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Prospects of cooperation between Russia and North-East Asian countries in the Arctic region*

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Abstract. Significant increase in global attention to the Arctic, as well as the intensive development of technologies for its study, makes the cooperation between various countries increasingly important. The article discusses the history and current interaction in the Arctic region between Russia (and its predecessor, the USSR) with North-East Asia (NEA) — China, Japan, and the Republic of Korea. The author noted the increasing scientific and practical interest of the NEA countries to study the Arctic, analyzed it and main aspirations of these countries to cooperate with Russia. Also, the author reviewed the most significant internal laws and regulations governing their activities in the Arctic. It was concluded that the high prospects for cooperation between the countries of Northeast Asia and Russia occur. Main directions of possible interaction in the region are presented in the article along with the highlighted unique position of the Russian Far East as one of the critical links.

Keywords: *the Arctic region, North-East Asia (NEA), the Northern Sea Route (NSR), the Arctic zone of the Russian Federation (AZRF), Initiative "One Belt — One Road," the Far East of the Russian Federation, Territory of Advanced Socio-Economic Development (TASED).*

Introduction

In the 21st century the Arctic region is a subject of increasing attention and study for the international community. According to different estimates, the Arctic has significant world reserves of natural resources, which can become basic for the world economy. Along with resources, international attention attracts the transport and logistics of the Arctic. Transport routes of the northern seas reduce the distance, time and cost of transportation between Asia, Europe, and North America compared to traditional routes through Suez and Panama canals.

Despite growing economic attractiveness, the Arctic is still poorly integrated into the international economy. It creates opportunities for all (not just circumpolar) countries to participate in the Arctic research and development of the Arctic economic system. In recent years, China, Japan, and the Republic of Korea have shown severe concern and commitment to the Arctic. These states received observer status in the Arctic Council and published their Arctic policy (the Republic of Korea in 2013, Japan in 2013 and China in 2018).

First, the interests of these countries are focused on the use of Arctic economic potential. Mineral resources (esp. hydrocarbons) and transport routes are significant for energy-intensive

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and export-oriented economies of North-East Asia. Russia, in turn, has specific jurisdiction over the NSR (Northern Sea Route) and can provide navigation in polar waters. Taken together, this serves as a severe basis for essential and even inevitable cooperation between Russia and the countries of North-East Asia in the Arctic.

Review of studies on the subject

The idea of cooperation between China, Japan and the Republic of Korea on the one hand and Russia (or other Nordic countries) on the other is relatively new. So far, comprehensive studies in this area have not been carried out enough. T. Troyakova is one of the few scholars who studied the main possible ways of such cooperation [1, Troyakova T., pp. 7–15]. At the same time, some experts argue that the participation of non-Arctic states, especially China, in the development and management of the Arctic is unreasonable and unsafe [2, Gudev P., pp. 71–78]. However, today, most researchers share the view that non-Arctic countries are involved in various activities in the Arctic, and their role in the development and management of the region is growing [3, Podoplekin A., pp. 40–45]. That is why it is so essential to study these processes of cooperation and to identify specific mechanisms for interaction between circumpolar and non-Arctic states between Russia and the countries of North-East Asia.

Within the framework of this article, the Arctic policy of the countries, mentioned above, is revealed. The main interests of Japan in the Arctic were covered by M. Akiyama, D. Tulupov [4, pp. 250–255], A. Tonami [5, pp. 47–71], F. Okhnishi [6, pp. 171–182]. Also, strategy and activity of the Republic of Korea in the Arctic is widely studied [5, pp. 73–92], [7, Jin D., Seo W., Lee S., pp. 84–96], [8, Benett M.].

The growth of activity of China in the Arctic, along with the study of the problems of the so-called “Arctic society”, increasing attention is paid to the Arctic policy of this country [5, Tonami A., pp. 19–45], [9, Xu G., pp. 52–62], [10, Nong H.], which is one of the most active participants in the region among the non-Arctic states. The release of the “White Paper” on the Arctic policy of China in January 2018 gives the basis for new research in this field.

