convention on the Law of the Sea led to political and economic development of several countries, that managed to use it's statements to justify their territorial claims. The clearest example, proving this thesis, is the Kingdom of Norway, which economic situation and political reputation have changed dramatically after United Nations Convention on the Law of the Sea was signed into law. Main point of this article is the process of Norway becoming high-powered arctic state and its government's experience in using United Nations Convention on the Law of the Sea in its arctic strategy. Moreover, this article contains retrospective analysis of context in which United Nations Convention on the Law of the Sea was signed through the prism of political and economic situation in Norway; review of Evensen's (Norwegian specialist) contribution in the process of the Convention development; up-to-date examples of Norway's government using Convention's states in executing above-mentioned strategy and in international arguments. Also, the article shows results of United Nations Convention on the Law of the Sea acceptance, that influenced Norway's positions on international scene.*

Keywords: *Arctic, geopolitics, United Nations Convention on the Law of the Sea, international cooperation, law of the sea, Norway.*

Norwegian journalist Berit Ruud Ratcher states that development of United Nations Convention on the Law of the Sea was a brave experiment and one of the most major challenges that United Nations took, because acceptance of Convention supposed “The biggest interchange of sea ownership form in human history” [10]. Certainly, Convention’s acceptance was an important moment for the world community, but the biggest changes took part in certain countries. First of all, that’s arctic countries. As some specialists state, the Convention gave start to arctic race, as large arctic countries received fully-featured legal basis for their claims on arctic territories and water areas [9]. One of this countries is Norway, that barely could challenge such countries as Russia and Canada up to second half of 20th century, but everything has changed with political course of Norwegian government [16]. It aimed on the search of resources and establishment of sovereignty over border water areas [10]. Logical continuation, and partly culmination, of that course was ratification of the Convention on the Law of the Sea and its usage in arctic strategy of the country.

Due to above mentioned reason, analysis of Convention’s influence on Norway’s position and politics is impossible without understanding realia that existed before the document was created. In this context, first of all we should mention that before the Convention was adopted, legal status of sea waters was very vague. One of potential conflict zones were territorial waters. According to Art. 1-2 of United Nations Convention on the Territorial Sea and the Contiguous Zone state sovereignty was given to them, but different countries had different thoughts about where the borders of their territorial waters were located [4]. Before the Convention was signed, Norway defined its territorial waters length as only 4 miles, also Northern Sea ledge and trench were located near the country’s coast and their legal condition was disputable. The trench was going very closely to the coast, so if Norway didn’t possess it, foreign vessels could uncontrollably use its

resources. At the same time, it should be emphasized that in 1959 a gas field was discovered in the north of the Netherlands, which gave rise to assumptions about a possible field near Norway [10]. Thus, the determination of clear boundaries of territorial waters for Norway acquired both political and economic importance and became one of the main foreign policy tasks. It is worth mentioning E. Evensen, Minister of the law of the sea of Norway, also known in Norway as the “architect of the law of the sea”. Under the leadership of the Minister, a number of internal documents were formulated on the ownership of part of the Norwegian shelf, as well as on the procedure for the exploitation of its resources (Royal Decrees of 1963) [10]. The gradual alignment of the internal regulatory framework was not only an attempt to protect the territories from foreign influence, but in fact equalized the sea and continental possessions of the country.

In 1964, the Convention on the Continental Shelf was signed, proclaiming the seabed to be the property of the coastal states, which made Norway’s claims on the shelf more legitimate. However, it was also necessary to delimit the borders on the shelf [8].

Norwegian tactics in asserting their rights to part of the shelf was to sign bilateral treaties (with the UK and Denmark). E. Evensen chose and carried out the following strategy: negotiations began before the discovery of deposits of useful resources, since their presence could complicate the process. In 1965, E. Evensen signed an agreement with Great Britain on the principle of the median line, which corresponded to the interests of Norway, in the Royal decree of which this option was already mentioned. At the end of the same year, E. Evensen, a similar agreement was signed with the Danes. So Norway gained sovereignty over the largest continental shelf in Europe, whose area exceeded the mainland part of the state [10].

In 1970, the UN General Assembly made a resolution on convening a third conference on the law of the sea. It was also decided to establish a group

of experts for the detailed development of the law of the sea project. Acknowledging the credibility of the opinion and the many merits of E. Evensen, the members of the group elected him as their leader. It was this group that developed the offers that later became part of the Convention on the Law of the Sea. One of the most significant of them is the unprecedented idea of establishing “economic zones”. This decision made it possible to reach a compromise between the striving of states to maximize the space of their territorial waters and the preservation of freedom of navigation (which would be jeopardized if the sovereign territorial waters were excessively expanded) [10]. According to Art. 55 of the Convention on the Law of the Sea, in the economic zone the coastal state has exclusive rights to resources, however, shipping in this part remains free [3].

Speaking of Norway, it should be noted that its government is actively using the provision of the “economic zone” to substantiate its claims. For example, the waters around the Norwegian island of Jan Mayen are, in fact, the economic zone of Norway, even though the island itself is geographically closer to Greenland than Norway. Another territory is the Spitsbergen archipelago, whose waters exceed the continental territories of Norway and include almost the entire Barents Sea. The question of the delimitation of this space was repeatedly raised at the negotiations between Norway and Russia, for example, at the talks in Murmansk in 2010. At the same time, during the negotiation process, Russia referred to the sectoral principle, and Norway to articles on the economic zone of the 1982 UN Convention on the Law of the Sea [2]. In addition, in this dispute, Norway uses other articles of the Convention, for example, Art. 76, according to which, the states located in close proximity to the Arctic have the opportunity to extend their shelf by obtaining a large Arctic territory, if research can prove that the Arctic zone has a similar origin and structure with state possessions [3]. Norwegians are trying to prove that the territories of Spitsbergen pass from the Norwegian

field in the North Sea - Ecofisk [9].

Summarizing the above, we can make a private conclusion that active participation in the adoption and drafting of the UN Convention on the Law of the Sea was (for Norway) not just an externally prescribed circumstance, but part of a single and far-sighted strategy.

Noting the other most significant implications of adopting the Convention for Norway and the Arctic direction of its policy, first of all it is worth mentioning one of the most fundamental changes - the territorial one. Norway for the first time since the time of the conquests of the Vikings expanded its ownership. The country's exclusive economic zone alone now exceeds the mainland by more than four times. One of E. Evensen's colleagues ironically remarked - "Groß Norwegen unter Wasser" ("Great Norway Under Water") [10]. In addition, the Convention now serves as a basis for increasing the territory for states, including Norway, an example of this statement is the treaty between the Russian Federation and Norway that entered into force in 2011 on the delimitation of maritime spaces and cooperation in the Barents Sea and the Arctic Ocean [1]. If the mainland of Norway is 323,802 km², then the cumulative territory of the mainland and maritime possessions of Norway (after the signing of the aforementioned agreement) amounted to 2,419,150 km² [13].

In turn, territorial changes have caused global changes in the country's economy, since the water space rich in resources has moved under the control of Norway. The shelf in the North Sea was divided between a number of European states, including Norway. This area is one of the richest oil and gas fields in Europe. By the end of the 20th century, nearly 500 fields were found here, the oil reserves of the entire North Sea are estimated at 3 billion tons, and gas at 4.5 trillion m³. Nevertheless, the resources are dispersed throughout the state sectors unequally, directly Norway owns about 200 oil and gas fields, whose reserves are approximately 1.7 billion tons of oil and

3 trillion m³ of gas [6].

Speaking of the uneven distribution of resources across the shelf, it is worthwhile to compare Norway's exports with the supplies of another developed European country with which Norway shares the shelf - the United Kingdom. Within a few years after the signing of the convention, UK crude oil exports rose to 80 million tons, which gave it the fifth place in the world in terms of this indicator. At the same time interval, Norway lagged somewhat, its production was half the size of the British, but as the area developed, production began to grow rapidly and in 2000 reached 160 million tons. Thus, Norway began to occupy the fourth place in the world in oil exports. At the moment, slightly less than half of Norway's total exports are hydrocarbons, in monetary terms it is almost 450 billion NOK [6].

If the extraction of hydrocarbon resources is a relatively new trend in the Norwegian economy, then fishing is traditional and extremely important for the country. After the signing of the Convention, the source of fish resources has significantly expanded, and at the moment Norway exports approximately 36 million portions of fish products [9].

The Arctic is of particular relevance in Norway's political and economic course. This is due to the previously mentioned Art. 76 of the UN Convention on the Law of the Sea, according to which states have the right to extend their Arctic possessions, if they can prove the common origin and structure of territories. In 2006, a Norwegian expedition was organized to collect the above evidence. Due to the results of the expedition's activities in 2009, the United Nations Commission on the Limits of the Continental Shelf confirmed the state's claims to extend the economic zone by 235 thousand km². It is worth mentioning that this is the first time that the Commission has approved such an application [7].

The place of one of the central questions of Norway's foreign policy has been taken by the development of cooperation in the region with other

near-Arctic states, as well as the protection of the resources of the Arctic territories. Thus, in the report on the work of the Arctic Council, Norwegian experts noted the importance of the Council for ensuring stability and security in the region, and also praised the Council's initiatives, such as the agreement on search and rescue operations and the agreement on oil spill response in the Arctic [14].

By legitimizing its claims to the Arctic territories, Norway has increased its prestige in the international arena. A particular example is the emerging influence on the EU countries in the field of Arctic development. At the moment, Norway is in favor of the EU obtaining observer status in the Arctic Council. Consequently, now Norway has a certain way to pressure the EU countries, which will probably play a role in the future [11].

Continuing the analysis of Norway's participation in international associations, it can also be noted that its importance has also increased as a member of NATO. This is due to the fact that the state has the Arctic territories. Beginning with the 2007 declaration, the role of the Norwegian military presence in the region is particularly emphasized in government documents. For example, in 2014, as part of the Arctic strategy, the Norwegian authorities recognized the need to develop an intelligence system. In 2012, the beginning of the implementation of the medium-term plan "Defense for today", which in the future could last until 2022. The plan is a large-scale purchase of weapons intended for the Arctic region [5]. This is confirmed by the alliance's military exercises in 2018, which have become the most massive in recent years. The main venue was Norway [12].

However, it should be noted that the adoption of the Convention and the subsequent increase in the sovereign waters of Norway led to a number of new difficulties and challenges. In particular, the constant rivalry between representatives of the fisheries and oil and gas industry within the state. It is impossible not to mention the fact that the legal status of the Arctic zones

remains controversial, in addition, the delimitation of the territorial sea common to several states takes place under an agreement to which they can come [3]. These circumstances give rise to some uncertainty and potential conflict zones.

This way, Norway from a non-influential and economically weak state, has become one of the world leaders with the richest resources and strategic geopolitical advantages in the Arctic [17]. This transformation, in fact, has been going on for several decades, but it was the 1982 United Nations Convention on the Law of the Sea that finally approved for Norway the new status of the Arctic power, claiming an active role in resolving world problems and the international lawmaking process. The participation of Norwegian experts in the activities of the Arctic Council on issues of both interstate cooperation and the protection of the region's natural resources demonstrates the status of an influential actor. As well as the increased importance of the state for NATO (especially in matters of security in the subarctic territories) [15]. It is also important that the Norwegian expert, Jens Evensen, who led the informal group on the development of the draft document, became a participant in the adoption and elaboration of the Convention. In addition, Norway's international prestige ensured the competent use of articles of the Convention by the country's leadership for territorial increments, in particular, the provision on the economic zone (in the case of the island of Jan Mayen) and the provision allowing the Arctic states to extend their shelf by gaining large Arctic in the case of Spitsbergen). As a result, the sovereign possessions of Norway were increased by 4 times.

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OBJECTS OF NATURAL AND CULTURAL HERITAGE OF ARCTIC AS TOURIST BRANDS

Abstract. *Russia has a huge territory in the high latitudes of Europe and Asia. Attention to the problems of the development of the Arctic is increased. The article analyzes the level of China's economic presence in the Arctic, discusses its participation in the development of the Northern Sea Route, taking into account China's publication of its first political strategy for such a remote region as the Arctic-White Paper. According to it, China intends to create a maritime economic corridor between China and Europe through the Arctic Ocean together with other Arctic states. Last few years China is actively strengthening its relations with Russia in the Arctic sphere, seeking to enlist its support. It participates in the complex offshore oil and gas explorations, increases gas imports from Russia, which is good news for Russian companies, and also invests in Russian development projects of the Northern Sea Route. Moreover, China has established strong economic relations with a number of small Arctic countries like Denmark and Iceland to use their votes in the Arctic Council to promote Chinese interests. The research result is the conclusion about a peculiar and very successful beginning of integration of China into the Arctic region, as well as the presence of a large number of advantages and disadvantages of this precedent. Wishing to strengthen its position, China is able to use its economic influence and push some Arctic countries together (and in alliance with China) to weaken the positions of others (Canada or Russia). Thereby China may cause a threat to the balance of power in the Arctic region.*

Keywords: *Arctic, Arctic shelf, NSR, China, Arctic economy.*

The Arctic has been involving in global processes, going beyond regional cooperation. Many new actors, as well as non-Arctic countries are paying attention to this region. Among non-Arctic countries, there are countries that do not have direct access to the Arctic Ocean. East Asia is

particularly prominent South Korea, Japan, Singapore, and, of course, China.

The intention of China, as well as other Asian countries - India, Korea, Japan - confirms the fact that they have joined the work of the Arctic Council as observers [1]. At the same time, China's role in the Arctic region is increasing at an enviable rate, its influence on the balance of forces and the situation in the Arctic, the ability to cooperate and find the most beneficial ways in relations with the main actors of the region — the Arctic countries expresses its experienced state policy and talent in negotiation the process with which China successfully integrates into the Arctic space.

One of the main tasks for China is to reduce the distance of delivery of goods between Asia and Europe. China can rightly be called a maritime power, for which sea lanes are a strategic priority, given that China's exports account for 13% of the world total [2]. Since sea trade and the presence of strategic sea routes play a significant role in building China's economic potential, China will not be able to create a truly global system of sea trade without the Northern Sea Route [3], which is already included in China's Northern Silk Road project. Worldwide, the exporting power showed interest in developing the Polar Silk Road and its willingness to invest in it, create new infrastructures.

Table 1
Distances between European and Chinese ports (km) [4]

Point of departure - destination	Panama Canal	North East Passage	Northwest Passage	Suez Canal and the Strait of Malacca
Rotterdam – Shanghai	25588	16100	15793	19550
Bordeaux – Shanghai	24980	16100	16750	19030
Marseille – Shanghai	26038	19160	19718	16461

Joya Tauro – Hong Kong	25945	20230	20950	14093
Barcelona - Hong Kong	25044	18950	20090	14693

China's interpretation of the 1982 Convention on the Law of the Sea is the key to understanding the logic of China's behavior in the Arctic. China makes good use of this to promote the paradigm of "universal heritage" in the Arctic, for which he sought to join the Arctic Council in order to "create communities of the common destiny of humanity and make a contribution to Arctic affairs, trying to invest their wisdom and strength in the development of the Arctic" [5].

China's interest in the Arctic began in 1984 when China conducted research for the first time in such major areas as oceanography, Arctic biology, geological exploration in the polar latitudes, meteorology, glaciology, deep drilling on the Arctic continental shelf, the first Chinese works in the field of the legal status of the Arctic appeared in international law.

From 1984 to 2012, China was conducting at least five Arctic expeditions, the main research objectives were:

- Exploration of natural resources;
- Problems of preservation of the ecosystem of the Arctic and natural diversity;
- Exploration of marine diversity;
- Study of sea routes and connections in the Arctic;
- Problems of legal regulation;

It can be said that scientific research and protection of the ecological environment and biodiversity of the Arctic is the softest and, to some extent, more legal instrument of integration into the region for a non-Arctic country.

However, studies in this area are "decorative" nature for China, so studying the melting of the ice, first of all, opens up the possibility for assessing the transport potential. The results of hydrological and glaciological surveys conducted by China in 2010 indicate increased melting of ice, which may contribute to year-round transport operation of the Northern Sea Route [6].

By 2014, China actively increased its economic ties with the countries of the region, and of course, primarily with Russia. Russia has the longest border in the Arctic Ocean and has superior experience in using the NSR (northern sea route), infrastructure and the presence of the largest icebreaker fleet.

The sanctions regime imposed by the USA, EU, Norway against Russia made it impossible to supply the country with a range of technologies and equipment necessary for the development of economic potential in the Arctic, as well as for the development and improvement of infrastructure and ports of the Russian Federation. As a result, almost all contracts of this kind concluded between Russian oil and gas companies and their Western counterparties were frozen or terminated. In such conditions, it became necessary for Russia to look for new partners and investors in the development of the Arctic region, and Chinese capital helped create and develop the infrastructures necessary for the use of resources and the NSR. China did not fail to take advantage of this, while offering its investments and technical assistance. Obviously, the majority of contracts and agreements for the development of trade through the NSR are inseparably adjacent to the development of natural resources on the shelf and the creation of joint floating platforms for the production and storage of liquefied natural gas and oil. In December 2017, the Russian energy company NOVATEK put into operation a plant for the production of liquefied natural gas on the Siberian Yamal Peninsula, which is funded by about 30% by the National Petroleum Corporation of China and the Chinese State Investment Fund.

Other states also began to accept Chinese investment. As for Russia, now the construction of the Russian Arctic infrastructure is part of a \$ 9.5 billion loan agreement of Chinese money signed with the China Development Bank [7].

To date, the expansion of China in the NSR has taken two forms [8]. First, it increases its share of orders for goods transported through Arctic waters on ships of other countries, especially in the Russian Federation. In addition, China is increasing its share in the courts under the Russian flag. Secondly, China has been launching the construction program of both icebreakers and vessels capable for operating on ice, to carry more goods and raw materials on its own ships. Thanks to its own icebreaker, Beijing will be able to navigate ships through the NSR without any dependence on Russia. And in August 2018, China launched its “Snow Dragon” at sea - the first atomic icebreaker in its fleet.

In addition, it is worth noting that now the dominance of Russia in the NSR is still obvious, however, some of the most important ships operating under the Russian flag actually belong, at least in part, to China or other countries. One example of this is Rusanov, the carrier of liquefied natural gas, jointly owned not by Russia, but by the Japanese company Mitsui Company and the shipping corporation of China, COSCO.

Of course, there is a huge benefit from attracting Chinese investment for Russia, which from year to year becomes more and more in the Russian sector of the Arctic. Beijing will not immediately dominate the Northern Sea Route; and the Arctic countries will try to limit to the necessary extent China’s presence in the NSR. Nevertheless, Beijing clearly shows that it intends to become an Arctic power, even without an arctic coastline.

In order to expand its presence in the Arctic, China seeks to establish strong relationships with circumpolar countries, primarily with small North European countries that want to use China as a counterweight to regional leaders like Canada and Russia. To this end, China is actively developing its

trade and economic relations with Iceland, Norway, and Denmark [9] – trade volumes account for 17% of the total foreign trade turnover of the PRC [10].

Every year China has more and more economic investments in the development of the NSR, and, consequently, more and more economic influence. Here we can note the increase in the dynamics of significant political participation of China in the Arctic. Beijing holds meetings at the state level with the heads of the Arctic states, and is increasingly present at the Arctic diplomatic meetings. PRC participates in rhetoric regarding various problems of the development of the Arctic. The Polar Book of China now officially declares that China's activities in the Arctic have gone beyond scientific researches and spread to various areas of Arctic issues.

All this cannot inspire the Arctic countries with the emergence of a new actor on the Arctic platform, which is capable of changing the balance of forces. And although the Chinese government has repeatedly declared its non-political intentions, as well as the complete exclusion of military factors in the development of the region, some of its areas of action cause concern to the Arctic countries.

In 2016, Denmark rejected an offer from a Chinese company to buy an abandoned naval base in Greenland due to security concerns. Iceland, with which China is constantly strengthening economic ties, has vetoed the controversial sale of a 300- sq. km. land in the northeast of the country to the company "Zhongkun", headed by former high-ranking functionary of the Communist Party of China, Juan Nubo. In 2014, Norway refused to sell Nubo a 217 sq. km. on the island of Svalbard.

In all cases, the country-sellers expressed concern that the Chinese side's intentions were not of the economic, but of a geopolitical plan - the creation of a springboard in the Arctic territories "for further seizure of the North".

In addition, despite Chinese integration into the Arctic Council, the strengthening of positions and the growing interests of China in the Arctic region is ambiguously perceived by the world community and in particular the Arctic states. For example, Denmark believes that Beijing “has its legitimate economic and scientific interests” and even contributes to China’s accession to the Arctic Council as a permanent member. Canada, in turn, believes that the PRC “threatens the sovereignty” of the Arctic countries. Thus, by 2018, one can observe an increase in contradictions among the Arctic countries, which arise due to the active presence of the PRC in the region, as well as the growing influence of China and its growing potential influence on the Arctic policy of the countries participating in the Arctic Council. Participation in the Arctic Council is rather symbolic for China, but underlines its possible intentions to fully participate in the “development and management of the region”.

China is purposefully expanding its presence in the Arctic, seeking to take influential positions in the club of the Arctic states. The legitimacy of the PRC's regional ambitions is recognized by a number of circumpolar states and, in particular, the Scandinavian countries, with which in recent years Beijing has managed to build very strong partnership relations. The main point of contact between China and Russia is the use of the Northern Sea Route to transport goods in the Eurasian direction, as well as mining and exploration of the oil and gas potential of the Arctic shelf. By 2020, from 5 to 15 percent of China’s international maritime transport will be through the Northern Sea Route (125–375 thousand tons). The total volume of cargo transported by transit through the NSR in the summer Arctic navigation of 2013, including Russian ports, amounted to 1.162 million tons. By the end of 2017, the traffic volume amounted to almost 10 million tons and will increase by another 30-40% by 2020. It is obvious that the activity and presence of China in the Arctic in the coming years will steadily increase.

Moreover, interest in the development of the Arctic routes can force the country to strive to give these routes international status, which does not coincide with the economic interests of Russia in the region. The ability to cooperate and find the most profitable ways in relations with the main actors of the region - the Arctic countries expresses China's experienced public policy, talent in the negotiation process, as well as national wisdom and sometimes even stealth with which China successfully integrates into the Arctic space. Wishing to strengthen its position, China is able to use its economic influence and push the Arctic countries together to weaken the positions of certain countries and raise the influence of others (in alliance with China), thereby posing a threat to the balance of power in the Arctic region.

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THE ARCTIC STRATEGY AND POLICY OF THE ARCTIC COUNCIL'S OBSERVER STATES: CHALLENGES AND ACHIEVEMENTS IN THE SECOND DECADE OF THE XXI CENTURY

Abstract. *This article analyzes the Arctic strategy and policy of the observer countries of the Arctic Council: Germany, France, Great Britain, Italy, Spain, the Netherlands, Poland, Switzerland, China, India, the Republic of Korea, Japan and Singapore. It is noted that states wishing to obtain the observer status in the Arctic Council have to recognize the sovereignty, sovereign rights and jurisdiction of Arctic states in the Arctic, as well as an extensive legal framework that extends to the Arctic Ocean. They are also obliged to respect the values, interests, culture and traditions of indigenous peoples and other inhabitants of the Arctic, as well as to make financial contributions in support of their livelihoods. The author pays special attention towards the actions undertaken by Asian states in the Arctic*

Keywords: *Arctic Council, Arctic, Russia, Germany, France, United Kingdom, Italy, Spain, Netherlands.*

According to the constituent Declaration of the Arctic Council, non-Arctic countries, intergovernmental and inter-parliamentary organizations, as well as organizations of universal and regional nature, including non-governmental, can obtain observer status in it.

It should also be noted that candidates for observer status in the Arctic Council must meet strict selection criteria. The most important of them is the recognition of the sovereignty, sovereign law and jurisdiction of the Arctic states in the Arctic. They are also required to recognize that the Arctic Ocean has an extensive legal framework, including maritime law, which provides

the firm basis for the responsible management of this area. They are also obliged to respect the values, interests, culture and traditions of indigenous peoples and other inhabitants of the Arctic. One of the criteria for selecting candidates is their willingness to make the financial contribution to the work of the indigenous peoples of the Arctic. It is noteworthy that the observers of the Arctic Council can use their status to the fullest extent only in close cooperation with the Arctic states or permanent members of the Council.

The arctic strategy and policy of the arctic council's observer states. Currently, the observer countries in the Arctic Council are Germany, France, the United Kingdom, Italy, Spain, the Netherlands, Poland, Switzerland, China, India, the Republic of Korea, Japan and Singapore. They reinforce their involvement in the Arctic issues with scientific research in the Arctic, their strategies and policy in the region.

The UN Convention on the Law of the Sea of 1982 became the basis for their Arctic strategy development. To date, 168 states have ratified the Convention, including all observer states in the Arctic Council.

In the last decade, German activity in the Arctic region has increased dramatically. The range of interests of the German state in the Arctic is determined by the following main factors: 1) its role in climate change on the planet; 2) the need to protect the Arctic ecosystem and the habitat of indigenous peoples; 3) the prospects of access to mineral resources (including hydrocarbon, as well as non-ferrous and rare-earth metals) from the point of view of enhancing the country's energy and raw material security; 4) the possibility of using the Northern Sea Route and the Northwest Passage; 5) the demand for German technology, machinery and equipment in the development of the Arctic. It seems that it is precisely long-term economic and political interests that are decisive in the current German Arctic strategy. Other objectives are subordinate to them and serve as important accompanying factors designed to show the special care of the

German state to protect the fragile ecosystem of the Arctic and the important role of Germany in it, in particular in terms of its unique one and a half century potential of scientific Arctic research [1][2].

Scientific research of the Antarctic, Arctic regions and the North Sea is carried out by the Alfred Wegener Institute for Polar and Marine Scientific Research, founded in the summer of 1980 with headquarters in Bremerhaven. In addition, the Helmholtz Center also includes the Potsdam Research Center, Helgoland Biological Institute (BAH) and the Wadd Sea Station Sylt. They are conducted using research vessels Polarstern, Heincke, Uthörn, Mya II and Aade.

So, Polarstern, since its commissioning on December 9, 1982, has covered more than 1.5 million nautical miles (as of 2014). This is about 2.7 million km. It is still one of the most powerful polar research vessels worldwide. It functions on average 310 days a year. Between November and March, the research vessel usually crosses the Antarctic, and in the summer months, scientists conduct research in Arctic waters.

The Heincke research vessel is mainly used for biological, geophysical and hydrographic research projects by national and international oceanographers, is at sea on average 230 days a year.

The results of the study show the complexity of climate change control processes in the Arctic and indicate significant spatial and temporal differences in the distribution of sea ice. To counteract the further warming of the Arctic and the loss of sea ice, reducing anthropogenic CO₂ emissions into the atmosphere is the indispensable condition.

On June 14, 2016, France approved the national Arctic roadmap. A special place in it belongs to the study of global warming, the Arctic atmosphere, the dynamics of permafrost, the processes occurring in marine ecosystems, the vital activity of indigenous peoples and sustainable development in the Arctic region [3].

One of the sections is devoted to research and scientific cooperation. The roadmap contains 10 key scientific priorities for France. These are: the variability of the global and Arctic atmosphere: amplification, interaction and consequences; hydrological cycle and continental ice; the changing ocean: from the physical environment to marine ecosystems; geodynamics and resources; permafrost dynamics in the context of global warming; dynamics of Arctic terrestrial ecosystems in the context of global warming; indigenous societies and global change; development of the comprehensive program on the Earth-Sea continuum in the Arctic; pollution: sources, cycles and effects; sustainable development in the Arctic region: influence, implementation, management.

As the nuclear power, France is committed to participating in the security of the Arctic. It actively participates in military cooperation with Denmark, Canada, Norway, and the United States in conducting «the Cold Response» military exercises organized every second year by NATO member countries in Norway.

France's Arctic policy is distinguished by the fact that Paris relies on «soft power» tools and actively attracts non-profit and public organizations to form a country's image and direction of international politics in the Arctic region.

In addition, Paris is actively advocating for the rights expansion of the Arctic Council observer states, as well as lobbying for the promotion of the EU as an observer of this regional organization.

On August 27, 2018, President of the Republic E. Macron, in an address to the French ambassadors abroad, noted the importance of cooperation with Russia in the development of the Arctic region.

In 2013, the UK government published its first Arctic policy framework: «Adaptation to Change». It sets out the UK's approach to the Arctic, based on three principles of respect, cooperation and good

governance. On April 5, 2018, the United Kingdom presented its second Arctic strategy, «Beyond the Ice. UK policy on the Arctic», which considers Arctic issues in the context of the country's exit from the European Union [3]. In 2017, the United Kingdom and Norway updated their 2011 High Level Agreement on Strengthening Cooperation in Polar Research and Cultural Heritage by expanding and improving the existing bilateral memorandum of understanding. In September 2017, the UK and Canada signed 10-year Memorandum of Understanding, which will expand bilateral cooperation in additional areas of research, technology and innovation.

Italy sees its interests in the Arctic in the field of energy, science, tourism, in the development of the infrastructure for mining, shipping and navigation [5, 6].

In 2018, Russia and Italy widely celebrated the 90th anniversary of the salvation of the Arctic expedition by the Soviet icebreaker Krasin, with the participation of Italian explorer General Umberto Nobile.

Other European observer countries of the AC have their own special plans in the Arctic: Spain, the Netherlands, Poland and Switzerland [7].

The efforts of all four of these countries are aimed primarily at studying the changes in the Arctic climate and the state of the Arctic environment.

Spain is committed to developing Arctic tourism.

The Netherlands has accumulated rich experience in offshore hydrocarbon production, which may find application in the northern seas.

Poland is making efforts to unite European observer countries around it in the Arctic Council.

Switzerland is only eyeing its new status, determining interest in the working groups of the Council [8, 9]. Largely thanks to the establishment of the Swiss Polar Institute, increased funding, and growing research in the Arctic, Switzerland became an observer country in the Arctic Council in

2017. Participation in its work for the Swiss is very important. Activities in its working groups will contribute to the deeper understanding of Arctic issues and better interaction with other member states. The Swiss Confederation with the status of a neutral state and taking into account the rich and positive experience can act as a mediator in tackling regional and international security problems. In the current tensions, this fact is extremely important to maintain the Arctic as the region of peace and stability. Switzerland's success in Arctic matters does with the scale and activity of its cooperation with Russia. Since 2016, her annual participation in the Russian scientific and educational project «Arctic Floating University» has allowed to expand the scope of Arctic scientific research, establishing and consolidating international Arctic cooperation with a number of countries - Russia, Germany, France, Italy, China, Canada, Bulgaria, Nigeria, Cuba and the Netherlands. This unique experience can serve as the basis for its large-scale research in the Arctic and Antarctic.

The Arctic European states are characterized by the significant expansion of the agenda and forms of work in the Arctic. The transformation of their policies is aimed at significantly increasing their role in the Arctic, further expanding the scope of climate observation, monitoring and assessing the state of the environment and ecological systems, biological diversity, changes in the living conditions of local peoples, the state of the Arctic seas and exploring the possibilities of shipping in ice waters coated.

The arctic strategy and policy of the Asian observers of the Arctic council. The role of Asian countries in the Arctic is also increasing. China, India, the Republic of Korea, Japan and Singapore joined the Arctic Council as observers in 2013 [10].

Joining the Council's work for them is one of the key achievements of their diplomacy in recent years and symbolic reputation capital, thanks to which they conditionally become on a par with such leading world Arctic

powers as Russia, the USA, Canada and Norway.

Arctic observer countries in the Arctic Council are characterized by:

- recognition of the requirements of the Ottawa Declaration for observer countries in the AC;
- the desire to show their right to independent study of the Arctic, to become prominent players in the Arctic field;
- Reinforcing their Arctic ambitions with the appropriate financial, economic, scientific and technological base;
- the use of their participation in the activities of the working groups of the Arctic Council to assess the situation and processes taking place in the Arctic, the alignment of forces in it and its place in the main directions of its activities and development;
- the desire to gain access to the rich natural resources of the Arctic region. Thus, China imports oil and gas from more than 30 countries: 56% of Chinese oil imports are from the Middle East, 27% are from Africa, 13.5% are from Asia and Asia-Pacific region, and 3.5% are from Latin America. 80% of the oil, which makes up 42% of Japan's primary energy balance, comes from the Middle East via the unsafe southern route. The Republic of Korea imports more than 50% of hydrocarbons from Saudi Arabia, Kuwait and the United Arab Emirates, Qatar, Indonesia and Malaysia. Singapore ranks 9th in the world in oil imports;
- interest in Arctic transport communications, the desire to reduce the cost of shipping to Europe and back in the operation of the Northern Sea Route (NSR) compared with the route through the Suez Canal;
- expanding the operation of its largest ports, which are equipped

with modern equipment for loading and unloading sea cargo, as well as large storage facilities and warehouses for oil and other cargoes. In China, it is Dalian, Qingdao. According to Chinese forecasts, by 2020, up to 15% of Chinese foreign trade freight traffic will go via the NSR, mainly in the form of container traffic, which corresponds to approximately 800 billion euros [11].

In the Republic of Korea it is Busana, Ulsana, the latter has 59 berths for liquid bulk cargoes. In Japan, it is Hokkaido, with its ports, the main port of base is proposed to be Tomakoman, the total turnover of sea transport for a year in it is 43 million tons of cargo [12].

Singapore is the largest container port in the world, and it has recently ceded the first place in the world to Shanghai as the world's leading container terminal [13].

China is the only Asian country that has its own Arctic strategy. On January 26, 2018, the press office of the State Council of the People's Republic of China published the White Paper on the Arctic [14].

Beijing formulated the political goals and basic principles of the country's activities in relation to the Arctic states for a long period in this document.

It is noted that the current situation in the Arctic goes beyond the framework of the Arctic states or the Arctic region. It is emphasized that extra-regional states do not have territorial sovereignty in the Arctic, but have the rights to research, shipping, flying over the territory, fishing, laying submarine cables and pipelines in the high seas and other relevant marine areas in the Arctic Ocean, and the right to explore and operate resources in the region in accordance with general international law.

An attempt was made to present a «new look» at the role and mission of China in the Arctic, where it called itself «a state located near the Arctic,»

one of the continental states closest to the Arctic Circle. It is clear that by doing this, the Chinese authorities are trying to consolidate the status of the PRC as an interested Arctic side.

It is noted that the political goals of China regarding the Arctic are to understand, protect, develop and participate in the management of the Arctic, in order to protect the common interests of all countries and the international community in the Arctic and contribute to the sustainable development of the region.

It should be noted that the program issues in the White Paper on the Arctic (about 60 percent of the text) are carefully and thoroughly written, taking into account national specifics, historical features and the desire to dominate the Arctic region globally.

The unconditional driver of cooperation between Russia and China is «Yamal-LNG» [15].

The largest Chinese company CNPC owns 20% in this project, another 9.9% was invested by the Silk Road Fund. Sending the first gas carrier of the «Yamal-LNG» company from the port of Sabetta on December 8, 2017, Russian President Vladimir Putin, during the meeting with Chinese representatives, said: “The Silk Road reached the very North. We will unite it with the Northern Sea Route and it will be what we need, and we will make the Northern Sea Route Silk” [16]. All this, from year to year, contributes to the growth of cargo transportation along the Northern Sea Route.

China understands that participation in the development of the Arctic, the development of the NSR is possible only through interaction with Russia, therefore, in the framework of its Arctic doctrine, it stated that it would play according to existing rules, in accordance with the requirements of international law. In addition, both countries are natural allies in the face of fierce competition and the difficult international situation caused by US and European Union sanctions against Russia. This may be the condition for the

emergence of new joint infrastructure projects.

The priority for India in the Arctic region is to expand not only economic and scientific, but also political and strategic cooperation with the "northerners" on a bilateral basis [17]. The strategy of the Republic of Korea in the Arctic is aimed at attracting a wide range of management, research and business structures to the implementation of Arctic projects [18]. Japan is interested in the possibility of using the NSR, conducting scientific research of the Arctic seas [19, 20, 21]. Singapore positions itself in the Arctic as one of the leading maritime powers in the world [22].

As the analysis shows, Asian countries are ready to offer Russia and other Arctic G8 countries advanced innovations and technologies for offshore oil production from great depths and in harsh climatic conditions, experience in organizing communications in the Arctic, planning and creating ports, marine process management, oil spill prevention and emergency response, participate in risk insurance, which, as you know, during the economic development of the Arctic will be high. They are interested in promoting the products of their shipbuilding industry, and are ready to supply offshore oil platforms and special vessels, such as icebreakers, sea vessels and ice class gas carriers. All this and much more can correspond to our long-term interests [23].

Beijing, Tokyo and Delhi are talking more about the Arctic as the "common heritage" of mankind, advocating the internationalization of the NSR, which is unacceptable to us. They advocate the creation of a new international structure in the Arctic, which would be formed, in their opinion, not according to the geographical principle, but according to the presence of economic interests in the region.

Under existing law, the rights of Asian countries in the Arctic are limited. They cannot claim any Arctic territories without questioning the UN Convention on the Law of the Sea. But they, together with Russia, in our

judgement, can occupy leading positions in the Arctic Economic Council, where large economic business projects will be implemented.

All observer countries pay special attention to the study of climate in the Arctic, environmental issues in the region, and work on the development of new technologies for offshore hydrocarbon production.

The greater involvement of countries in the Arctic region can contribute to the global governance of the Arctic in such areas as sustainable development, ensuring maritime security, and environmental protection. In our opinion, the presence of large Asian states in the Arctic Council can lead to a decrease in the overall level of tension in relations between the West and Europe concerning the situation in Syria and Ukraine. These countries didn't join the sanctions against Russia, but we should also notice that they strive quickly, sometimes aggressively, to gain a niche from the United States and European Union countries.

Building relations with Asian Arctic countries, it is important for us to realize that the process of developing the Russian Arctic spaces in order to consolidate their status, develop infrastructure, develop and extract natural resources will require the attraction of large-scale investments, including foreign ones. But here we should not cross the red line while maintaining and observing our national interests.

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THE RESULTS OF THE CANADIAN, AMERICAN AND FINNISH CHAIRMANSHIPS OVER THE ARCTIC COUNCIL (2013-2019)

Abstract. *The article summarizes the results of the Canadian, American and Finnish chairmanships over the Arctic Council (AC) in the past 6 years. It is noted that the Canadian chairmanship was quite productive (a permanent secretariat of the AC was formed, an agreement on preventing and combating possible consequences of oil spills was signed, the Arctic Economic Council was formed, the number of observer countries in the AC was expanded). The author considers the position of the United States on such issues as the development of icebreaker fleets, scientific research, environmental management, development and coordination of international relations of the Arctic countries. It is emphasized that Washington has used its chairmanship in the Arctic Council, as much as possible to promote its interests and to achieve the role of the leading Arctic power. The main priorities of the Finnish chairmanship of the AC are also revealed in the article: environmental protection, including the conservation of biodiversity in the northern polar zone, development of connectivity and communication networks in the region, growth in the number of weather stations to monitor the state of ice, ocean and the atmosphere, introduction of educational programs for indigenous youth*

Keywords: *Arctic Council, Arctic, Russia, Canada, USA, Finland.*

As is known, the functions of the Chairman of the Arctic Council are transferred from one member country to another on a rotational basis and are fulfilled by them for two years. At present, all countries have passed the first round of rotation, and Canada, having assumed the role of the main organizer of the Arctic Council in 2013, opened the second round of chairmanship. It was followed by the United States and Finland [17].

The Chairmanship of the Arctic Council of Canada. Canada is positioning itself as a Northern nation. According to the official methodology based on the administrative division of the country, the Canadian North includes the territories located North of the 60th parallel. The area of the Northern region is 3.9 million square kilometers, which is about 40% of the territory of Canada. The population is about 100 thousand people. The population density is low, its main concentration falls on the capital cities. The Indigenous people (main groups – métis, Inuit Canadian eskimo, the Indians of the den) is about 53%. The Canadian North is divided into three Federal subjects, the Northwest territories (NWT), Yukon, and Nunavut (established April 1, 1999). The transformation of Canada's three Northern territories into self-sufficient regions has been identified as a long-term Northern strategy. First of all, the main goal is to achieve positive dynamics in the political development of the territories, to create conditions for the territories and the indigenous to benefit from the economic opportunities of the North, to ensure the guiding role of the Federal center in the environmental sphere, to promote international cooperation in the Arctic and in the North [12].

The North is the Foundation of its national identity, a priority direction of domestic and foreign policy [8]. Canada's Northern strategy: our North, our heritage, our future (2009) sets out its main provisions: exercising Canada's sovereignty in the Arctic; promoting social and economic development; protecting the environment of the North; and promoting governance for the rights of local people. In its foreign policy, Canada claims to expand the continental shelf in the Arctic, where it has disputed territory with Russia. These are questions about the boundaries along the Lomonosov ridge; Hans Island, the dividing line in the Lincoln and Beaufort seas. Canada would prefer to see the status of the Northwest passage under its control. On the issue of the status of the Northwest passage, Canada's position coincides

with Russia's position on the national status of the Northern sea route [1].

Canada's chairmanship of the Arctic Council has been quite productive, [4] in particular:

- The permanent Secretariat of the Arctic Council was established, all the issues necessary to ensure its work (personnel, financial, organizational) were agreed);
- There has been a further expansion of the range of its activities to a wide range of practical matters, including some issues related to mining operations;
- The second international agreement in the history of the Arctic Council has been sighted signed -the Agreement to prevent oil spills and combat possible consequences;
- The agreement was achieved on the creation of a new platform for negotiations – the Arctic economic Council;
- It was decided to establish a collective Fund for co-financing environmental projects;
- The membership of observer countries in the Council has been expanded on the basis of pre-established criteria for the admission of new members to the Arctic Council as permanent observers;
- The second report on the human dimension of Arctic policy has been prepared, which is important for the development of socio-economic policy in the Arctic and the protection of the interests of the indigenous population.

U.S. Arctic Council chairmanship. The US presidency of the AU took place from 2015 to 2017, at a time when the world has sharply complicated the socio-political situation. All the countries of the Arctic region imposed sanctions against Russia, which, in turn, responded to them with its counter-sanctions. As a result, Arctic cooperation has been discontinued in many

areas, especially on environmental issues. But to the credit of the US, they did not transfer the existing contradictions between the US and Russia into the work of the AU itself, which cannot be said about Canada, which chaired the AU before the US.