As for the Russian strategy of the Arctic, there are several main documents to regulate various activities of Russia: “Fundamentals of state policy of the Russian Federation in the Arctic for the period up to 2020 and Further Perspective”, “Strategy of Development of the Arctic zone of the Russian Federation and Ensuring of National Security for the period up to 2020” and “State Program for Socio-Economic Development of the Arctic Zone of the Russian Federation”. These documents have been studied by many authors. P. Zhuravlyov analyzed the “Strategy of Development of the Arctic zone of the Russian Federation and Ensuring National Security for the period up to 2020” from the point of view of its main problems and proposed measures for its improvement [11, pp. 154–156]. Employees of the Northern (Arctic) Federal University A. Podplekin and K. Bestuzheva stressed the advantages of the “Strategy of Development of the Arctic zone of the Russian Federation and Ensuring national security for the period up to 2020” and outlined its main

prospects [12, pp. 35–46]. The first steps and promising directions of the “Fundamentals of the State Policy of the Russian Federation in the Arctic for the period up to 2020 and Further Perspective” were considered by E. Labetskaya [13, pp. 59–71], [14, pp. 106–114].

When studying the possibilities and prospects of cooperation between Russia and the countries of North-East Asia it is necessary to consider regional aspects linking the Russian Arctic, China, Japan and the Republic of Korea. The authors consider the Far East of Russia one of these links. The Institute of Economic Research of North-East Asia paid great attention to the problem of the economic integration of the Far East of Russia into the economic system of the Asia-Pacific region [15, Kurokawa Y, pp. 46–48]. Russia's view of regional cooperation between the Far East, China, Japan and the Republic of Korea, and problems and specific projects within the framework of such cooperation, is best demonstrated by the scientists of the Institute of Economic Studies of the Far East Branch of the Russian Academy of Sciences — P. Minakir, O. Prokapalo and A. Goryunov [16, pp. 6–16], [17, pp. 486–492]. In this article, the authors tried to develop the ideas of their colleagues and put them in the context of the Arctic cooperation to demonstrate that the Far East of Russia can act a link between the countries of North-East Asia and the Arctic zone of Russia.

History of cooperation between the USSR and the North-East Asian countries in the Arctic

Joint projects between Russia and the North-East Asian countries in the Arctic zone of Russia are not new. The agreements between the USSR and Japan on the wood supply for Japan were signed in 1968, 1974 and 1981. In exchange, Japan supplied the USSR machinery and equipment necessary for the wood exploitation in the Far East. Part of the wood was delivered from Yakutia to Japan via the NSR. They also used the transportation along the Lena River to the seaports of the NSR by the method of “wood rafting”. During the summer navigation, transportation was carried out by barges to the eastern ports of the USSR and further to Japan.

In accordance with the Agreement 1974, the USSR supplied coking coal to Japan in exchange for equipment, machinery, materials and other goods used in the development of coal basins in Yakutia. Part of coal was also supplied by means of rivers and the NSR. In addition, in 1974 Japanese companies “Tokyo Gas” and “Mitsubishi Corporation” initiated an agreement on the supply of natural gas from Yakutia to Japan. According to the agreement, the exploration of natural gas fields in Yakutia was carried out jointly by the USSR, the USA, and Japan. Japan also supplied the USSR with pipes, incl. “large diameter pipes”, equipment for liquefaction of gas and other equipment for exploration and development of gas fields. However, in 1980, the implementation of the agreement was stopped due to the beginning of the USSR's military campaign in Afghanistan.

Since the late 1980s, Japan showed increasing interest in joint scientific research of the Arctic with the USSR, especially in connection with the use of the NSR. Japanese scientists, together with their colleagues from Norway and the USSR participated in the international program for

studying the Northern Sea Route and comprehensive study of the route and the possibilities of its use by global shipping companies.

However, there was no systematic approach to these projects. The Arctic was not considered a special economic region. That is why these initial projects cannot be examples of full cooperation between countries. However, today, the foundation for the development of such cooperation has already been formed.

Fundamentals of cooperation between Russia and the North-East Asian countries in the Arctic

It is reasonable to compare the arctic policy of these countries, to emphasize shared interests and to define the relationship between them to determine the directions of cooperation between Russia and the countries of North-East Asia in the Arctic.

The main priorities of North-East Asian countries in the Arctic have been disclosed in the relevant regulatory documents: China's Arctic Policy White Paper; Japan's Arctic Policy; and Japan's Ocean Policy Plan; the Republic of Korea's Arctic Policy Master Plan. These documents contain a clear view of the approaches of the three countries to the development of the Arctic.