Firstly, the Council has made progress in developing multilateral coast guard cooperation. Thus, on October 31, 2015 in New-London (the USA), the official representatives of the agencies exercising the functions of the coastguards of the Arctic Council member States signed the Joint statement of intent to develop multilateral cooperation in the format of the Arctic coastguards forum. It has the status of an independent organization, not bound by a legally binding Treaty. It was attended by Russia, Denmark, Iceland, Canada, Norway, the USA, Finland, Sweden. The change of chairmanship is organized on the principle of rotation with regularity every two years and is interconnected with the chairmanship of the parties in the Arctic Council. In the Arctic coast guard forum, despite a number of differences in the functions of the participating agencies at the national level, there is a huge potential for joint resolution of regional security issues. Joint efforts will improve the level of Maritime security and the safety of every person in the Arctic.

Secondly, the consultations on international fisheries in the Arctic ocean were fruitful. In June 2015, Russia, the United States, Norway, Canada and Denmark signed the agreement banning fishing in international Arctic waters. The agreement concerns the high seas area located outside the exclusive economic zones of the Arctic States.

Thirdly, for the first time in the history of the AU, the US studied the state and problems of communication networks in the Arctic region.

Fourthly, as the analysis showed, during its presidency, the United States realized and publicly acknowledged that in its activities the country had previously paid insufficient attention to the Arctic and was far behind

Russia, Norway and Canada in this regard [5]. The fact that Barack Obama, as the first current President, visited the Arctic circle and met the residents of this territory is a vivid confirmation of this.

The US is falling behind in the construction of icebreakers. Currently, they have three, but capable of operating in the Arctic latitudes-two. In addition, according to experts, the existing icebreakers can not quickly and effectively help in eliminating possible disasters in oil production in the Arctic ocean. The US President decided to begin the construction of another heavy icebreaker with a total cost of up to \$ 1 billion with commissioning two years earlier – in 2020. May 5, 2017, the commander of the US coast guard Paul Zukunft [10] complained in his statement about the lack of icebreakers in the country.

During this period, a number of events were held to strengthen the interest of US citizens in the country to polar Affairs, informing ordinary Americans about the "Arctic status" of America. First of all, it is talking about signing the UN Convention on the law of the sea. Non-participation in it harms the image, creates a inconsistency in the position of the US and the AU partner countries and a potential opportunity to change the position of the state on the problems of the Arctic.

Fifthly, it should be noted that during the US presidency, the working bodies of the AU continued to function in the same mode, which allowed the United States, together with its colleagues in the AU, to prepare for signing in Fairbanks a number of important documents: the "Fairbanks Declaration" and the Agreement on the development of international Arctic scientific cooperation.

The Fairbanks Declaration reaffirms the commitment to the peaceful development of the Arctic, mutually beneficial cooperation with an emphasis on environmental activities and emphasizes the importance of developing joint steps to adapt to climate change.

The agreement on the development of international Arctic scientific cooperation is aimed at the development of international Arctic scientific cooperation in order to improve the efficiency and effectiveness of the development of scientific knowledge about the Arctic. The draft of this Agreement was approved by the decree of the government of the Russian Federation dated April 19, 2017 No. 735-R. It provides for facilitation of international scientific research in the Arctic, consolidation of contacts between scientists, exchange of research results, simplification of border crossing and the possibility of joint use of scientific infrastructure. It clearly defines the geographical areas in respect of which the member States of the Agreement, in accordance with national legislation and international law, will assist in obtaining permits for research, access to research areas, the use of scientific infrastructure and etc. The Agreement is drawn up in such a way as not to prejudice existing agreements between the Arctic and extra-regional States and not to reduce the opportunities for non-regional States to carry out scientific research in the Arctic. The development of this Agreement was carried out over four years by a specially created task force of the AU. The group was co-chaired by Russia and the United States.

The U.S. chairmanship of the Arctic Council ended with a meeting of foreign Ministers in Fairbanks, which was held in a friendly atmosphere. At first, Anchorage, the larger city, was chosen as the meeting place. However, the community of Fairbanks proposed to hold the forum in this city, as it is the northernmost settlement of the United States with air and rail links. Canadian foreign Minister Christya Freeland welcomed the Russian delegation in Russian. Russian foreign Minister Sergey Lavrov, Russian Ambassador to the United States Sergey Kislyak and Fairbanks mayor Jim Matherly laid wreaths at the monument to the heroes of the Alaska - Siberia air route after the meeting. In total, from 1942 to 1945, as part of the lend-lease, Soviet and American pilots overtook about 8 thousand combat aircraft

from this city [3]. One of the outcomes of the Fairbanks event was the granting of observer status in the Arctic Council of Switzerland. Although this status does not give the country the right to vote, this event once again demonstrates the increased interest in the Arctic from a wide range of non-Arctic States [13].

Chairmanship of the Arctic Council of Finland. The Finnish foreign Minister at a meeting in Fairbanks taking the chairmanship of the AU in his speech called four main areas of work until 2019. It:

- firstly, environmental protection, including biodiversity conservation in the Northern polar zone. Healthy ecosystems and human well-being in the Arctic require effective conservation measures. It is proposed to continue to focus on biodiversity conservation and pollution prevention, adaptation to climate change, exchange of information on best practices and new technologies to promote sustainable and responsible development of the Arctic;
- secondly, the development of communications and communication networks in the region. Electronic communication services improve the safety and quality of life of those living or temporarily in the Arctic. Access to broadband facilitates e-learning, enables digital health, social services and media connectivity. It is proposed to continue the work of the Arctic telecommunications Council and explore opportunities to improve communication and broadband Internet availability in the Arctic;
- thirdly, the increase in the number of weather stations to monitor the state of the ice, ocean and atmosphere. This will improve public safety, benefit international shipping and air traffic, and help advance Arctic climate science, improve

monitoring and surveillance networks, and improve climate and water risk management. Enhanced monitoring on land, in the water, in the air and in space will help to obtain accurate data and fill geographical gaps, which in turn will lead to improved transport services and forecasting of meteorological phenomena in the Arctic, as well as contribute to the development of much-needed climate change scenarios. It is proposed to develop in-depth cooperation between the Arctic States with the assistance of the world meteorological organization;

- fourthly, the implementation of educational programs for the indigenous youth [14].

Speaking about the features of this presidency, the Chairman of the Committee of senior Arctic officials as Alexi Harkened noted that despite the difficult international situation "the experience of Finland as chair of the Arctic Council in may 2017 shows that all States members of the Council wish to continue the constructive cooperation in the Arctic. It seems that in the troubled waters of interstate relations, this is the boat that the Arctic countries do not want to rock. As Chairman, Finland will do everything in its power to maintain this course" [15].

Finland, in its activities in the Arctic, supports the preservation of stability and the peaceful nature of the Arctic, believes that the region can and should develop as a space for cooperation and security.

Finland, like other Nordic countries, recognizing Russia's successes in the exploration and development of the Arctic [6] notes with concern the increase in its military presence in the Arctic. However, the analysis shows that the level of militarization of the Arctic does not go beyond reasonable sufficiency. Any accusations of Russia in the militarization of the Arctic are groundless. The measures taken by our country to deploy military infrastructure are aimed at protecting Russia's national interests and

contribute to maintaining the balance of power in the region. Now it is important to restore military contacts, reduce suspicion, to avoid any misunderstandings between NATO and Russia [16].

Finland chaired the AU under the motto "In research of joint solutions". During the first year of the Finnish presidency, two scheduled meetings of senior AU officials were held. The first was in Oulu on 25-26 October 2017, the second on 22-23 March 2018 in Levi. Many other expert group meetings and forums also took place during this period.

During the first meeting of senior officials of the Arctic Council, education was one of the main topics of discussion. The AU reviewed the reports of its working groups and a representative of the Ministry of education and culture of Finland presented their country's approaches on this issue. Representatives of participating countries as on November 22-23, 2017 in St. Petersburg took part in the XVIII International scientific conference "Reality of ethnos: the role of education in preserving and development of languages and cultures of indigenous peoples of the North, Siberia and the Far East of the Russian Federation".

Thus, during the second meeting of senior officials, the issues of improving the forecast of climate change and its consequences in the Arctic, strengthening and coordination of observation systems and analysis of the data obtained, as well as the development of new innovative methods of observation of the Arctic atmosphere and cryosphere were discussed. The world meteorological organization on March 20, 2018 in Levi organized the Arctic meteorological summit [2] at which the Russian delegation was headed by the head of Roshydromet Yakovenko M.E. The main topic of speeches and discussions were the prospects of scientific and meteorological cooperation in the Arctic [9].

The Forum on Arctic viability was held in Rovaniemi, Finland, on 10-11 September 2018. The second Arctic biodiversity Congress was held from

9 to 11 October 2018. In the course of its work, the participants reviewed the situation in the Arctic from the point of view of the implementation of the Strategic plan for biodiversity 2011-2020, October 11-12 2018, a meeting of environment Ministers of the Arctic States, and 5-26 October in Berlin hosted the second Ministerial meeting of the Arctic science. From October 29 to November 2, 2018, the student model of the Arctic Council was held.

From 12 till 14 March 2019 in Ruka (Finland) a two-day plenary session of the Committee of senior officials was held as final in the period of Finland's presidency in this organization in the 2017-2019. In the course of past events two years of work was summed up as a whole and approved the materials that will be presented to the foreign Ministers of the Arctic countries in Rovaniemi (Finland) on 6-7 May, 2019 [11]. At the same meeting, the chairmanship of the AU will pass to Iceland. The strategic plan of the Arctic Council, the first document of this nature in the work of the AU, which will consolidate the long-term priorities and key areas of development of the organization, was largely agreed in the Ruka. A number of documents for the upcoming Ministerial session in May, involving collective efforts to address topical issues for the Arctic region, including reducing emissions of black carbon and methane, were also approved. In addition, the work of the AU financial mechanism – a method which supports projects that contributes to the implementation of practical actions necessary for the sustainable development of the Arctic – was considered. Among them are projects for the disposal of solid waste, reduction and complete abandonment of the combustion of associated petroleum gas and "green shipping".

The results of Finland's chairmanship in the Arctic Council were summed up By the President of Finland, speaking at the V International Arctic forum "the Arctic – the territory of dialogue", which was held on April 9-10, 2019 in St. Petersburg.

Iceland will chair the Arctic Council from May 2019 to May 2021. Among experts, this causes particular concern and even alarm in connection with the nature and direction of its cooperation with China on Arctic issues in previous years.

At the height of the 2008 financial crisis, Beijing provided the country with a currency swap of 406 million euros to support the banking system, issued several significant loans on extremely favorable terms, which allowed it to avoid default. In 2012, China signed the agreement with Iceland on cooperation in the Arctic, as well as a free trade area agreement, which came into force in 2014. Deals were concluded for the exploration of oil reserves off the South-East coast of Iceland. A number of Chinese billionaires have privately tried to buy Islands in the North-East of the country with a total area of more than 300 square kilometers for the "tourist business", as it was officially announced. In fact, the real purpose of such purchases, most likely, was-the creation of «stationary military bases and communications» or improving its Arctic status. Iceland was able to reject the proposal by legislating a ban on the sale of land that could potentially be used to establish such bases.

Iceland, grateful to China for its assistance in recent years, has repeatedly proposed the inclusion of Beijing, given its economic, financial and technological potential, in the founding members of the AU. To this end, it actively uses the format of the international Arctic forum The "Arctic circle", which is held annually in Reykjavik. During the chairmanship of the AU, Iceland, in our opinion, will have additional opportunities to lobby China's interests in the Arctic, which may threaten the sovereignty of the Arctic Council and contradict the national interests of Russia.

The analysis of the results of the chairmanship in the AU of Canada, the United States and Finland shows that they have carried out significant work on the study of the Arctic, improving the activities of the Arctic

Council.

The main result of the Arctic cooperation is that mutual interest in its strengthening and development did not allow freezing its activities. Cooperation continues to develop, the Arctic remains a zone of peace, international cooperation and political stability, despite the environmental risks and military-political threats that arise here. Therefore, it is no coincidence that in January 2018 the Arctic Council was nominated by scientists from 20 countries for the Nobel Peace Prize.

In 2021, Russia will chair the AU. Now it is necessary to work on its program to demonstrate the leadership of our country on the Arctic track.

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ARCTIC ROBOTICS

UDC: 001.8: 623.8/9: 627.77

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COMPARATIVE ASSESSMENT OF RESCUE OPERATION EFFECTIVENESS IN ARCTIC CONDITIONS

Abstract. *The report considers relevance of creation and implementation of rescue robotics in Arctic conditions. Given the high levels of risk to human life in the Arctic conditions basic principles of robotics implementation are suggested. The most promising areas of application of robotic complexes (RTC) and Robotic Systems (RS) in performing search and rescue operations in Arctic conditions are identified. Basic indicators of assessment of efficiency of RTC and RS when carrying out search and rescue operations are suggested. Main stages of search and rescue operations, as well as solution of the problem of comparative assessment of efficiency of RTC and RS at the stage of search of rescue means and survivors on water and ice surface are considered. For operative search and rescue of people in distress in a complex ice environment the concept of ground robotic air-droppable complex of universal rescue means (NRK USS) for Arctic conditions is offered as RS. Mathematical model of solution of the problem of comparative assessment of efficiency of search and rescue operation for suffering distress in individual and collective means of rescue is suggested. Comparative assessment of efficiency of search and rescue operation with application of ground robotic air-droppable complex of universal rescue means and alternative complex on test case is carried out.*

Keywords: *search, rescue, robotics, complex, system, assessment, efficiency.*

Robots, as it is known, are being implemented, firstly, where the work of man and his life are difficult, impossible or fraught with a threat to lives and health. Any activity at sea involves some degree of risk to human life. Moreover, it is true not only for works outside the facility of marine equipment overboard or at depth, but also work directly at a sea facility, as well as activities of marine rescuers [1], [2]. Therefore, creation of effective

robotic systems (RS) for search and rescue of people in distress at sea is an urgent task [3], [4]. This task is especially relevant for Arctic conditions, where search and rescue at sea are significantly complicated by heavy hydrometeorological conditions, complex ice situation and low temperature factor.

BASIC PRINCIPLES AND PERSPECTIVES OF ROBOTICS IMPLEMENTATION. Given the high levels of risk to human life in Arctic conditions the following basic principles of robotics implementation are suggested to implement.

The principle of substitution of human work for robotic in zones of high danger is certainly dominating, which is confirmed by active introduction of submarine robots – autonomous uninhabited underwater vehicles (AUV). The principle of expansion of functional possibilities, increase of efficiency and productivity of works. Thus, when replacing hard diving work, for example, in case of inspection, examination or repair of objects under water (on the ground) with underwater robot (AUV), functional capabilities are expanded, efficiency and productivity of works are increased. The principle of eliminating the risk of crew loss in search and rescue in complex hydrometeorological conditions. Active development and application in extreme conditions of AUV, unmanned motor boats (AMB), as well as unmanned aerial vehicles (UAV) testify to the prospects of RTC implementation in the maritime business and specially to solve the problems of search and rescue [5].

Based on the above principles, as the most promising areas of RTC and RS application in search and rescue operation (SRO) in the Arctic conditions the following can be specified:

- search of emergency objects and people in emergency situations;
- rescuing people in distress;

- medical evacuation of injured or aggrieved persons;
- external environment monitoring.

KEY INDICATORS OF EFFICIENCY ASSESSMENT AND STAGES OF SEARCH AND RESCUE OPERATION. Due to the relatively low cost, RTC production can be high-volume, and their application as a part of RS-large-scale. To assess the feasibility of RTC and RS creation and application when search and rescue of people in the Arctic, the following key indicators of RTC and RS efficiency assessment:

- probability of SRO for the given time (efficiency of the problem solution);
- mathematical expectation of the number of rescued for a given time;
- degree of replacement of the object's personnel (how far the implemented robotic system can replace people in whole or in part);
- degree of versatility (dual-use capability);
- degree of RS standardization and unification (design-technological criterion);
- technical level – degree of conformity to functional purpose (criterion of technical perfection, possibility of further modernization, modification, improvement and integration into other systems).

The above mentioned main key performance indicators of RTC and RS are used occasionally in case of comparative price indicators of items.

Difficulty of SRO implementation is related to the variety of emergency situations, specific conditions of emergency at the emergency facility, diversity of rescue facilities, ranging external conditions, etc. The main stages of SRO can be considered as follows:

- evacuation of people from sinking sea facility;

- survival period, which is counted from the moment of the facility leave to the completion of rescue operation;
- search of rescue means and finding salvation on water and ice surface;
- completion of rescue operation by transporting and moving injured or aggrieved persons to the shore or vessel taking part in the rescue operation.

CONCEPT OF GROUND ROBOTIC AIR-DROPPABLE COMPLEX. For operative search and rescue of people in distress in a complex ice environment the concept of the ground robotic air-droppable complex of universal rescue means (NRK USS) for conditions of the Arctic is offered as RS, shown in Figure 1.

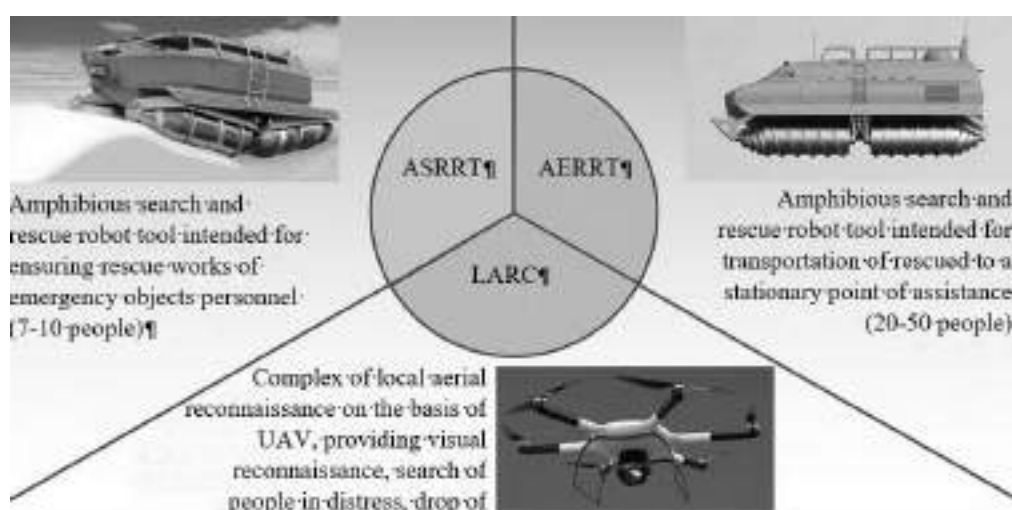


Figure 1. Ground robotic air-droppable complex of universal rescue means (NRK USS) for the Arctic

NRK USS can be arranged on the modified aircraft IL-76 MF with engines PS-90A-76. The model of application of robotic AMPSK on the basis of NRK USS is shown in Figure 2.

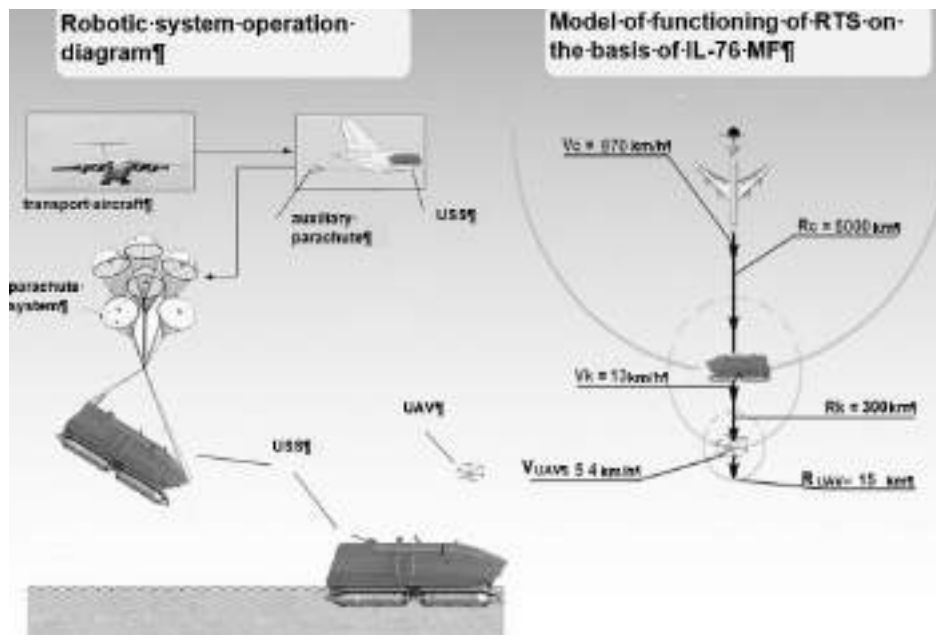


Figure 2. Model of application of robotic AMPSK on the basis of NRK USS in the Arctic

THE TASK OF COMPARATIVE EFFECTIVENESS ASSESSMENT. Consider the task of comparative effectiveness assessment of RS consisting of RTC using as efficiency indicator the probability ratio of SRO task solving for the given time at the stage of search for rescue means and finding salvation on water and ice surface.

To assess RC effectiveness, the following mathematical model is proposed to solve the problem of comparative effectiveness assessment of SRO on rescue in distress in individual and collective means of rescue.

Three states of the system "suffering distress-rescuers" are considered (the term rescuers refers to forces and means of rescue, including relevant RS):

- 0 – Initial state of the system: occurrence of emergency, there are suffering distress, rescuers received an alert;
- G – suffering disaster died, rescuers did not have time to save them;
- S – suffering disaster are rescued in the course SRO.

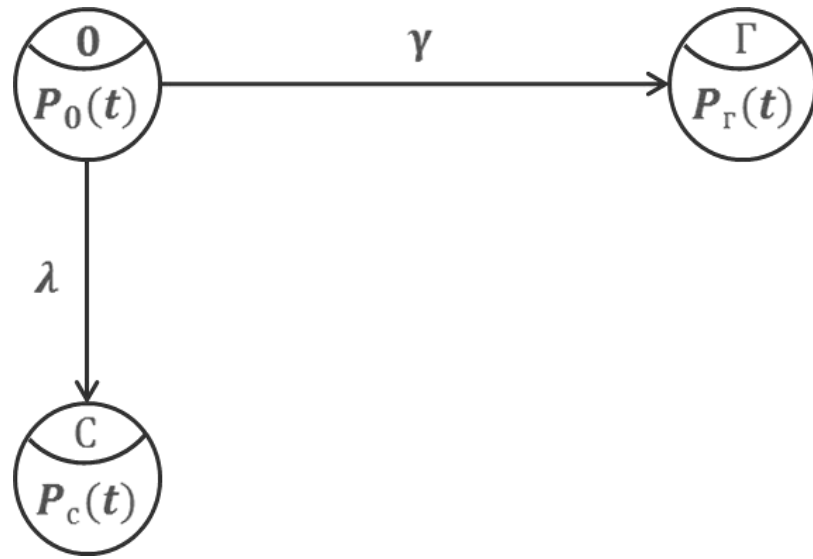
Initial conditions for task solving:

$$P_0(t_0) = 1; \quad (1)$$

$$P_r(t_0) = P_c(t_0) = 0 \text{ at } t_0 = 0, \quad (2)$$

where $P_0(t)$, $P_r(t)$, $P_c(t)$ – probability of system in relevant states.

System state graph is shown in figure 3.



γ, λ – system transition from state to state

Figure 3 – Graph of system transitions to different states

Assume that "suffering distress-rescuers" system transitions from state to state according to the graph (Figure 3) are described by the Markov process. Then the probability of finding the system in relevant states can be determined from solution of the following system of equations:

$$\begin{cases} \frac{dP_0(t)}{dt} + (\gamma + \lambda)P_0(t) = 0; \\ \frac{dP_r(t)}{dt} - \gamma P_0(t) = 0; \\ \frac{dP_c(t)}{dt} - \lambda P_0(t) = 0; \\ P_c(t) + P_r(t) + P_0(t) = 1; \end{cases} \quad (3)$$

where $\gamma(t) = \frac{f_r(t)}{1 - F_r(t)}$;

$$\lambda(t) = \frac{f_c(t)}{1 - F_c(t)}.$$

Consider as an indicator of comparative effectiveness assessment of search and rescue operation the solution:

$$\exists = P_c(t) = \frac{\lambda(t)}{\gamma(t) + \lambda(t)} [1 - e^{-(\gamma + \lambda)t}], \quad (4)$$

$$K = \max\{P_c(t)\}$$

TEST EXAMPLE OF SOLVING THE PROBLEM OF COMPARATIVE EFFECTIVENESS ASSESSMENT. For example, conduct a comparative assessment of SRO effectiveness with the use of NRK USS and alternative complex (AC) under some test conditions of the task taken for assessment.

The radius of the search-and-rescue operation is accepted as follows: $R = 2000$ km, SRO is carried out from the Arctic complex emergency rescue center of the Ministry of Emergency Situations.

NRK USS delivery speed:

$$V_{NRK} = 800 \text{ km/h.} \quad (6)$$

AC moving out speed:

$$V_{AC} = 200 \text{ km/h.} \quad (7)$$

Efficiency indicator – probability of rescue as a function of time:

$$E = P_C(T_B, T_{CH}), \quad (8)$$

where T_B – rescued survival time in individual rescue vehicles (IRV) and in collective rescue vehicles (CRV);

T_{CH} – Time to rescue people in distress.

$$P_C = \frac{\lambda}{\gamma + \lambda} [1 - e^{-(\gamma + \lambda)t}], \quad (9)$$

where $\lambda = \bar{T}_{CH}^{-1}$ – Intensity of rescue of people in distress;

$\bar{T}_{CH} = \sum \bar{T}_{CHi}$ – average rescue time as a sum for rescue operation stages;

$\gamma = \bar{T}_B^{-1}$ – Intensity of death of people in distress;

where \bar{T}_B – average time of human survival in IRV (SGTK suit, etc.) or CRV (PSN raft, etc.).

When rescue of single person in distress in IRV (SGTK) the following estimates are obtained:

- for indicator of comparative effectiveness assessment of NRK USS:

$$E_{NRK}^1 = 0.62; \quad (10)$$

- for indicator of comparative effectiveness assessment of AC:

$$E_{AC}^1 = 0.35. \quad (11)$$

Efficiency of the suggested complex NRK USS is better by 1.8 times than AC efficiency at rescue of a single person in IRV (SGTK) under other equal conditions.

When rescuing a group of 10 people in CRV:

- for indicator of comparative effectiveness assessment of NRK USS

$$E_{NRK}^{10} = 0.92; \quad (12)$$

- for indicator of comparative effectiveness assessment of AC:

$$E_{AC}^{10} = 0.84. \quad (13)$$

Efficiency of NRK USS is better by 1.1 time than AC efficiency at rescue a group of 10 people in CRV.

For operative search and rescue of people in distress in a complex ice environment the concept of the ground robotic air-droppable complex of universal rescue means (NRK USS) is suggested.

The comparative effectiveness assessment of carrying out search-and-rescue operations with application of NRK USS and alternative complex

(AK) under test conditions of the task has shown advantages of NRK USS and efficiency of the offered mathematical model of effectiveness assessment.

Based on the comparative effectiveness assessment NRK USS can be recommended for creation and implementation for search and rescue operations in Arctic conditions.

Based on a comparative assessment of effectiveness, the NRK USS can be recommended for creation and implementation for search and rescue operations in the Arctic, especially on the Northern Sea Route, which is of strategic importance for Russia in a partnership of civilizations in the era of globalization [7].

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DEVELOPMENT OF HUMAN CAPITAL IN THE ARCTIC

UDC: 332.145 (=1-81)+(561.6+985)

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QUESTIONS OF SOCIAL-DEMOGRAPHIC DEVELOPMENT OF THE INDIGENOUS SMALL- NUMBERED PEOPLES OF THE NORTH OF THE RUSSIAN FAR EAST

Abstract. *On the basis of the analysis of the All-Russian population census of 2002 and 2010 trends of demographic development of indigenous ethnic groups of the North of the Russian Far East are considered. Over the past 30 years, as a result of the migration outflow, the population in the regions of the Far North has significantly decreased. At the same time, there has been an increase in the number of residents of indigenous ethnic groups. Reproductive processes of the indigenous population are characterized by the preservation of the positive dynamics of natural growth. Because of intensive industrial development of the territory, without taking into account the interests of the peoples living in these areas, living and working conditions have deteriorated; the ecological situation has been disrupted. The alienation of lands of traditional nature use for industrial use led to a reduction in the area of reindeer pastures. All this leads to the loss of traditional types of management, has a very adverse effect on the social situation of small peoples. The solution of demographic problems will be facilitated by the close relationship of the federal and regional migration policies with employment policies and the socio-economic development of the regions inhabited by small indigenous peoples of the North.*

Keywords: *indigenous peoples of the North, demographic problems, traditional nature management, North of the Russian Far East.*

Currently, there is a desire of the state to accelerated economic development of the eastern regions of Russia. Interest in the Far East contributes to increased investment flows, which implies intensive economic and social development of these territories. The primary role played by the geopolitical factor. From the point of view of long-term trends, it can be assumed that one of the most important factors determining the distribution and interaction of various forces in the XXI century will be the increase of geo-economic contradictions in the Arctic, associated with its resource potential [4]. In the near future, the Northeast will take a new place in the economic space of Russia, due to its resource potential and geopolitical position. These areas account for 1/5 of the country's national income and 60% of foreign exchange earnings. It produces 97.5% of gas, 3/4 of oil, 91% of tin, 100% of diamonds, the vast majority of gold, copper, nickel, 15% of coal, and 1/5 of electricity is produced, etc. [7]. The Arctic has become a global and Russian economic donor. In a situation where there is a gradual decline in population, the demographic factor takes on a special role. In this regard, considering such an important problem as the demographic development of the Far East, one should pay attention to the current state and development prospects of the indigenous ethnic groups of the North (IEGN) in the market conditions. Well-being and their ethnic development always depended on the goals of the state, starting from the policy of non-intervention, attempts to integrate them into the national system and ending with full paternalism.

The discussion of the results. Numerous studies available on the Arctic and subarctic territories and the peoples inhabiting them show that the relevance of conducting such studies continues unabated [2, 6, 7]. The data from censuses of the population and regional statistical bodies were used as information materials. It is quite a difficult problem to combine intensive

development of the natural resource potential in the territories traditionally occupied by small ethnic groups. The indigenous peoples of the North are singled out in a special group due to their small size, the special character of the traditional economy and way of life, the specific social, cultural and housing structure. The lifestyle of their life, formed in certain climatic conditions, the degree of employment of traditional occupations change more slowly than economic conditions. The difficult climatic conditions, the vulnerability of the traditional way of life and the small number of each of the peoples of the North necessitated the development of a special state policy regarding their sustainable development, including measures to preserve the original culture, traditional way of life and habitat of these peoples. Further livelihoods will be based primarily on the development of traditional economic sectors: reindeer husbandry, hunting, hunting, fishing. On the agenda is the revival of shipping along the Northern Sea Route [8]. To do this, in addition to extracting the types of natural resources that are significant for the country, it is necessary to restore an important sector of the economy serving clusters in the form of the implementation of necessary state functions (border security, meteorological observations, hydro posts, environmental protection and other activities). At the same time, the demographic feature of the considered Arctic region is determined by the small number of the population and the extremely uneven distribution over a vast territory. A little over 2 million people live in the Russian Arctic. It is known that the population of the overseas north is growing steadily, while in our country it has decreased by almost 1.5 million people [9]. According to the 2010 All-Russian Population Census, 105.9 thousand people lived in the Russian Far East, representatives of 20 ethnic groups belonging to the indigenous peoples of the North (tab. 1). Over 70% of them live in rural areas.

Table 1
The dynamics of the number of IEGN in the Far East (according to population censuses) [5]

Years	IEGN number (one thousand people)
1989	87,9
2002	101,0
2010	105,9

Most of the indigenous ethnic groups live in the Republic of Sakha (Yakutia), the Chukotka Autonomous Region, the Kamchatka and Khabarovsk Territories, where they form large areas of compact residence. The most numerous group among them (about 80%) are representatives of two language groups: Tungus - Evenks, Evens, Nanai and Paleo-Asiatic - Chukchi, Koryaks (Table 2).

Table 2
Population dynamics of a large group of IEGN in the Far East, thousand people [5]

IEGN	1989	2002	2010
Evenks	19,9	24,8	26,8
Evens	15,9	18,7	22,1
Chukchi	14,7	15,1	14,9
Nanai	11,3	11,8	11,4
Koryaks	8,3	8,4	7,6

In general, for the period 1989-2010 their number increased by 18.0 thousand people or 20.5%. Growth was recorded in the Republic of Sakha (Yakutia), the Magadan region and the Chukotka Autonomous District. However, only six ethnic groups (Evenks, Evens, Chukchi, Yukagirs, Eskimos, Itelmens) experienced an increase in numbers.

The ratio of men and women among IEGN remains traditional: the number of women prevails. In the Chukchi, the number of women is 58.9%, in the Evenki - 52.1%. In the composition of the most numerous group IEGN, over the last intercensal period (2002–2010), the share of the working-age

population increased by 6.5% among Evenks, by 3.1% among Koryaks. If in 2002 the number of people younger than the working age among a large group of indigenous people exceeded the number of older ages by 3.2–5.9 times, then in 2010, this excess decreased by 2.4–5.0%, i.e. In the future, the number of able-bodied population will decrease and the number of disabled people in this group of ethnic groups will increase. In general, between the last two censuses, there is a steady decline in people younger than working age, working age (alien population) and an increase in the number of people older than working age.

The reproduction of the population is due to national traditions, the level of personal and social consciousness, social attitudes that arise under the influence of political and economic transformations. Statistics show that among indigenous ethnic groups, the highest birth rate is observed among the Evens (an increase of 50.4% in 1990-1997), the Chukchi 25.4%, the Yukagirs 32.5%. Rural areas remain the main producer of the population, their birth rate is 50% higher than in urban areas. For example, according to the 2010 All-Russian Census, 53.6% of the Evens and 42.4% of the Evenks lived in the northern areas of the Republic of Sakha (Yakutia), where the natural reproduction regime refers to the expanded type and above the national average.

The excess of the birth rate of indigenous people compared with visitors, stuck in the 2000s, as a result of this, the reproduction rate of the indigenous population in the autonomous districts approached 3.0 per 1,000 women of fertile age. The preservation of natural growth is associated with the preservation of the traditional model of the demographic behavior of the indigenous peoples inhabiting these territories.

The restoration of ethnic identity is observed in all territories of the IEGN. For example, according to the research data of V.B. Ignatieva et al. [3], in the Republic of Sakha (Yakutia) there was an increase in the growth

of the aboriginal population due to ethnic preference in favor of "local ethnic leaders." The Dolgans, previously considered Yakuts, "restored" their nationality. In mixed marriages, preference is also given to the restoration of their indigenous ethnicity. In the mid-1990s, in the Republic of Sakha (Yakutia), children of mixed marriages accounted for about 20–22%, while for small natives this figure was 51–92%. Of the indigenous Sakha population, this indicator is 5–6 times lower than that of small ethnic groups. The proportion of mixed children is high - 52 - 85% [3].

Mortality rates are different for these ethnic groups; they are higher - by 15–20%. Social negative trends remain. The high mortality rate in these territories depends, first of all, on the quality and timeliness of the provision of treatment-and-prophylactic care to children, the organization of anti-epidemic measures. An important generalized indicator of mortality is life expectancy at birth.

Indicators of life expectancy at birth below Far Eastern (72.70, 2017): Republic of Sakha (Yakutia) - 71.68 years; Magadan Region - 69.37 years; Chukotka Autonomous Region - 66.10 years. This is the lowest life expectancy in the Russian Federation, with high rates of mortality from external causes and social diseases [5]. Small ethnic groups of the north, having a genetic adaptive capacity for natural changes, turned out to be less adapted to the negative artificial effects of socio-economic factors that affect the emotional and psychological sphere [3].

The decline in living standards has contributed to the fact that the susceptibility of the peoples of the North to social apathy has increased. An increase in mortality among IEGN due to an increase in alcoholism and accidents is recorded. This led to a decrease in the average life expectancy of Aboriginal people to 44.7 years for men and 55.6 years for women (on average in the Far East). This is due to the fact that the quality of public health has been reduced almost in the North, since the reserve potencies of

physiological functions (especially reproductive abilities) are depleted seven to ten years earlier, that is, premature old age occurs [6].

Over the past decade, there have been changes in the employment structure of the IEGN. If in the social sphere the number of workers has increased, in the traditional sectors employment of the indigenous population has sharply decreased. The traditional way of life of the indigenous peoples of the North of the Far East is associated with reindeer herding, hunting, and fishing. As a result of intensive industrial development of minerals in the areas where these peoples live, without taking into account their interests, living and working conditions have deteriorated, the ecological situation has been disturbed, the area of reindeer pastures has decreased, and the land has been alienated for industrial use. Compared to 1990, the number of deer decreased by more than three times [1]. All this leads to the loss of traditional types of management, has a very adverse effect on the social situation of small peoples. About half of the working population does not have a permanent job [10].

The socioeconomic situation of the indigenous population was aggravated by the collapse of the state medical, cultural, commercial, domestic and transport services for reindeer herders and fishermen leading a semi-nomadic lifestyle, the abandonment of the state order for the products of rural and commercial aboriginal farms. Due to the elimination of industrial, transport, construction enterprises in the areas inhabited by Aboriginal people, the internal sales market for IEGN products also disappeared.

The development of reindeer husbandry remains the main condition for preserving the traditional way of life of IEGN and supporting the rest of the northern peoples. At the same time, the industry is most vulnerable to the threats of industrial development; it reacts most painfully to the consequences of the industrial type of developing the resources of the North

[1].

In the past two decades, the federal authorities have attempted to solve the problems of state support for the preservation and development of traditional economic activities of IEGN. But insufficient funding for the activities of federal targeted programs and their low efficiency led to its cessation. Since 2009, state support for the economic and social development of IEGN has been implemented in the form of targeted subsidies directed to the budgets of entities in whose territories small peoples live.

Is it possible to use foreign experience to stimulate the economic activities of indigenous peoples in the Far East? As international experience shows, the most effective positioning models for northern minorities in Alaska, Greenland, Lapland, Nunavut, Troms are based on structuring regional identity, combining the values of northern minorities and the new (alien) population. Everywhere along with financial, land policy in the overseas North has become the most important concrete tool that has provided economic and political decolonization in recent decades - overcoming the harsh dependence of the northern periphery on the center-metropolis [4, 6].

Due to the legislative consolidation of the rights to biological resources and the subsoil of the territory, indigenous peoples in the United States and Canada implement an effective mechanism for protecting traditional livelihoods and provide a financial basis for the development of a traditional economy, both on a commercial and non-commercial basis. A vivid example is the solution of the problems of the Swedish minority of Finland (the Åland model). In the Åland Islands, all land ownership is inherited, and each Ålander from birth is a large landowner. Islanders are convinced that the preservation of land in the hands of the indigenous people is an indispensable guarantee of their economic success. In terms of standard of living, the Åland Islands were left far behind by many EU countries [7].

A comparison of the Russian experience in organizing relations between indigenous peoples and the state with the experience of Canada and the United States shows that increasing the effectiveness of incentive measures can be hampered by the lack of proper regulation of the rights of these peoples to free possession of land and priority environmental management [8]. In the modern mixed economy of the regions of the North, indigenous peoples need to be given ownership of land. Regulation of land relations is largely a reflection of national traditions in the system of common and land property rights.

An assessment of the problems of the indigenous peoples of the North shows that when planning investment projects in the North of the Far East, positive foreign models of relations with indigenous peoples should be used. The consolidation at the legislative level of the rights of small indigenous peoples will provide an opportunity to reduce the constraints on the development of the traditional economy, which is the basis of the life of the SIM. The state's right of ownership to non-traditional natural resources (subsoil) must be limited and accompanied by the consent of the residents of the area for such actions and substantial compensation.

History shows that as soon as a new stage of intensive development of the natural resources of the northern territories begins, the state eliminates structures capable of regulating and controlling the relations of power, indigenous peoples and business. The Russian North remains the latest natural, economic and environmental potential to enable Russia to preserve itself as a great power, possessing all the characteristics necessary for entering the community of developed countries, while preserving resources for long-term sustainable socio-economic development in a world with rapidly depleting natural wealth. The northern territories should be more actively developed not only as a source of raw materials for Russia, but also as a unique place of residence for the indigenous peoples of the North, from

the complex development of which further advanced development of the country and sovereignty in the northern and Arctic regions of the Far East depend.

Thus, solving the demographic problems of indigenous peoples of the North requires an integrated approach, conducting federal and regional demographic policies aimed at preserving and increasing the number of indigenous people, including an increase in the birth rate, a decrease in morbidity and mortality, and the attraction and consolidation of labor resources in the regions of the Far North. The current stage needs to develop a new, more flexible economic strategy, taking into account market relations, social conditions that encourage migration, and increasing social differentiation of society. There is a fundamentally important problem of resource management as a mechanism for the distribution of resources among users. The provision of land ownership within 200-400 square meters. km per person becomes a prerequisite for the revitalization of life in the Russian North, and with the condition of its inheritance. Such rights will contribute to the revitalization of the local population, professional and qualification training.

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PRINCIPLES OF FORMATION OF THE SETTLEMENT SYSTEM OF THE ARCTIC TERRITORIES OF RUSSIA

Abstract. *The article discusses current, “painful” problems of the settlement system and territorial planning in the conditions of the Far North, the impact of the current situation on the Arctic ecosystem. Particular attention is paid to the indigenous peoples of the North. Particular attention is paid to the preservation of culture and traditional economic activity - reindeer herding, as a factor in preserving the identity and number of indigenous peoples, in today's conditions, when reindeer herding cultures suffer from lack of pasture areas, disrupted seasonal migration routes. Much attention is paid to the problem of inconsistency and the lack of a unified strategy for the use of the territories of the Far North by all partners in the resettlement process. The problems of increasing anthropogenic pressure in the region and aspects of its influence are also discussed. A model for a possible solution is proposed: the development of a common system of using the region for a long-term period, where zoning and spatial planning will be carried out in advance, a common use and continuity of facilities will be designed in the interests of all groups of the population. A graphic model of the settlement system is presented. The main factors are: The Northern Sea Route (NSR), NSR ports, meridional connections, shift camps of various types, internal communications (logistics), nature reserves, seasonal migration routes and green corridors. The proposed model is designed to influence problems of the Arctic region, such as: increasing decline in population, multilateral disunity of territories, environmental management and the preservation of indigenous peoples of the North. The study carried out in the article is based on the study of numerous sources, studies of previous decades and the experience of other circumpolar states. Conclusions offer a solution to problematic issues using a system of measures.*

Keywords: *the Far North, indigenous peoples of the North, settlement system, shift camps, Arctic ecosystem.*

Territories of the Far North have always been of particular interest.