Table 1

Russia and the countries of North-East Asia: basic approaches to Arctic policy[1]

Country	**Key documents related to Arctic policy**	**Interests in the Arctic and Priorities of Arctic Policy**
China	Arctic Policy of China (2018)	• Expanding exploration and understanding of the Arctic. • Protecting the Arctic environment and combating climate change. • Use of Arctic resources in a legitimate and rational manner. • Active participation in international governance and cooperation in the Arctic. • Promoting peace and stability in the Arctic.
Japan	Ocean Policy Plan (2013); Arctic Policy of Japan (2015)	• Full advantage of Japan's scientific and technological benefits from a global perspective. • Study of the Arctic environment and ecosystem. • Ensuring the rule of law and promoting international cooperation in a peaceful and orderly manner. Respect for the rights of indigenous peoples and the traditional economic and social foundations of their life. • Study of the security in the Arctic. Economic and social compatibility with climate change and the environment. Study of the use of maritime transport routes and exploration of natural resources in the Arctic.
Republic of Korea	Arctic Policy Master Plan (2013)	• Creation of an Arctic partnership within the international community to solve current problems of the region. • Expanding research activities for better understanding the Arctic. • Sustainable development of economic activity in the Arctic.

[1] Source: developed by the authors.

Russia	"Fundamentals of the state policy of the Russian Federation in the Arctic for the period up to 2020 and further perspective" (2008); "Strategy of development of the Arctic zone of the Russian Federation and ensuring national security for the period up to 2020" (2013)	• Socio-economic development of circumpolar areas through the development of natural resources and commercial use of the NSR. • Conservation of the Arctic ecosystem. Preservation of peace and stability in the region. • Ensuring state sovereignty on the continental shelf under the jurisdiction of Russia and along the NSR.

Many of the priorities are common to the three North-East Asian states. In particular, the key force of the Arctic policy of the Asian countries and Russia is the economy.

The development of commercial navigation in polar waters along with the exploitation of minerals is also of importance for North-East Asian states. Promotion and support of technological solutions, know-how, and high-tech equipment in the Arctic is another priority for North-East Asian states. Finally, the last priority on the list, but not least, is recognition of the opportunity to participate in the management of the Arctic. The comparison of these interests with the priorities of Russia helps to identify the promising areas of possible cooperation in the region.

Mineral resource development in the Arctic

From the resource perspective, North-East Asian countries are interested in gaining access to mineral deposits in the Arctic, incl. oil and gas, non-carbon minerals and the maritime biological resources. The Arctic zone of Russia is rich with various types of resources (Table 2) [18, Istomin A., Pavlov K., Selin V., pp. 158–172].

Table 2

Mineral resources of the Russian Arctic[2]

Type	Territory	Resources
Energy resources	Chukotskiy Autonomous Okrug, Krasnoyarsk Territory, Nenets Autonomous Okrug	Coal, uranium, oil shale, and methane hydrates
Hydrocarbons	Yamalo-Nenetskiy Autonomous Okrug and Nenetskiy Autonomous Okrug	Oil, gas, condensate, and mineral resins
Ferrous metals	Chukotskiy Autonomous Okrug, Republic of Sakha (Yakutia), and Murmansk Oblast	Iron, manganese, titanium, chrome, mercury, lead, zinc, and lead
Rare earth metals	Chukotskiy Autonomous Okrug, Republic of Sakha (Yakutia), and Murmansk Oblast	Beryllium, vanadium, lanthanoids, lithium, niobium, and tantalum
Non-ferrous metals	Chukotskiy Autonomous Okrug, Republic of Sakha (Yakutia), Murmansk Oblast and Krasnoyarskiy Krai	Aluminum, bismuth, tungsten, copper, molybdenum, nickel, cobalt, and tin
Precious metals	Chukotskiy Autonomous Okrug, Republic of Sakha (Yakutia), Murmansk Oblast and Krasnoyarskiy Krai	Gold, silver, and platinum
Mining and chemical raw materials	Krasnoyarskiy Krai	Phosphate ore, mineral salt, graphite, gloss, barite, and abrasive
Crystals	Republic of Sakha (Yakutia) and Murmansk Oblast	Unprocessed diamonds and gems

[2] Source: developed by the authors.