The Arctic is of great strategic importance: the protection of the state border, the Northern Sea Route (NSR), which is reviving as the most important trade and transport route of intercontinental importance, the Arctic shelf and coastal areas have an extremely significant natural resource reserve, moreover, it is a unique natural complex of world significance. And also these are the territories of ancient culture - the indigenous minorities of the North[1].

Today, the issue of indigenous peoples often fades into the background, or at least a unified program of development of the Arctic territories has not been developed, taking into account the interests of all parties. Such program would allow the interaction of the shift settlement system, trade and transport corridors connecting the NSR with the central regions of Russia, the settlement and migration systems of indigenous peoples and the complex of nature reserves.

Unresolved problems of the northern regions affect the lives and the way of life of the indigenous peoples of the North. Preservation of the culture and the people themselves is largely associated with their traditional economic activities. Traditional economic activities: reindeer herding, hunting and fishing. Cultures have emerged that are most adapted to the harsh climatic conditions of this zone. Arrival of other nations, emergence and development of industry. At present, reindeer herding cultures lack a range of pasture areas and the rupture of seasonal migration routes. Nenets, Khanty, Selkup perceive reindeer herding not only as the main industry, but also as a life philosophy. Translated from the Nenets language "deer" means "life-giving". The dominant importance of reindeer herding is determined by the presence of large areas - land massifs located in the tundra, forest-tundra and northern taiga zones. The vegetation of these zones is the food base for deer. Therefore, the specifics of land management in the conditions of the

Far North are the creation of reindeer pastures, pastures of herd horse breeding and territories suitable for hunting. In addition, intermediate bases are needed - a well-developed system of settlements along seasonal migration routes.

Current environmental issues affecting the arctic region and requiring solutions:

- pollution with physical debris accumulated over the past decades;
- burial of radioactive waste. Burial zones are: the bay of Sedov, the Og bay, the Tsivolki bay, the bay of Stepovoy, the bay of Abrosimov, the Blagopoluchiya bay, the Teheny bay, and others. As a result of such activities a lot of underwater potentially dangerous objects were formed at the bottom of the Kara Sea and the bays of Novaya Zemlya, requiring constant monitoring, and further safe and environmentally friendly disposal;
- the state of the Arctic ecosystem is one of the most pressing today's issues, as the anthropogenic load in the region and all strategic, economic, military interests of the countries of the circumpolar group (Russia, Norway, Denmark, Canada, etc.), NATO countries and other countries, which do not have a direct access to the Arctic, are aimed at participating in long-term projects for the development, study and other work in the Arctic.

For Russia, this issue is particularly relevant, since: its total area of Arctic possessions is 3 million sq. km (18% of the entire territory), where more than 2.5 million people live (over 54% of the total population of the entire Arctic (4.6 million)), and the mineral resources mined in the Arctic, their explored reserves and forecast resources make up the bulk of mineral

resource base of the country.

The settlement system of the Arctic and the territories of the Far North that has developed at the moment can be divided into two categories: temporary and permanent. I.e.: the indigenous peoples of the North, leading a settled-nomadic way of life, are a permanent population. The temporary population is represented by residents of various types of shift crews: prospecting (mineral exploration), expeditionary, research, placement of employees of mining companies.

The negative impact on the ecology of the Arctic zone occurs in several stages:

1) selection of the location of the future shift camp does not take into account the interests of the economic activities of indigenous peoples - reindeer herders;

2) opportunistic economic activity destroys the soil layer and vegetation, thus destroying the ecosystem so long-standing in the Arctic;

3) after the end of their use, shift camps are not dismantled or removed, in fact, they themselves become mountains of decomposing industrial waste.

One of the ways to solve this problem may be a joint program for the development of indigenous peoples and shift camps. Today we see a lack of consistency - and sometimes its complete absence. As a result: trampled areas unsuitable for reindeer herding, interrupted migration routes and abandoned shift camps dangerous for ecosystem sustainability that could serve the interests of the indigenous population, with their more favorable location.

In the absence of profitability of the core activity, the representatives of the indigenous peoples will be forced to look for opportunities to exist outside the traditional culture not by their own will, but by necessity. This leads them to cities where their native language is forgotten, centuries-old traditions and culture fade and are completely forgotten later. This is the loss

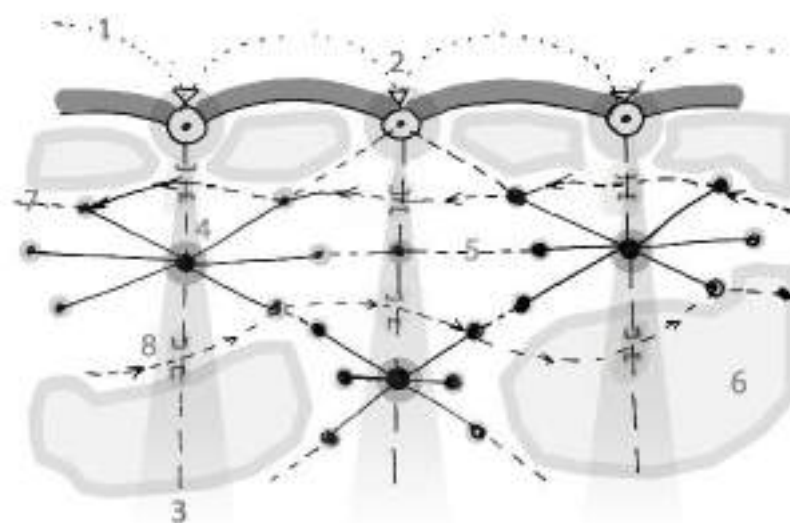
of a unique culture not only for Russia, but for the world as a whole. It is necessary to maintain the significance of small peoples by creating a single development program for this region.

Today's growing significance of the region and the growing interest should serve all groups of the population of the north of Russia, the rapidly growing industry should not become a machine wiping off the unique culture of the far north. It is necessary to maintain the importance of small cultures, and the results of population censuses also indicate that in several years the number of one or another ethnic group or subethnos decreases several times. It does not happen for reasons of physical extinction, but because people no longer identify themselves as representatives of a small ethnic group without seeing the significance of it and begin to count themselves as the general ethnos.

A model of a possible solution to the problem is proposed: development of a common system of use of the region for a long-term period, where zoning and territorial planning will be carried out in advance, general use and continuity of the facilities will be designed in the interests of all groups of the population. Shift camps can be used together with indigenous peoples, as temporary stands, platforms for economic exchange, trade, supply, storage of goods produced by the indigenous population, location of refrigeration rooms, points of delivery of products, which will contribute to intra-regional economic development, as well as for the country in whole. The demand for the products of the indigenous peoples of the north is quite high, especially among foreign countries (for example, in Germany there is a significant interest in deer meat products). But at the moment there is no possibility to satisfy this demand, due to the lack of storage places and problems of logistics. Where resource companies are not prioritized, the importance of preserving the ecology of the Arctic zone for future generations and preserving the "living" cultural heritage is taken into

account. The mode of use of the territory has been determined, the legislative base has been laid down, “green” corridors have been provided, seasonal migration has been taken into account. The possibility of the subsequent transfer of shift camps after the end of their use by target enterprises to the indigenous people has been developed. This will avoid the problem of turning unused shift camps into physical waste requiring disposal.

From the point of view of some environmentalists, 40% of the territory of the Arctic should not be involved in economic activities in order to preserve the overall ecological balance; these areas should be designated as natural ecological reserves and can also become zones of uninterrupted reindeer herders migration routes. That, among other things, can increase the significance and scale of eco-tourism, which will lead to the development of new transport networks, the replenishment of the local budget, the creation of new jobs, the popularization of the region in the media and so on.



Picture 1. Model of settlement system:

1 – the Northern Sea Route; 2 – port; 3 – meridional connections; 4 – rotational settlement; 5 – connections (logistics); 6 – national park; 7 – seasonal migration; 8 – “green” corridors

Creation of a system of shift camps, connected with each other, with advanced economic development zones, with ports of the Northern Sea

Route and meridional connections. Taking into account all these parameters will help to create a stable unified system that considers the interests of all participants in the resettlement of the Russian Arctic. Prevent a number of potential problems, not only environmental, but also an acute social issue - saving the numbers and preserving the culture of the peoples of the North. This may be a new approach to the territorial and town-planning development strategy of the territories of the Far North of Russia. It is necessary to form a unified system of settlement and territorial planning, designed for a long-term period and providing for the continuity of land use.

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**PROBLEMS OF ECOLOGICAL AND TECHNOGENIC SAFETY IN
THE ARCTIC REGION**

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PROBLEMS OF DEVELOPMENT OF SANITARY AVIATION IN THE FAR NORTH

Abstract. *In the Arctic region, the work of air ambulance is determined by a number of regional features (sharply continental climate, territorial dispersion and remoteness of settlements, low population density) and is often the only way to provide emergency medical care to the population. To improve the quality of access to medical services, these factors must be taken into account when planning the development of a medical aviation network in the Far North.*

Keywords: *North, Arctic, medicine, Russian Federation, sanitary aviation.*

At the end of 2016, a passport of a priority project for hard-to-reach areas was approved (34 subjects of the Russian Federation). The need for aviation from the entire volume of emergency medical care is determined in 30% in the European part of the country and in 50–80% in Siberia and the Far East. Potentially, such services can be provided in 85% of the territory of the Russian Federation, with about 200 helicopters on duty (versions of Mi-8, Ansat, Bell and Eurocopter). In 2017, there were more than 24 thousand sanitary departures. Sanitation is funded by a priority project and by regions, but is not part of the basic compulsory medical insurance.

Until 2020, 10.2 billion rubles are allocated to it (3.3 billion rubles per year). The goal is to increase the proportion of hospitalized for emergency reasons during the first day in 2017 to 71%, in 2018 - 83.5%, in 2019 - 90%. The question was also raised about the need for accelerated production of airmobile medical complexes and equipping them with

medical aviation units throughout our country. An air-mobile medical complex is a special-purpose aviation complex consisting of a transport aircraft (LA) and specialized medical modules [1, p. 46]. As part of a public-private partnership, it was planned to build 34 helipads and conclude agreements with the regions on the purchase of 8.5 thousand sorties. At the end of 2017, Rostec announced its readiness to create a unified operator of emergency medical care (National Air Ambulance Service).

Sanitation is now actively developing in only 38 subjects of the Russian Federation. Mostly in the Far North, Siberia, the Far East. In the European part of the country, aircraft are used only in the Republic of Karelia, Arkhangelsk, Voronezh, Murmansk regions, Moscow and St. Petersburg. The use of air ambulance is also relevant for megacities: in Moscow over the past two years, more than 2 thousand sorties have been carried out, which has significantly reduced the time of delivery of patients to hospitals.

So, in the USA in 2007–2016. the number of emergency medical service helicopters increased from 753 (2.5% of the total number of EMS vehicles) to 1045, or 39%. In May 2016, the international aerospace industry corporation AIRBUS Helicopters presented data on the availability of HEMS helicopters to the population of several countries of the world. Based on these data, the average supply of HEMS helicopters per 1 million people was: in Europe - 1.01; in the countries of the Asia-Pacific region (APR) - 0.12. Along with the USA and Canada, the largest number of helicopters of emergency medical services (more than 3 helicopters per 1 million population) are registered in the so-called "Mountainous" countries - Switzerland - 3.38 and Austria - 2.78, as well as in New Zealand - 2.40; Australia - 2.33 and Scandinavian countries - 1.90; the least - in Turkey - 0.25, South Korea - 0.20, Indonesia - 0.04 and China - 0.01. At the same time, emergency and emergency medical services in many countries either

do not have at all, or have units of rotary-wing aircraft.

The analysis, conducted jointly with the constituent entities of the Russian Federation, established that the need of a country, 28 thousand of which are generally inaccessible by land, is more than 32 thousand sorties of ambulance aircraft per year. And this is not taking into account emergency situations. The most urgent need arises in the provision of medical care by profile: surgery, neurosurgery, obstetrics and gynecology and neonatology.

The problems of domestic sanitation are not related to the lack of helicopters and ground infrastructure. Not enough funds for flights. And it is not a fact that they will be enough to cover all cases when the use of sanitation is justified from the point of view of medical indications [2, p. 44]. Indeed, in addition to traditional departures for sanitation, when it comes to saving lives and preserving the health of victims, for example, in road accidents or other emergencies, there is a large layer of work, such as inter-hospital transportation, that is, when a patient with some kind of diagnosis is delivered to specialized medical facility where he can be provided with the most qualified assistance. And this is a big problem. So, in one of the regions, funds allocated from the budget were used including for inter-hospital transportation and were spent for 4 months of intensive flights. In this regard, according to him, 3.3 billion rubles is unlikely to be enough for a year to ensure the purchase of air services for the rapid evacuation of all those in need throughout the country. The estimated cost of aviation transportation services required by medical organizations for emergency medical advice and evacuation is about 11 billion rubles a year.

EKMP departments for the rural population or, in other words, sanitation were established in the last century in all the entities attached to regional hospitals or centers for disaster medicine. The system worked successfully until the early 1990s, and there has never been talk about how expensive it is. But when the financial crisis erupted, which led to the

collapse of the USSR, the regions began to refuse to conclude contracts with aviators due to lack of money. Approximately half of the subjects made this decision, but in the rest, mainly in those where it is impossible for doctors to fly, sanitation continues to be financed from local budgets.

Now flights are carried out three times less than the requirements and at least five times less than in the Soviet period on the scale of the RSFSR. Constraining factors are the high cost of flight hours and the lack of Russian medical aircraft.

The priority project of the Ministry of Health sets the task of providing only emergency cases of evacuation. As for the inter-hospital transportation of patients, coordination is underway.

Other problems of aircraft characteristic in General for the whole world, they are related to the fact that there are increased demands on the skills of the pilots to ensure the safety of flight operations in adverse weather conditions, at night, if at all permissible. And to meet these requirements may be much more difficult than to allocate funds for additional flight hours.

Organization of work of sanitary aircraft is determined by a number of regional characteristics (sharply continental climate, territorial dispersion and remoteness of settlements, low population density) and is often the only option for emergency medical care. A leading factor in determining the organization and scope of air ambulance, is the nature of medical care, in particular, the proportion of emergency medical care to the sick and injured [3, p. 49]. A measure of urgency during the study period ranged from 73,1 to 95.1 per cent. Analysis of retrospective data on the evacuation of patients from Northern areas, where there is only seasonal transportation availability, showed the greatest (98,4%) shipment quantity of the total number of planned patients. Aeromedical evacuation to the regional hospital was carried out in 66,8% of cases, in specialised institutions - 33.2 per cent. Analysis of the nosological structure of the calls revealed that the bulk of

medical care was about the injuries (37,3%), and fractures accounted for 14.6% of the total calls. The second important reason is the pregnancy and childbirth pathology (26,9%). Third place on the frequency of calls is a disease of the digestive system (19.1 per cent).

In 2015-2017, there have been a number of papers on performance testing and efficient use of medical modules installed on the Ka-226.80, Mi-8MTV-1 and the Il-76MD. Module medical single MM-226.9520.000 (hereinafter MM) is intended for use in the composition of the helicopter Ka-226 with the purpose of providing medical evacuation of passengers on stretchers, one patient in critical condition or severe severity, continuous monitoring of its condition and maintain vital body functions with ispolzovanii medical equipment – medical devices, apparatuses and equipment, included in its composition. Module medical helicopter double options in the IIM.9520.000-03 (rear) and the IIM.9520.000-04 (front) – hereinafter MMV – designated for evacuation by helicopter Mi-8 of the victims in emergency situations (es) and providing them with medical assistance using the medical equipment, included in its composition. Module medical aircraft MMS.9520.000 (hereinafter – MMC) are designed for use in the composition of the aircraft type Il-76 with the purpose of evacuation of bedridden patients in four emergency and the provision of medical assistance using the medical equipment, included in its composition. On Board the Il-76 can be set to 5 MMS [2, p. 48].

The medical modules MM, MMV and MMS provide a continuous Autonomous operation of medical devices from its own batteries for 1.5–4 hours – depending on the equipment to solve a specific problem. To ensure longevity of equipment design of the medical modules provides for the possibility of power supply from the power supply system of the aircraft via built-in Converter. With this purpose, the serial LA subjected to revision, consisting mainly in the installation of a cargo (transport) cab additional

electrical cables to the mounting medical modules, switching and protective electrical equipment.

In general, summing up, we can say that:

1) the use of air transport for medical evacuation significantly increased and made it easier for the population of the Far North, especially in hard-to-reach areas, to receive high-quality specialized medical care;

2) the problems associated with the lack of domestic analogues of imported equipment for completing medical modules under sanctions may lead to some difficulties in their further operation;

3) the PPP strategy in the field of development of air ambulance in the regions fully justifies itself.

The problem of development and implementation of medical evacuation in the North is only one of the problems of Arctic development and human capital development in the Arctic. The problems of this region also include the development of robotics, the economy [4], as well as the problem of migration in the Nordic countries [5] [6] [7].

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GREEN INFRASTRUCTURE OF THE RUSSIAN ARCTIC'S CITIES AS A FACTOR OF ECOLOGICAL SAFETY

Abstract. *Urban green infrastructure is a key element of a comfortable living environment, and also – in a broader sense – a precondition for sustainable development. Ecological frameworks in Arctic cities play huge role in maintaining an ecological balance at the urban areas. The paper discovers significance of green infrastructure by providing a number of life-supporting ecological functions on the example of one of the Russian Arctic cities – Kirovsk (Murmansk region). The city environment is quite high polluted by emissions from local industry and transport, and the green spaces operate as a natural absorber. On the basis of data received in the course of own field researches during the summer 2017 and winter 2018, and its processing with GIS-technologies, the role of the green infrastructure of the city and its effectiveness are analyzed, and its ecological functions (such as recreational and hygienic) are estimated. The analysis undertaken in a paper allows to conclude that the green infrastructure development is necessary in order to improve environmental situation in the city and also to raise its aesthetic appeal. This will make city more attractive for local people and tourists, and will contribute to its development taking into account the environmental, economic and social interests of population.*

Keywords: *green infrastructure, urban environment, Kirovsk city, ecosystem services, green spaces*

The issues of environmental safety and quality of life of the Russian Arctic population are closely linked. Most of the industrial cities in the

Russian Arctic are classified as priority “hot spots of environmental stress” [1], and are characterized by adverse environmental conditions, degradation of environmental components and high rates of morbidity. One of the effective tools to improve living environment in modern cities is “green infrastructure”, which operates to support high quality of environment and to prevent degradation of natural components [2].

In modern foreign urbanism, “green infrastructure” (GI) is often understood as an “environment stabilizing territorial system” [3] - a network of sites, free from anthropogenic elements, in combination with green and specially protected natural areas, providing ecological stability of the territory through their ecological functions, often defined as “environmental services” [4]. More common in the Russian authors works is the equivalent term “ecological framework” [8].

The assessment of the urban population’s quality of life requires a comprehensive study taking into account economic, social and environmental parameters. Improvement the environmental situation as a factor of quality of life in the Northern cities of Russia is an issue of special attention. The settlement system of the Russian Arctic is characterized by a high proportion of single-industry towns, which are a kind of “growth points” of this region [1]. In contrast to all Russia there are 18 single-industry towns the Russian Arctic, and their share reaches 25.4% of the total number of settlements, while the national average is about 14% [7]. In this project we considered the role of green infrastructure in improving the environmental situation on the example of Kirovsk, Murmansk region – one of the Russian Arctic single-industry town, located in the center of the Kola Peninsula, on the southern border of the Khibiny mountain range. Harsh Northern natural conditions determined the relatively poor biological diversity of the study area, which increases the relevance of the urban green infrastructure’s development.

The location of the city at close distance from the enterprises of “Apatit” corporation (Kirovsky and Rasvumchorrsky mines and Apatite-nepheline concentrating factory ANOF-3) determines the nature of the impact of production activities on the environmental situation. Pollutants enter the atmosphere as a result of technological processes such as drilling and blasting, moving rock mass and ore removal, dusting dumps, burning fuel in the boiler room, etc. At the same time, the main share of emissions into the atmosphere (65%) is due to inorganic dust released at almost all stages of the process, and the greatest impact is associated with dusting of tailings. Dust clouds extend far beyond their areas – at distances up to 10-15 km depending on the prevailing wind directions. The total amount of pollutants from the Rasvumchorrsky and Kirovsky mines is 6.8 thousand and 21.3 thousand tons per year, respectively. The impact of ANOF-3 is characterized by comparable values: the total emission of pollutants into the atmosphere amounted to about 2.8 thousand tons in 2017 [6].

Despite the fact that the “Apatit” enterprises provide biggest emissions into the atmosphere of the Kirovsk city area, the main polluter of the city’s air is automobile transport – due to location of enterprises in relation to residential areas, predominant air transport and pollution capture technologies. The assessment of vehicle emissions’ impact we made in accordance to the methodology [5]. The results of assessment for the roads of the city show that the total emissions in the area of Kirovsk are about 2.9 thousand tons/year. The main substances in the emissions are carbon monoxide (84%), hydrocarbons (9%), and nitrogen oxide (7%). Emissions of soot, sulfur oxide, formaldehyde, lead compounds, benz(a)pyrene account for less than 1%.

The results were used to assess the effectiveness of urban “green infrastructure”, which total area in Kirovsk city is about 10 hectares (table. 1).

Table 1
The green space area of the Kirovsk city *

Category of plantings	Area, ha
Natural plantings	
Mixed forest	512
Small-leaved forest	334
Wetlands vegetation	84
Antropogenic plantings	
Intra-yard vegetation	31
Parks and gardens vegetation	36
Roadside vegetation	12
Totally	1010

** the data are obtained on the basis of digitization of continuous areas of green spaces and its calculation in the ArcMap 10.3 program*

Analysis of the distribution of city's green spaces by functional zones of the city area shows that they are confined to recreational zones: urban forests and forest parks (54% of the area of all green spaces); protected areas (8%); sports and recreational area (2%). The plant composition is quite homogeneous: the predominant species in plant communities are goat willow (*Salix caprea* L.), rowan ordinary (*Sorbus aucuparia* L.) and warty birch (*Betula pendula*), their share is 36, 31 and 30%, respectively. Less common are grey alder (*Alnus incana* L.) and siberian spruce (*Picea obovata*). The green infrastructure of Kirovsk also includes categories of green spaces for special purposes (reducing the negative impact of industry and transport), located everywhere along major roads, industrial areas, as well as areas of transport and engineering infrastructure. The share of green spaces in different functional zones of the city is: 14% in the residential area, 16% - in the social and business areas, 31% - in the production, and 46% - in the recreational area.

As part of the urban ecological framework that forms the basis of the urban GI, the following main elements can be identified: large space areas

(or core areas), linear elements and buffer zones (table 2).

Table 2
The categories of green infrastructure's elements at the Kirovsk city

Category	Green infrastructure's elements
Large space areas	Protected forest areas, water area of the lake Bolshoy Vudyavr, Botanical garden (PABSI Kola science center of the Russian Academy of Sciences), city park (the area of aboriginal forest)
Linear elements	Roadside green spaces, located on the intra-yard areas and along the roads (link the elements of GI as ecological corridors)
Buffer zones	Anthropogenic and natural green plantings of the sanitary protection zones

The efficiency of green infrastructure of the city of Kirovsk we evaluated taking into account their main functions: hygienic (maintaining the quality of the urban environment) and recreational. The hygienic function was analysed through the efficiency of absorption of vehicles emissions. For this purpose, such indicators as the total number and species composition of green spaces that can capture pollutants were analysed, and the volume of emissions from vehicles as well as the intensity of gas absorption by different tree species were calculated.

During the field researches we identified the most loaded city roads with the intensity of traffic flow more than 200 cars per hour, and then the city area was divided into 6 districts with different traffic load. According to the methodical instructions [4], only the plantings which are located closely to a road transport network (within borders of the allocated areas), i.e. directly participating in the process of gas absorption, were considered at calculation. Taking into account the prevailing tree species in the city, the average volume of emissions from motor transport by 1 tree per day was 27.4

g. As a result, the total volume of emissions absorbed by green spaces during the growing period was determined at a level of 317.6 tons.

Territorial differentiation of the amount of emissions absorption is as follows: the highest absorption rates (about 88% of the total emissions) are typical for the Apatite roadway district, the lowest (about 1%) - for the regulated crossroad district in the city center. The average efficiency of vehicles emissions' absorption by the green spaces of Kirovsk is 11%, which indicates the need for additional greening of the urban area.

Evaluation of the recreational function's effectiveness of GI was carried out on the basis of a social survey of city's residents. The vast majority among 77 respondents believe that the green areas of the city effectively perform their hygienic, social, aesthetic functions and "are a good place for short-term recreation". At the same time, the majority of respondents noted the insufficient number of green spaces and their moderately depressed state.

The number of residents – potential visitors of the park (total area is 36 hectares), as a place of rest, is 19.2 thousand people. Thus, there is area of 18.75 m² for one person, which is more than 2 times higher than the established norm (no less than 8 m²). Thus, the GI of the city effectively perform a recreational function. However, taking into account the assessment of hygienic function, the structure of the ecological framework needs to be supplemented both in terms of increasing its area and optimizing the species composition of green spaces. The assessment provides a basis for the development of recommendations for further study of the state of the ecological framework, and its "response" not only to human impact, but also to the needs of residents. One of the actual directions of economic diversification in Kirovsk is recreation on the basis of the mountain-ski complex, so the aesthetic and environmental issues are extremely important to develop the city and a whole region.

A comfortable urban environment is an important factor of development – especially for a cities, included into the list of single-industry municipalities of the Russian Federation with a declining population in recent years. In this regard, the improvement of aesthetic appearance of the city along with the environmental situation are factors that increase its attractiveness for both local residents and tourists. Optimization of the Arctic cities green infrastructure will contribute to their development, taking into account environmental, social and economic interests of its visitors and local population, and raise ecological safety at the region of strategic significance.

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ENVIRONMENTAL COOPERATION BETWEEN RUSSIA AND CHINA IN THE ARCTIC. DEVELOPMENT PROSPECTS

Abstract. *The Arctic has been attracting states from all over the world for many years. This region is known not only for its northern beauty, admiring more and more tourists every year, but also for the huge oil and gas reserves, the presence of which allows to determine the economy and technical potential of the country. It is the availability of rich natural resources that largely determines the policy pursued in relation to the Arctic. A great number of economic agreements are concluded, collective projects are created, and joint resource extraction is often carried out. However, is the same attention paid to the environmental component of the region? After all, because of oil and gas production waters of the Arctic ocean are polluted and rare species of animals disappear gradually. It is also very important to say about the warming, which leads to raising the World Ocean Level and the emergence of natural disasters. Is there enough attention paid to the Arctic ecology? What measures are countries taking to solve these problems? Only by joint efforts the region can be adequately protected. In this article the author examines the current environmental problems of the Arctic, as well as the participation of countries in their solution. Special attention is paid to the Chinese ambitions in the region and Russian-Chinese cooperation.*

Keywords: *environmental problems, Sino-Russian relations, Arctic ecology, environmental issues of the Arctic, Russian-Chinese cooperation*

The Arctic is a unique region that combines the beauty of nature and a huge energy potential. This is a vast expanse of ice and snow, rich in enormous amounts of natural resources. According to the US Geological Survey, with the current demand for oil reserves in the Arctic, it will be enough for about 145 years.[1] However, due to the harsh climate, its

production becomes very dangerous: the possibility of emergency situations increases several times, and the consequences can be eliminated only by 10 percent. Another problem of the Arctic is warming, which is happening here much faster than in other regions of the world. Glaciers protect the planet from overheating. Their melting leads to a rise in the level of the oceans. This means that coastlines can move, and today's coastal cities of all continents will be under water. London, Rome, New York, St. Petersburg and many other cities will disappear from the world map, and humanity will face a huge number of natural disasters. According to former UN Secretary-General Ban Ki-moon, if the situation in the region does not change, by 2030 almost half of the total population will face a huge shortage of fresh water.[2] It is also important to note that due to the climate change and pollution of the territories, the number of animals is rapidly decreasing, and soon some species may disappear completely. Thus, ignoring the environmental problems of the Arctic can lead to irreversible consequences affecting all regions of the world. That is why it is so important to support international cooperation. Only by universal efforts we can ensure the protection of the region and prevent impending threats [3].

International organizations and agreements that protect the environment of the Arctic. How is the protection of the Arctic environment realized? Do countries actively cooperate with each other in solving environmental problems of the region? In fact, international assistance in resolving this issue is characterized by a high speed of development and serves as a vivid example of successful interaction between states. Since the 1970s, there has been an increased interest in the environmental safety of the Arctic and, as a result, the first agreements that regulate this area and establish certain environmental requirements arose. They include the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972) [4], the Stockholm declaration (1972) [5], The

International Convention for the Prevention of Pollution from Ships (1973) [6], The United Nations Convention on the Law of the Sea (1982) [7], the International Convention on Oil Pollution Preparedness, Response and Co-operation (1990) [8], the Framework Convention on Climate Change (1992) [9], the Kyoto Protocol (1997) [10] and others. However, interstate cooperation began to develop most actively in the early 1990s, when a key role was assigned to international intergovernmental and non-governmental environmental organizations: the International Arctic Scientific Committee (IASC), founded in 1990; the Barents Euro-Arctic Council (BEAC) that was created in 1993; the Arctic Council, founded in 1996; as well as Greenpeace, World Wildlife Fund (WWF), Bellona and many others, where countries that do not have access to the Arctic Ocean actively began to join. The activity of Asian countries in the region only increases every year. At the moment, China, Japan, India, Indonesia, the Republic of Korea and a number of other states are observer countries of the Arctic Council, many of them organize scientific expeditions, participate in conferences devoted to the environmental problems of the Arctic. The number of regional and bilateral agreements is also increasing, although there is no universal agreement regulating the international legal regime of the Arctic.

What is China's environmental interest in the Arctic? At first glance, it seems that only Arctic countries should be interested in the Arctic, as they have real rights to extract and use the region's natural resources, and can fully realize its potential. However, states that do not have access to the Arctic Ocean, often declare no less serious intentions to exert influence in the area. In particular, China's environmental interest can be explained by three main reasons.

Firstly, the problem of melting ice in the Arctic is relevant for China. According to Chinese studies, as the level of the World Ocean rises, the coastal cities of the country that are the most densely populated and

economically developed will be in danger of flooding. Their disappearance will lead to China losing the status of a great power. Already, some areas of the republic suffer from constant storms. Among the largest in the past few years, typhoon Hato [11], which hit southern China in 2017, and Typhoon Manghut [12], which covered the south-east of the country in September 2018, can be mentioned.

Secondly, China's heightened attention to the environmental situation in the Arctic is associated not so much with the desire to resolve emerging problems, as with the desire to enter new markets and increase the share of exports. When the ice surface decreases, the Northern Sea Route can become navigable without the use of icebreakers, which means that a faster and more convenient way of interconnecting with Europe will appear. China aims to create a “blue corridor”, the Silk Road, with which it will be possible to increase its own economic power [13]. In addition, through cooperation in resolving environmental issues with other countries, China strengthens its position and role in global politics. Often, pursuing its goals, the country uses the contradictions that exist between regional countries. Therefore, participation in ensuring the environmental safety of the Arctic is one of the ways to spread the influence of the PRC on the world stage.

Thirdly, China is interested in the region's rich natural resources. Rosneft has already entered into a contract with the Republic, under the terms of which oil supplies to China have been increased. In 2016 they exceeded the monthly deliveries from Saudi Arabia seven times. [14] This activity scares most of the Arctic states and causes a desire to break off relations with China. However, the extensive financing and significant participation of China in the development of environmental protection methods prevent attempts to push the Celestial Empire to the second place.

Thus, it is the combination of the above factors that plays a key role in shaping Chinese policy in relation to the environmental problems of the

Arctic. On the one hand, the environmental problems of the region really worry China because the ecological instability of the Arctic region also affects the climate of East Asia. On the other hand, the desire to improve the ecology of the region hides the country's personal interests, the desire to benefit and strengthen its own influence on the world stage.

How is China involved in solving the environmental problems of the region? Environmental cooperation of China with Russia. According to the director of the Stockholm Peace Research Institute L. Jacobson [15], the environmental problems of the Arctic have become interesting for China relatively recently, since 1995, when it organized the first foot expedition to the North Pole. However, attention to the region as a whole appeared much earlier: as early as 1920. The Republic became a member of the Spitsbergen Treaty [16], according to which the archipelago was transferred to Norway. In 1996 the PRC joined the International Arctic Science Committee and carried out a number of studies together with scientists from other countries, and in 2003 in the territory of Spitsbergen, China opened the research station “Yellow River”, due to which it was possible to pay more attention to meteorology and glacier observations. In 2007 the country became an observer in the Arctic Council and began to actively participate in events held under the auspices of the International Polar Year.

Now China is one of the largest sponsors of research projects on the study of the Arctic and the implementation of measures to protect the environment in the region. In the period from 1997 to 2017 eight scientific expeditions were organized, and two polar stations were opened. [17] The China-North European Arctic Research Center, where one of the main topics for discussion was the problem of changing climatic conditions, was organized and the active construction of Chinese icebreakers began.

In January 2018 the first edition of the White Paper, China's Arctic Policy [18], appeared for the first time, consolidating and unifying the

strategy of regional policies. This document formalized all the initiatives and aspirations that have been repeatedly expressed by the Chinese representatives earlier. In particular, the White Paper speaks about cooperation, which is one of the four basic principles of the country's Arctic policy. Cooperation means the establishment of a “multi-level, multidimensional relationship” with states interested in the Arctic, as well as participation in intergovernmental and non-governmental organizations. In particular, relations with the Russian Federation, considered by the Celestial Empire as a main partner, are being strengthened. However, in cooperation with Russia, more attention is paid to economic relations, rather than resolving environmental problems. The Chinese government is interested in the joint development of the Barents Sea with Rosneft, therefore they are actively supplying oil-producing equipment that allows Russia to abandon the use of Western technologies that have been sanctioned.

As regards environmental interaction, it is less developed, but gradually reaches a new level. Environmental cooperation between Russia and China began quite recently and, unlike economic ties, is developing not too fast. At the moment, the interaction of the two countries is mainly manifested in joint research. The first joint Arctic expedition was conducted in 2016. As a result, information about oceanological conditions, which helped to predict changes in ice surfaces, was obtained. The second Russian-Chinese expedition was conducted in the autumn of 2018. Thanks to her, the country received more detailed data on the geological structure of the ocean and water currents. "All this will form the basis for further study of the ecology and biology of climate change," said the member of the international team of scientists Hu Limin. [18] In addition, between Russia and China international agreements aimed at mutual participation in the resolution of environmental problems of the Arctic began to conclude actively. For example, in the summer of 2018. in Beijing, at a meeting with V.V. Putin, a

number of agreements aimed at developing and strengthening the environmental cooperation between countries was concluded. [19]

Thus, environmental cooperation between Russia and China in the Arctic is gradually developing. To improve it, in the opinion of the author, it is necessary to create a single document regulating the rights and obligations of the parties. In addition, ideas that will help to reduce emissions and save energy should be developed. It is necessary to actively participate in negotiations aimed at jointly finding ways to solve environmental problems in the region. Perhaps such international organizations as BRICS or the Shanghai Cooperation Organization (SCO) will become new platforms for the development of communications in this area. The Arctic's environmental problems have ceased to concern only the Arctic countries. They began to affect the interests of the entire international community. This means that it is necessary to strengthen interaction with other states. In particular, Russia should step up cooperation with China, its main strategic partner at the moment.

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ECOLOGICAL ASPECT OF THE TOURISM DEVELOPMENT IN THE CHUKOTKA AUTONOMOUS REGION

Abstract. *The development and sustainable use of the richest recreation-tourist resources on the Chukotka Autonomous Region territory and formation, on their base, of the tourist industry can bring in not less than the extraction of commercial minerals and provide the additional influx of funds into the economy of this territory. The Arctic tourism on the Russian North becomes one of the promising economic lines in restoration of the transpolar territories of the Russian North. However, the irregular spatial distribution, wide species diversity and irregularity of combinations of the natural recreational resources preclude, at the present time, the rapid and easy development of tourism in this region. In addition, the production facilities of I-V classes of occupational hazard are located on the Chukotka territory and, at the same time, all the districts include many Special Protected Natural Areas (SPNA). The further development of industry (extractive and significantly affecting processing branches) is antithetical to preservation of the natural ecological systems and biodiversity. In order to maintain the uniqueness of the natural complexes of Chukotka, the recreational nature management is here possible as a whole rather than by small economic structures. The serious ecological studies and capital investments in the protection of nature and integrated assessment of the effect of the production sphere and tourism on the environment are necessary. For this reason, the following measures unrelated to commercial development but oriented on*

the intense development of the nature protection in the nature management should be high-priority as well as for the foreseeable future. The ecological tourism can become, in the future, one of few promising and environmentally acceptable economic branches of the region and transform into the forceful player of the social development.

Keywords: Arctic territories, Chukotka, tourism, ecology, protected natural territories.

The northern tourism, in case of its sustainable development, may become one of the promising economic lines of the restoration of the transpolar territories in the Russian North and contribute to the high level of the social and economic development of the arctic regions [1]. The natural resources potential of the Chukot Peninsula and international natural park “Beringia” located in its territory provide the exciting opportunities for the ecological, scientific, educational, sports and extreme tourism. Rich and unique flora and fauna, exotic north landscapes, original ancient culture of the Chukchi and Eskimos bring the Chukotka into line of the most beautiful corners of the planet. An interest from tourists in this area is also determined by the “wild” state of the harsh northern country not disturbed, for the most part, by the human economic activities [2].

However, the social and economic base of tourism in the Chukotka (infrastructure, personnel, service sector, investment complex) is ill-developed, the natural monuments are badly protected and there is the low transport accessibility. The irregular spatial distribution, wide species diversity, and irregularity of combinations of the outdoor recreational resources preclude at the present time the rapid and easy development of tourism in this region. The recreational exploitation of natural resources is here possible only as a whole rather than by the small economic structures as a result of the rigorous environmental research and capital investments in the nature protection, integrated assessment of the tourism impacts on the natural environment. Otherwise, the valuable natural habitats will be

destroyed due to inconsistent exploitation. The development of the richest and still little used recreation-tourism resources of this region, organization here of the tourist industry, especially, international tourism, can provide the additional influx of funds to the economy of this territory and will promote here the development of transport, trade, services sector, influx and settling of population. It is also necessary to resolve a number of the social and economic problems: provision of resources, materials, finances, staffs; marketing preparation; allowance for specificity of life sustenance of the North people; creation of the legal and economic mechanisms of the system functioning.

Up to now, the Arctic Region remains one of the most environmentally sound territories of the planet. All the countries possessing their own Arctic sectors protect the environment of this unique region of the Earth. The Russian's Far East possesses the greatest part of the Arctic territory. The territories under consideration are characterized by the severe climate, presence of permafrost, rich raw-material base, out migration and depressed social and economic status. In order to maintain the unique character of the natural complexes and especially protected natural objects, it is necessary to create the environmentally-comfort conditions which are formed by the kinds of economic activities existing in these and neighboring territories. For many years, the Chukotka Autonomous Region (CAR) was one of the leaders in the ecological ration of the RF regions. According to the rating for 2018, this region lost its position and occupies now 12th place [3]. The current situation was formed by the existing territorial-economic structure and existing industrial-natural relations (Fig.1). Here, the production facilities of the I-V classes of occupational hazard are presented and, at the same time, all the districts are characterized by a large amount of the Special Protected Natural Areas (SPNA) (Table 1).

Regardless of the fact that the considerable decrease in production is here observed over the last years, the ecological state of the territory is not improved which is confirmed by the results of ecological rating. The reasons are poor-quality potable water for people life provision; uncontrolled waste disposal (basically, residential); presence of unauthorized landfills of raw refuse; absence of solid waste disposal; disturbance of land resources, essentially, of technogenic nature; poor development of the environment-friendly line of nature management; low rate of self-purification and self-regeneration of biocenoses; underactive position and insufficient positive assistance of the state with regard to restoration and conservation of the unique nature of the North.



Picture 1. Technogenic impact on the CAR territory

Legend keys:

Total pollution (t/man) limiting the economic development – Increase in technogenic impact

BO (WR) – without restrictions

ЧО (PR) – partial restriction

О I – restricted

Moderate

Significant

Powerful

Table 1. Characteristic of the districts in the Chukotka Autonomous Region

Districts	SPNA according to data of 2018 [4]	Kinds of business activities	Classes of occupational hazards [5]
Anadyrski	state natural (hunting) sanctuary of federal importance ‘Lebediny’, regional sanctuaries “Ust-Tanyurersky” and “Avtatkuul”, 3 natural monuments: botanic “Pekulneisky”, “Tnekveemsky grove”, geological “Elgygytgyn Lake”	mining of coal, gold, silver, natural gas extraction; food industry, deer farming; airport	I II IV V
Bilibinski	geological natural monument “Anyuisky volcano”, archaeological monuments: “Large Baranov cape”, “Tytyl Lake”, “Rauchuvagytygyn”, “Srednee Lake”, “Lipchikvygytygyn Lake”, Yagodnaya”, “Sinitsin cape”, “Imirney”, “Orlovka”	nuclear energetics, gold mining, food industry; agriculture: deer farming, fishery, hunting and fur trapping, greenhouse business; airport	I II IV V
Iultinski	natural reserve “Vrangel Island”, natural-ethnic park “Beringia” (part), botanic monument “Amguemsky” and aquatic natural monument “Chavtakan Lake”	energetics, gold mining, port; agriculture: deer farming, fishery, sealing; airport	III IV V
Providenski	natural-ethnic park “Beringia” (part),	Fishing and harvesting of sea bioresources,	III IV V

	aquatic monuments “Klyuchev oi”, “Achchen Lace”, aquatic-botanic monument “Chaplinsky”.	food, leather industries, provender milling; agriculture: deer farming, pig breeding, poultry farming, sealing, hunting and fur trapping	
Chaunski	regional sanctuary “Chaunskaya guba”, 5 natural monuments: “Utiny”, “Aionsky”, “Routan”, “Pineiveemsky”, “Rauchuvagytyn”	heat power industry, mining of gold, copper, tin metal, port	II III
Chukotski	natural-ethnic park “Beringia” (main territory), 3 natural monuments: “Gilmimliveemslie” and “Kukunskie” hot springs, “Chegitun river canyon”	gold mining, fishery, harvesting of sea bioresources, and sealing, deer farming, harvesting of wild-growing herbs	III IV V

Because the environmental consequences of the economic activities have practically no territorial boundaries, are longstanding and transformative in action whereas the activities and financing for preservation of the SPNA in the territories under consideration are practically absent, then their degradation, destruction and decay are observed and the unique and distinctive character of the Arctic protected natural objects is lost. In the conception of the sustainable development of the Arctic areas [6], it is emphasized that the long-time benchmark of the development of the Arctic uluses and areas of compact settlement of the indigenous small-numbered peoples of the North is the balanced resolution of the problems concerning the development of industry and traditional kinds of economy management of the North people with obligated preservation of the natural ecological systems and biological diversity. However, the investment projects in the

Chukotka territory oriented on a creation of the friendly environment are practically absent (Table 2). For the considered territories, the further development of industry (generally, extractive and substantially affecting processing branches) will be antithetical to preservation of natural ecological systems and biodiversity, i.e. conservation of protected areas, geological, archaeological, historical, biological and other unique natural monuments will be impossible.