However, due to the limitations of industrial, financial, technological, and economic potential, Russia cannot effectively manage large resource projects on its own. At the same time, after the introduction of economic sanctions against Russia, the problem has worsened. In this context, cooperation between Russia and North-East Asian states has significant technical, production, and financial base.

Due to the conditions presented by the President of the Russian Federation V. Putin in the so-called “May decrees”, the goal to achieve by 2024 is the annual NSR's cargo turnover of 80 million tons. The Government of the Russian Federation (i.e., the coordinator of economic activities in the Russian Arctic) began work on large projects that would contribute to the development of the region and will attract private investors, incl. foreign ones.

At the same time, the Russian leaders have repeatedly stated that our country is open for any mutually beneficial cooperation with foreign business in the Arctic.

One of the most successful examples of international cooperation in the Russian Arctic is the Yamal-LNG project, an integrated project for the production, liquefaction, and supply of natural gas with a capacity of about 16.5 million tons per year at the Uzhno-Tambeyskoye field. The first production line started in Q4 2017, the second and third production line started in July and November 2018, respectively. Shareholders of the OJSC "Yamal LNG" are Novatek (50.1%), Total (20%), CNPC (20%), and the Silk Road Fund (9.9%). Although the project reached its full capacity only in November 2018. More than 10 million tons of LNG have been shipped to foreign consumers.

The next significant project should be "Arctic LNG 2" of Novatek on the Gydanskiy Peninsula, i.e., the construction of three liquefaction lines of 6.6 million tons each. The cost is about 20–21 billion US dollars. It is planned to launch the first phase of “Arctic LNG-2” in 2022—2023. At the same time, the Novatek management announced the signing of binding agreements on the terms of entry into the “Arctic LNG-2” project with Chinese CNODC (100% “daughter” of CNPC) and CNOOC. Both agreements mean a 10% stake in the project.

Other projects, incl. the coal sector, are also being prepared. E.g., on the Taimyr of the Krasnoyarsk Krai — the development of oil and coal fields (expected turnover of up to 20 million tons by 2024), Payakhskaya group of oil fields in Krasnoyarsk (“Neftegazholding” company), as well as a hard coal project on the Taimyr (“VostokUgol” company).

Besides, according to Vice-Premier Yu. Trutnev and Minister of Natural Resources and Ecology of Russia D. Kobylkin, in 2019, it could be possible to open the Arctic shelf for private companies. It will also significantly increase investment attractiveness of the region for foreign business.

Oil, gas, and coal are not the only areas of cooperation in the region. In the Arctic, strategic deposits of solid minerals are found. In addition to the resources listed in Table 1, the deposits of manganese and polymetallic ore in Novaya Zemlya archipelago, rough diamonds in Laptev and White Seas and tin on Novosibirsk Islands are still underestimated. Tomsk deposit is one of the

most attractive deposits of rare metals, incl. niobium. World annual demand for it exceeds 3 billion carats, and the main consumers of niobium and other rare metals are high-tech industries of China, the Republic of Korea and Japan.

Summing up it is reasonable to consider the development of mineral resources as one of the promising areas of cooperation between Russia and the North-East Asian states in the Arctic. Despite skeptical statements about the inexpediency of extraction in the Far North in the current economic situation, the Arctic remains the main reservoir of mineral resources for future generations and a key element for ensuring energy and resource security for several states.

Joint use of the Northern Sea Route

The development of commercial navigation along the NSR is another area of cooperation in the Arctic. Despite all the advantages over traditional southern transit routes, it is mainly used for mineral development projects. At the same time, the NSR is the only way to deliver resources from Arctic Russia to the countries of North-East Asia. To make the route safer and more efficient, it is necessary to establish appropriate infrastructure, incl. port facilities and navigation services and rescue centers. All this opens a wide field for cooperation between Russia, China, Japan and the Republic of Korea.

Russia is working on all these due to the Federal Program "Development of the Russian Transport System until 2020", "Strategy of development of the Russian Maritime Transport System until 2030" and other regulatory documents. According to these directives, EMERCOM of Russia plans to establish ten rescue centers in the Arctic.

The construction and modernization of Russian ports are actively underway (Fig. 1).

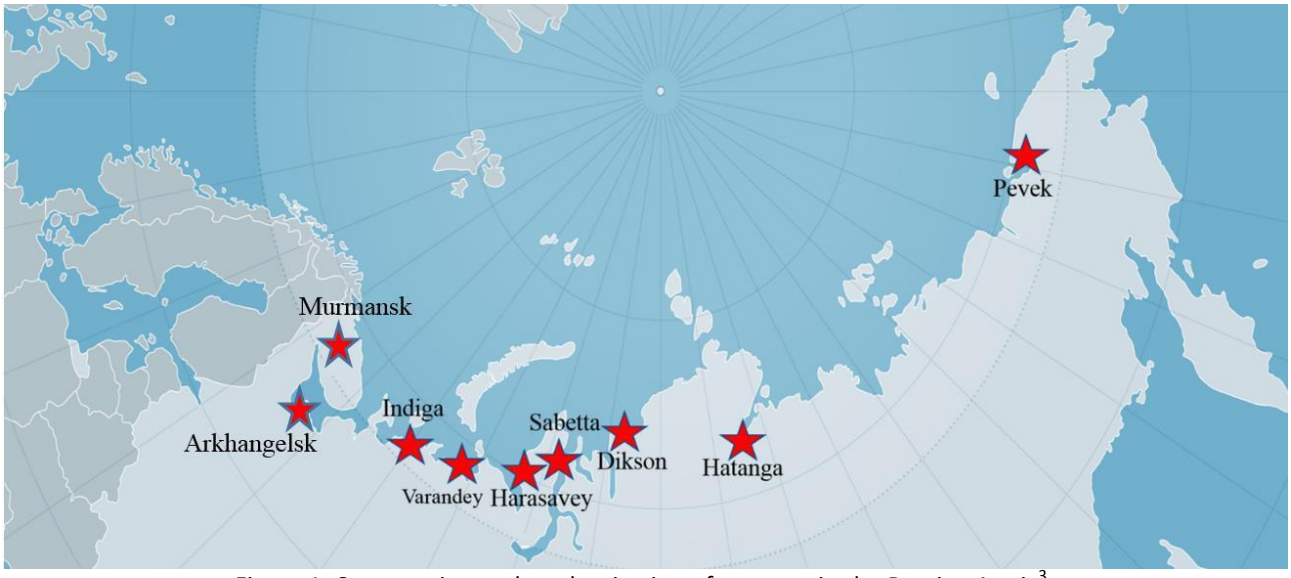

Figure 1. Construction and modernization of seaports in the Russian Arctic[3].

Several companies from North-East Asia have already taken part in the construction of offshore facilities in the Russian Arctic. E.g., the Japanese "Mitsui O.S.K. Lines" and the Chinese "Chi-

[3] Source: developed by the authors.

na COSCO Shipping" participate in the development and operation of the Sabetta seaport, while the Korean company "Hyundai Merchant Marine Co." together with the Chinese "Poly Group" are considering the participation in the reconstruction of the Arkhangelsk deep seaport and development of the Murmansk transport system. In addition to the profits from specific joint investment projects, these countries may expect to receive some privileges from the NSR shipping.

Improvement of the NSR infrastructure should increase the capacity of the route. Due to NSR's advantages compared to the Suez and Panama Canals, it can be used as an alternative way for trans-Eurasian transportation. At the same time, the interest of Asian countries in transit is clear.

According to the Administration of the Northern Sea Route, in 2018, 12 Chinese vessels applied for passage (eight of them belonged to COSCO Shipping), in 2017 — 9 (5 — COSCO), in 2016 — 5 (3 — COSCO), in 2015 — 3. In 2018, Japan had 2 applications and only one in 2016 and 2017. Korean shipping company Hyundai Merchant plans to test transit of container vessels with a capacity of 2500-3500 TEU (unit equivalent to twenty feet) along the NSR in 2020.

To reduce shipping costs along the NSR, China, Japan and the Republic of Korea can begin deliveries with cargo caravans in cooperation with Russia. The idea is to combine several ships from different countries into one caravan instead of single shipping. It will reduce the costs of provision and insurance for icebreakers and make navigation safer. Russia could reduce taxes on the NSR passage for international caravans. Cargo caravans may be formed depending on demand at one of the North-East Asian seaports. In 2015, Japanese Prime Minister Shinzo Abe announced the creation of a hub port (Tomakomai (Hokkaido Island) is considered the most appropriate by Japanese scientists) to promote commercial transportation via the NSR[4].