In our opinion, it is necessary to place heavy emphasis on the ecological balance of the nature management. For this reason, the following measures unrelated to commercial development but oriented on the intense development of the nature protection in the nature management should be high-priority as well as for the foreseeable future:

1. Measures oriented on the restoration and “sanitation” of the territories exposed to the technogenic impact: rehabilitation of disturbed lands; cleaning of the territories from waste metal and other wastes, unauthorized landfills; organization and realization of the environmental and resource-conserving projects; active and comprehensive real support of the state in the field of development and stimulation of the traditional kinds of economic activities.

2. Measures oriented on the establishment of new and reconstruction of the old (if any) objects of necessary preparation (according to SanPin (Sanitary Rules and Regulations) of water-supply, water discharge, disposal or re-use of solid waste.

Table 2. Principal strategic directions of the Chukotka AR development [7]

Region	Basic investment projects	
	Economic orientation	Ecological orientation
Chukotka AR	- “Development of the Baimsky ore zone”	- Establishment of the facilities for the high-level and non-waste

	<ul style="list-style-type: none"> - Formation of the priority development area (PDA) “Beringovsky” - Creation of the tourist complex “Mainits Lake” 	processing of the north deer farming products
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When reasoned the further recreational policy of the region development, it is needed to pay special attention to the questions of the integrated assessment of the recreational potential, determination of the priority areas of its use and sustainable territorial organization of the recreational facility with due account for new “market” factors [8]. With that, the substantive changes and, particularly, positive shifts in the spatial distribution of the kinds of economic activity over the last years were not noted in the north zone. Only, a considerable increase in a share of the extractive industries in the structure of the added value of the Chukotka Autonomous Region is recorded. This kind of activities becomes principal and does not contribute to the environmental improvement in the region. In addition, a share of construction, transport and communications as well as processing industries has decreased in the Autonomous Region [11], which restrains also the establishment and successful development here of the profitable tourist industry and attendant facilities. Nevertheless, the Arctic tourism in Russia begins actively to develop at the present time and ever-greater number of the Russian travelers wants to discover this north region.

Irrespective of different complexities and novelty of the tourist line, the Russian tour operators organize the cruises to the Arctic. So, five cruises aboard the atomic ice-breaker, one cruise to Wrangel Island and one to Chukotka were organized in 2015. In the cruise organization, the American, British and New Zealand companies participate. In 2017, about 1.3 thousand tourists have visited Chukotka. The substantial proportion of them falls on the sea voyages along the coast and to islands organized by the foreign

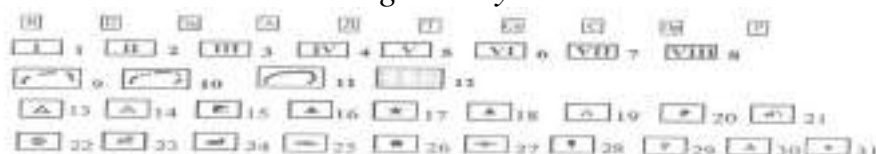
tourism firms and tourism firms of Kamchatka. At the present time, several routes of the domestic tourism are mainly offered by the tourism firms of Moscow and Saint-Petersburg. On the CAR territory, only 4 tourism firms are registered and function and there are no tourist camps able to take tourists. Nevertheless, the region has the potential and further cooperation of local authorities and business can result in situation where, in perspective, the yearly tourist traffic to the continental Chukotka will reach up to 7 thousand people [9]. In spite of the problems with the transport accessibility and apparent infrastructure insufficiency, the regional authorities invest in support of enthusiasts the energies of which develop the tourism (especially, event tourism) in the region. At the present time, the basis of the Chukotka tourism is formed by the hiking trips and excursion tours to the natural treasures: Provideniya Bay, Cape Dezhnev, easternmost point of Eurasia, Cape Navarin. The fishing on the North river and acquaintance with culture of the northern first nations are very popular. In 2017, the government of Chukotka took the active steps for development of recreation and domestic tourism for local residents. The subsidized prices (only 3 thousand rubles) for air transportation from Anadyr to Egvekinot were introduced. In this connection, the possibility appeared to develop the domestic tourism – weekend tours. It is planned to enrich the comfortability of the recreation of people on the hot springs of the region (weekend tours) [9].

The territory of the East Chukotka presents the unique world-class natural region for organization of the eco-tourism (Fig. 2). The extremely high bioproductivity of waters attracts into the Bering Strait birds, fishes, sea mammals from different corners of the planet. In this region, many rare and endemic species of land animals and plants. The local landscapes differ in high aesthetic appeal.



Picture 2. Recreational-tourist zonation of the North-East Chukotka [2]

Legend keys:



Tourist destinations: H – scientific; П – educational; ЭК – Eco-tourism; Эм – ethnographic; Д – business; Т – transport; Сб – communication; С – sports; Пр – trade; Р – recreation

Zonation: I – Country of blue geese; II – Chegitunsky complex; III – Dezhnevsko-Lavrentyevsky complex; IV – Mechigmensko-Getlyangensky complex; V – Senyavinsky archipelago; VI – Fuchchetsky complex; VII – Erguveemsky complex; VIII – Ioni Lake

Attendance of areas: 1 – Most attended by tourists (III and V); 2 – Moderately attended by tourists (II, IV < VI); 3 – Seldom attended by tourists (I, VII, VIII); 4 – Reserve status of territory

Monuments of culture, history, art: 13 – ancient settlements; 14 – assumed ancient settlements; 15 – ancient settlements and present-day nomad camps; 16 – present-day nomad camps; 17 – the rest monuments of history and culture

Natural monuments: 18 – approved; 19 – proposed; 20 – botanic (vegetation); 21 – landscapes (complex); 22 – geological (mineral); 23 – mammals; 24 – birds; 25 – fishes; 26 – rookeries of marine mammals; 27 – seabird colonies (birdy spots)

Springs: 28 – hot; 29 – cold; 30 – sea ports and port stations; 31 – settlements

The historical and cultural legacy of the region is great and various. Here, the traditional cultural and economic complex of sea hunters (the

Eskimos and Chuckchi) with basic elements of marine sealing culture has remained up to now. The whole eastern coast is rich in the archaeological monuments (excavations of the ancient settlements, burial grounds and houses of worship). Riches of the Bering Strait nature and its great historical-cultural value for the nations of the whole world have contributed to the recognition of the particular status of this region as the "treasure" of a global scale preserving the unique resources of the planet.

The importance of the geopolitical position of Chukotka for Russia, the unique natural and historical-cultural resources of the territory, the high vulnerability of the Arctic landscapes - all this imposes increased responsibility and creates additional difficulties in planning activities to create a unified recreational and tourist system of Chukotka. For this reason, on the one hand, it is necessary to create here the modern, stable recreation-tourist industry and, on the other hand, to organize the high-efficient network of the environmental institutions, especially, within areas of special protection of the CAR [2]. All of this imposes the enhanced responsibility and makes the additional difficulties in planning of the measures to the formation of the integrated recreation-tourist systems of Chukotka. Here, the ecological tourism should in the first place rest on the reveal and use of the richest natural and historical-cultural potential of this territory and its ethnographic, social-cultural and landscape diversity. It should contribute to retaining and protection of traditions, memorial places, unique landscapes, natural, historical and archaeological monuments because they are the main objects able to interest tourists and invite attention of the world community.

The main objectives of the tourism development in Chukotka provide for. 1. Preservation and development, in all diversity and harmony, of the unique section of biosphere being the resource base of the traditional way of life, intellectual culture and inter-generational continuity of the aboriginal inhabitants of the Bering Strait area. 2. Development of one of few upcoming

and environmentally acceptable branches of the region economy with its transformation into the forceful player of the social development [10]. A distinctive feature of the Russian North tourism in this region consists in its exotic character related not only to uniqueness of natural environment but also to peculiarities of ethnography and historical and cultural legacy of Chukotka nations. I Of great importance for development of the recreational facilities is a creation of the modern tourist infrastructure, especially, hotel room stock. The Arctic tourism in the Russian North can, in prospect, provide an yield not less than that on the extraction of commercial minerals [11].

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**PROBLEMS AND PROSPECTS OF ARCTIC ECONOMIC
DEVELOPMENT**

UDC: 3553.08; 621.3

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APPLICATION OF THE ELECTRIC PULSE DISINTEGRATION METHOD FOR OBTAINING A GARNET CONCENTRATE FROM SCHIST OF WEST KEYVY

Abstract. *The article reports the research findings on feasibility of abrasive garnet production from garnet–mica schist of Western Keivy deposit on the Kola Peninsula using the method of electric pulse disintegration. After electric pulse disintegration of garnet crystals and washing the garnet product from mica inclusions has managed to get 94% pure garnet fraction $-0.5+0.25$. The research shows prospects for electric pulse disintegration application in production of abrasive garnet concentrate.*

Keywords: *West Keivy, electric pulse disintegration, garnet concentrate.*

There are large reserves of garnet in Russia. In Karelia 13 deposits and occurrences were discovered, for example Terbeostrovskoe (over 1 mln tons of ore), ZapadnoPlotinskoe (50 mln tons) Vysota-181 (12 mln tons) [1].

Large deposits of garnet are known too in the West Keyvy – Makzapakhk, Rovozero, Takhlintuaiv et al. The most of garnet is concentrated in muscovite-garnet schist and garnetite, forming layers 10-100 m long, with garnet abt 10%, in some cases up to 50%. The mineral forms crystals 1-25 cm in size [2].

Known garnet deposits in the West Keyvy have similar geological structure and industrial potential. The deposit Takhlintuaiv is located on the top of an acclivous hill composed of garnet-mica schist and characterized by the most clean and clear-cut crystalls 3-6 cm in size up to 10 cm. The most garnet-rich zone is 500 m long and 20 m wide. The garnet is at least 10 vol. %. V.I Vlodavets estimated the reserves of the deposit at 150 ths tons of C category. Later L.Ya. Kharitonov overestimated the reserves at 80 ths tons with working depth up to 20 m and 10% extraction of garnet from the rock. The deposit Makzapakhk is located at the top of the meridional ridge of East Makzapakhk. Here alkaline granites closely approach the schist. The high concentration of garnet is related to the locking parts of the transverse folds. Near granites garnets is altered into muscovite, biotite, quartz-feldspathic material and chloritoid. The most garnet-rich zone is 500-600 m long and 10-15 m wide. The garnet crystals over 3 cm in size is 7-10 vol. %. Less common are crystals up to 30 cm. V.I. Vlodavets estimated the reserves at 300 ths tons. L.Ya. Kharitonov overestimated them at 48 ths tons with working depth up to 20 m and 10% extraction of garnet from the rock. The deposit is located on submeridionally elongated hills composed of garnet-mica schist 3 km to the NW and SW from the Lake Rovozero. Two garnet-rich zones are related to the locking parts of the transverse folds. They are 500-600 m long and 10-20 m wide. The quality of the garnet is low – it is oxidized and contains many inclusions of quartz. The sizes of crystals are 2-5 cm up to 8 cm. The reserves were determined by M.D. Vagapova at 120 ths tons of C category. The deposit Berezovaya-II is located 4 km to the SW

from the Lake Rovozero on a steep SW slope of a wide hill. It is 200 m long and 10 m wide. High concentrations of garnet are related to the castle part of a large transverse fold. Across strike its quantity decreases, and microcline appears in the schist. The garnet-rich zone is 100 m long and 5-6 m wide. The garnet crystals are large, average 3-5 cm in size, often up to 15 cm. Large crystals form nest clusters. The average garnet content is 25 vol. %, but it can reach 50 vol. % and more. Reserves were estimated by M.D. Vagapova at 330 ths tons of C category. L.Ya. Kharitonov overestimated them at 10.200 tons when working out the richest body of 5×15×100 m in size with 10% extraction of garnet from the rock. The deposit Berezovaya-I is located 1.5 km to the south and has similar geology and reserves.

West Keyvy ore district is not economically developed, removed from industrial centers and transport communications. The distance to the nearest populous city of the Murmansk region (Apatity) is 150-250 km, to the village Lovozero – 100-200 km, to the seaport Gremikha – 80-100 km. The building of the railroad towards the Keyvy deposits was stopped in 1953. In the far west there is a railway and a parallel dirt road from Kirovsk to Revda, and in the SW – a dirt road along the Pansky Tundra to Lake Churozero. There are two local airfields in the villages Krasnoshcheliye and Kanevka and a light aviation site near Mt. Shuururta. Due to the lack of currently built logistics, the West Keyvy abrasive garnet are not so liquid as the ores of platinum metals, the reserves of which were calculated in the south of the Fedorovo-Pansky Tundra. However, if the development of the latter will be cost-effective, which will require the construction of the road from the village Ochyabrsky through the Maryok swamps, the problem of export of the garnet concentrate will be greatly solved at the same time and its cost will be lowered [3]. When analyzing the terrain of West Keyvy using «Yandex Maps» service, a continuous waterway was found. It is theoretically possible to transport garnet ore for its further beneficiation from the deposits near Mt.

Rovgora (West Keyvy, Kola Peninsula, Russia) to the closed city Ostrovnoy along the water route: Lake Rovozero – the River Rova – Lake Kalmozero – the River Iokanga – Iokanga Bay (total length 224 km). A second, shorter route (94 km) from the Mt. Rovgora to the village Lovozero was also found, but, between the River Rova and the River Lenyavr the waterway is broken by a land area about 830 m wide.

With interest of small and medium businesses in terms of entrepreneurial risk and available techno-technological basis in the market for creating technological complexes to extract garnets from the West Keyvy ores and to grind them into garnet concentrate in the city Ostrovnoy, a small industrial factory for extraction of abrasive garnets can be created. The obtained garnet concentrate next can be sent from the port Gremikha by water to any seaport of the Russian Federation.

GARNET CONCENTRATE PRODUCT APPLICATION IN INDUSTRY. Since garnet is a promising industrial mineral, its use is constantly expanding. The consumption of pomegranate product by industry is distributed approximately as follows: 40% - cleaning surfaces, 24% - water purification, 12% - waterjet cutting, 12% - manufacturing abrasives, 6% - manufacturing soft abrasives, 4% - oil industry, 2% - other industries. The specific field of application of garnet sand depends on the fraction. The highest fractional requirements for abrasives are for the application of surface treatment, hydro-abrasive cutting and purification of drinking water. For these purposes, the content of pure pomegranate in the product should not be below 95%. For the purification of industrial water, the content of pure garnet in mixed garnet-quartz sand can be from 55 to 65%.

ELECTRIC PULSE DISINTEGRATION METHOD FOR OBTAINING CLEAN GRANATE CONCENTRATE. Pomegranate enrichment methods depend on the properties of the minerals that make up the ore and the level of development of the technology. Abroad, in small

enterprises extracting garnet from the upper weathered horizons and placers, enrichment is carried out by washing and sieving. A gravitational-magnetic scheme has been proposed in Russia for enriching ores, which is characterized by a higher efficiency of the garnet extraction process. To evaluate the prospects of processing garnet-containing ore, its technological tests as a potential abrasive raw material in accordance with modern industry requirements are extremely necessary. In 2017, for the first time, the Geological Institute and the Center for Physical and Technical Problems of the Power Engineering of the North of the Kola Scientific Center of the Russian Academy of Sciences conducted research to identify the possibility of obtaining pure garnet concentrate from West Keivy from garnet-shales using the method of electric pulse disintegration (EID), characterized by a high fracture selectivity compared with mechanical methods. The method is based on the destruction of a material under the action of force fields generated by a channel of electrical breakdown of a solid body during the impulsive release of storage energy in it [4][5][6]. The EPD method uses pulsed voltages with an amplitude above 250 kV, a steepness of the voltage pulse front not lower than 300 - 500 kV/ μ s (in a dielectric medium) and 2000 - 3000 kV/ μ s (in water), with energies from hundreds of joules to several kilojoules. The method is distinguished by high energy efficiency and unique technological features that make it possible to universally use it for drilling wells of various diameters and purposes, crushing and grinding ores and technical materials, cutting and surface treatment of the massif and block stone, etc. [7]. The EPD method with high technological efficiency was tested on ores with coarse-grained inclusions (mica, asbestos, precious stones). The electric pulse crystal-breaking technology is distinguished by a minimum violation of the integrity of the released crystals, the yield of the conditioned product is several times higher than with other methods of extraction. Such a high technological effect on products of very high cost

creates the prerequisites for ensuring the economic efficiency of the technology with the current level of electrical equipment operation life. To a certain extent, this is also true for technical garnet (West Keivy and Karelian), since, due to their relatively large size and high content in the rock, the opening using the electric pulse method will help to extract crystal raw materials with high productivity at relatively low energy costs.

Tests for obtaining mono mineral garnet product using EPD were carried out in three stages (Fig. 1):

1. Isolation of garnet crystals from mica shale ores (1,2);
2. Electric pulse disintegration of isolated garnet crystals (3,4);
3. Separation of the product into fractions and washing the garnet product from mica inclusions (5,6).

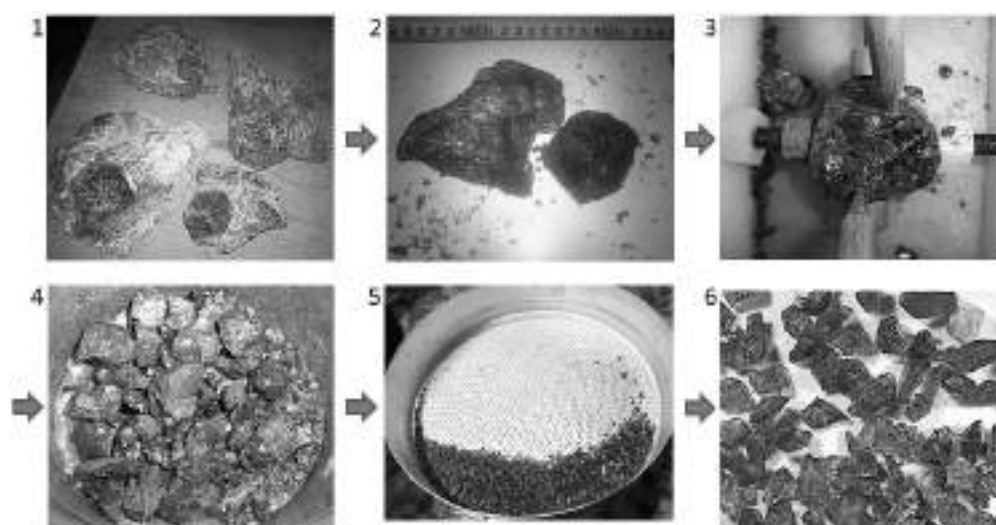


Figure 1. Stages of obtaining monomineral garnet product using EPD

The starting material for the study were somewhat ores mica slate of deposits of Makzabak, Western Keivy containing garnet crystals almandine rhombic-dodecahedron habitus to 50 mm in size. The first stage of extraction of garnet crystals with the use of EPD was carried out in a two-electrode device with a discharge gap of 20–30 mm, with a pulse voltage of up to 300

kV, which guarantees the mode of electrical pulse breakdown with the introduction of discharge into the rock. The crushing process lasted until the complete release of pomegranate crystals. Experiments have shown that large and small pomegranate crystals are well distinguished from rock with minimal adhesion of mica. The second stage consisted in crushing directly the garnet crystals themselves using EPD to obtain the finest fraction of the garnet product. For the destruction of large pomegranate crystals, the process was carried out sequentially using two different EPD chambers - a chamber with electrodes system form "sharp-sharp" and a closed-type chamber with a electrode system "sharp-hemisphere". In the course of the research, a multistage chamber for electric pulse opening and subsequent disintegration of garnet of garnet mica schist crystals was developed and patented [8]. After electric pulse crushing of granate crystals, the garnet product was divided into fractions $+10$; $-10 + 3$; $-3 + 1$; $-1 + 0.5$; $-0.5 + 0.25$; $-0.25 + 0$ using sieve-classifiers. After product separation into size classes, visual analysis of each fraction under the microscope was performed. The total number of fragments (grains) was counted, and the number of grains of a pure garnet was counted. The purest was the fraction $-1 + 0.5$. It analyzed 970 grains, of which 867 made pure garnet. Thus, the share of pure pomegranate was 89%. Impurities, except for mica, were garnet in intergrowths and extraneous minerals (Fig. 2).