The NSR can also be considered one of the transit routes within the Chinese "The Belt and Road Initiative" (BRI) and become the "Ice Silk Road", which provides for the connection of the Arctic transport routes with the BRI and Central Asia. Such a connection can be provided by the inland Russian waterways, e.g., the Ob-Irtysh system. Passing on these rivers, special mixed navigation vessels (river and sea) can make routes from the NSR ports to Central Asia. An alternative solution is transshipment from sea vessels to river vessels. In 2016, this route has already been tested by the Korean logistics company SLK Kukbo and the shipping company Pan Ocean, which organized the delivery of large-tonnage objects from Ulsan (Republic of Korea) and Shanghai (China) to Pavlodar (Kazakhstan). Later, the representatives of the companies assessed the route as very promising.

Certainly, routes using Russian rivers are cost-effective only for large cargoes that cannot be delivered by other means. However, the development of infrastructure, incl. hydraulic structures and terminals for transshipment of sea and river cargo, they can be used as a link between

[4] Kitagawa H., Otsuka N. A New Hub-Port Concept for Tomakomai in Anticipation of the Era of Arctic Shipping. Conference paper: 24th International Ocean and Polar Engineering Conference, June 15-20, 2014, Busan, Korea. Retrieved July 05, 2018. URL: https://www.onepetro.org/conference-paper/ISOPE-I-14-079/ (Accessed: 20 March 2016).

the Chinese initiative "The Silk Road Economic Belt" (SREB) and the NSR (Fig. 2). In the long term, Russian rivers will also allow supplying hydrocarbons from Arctic deposits to the energy deficit areas of Central Asia.

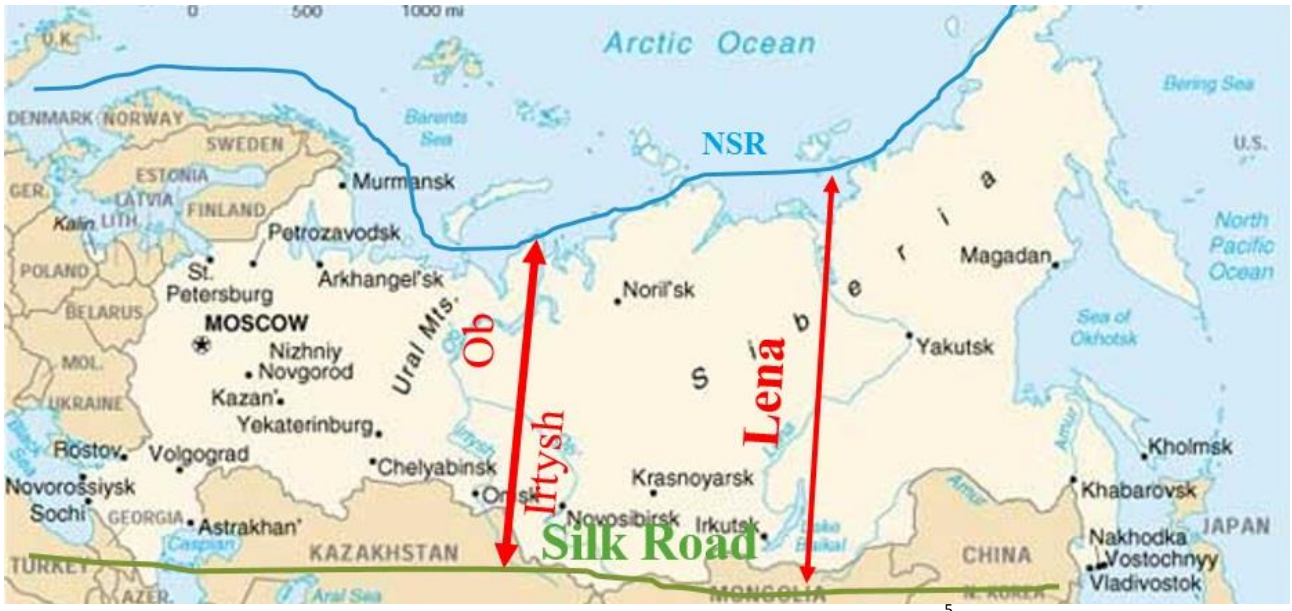

Figure 2. Water routes connecting the SREB and the NSR[5].