Figure 2. Product of electric pulse disintegration of garnet crystal, fraction $-1 + 0.5$

In order to identify the possibility of obtaining a cleaner garnet product, all the obtained garnet product fractions were washed with a rising flow of water. After washing, an analysis of the washed fractions under the microscope was also carried out. In all fractions, except for $-0.25 + 0$, about 500 grains were taken. The total number of grains and the number of grains of a pure garnet were counted. By "pure garnet" (concentrate) was meant transparent fragments of pomegranate with minor inclusions of foreign minerals. The difference between the total number of grains and grains of pure garnet was represented by a muddy garnet, garnet with inclusions, mica, and foreign minerals. The counting results are presented in the table. The relative proportion of pure garnet is shown in brackets in percent, rounded to units. The share of pure garnet fraction - $0.5 + 0.25$ after washing from mica inclusions was 94%. This product already in this form can be used for water treatment and abrasive, and when the product is enriched with the material regrinding by the electro-hydro-pulse method [9] and releasing mica and other impurity minerals in the opened form, the content of pure garnet can be further increased, which will make it possible to get garnet concentrate the highest marks.

Fraction	Garnet		Garnet after washing	
	Pure garnet	Total	Pure garnet	Total
$-0,25+0$	—	—	—	—
$-0,5+0,25$	490 (94%)	522	500 (85%)	586
$-1+0,5$	502 (92%)	548	428 (78%)	547
$-3+1$	458 (85%)	536	333 (73%)	457

The table shows that for all fractions the share of pure garnet in the case of "garnet" is higher than in the corresponding fraction "washing". With a decrease in the size of grains in both cases, the content of pure garnet increases, and in the case of "garnet" with a decrease in the size of the grains, the growth goes on decreasing, and in the case of "washing" - on increasing.

This study is the first experience to assess the possibility of obtaining pure garnet material from Western Keivy garnet-mica schists using the method of electric pulse disintegration of materials. There are good prospects for the technical implementation of the proposed EPD technology. The KSC RAS has a rich practical experience in creating demonstration (pilot-industrial) facilities for both opening and extraction of coarse-grained minerals and grinding. For the breaking of garnet crystals, coarse grinding chambers can be used, designed to isolate gems and mica with a capacity of up to 5–10 t/h for ore of 200–250 mm.

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BASIC TENDENCIES IN RUSSIA'S ARCTIC DEVELOPMENT. NEW UNDERSTANDING OF ARCTIC AREA DEVELOPING

Abstract. *In the present article the author investigates problems and basic tendencies of Russia's Arctic development, strategic importance of this region in the international relations and absolutely new factors in the Arctic area development.*

Keywords: *infrastructure growth, natural resources, innovative platform, potential up-building, new technologies.*

The problem of the Russia's Arctic development grew particularly severe in the early 1990s. The development of the Arctic shelf and the extraction of mineral resources, mainly oil and gas, which the Arctic is rich with, turned out to be in the foreground after the end of the Cold War and the confrontation of the USSR and NATO countries in the Arctic region. The strengthening of the Arctic international status in international agreements and the division into five sectors of responsibility between the main players in the study area: Russia, the USA, Canada, Norway and Denmark also caused the so called Arctic policy. These countries still have practice the greatest interest in the development of the Arctic region. In the Arctic, Russia has the greatest length of borders, so the study of its regional activity is important for understanding of the future prospects of its political and economic development in this territory [1]. If Russia did not possess the natural resources of the Arctic, its international positions would be significantly weaker, so the issue of withdrawing from the Arctic territories

at this stage could cause bewilderment. A state, which has the Arctic status, should carefully look for the best ways to extract resources, develop infrastructure and raise living standards. In the process of exploration, Russia faces many problems, especially acute ones which are relevant to the actual use of resources: how to ensure its presence in the Arctic efficiently and economically, given that the Russia's Arctic shelf is explored less than American and European [2]. In this article the author considers the main trends in the current development of the Arctic shelf by Russia, the role of the region and the solution of gradually increasing strategic tasks.

ARCTIC AS A PRIORITY. Why is Russia's development of the Arctic can be considered as a priority? Why should we consider Russia's Arctic development to be of high propriety ? Despite all the variability of the Arctic area and its some remoteness, it does attract more and more attention of other northern countries. The Arctic is a trove of natural resources. It immediately increases the international rating of the countries that own them dozens times at once. The depletion of existing resources on the Russian territory due to the gradual depletion of mineral deposits damages economic security and forces Russia to turn to reserves in the Arctic region and develop the oil and gas industry.

Oil and gas make up 20% of Russia's gross domestic product and they are main objects of export and international trade. The total volume of oil and gas sales is 45.6% of all Russian exports and the largest suppliers at the moment are PJSC Gazprom, NK Rosneft and Novatek. Only on the Arctic Ocean shelf it's found about 25% of the world's hydrocarbon raw materials. [3] It means that further research and the extraction of natural resources in the Arctic region will contribute to the improvement of the economy and the increase of Russia's authority not only in the world, but also in the Arctic.

Another major feature of the Arctic is that it provides a vast platform for innovations and, one might say, throws an intellectual challenge. Its

territory, due to harsh climatic conditions and poorly developed infrastructure, acts as an area for testing of the new technologies, equipment, techniques, and scientific research [4]. All of the above echoes the oil and gas sector, so Russia's task is to learn how to properly allocate resources and develop advanced technologies that in the future can become the basis not only for the domestic science, but also expand the understanding of information technologies that contribute to the development of the northern regions as a whole.

PROBLEMS AND FEATURES OF DEVELOPMENT. It should be noticed that the Arctic development is unbalanced due to the climate instability. Therefore the problems facing Russia affect several areas of public life. That is why it is impossible to emphasize the resolution of one specific issue, guided by only its national interests. The reasons of this is the gravity of the problems and their global significance. Recently, a significant environmental degradation has been observed in the Arctic region, which is a certain barrier to the development of the Arctic shelf and a global environmental problem affecting this as well as other regions. In the construction of the new oil platforms, pipelines and gas liquefaction plants the harsh natural conditions should be taken into account to prevent disasters. Low temperatures and ice storms result in increase of ice loads, which, in turn, affect the hydraulic structures. To overcome these loads, two types of platforms are used: floating with stabilizing columns and floating platforms. These structures, designed specifically for the northern regions of the country, allow the pumping of water to stabilize pitching and use specific reservoirs for oil. The author of this work pays special attention to the accident in the Gulf of Mexico, which caused abnormal weather events in the Arctic region. The huge amount of oil, which later formed a spot of about 75 thousand square kilometers, became the main factor for the diversion of the warm flow of the underwater Gulf Stream, and therefore, the gradual

melting of glaciers in the entire Arctic space [5]. According to the Russian Federation Government official publication from March 30, 2018, a decree and order of the Government of the Russian Federation were signed on the self-propelled ice-resistant platform approval. "North Pole" will be later used for research and monitoring of the natural environment [6]. According to the decree, the project will be implemented in 2020. It will make an indisputable contribution to the development of the Arctic region, as the inhabitants of this territory need additional supervision due to the threat of extinction (polar bear, reindeer, narwhal, bowhead whale and Atlantic and Laptev Sea walruses). Tracking of temperature fluctuations will become more accessible due to the introduction of new technologies and expand the prospects for further development of ecosystem management. The melting of the ice also provokes an additional danger not only to the structures such as flora and fauna, but also for the people working and living in this region. However, there is a positive impact noted by some researchers. Russia has a considerable potential accumulated in Arctic medicine, which, despite the limitations of this area, allows us to monitor both lifestyle and equipment in a changing climate, and finally, the individual psychology or the behavior of a group of people. So the Russian scientists managed to study more fundamental laws and properties of human nature, which are still fundamental in psychology. Psychophysicists V. Rotenberg and V. Arshavsky, comparing the cerebral hemispheres function of the indigenous North nations and the one of the nations, living in the European part of Russia, noticed that their functions are different [7]. These studies became the starting point in the study of activity and its special place in increasing of the body's resistance to stress, which is particularly evident and most harmful in the harsh conditions of the north. It is impossible not to take this moment into account when considering a human factor in the processes of Arctic exploration. Work at the Arctic enterprises implies a strict discipline

and high level of staff training. The latter criterion is influenced not only by the personal qualities of the potential employee, but also by comfortable working conditions that guarantee not only vocational education, but also retraining, advanced training, final certification and mastering information and engineering literacy to reduce the risk of disasters.

It should be noted that the Arctic is a fairly popular place, attracting people not only from the northern regions of the country. Now the Arctic cities more than ever experience the phenomenon of urbanization [8]. This is most likely due to the fact that they are more informationally open due to the active renewal of the population. Frequent migrations, support for travel on vacation and extreme environmental conditions of existence of the city (its instability) make it a vast territory for the development and innovations' implementation. Salaries gradually grow and at the same time the number of jobs. In the Yamalo-Nenets Autonomous District, which is an important center for the professional training, the project "Workers for the Arctic" is being implemented [9]. The goal of the project is to create advanced training systems for further work in the Arctic region. The project should be implemented by 2020, and the system itself - to ensure not only the influx of professional workers in enterprises and research stations, but also contribute to the creation of a developed infrastructure, despite the constant change of key resources (forest, oil and transportation).

Another obstacle to the infrastructure growth on the Arctic shelf is the high cost of research and exploration. As G. Vygon, the Director of the Skolkovo Energy Center, emphasized that this nuance does not allow the state to fully fund projects, therefore, more and more often, plans to explore the Arctic and develop the oil and gas industry are being transferred to private companies, which, in turn, cooperate with foreign investors, avoiding various costs [10]. For example, Rosneft's partners are the major oil companies of Norway and the United States, Statoil and ExxonMobil [11].

This fact only means that Russia is ready for the joint development of the Arctic and welcomes the implementation of large-scale and mutually beneficial projects with other countries. Why is it so important? Can Russia independently master the Arctic shelf belonging to it? First of all, partnerships provide a reliable base for the implementation of Arctic programs. Some Arctic universities [12] and resource companies form alliances which aim to share responsibilities, save time and finance, while avoiding various production costs. They coordinate with each other interests and goals and establish partnership between the different countries' polar regions. They also have significant intellectual potential, and experts with outstanding competencies are invited to research centers [13]. It is important to emphasize that the main factor is not even the development of new technologies, but their implementation, which, if you look at the ordinary inhabitant of the Arctic periphery, turns to be out quite a challenge. Innovations do not have to be spontaneous. If their implementation is gradual and consistent, the probability of their "sustainability" will increase significantly [14][15][16].

So is it possible, given the instability of the Arctic region, to make an accurate forecast for the near future? How will Russia develop these territories? Will its strategy change in the next few years or will Russia follow the intended path? There is not a clear answer to these questions because of the specific features of the Arctic territories. Here it is necessary to use specific methods of forecasting, referring to the fact that progress directly depends on the life cycle of natural resources. The Arctic differs from the other northern regions in that. Its research requires the involvement of experts from different fields of scientific knowledge. This is its uniqueness. This trend allows us to identify several vectors of Russia's present development in the Arctic at the present stage. This involves a completely new technology for the extraction of oil and gas, adapted to the

harsh climatic conditions, and reduction of the accidents risk at enterprises, and with it the economic growth maintenance. Adaptation of infrastructure for a permanent migration movement and a changing number of people by expanding urban agglomerations and strengthening their role. In addition to it, scientific capacity is being increased by funding of research centers and attracting of talents. An important factor is the study of human psychosomatics in harsh natural conditions to ensure the comfort work in the future. In conclusion, the author emphasizes that the Russia's current Arctic policy is at a new stage of development. It is significantly different from the trends that were traced during the Soviet era. This is a major innovation platform, which is literally doomed to give impulse to the development of science, industry, economics and international cooperation.

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FOTOALBUM

SESSION IN ST. PETERSBURG 17-18 APRIL 2019

PLENARY SESSION



Presidium (from left to right): *Sergey Kulik*, Deputy Chairman of the Conference Organizing Committee, doctor of historical Sciences, Director of the Higher school of social Sciences of Peter the Great St. Petersburg Polytechnic University; *Nadezhda Almazova*, Deputy Chairman of the Conference Program Committee, doctor of pedagogical Sciences, corresponding member of RAO, Director of the Humanitarian Institute of Peter the Great St. Petersburg Polytechnic University; *Vladimir Glukhov*, doctor of economic Sciences, head of the administrative apparatus of rector of Peter the Great St. Petersburg Polytechnic University; *Yuri Vasiliev*, Chairman of the Program Committee of the Conference, doctor of technical Sciences, Professor, academician of RAS, scientific Director of the Peter the Great St. Petersburg Polytechnic University



Presenting a letter of appreciation from the State Duma of the Russian Federation
Nadezhda Almazova (from left to right): *Nadezhda Almazova*, Director of Humanitarian Institute of St. Petersburg state Polytechnic University Peter the Great;
Valeriy Zhuravel, member of the Organizing Committee of the conference, candidate of pedagogical Sciences, Head of Center for Arctic studies of the Institute of Europe RAS



Hugo de Chevagnac, Consul General of the Republic of France in St. Petersburg



Italian delegation (from left to right): *Stefano Maria Capilupi*, PhD, Peter the Great St. Petersburg Polytechnic University; *Alessandro Monti*, Consul General of Italy in St. Petersburg



Andrzej Chodkiewicz, Consul General of the Republic of Poland in St. Petersburg



Natalia Kudashova, head of the Representative office of the Arkhangelsk region in Saint-Petersburg



Alexander Palagin, head of the representative office of the Yamal-Nenets Autonomous Okrug in St. Petersburg



Yuri Kravtsov, head of the Permanent mission of the Republic of Sakha (Yakutia) in St. Petersburg



Vladimir Losev, head of the Murmansk region representative Office in St. Petersburg



Nikolay Didenko, member of the Program Committee of the Conference doctor of Economics, Professor, Professor of the International higher school of management of Peter the Great St. Petersburg Polytechnic University, head of the laboratory «System dynamics»



Vitaly Cherenkov, doctor of Economics, Professor of the Higher school of management of St. Petersburg state University



Sergey Fedoseev, member of the Organizing Committee of the Conference, doctor of Economics, Director of the Institute of economic problems. G. P. Luzin of the Kola scientific centre of the RAS



Alexander Vorotnikov, candidate of chemical Sciences, associate Professor of the Russian Academy of national economy and public administration under the President of the Russian Federation, expert of the "Expert center"



Plenary session

BREAKOUT SESSION



Section "Problems and prospects of social and economic development of the Russian Federation" (from left to right): Nikolay Didenko, doctor of Economics, Professor, Professor of the International higher school of management of Peter the Great St. Petersburg Polytechnic University, head of the laboratory "System dynamics"; **Sergey Beletsky**, candidate of technical Sciences, associate Professor, Deputy head of the laboratory of fsbi NIIPH rosrezerva



Section «Robotics in the Arctic»



Section "Human capital Development in the Arctic". *Jamila Skripnyuk*, member of the Organizing Committee of the Conference, doctor of Economics, Professor, Professor of the Higher school of management and business of Peter the Great St. Petersburg Polytechnic University



Section "Human capital Development in the Arctic"



Секция «Международное сотрудничество в Арктике» (слева-направо): *Сергунин Александр Анатольевич*, доктор политических наук, профессор, профессор Санкт-Петербургского государственного университета; *Журавель Валерий Петрович*, кандидат педагогических наук, Руководитель Центра арктических исследований Института Европы РАН



Секция «История исследования и освоения Арктики» (слева-направо): *Кашеваров Анатолий Николаевич*, доктор исторических наук, профессор, профессор Высшей школы общественных наук Санкт-Петербургского политехнического университета Петра Великого; *Скрыдлов Андрей Юрьевич*, кандидат исторических наук, старший научный сотрудник Санкт-Петербургского филиала Института истории естествознания и техники им. С.И. Вавилова РАН



Секция «Историко-культурное наследие Арктики и туризм»



Section "Problems of Ecological, Technogenic and Military Security in the Arctic Region"



Section "Problems of Ecological, Technogenic and Military Security in the Arctic Region" (from left to right): Kudryavtseva Regina-Elizaveta Antonovna, assistant to the Peter the Great Higher School of Social Sciences at the Peter the Great St. Petersburg Polytechnic University; **Anufriev Andrey Anatolyevich**, doctor of the All-Russia Central Medical Center "Protection"



Section "Problems of Ecological, Technogenic and Military Security in the Arctic Region"
(from left to right): **Daria Synchikova**, student of the Department of International Relations, St. Petersburg State University; **Gerdes Andreas**, Doctor of Technical Sciences, Professor, Director of the Institute of Technology Institute of Karlsruhe, Scientific Director of the Institute of Technology of Karlsruhe



Section "Youth". Ahead of the section moderator: Eidemiller Konstantin Yuryevich, member of the Conference Organizing Committee, Ph.D. in Geography, Senior Lecturer, Faculty of International Relations, St. Petersburg State University



Секция «Молодежная»

CHRONICLE



Organizers of the Conference (from left to right): Ekaterina Shlyamina, member of the Organizing Committee of the Conference, member of The state Hermitage Museum; **Alexander Prishchepa**, member of the Organizing Committee of the Conference, assistant of the Higher school of social Sciences of Peter the Great St. Petersburg Polytechnic University; **Olga Cherkez**; **Sergey Kulik**, Deputy Chairman of the organizing Committee of the conference, doctor of historical Sciences, Director of the Higher school of social Sciences of Peter the Great St. Petersburg Polytechnic University; **Ekaterina Samylovskaya**, Executive Secretary of the Conference Program Committee, candidate of historical Sciences, associate Professor of the Higher school of social Sciences of Peter the Great St. Petersburg Polytechnic University; **Viktor Elistratov**, member of the Organizing Committee, doctor of technical Sciences, Professor of the Department of water Management and hydraulic engineering, Director of the REC" renewable energy and installations based on Them " of Peter the Great St. Petersburg Polytechnic University; **Ekaterina Travkina**



Registrartion. Vladimir Glukhov, doctor of Economics, head of the administrative staff of the Rector of Peter the Great St. Petersburg Polytechnic University



Register (left to right): Regina-Elizabeth Kudryavtseva, member of the Organizing Committee, assistant at Higher school of social Sciences the Saint-Petersburg Polytechnic University Peter the Great; **Ekaterina Shlyamina**, member of the Organizing Committee of the Conference, an employee of the State Hermitage Museum; **Ekaterina Samylovskaya**, Executive Secretary of conference program Committee, candidate of historical Sciences, Associate Professor of Higher school of social Sciences the Peter the Great Saint-Petersburg Polytechnic University



Photo session



Photo session



Coffee break



Coffee break



Conference talisman – Scientist white bear (left to right): Regina-Elizabeth Kudryavtseva, member of the Organizing Committee, assistant at Higher school of social Sciences of the Peter the Great Saint-Petersburg Polytechnic University; **Conference talisman; Ekaterina Samylovskaya**, Executive Secretary of conference program Committee, candidate of historical Sciences, Associate Professor of Higher school of social Sciences the Peter the Great Saint-Petersburg Polytechnic University



Photo session. Ekaterina Samylovskaya, Executive Secretary of the Program Committee of the conference, candidate of historical Sciences, associate Professor of the Higher school of social Sciences of Peter the Great St. Petersburg Polytechnic University



Photo session. Regina-Elizabeth Kudryavtseva, member of the Organizing Committee, assistant at Higher school of social Sciences of the Peter the Great Saint-Petersburg Polytechnic University

SESSION IN MURMANSK, 23-24 APRIL 2019



Mikhail Vasekha, member of the Organizing Committee of the conference, doctor of technical Sciences, associate Professor, Director of the Institute of Arctic technologies, head of the Department of marine oil and gas Affairs of the Murmansk State Technical University



Breakout session



Breakout session



Breakout session



Breakout session



Victoria Yatsenko, candidate of technical Sciences, Vice-rector for innovation and international cooperation of Murmansk State Technical University



Conference Organizers (from left to right): **Ekaterina Samylovskaya**, Executive Secretary of the Program Committee of the conference, candidate of historical Sciences, associate Professor of the Higher school of social Sciences of Peter the Great St. Petersburg Polytechnic University; **Sergey Kulik** , Deputy Chairman of the conference Organizing Committee, doctor of historical Sciences, Director of the Higher school of social Sciences of Peter the Great St. Petersburg Polytechnic University; **Vasekha Mikhail Viktorovich**, member of the organizing Committee of the conference, doctor of technical Sciences, associate Professor, Director of the Institute of Arctic technologies, head of the Department of marine oil and gas Affairs of Murmansk state technical University



Coffee break (from left to right): Alexander Vorotnikov, candidate of chemical Sciences, associate Professor of the Russian Academy of national economy and public administration under the President of the Russian Federation, expert of the "Expert center "PORA"; **Zhanna Vasilyeva**, member of the Organizing Committee of the Conference, candidate of technical Sciences, head Of the Department of ecology, engineering systems and technosphere safety of the Murmansk State Technical University

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