Another problem that needs to be addressed to ensure sustainable navigation along the NSR is the construction and maintenance of icebreakers. Countries with extensive shipbuilding experience, e.g., China and the Republic of Korea, could make a great contribution to this process. Moreover, the Korean corporation Daewoo Shipbuilding & Marine Engineering is building ten Russian LNG ice-class vessels for "Sovcomflot". Hyundai Heavy Industries and Samsung Heavy Industries also intend to receive orders from Russia. The vessels will be used for the Yamal — LNG project.

Considering this, the joint development of the NSR provides a good field for cooperation. To structure it, the countries of North-East Asia and Russia should sign an agreement to ensure the participation of China, Japan and the Republic of Korea in the development of the NSR in exchange for some preferences. Ideally, the countries should create two large container terminals (in Murmansk and Chukotskiy Autonomous Okrug) and provide continuous maintenance of icebreakers transport corridor between them, together with qualified safe services and the provision of meteorological, navigation and rescue services (search and rescue operations).

In this situation, Russian jurisdiction over the NSR is in the interests of Asian states. First, it means that the route belongs to one party responsible for its maintenance and operation. Secondly, the internationalization of the NSR will lead to attempts of the United States to establish control over the route, incl. the military one. Even today, the US is trying to introduce NATO into the region, although there are no real military threats there. At the same time, the existing status of the route provides free navigation in the polar waters, requiring notification of the Russian side, and the independence of the NSR as a transit route.

[5] Source: developed by the authors.

Development of the Russian Arctic

At first glance, the countries of North-East Asia should not be interested in the socio-economic development of the Russian Arctic directly. However, effective use of the economic potential of the Arctic, incl. mineral exploration and navigation, is impossible without ensuring sustainable socio-economic development and the creation of a spatial framework, transport, engineering infrastructure, and communication lines. A sustainable economic system of the Arctic is crucial for the successful development of Arctic resources.

In addition, cooperation in the sustainable development of the Arctic, incl. social and environmental projects, will help countries to strengthen their positive public image and affirm the validity of its activities in the region, rather than simply making economic gains in the long term. This will demonstrate the serious long-term intentions of Russia and North-East Asian states as responsible players in the Arctic before the international community.

Russia is taking certain steps in this direction. In April 2014, the "State Program for Socio-Economic Development of the Arctic Zone of the Russian Federation until 2020" was approved (in 2017, it was extended to 2025). It aimed at accelerating the socio-economic development of the country through the development of Arctic resources, based on the principles of resource efficiency and environmental protection. Among the main objectives of the Program are key investment projects in the Russian Arctic; development of transport, energy and IT infrastructure, security and control environmental systems in the region, and the establishment of a regulatory, institutional, technological and scientific basis for the development of the Russian circumpolar territories and the improvement of governance.

In accordance with the new edition of the state program, it introduces the concept of "support zones" of development in the Arctic: Kola support zone; Arkhangelsk support zone; Nenets support zone; Vorkuta support zone; Yamal-Nenets support zone; Taimyro-Turukhan support zone; North-Yakut support zone and Chukotskaya support zone. Summarizing the list of goals and tasks of support zones of development, it is possible to conclude that they should become catalysts of comprehensive economic development of the region and to provide its social component aimed at improving the quality of life of the population.

At the same time, Russia expects to attract part of the funds for the comprehensive development of the Russian Arctic from foreign sources, incl. North-East Asia. In turn, the Russian government and regional authorities offer administrative and tax preferences for investors. It was discussed at the international forum "Arctic — the territory of dialogue" (St. Petersburg, April 2019).

The interregional large railway projects expected to benefit the socio-economic development of the North of Russia and improve the development of mineral deposits of the NSR for investors from North-East Asia are: North Latitudinal Railway (NLR) (first stage: Salekhard — Nadym — Urengoy; second: Igarka — Dudinka — Norilsk; third: Railway to Yakutia); BelKomur (White Sea — Komi Republic — Ural; Arkhangelsk — Syktyvkar — Gaini — Solikamsk); Barents Komur (Barents Sea — Komi Republic — Ural) (Fig. 3).

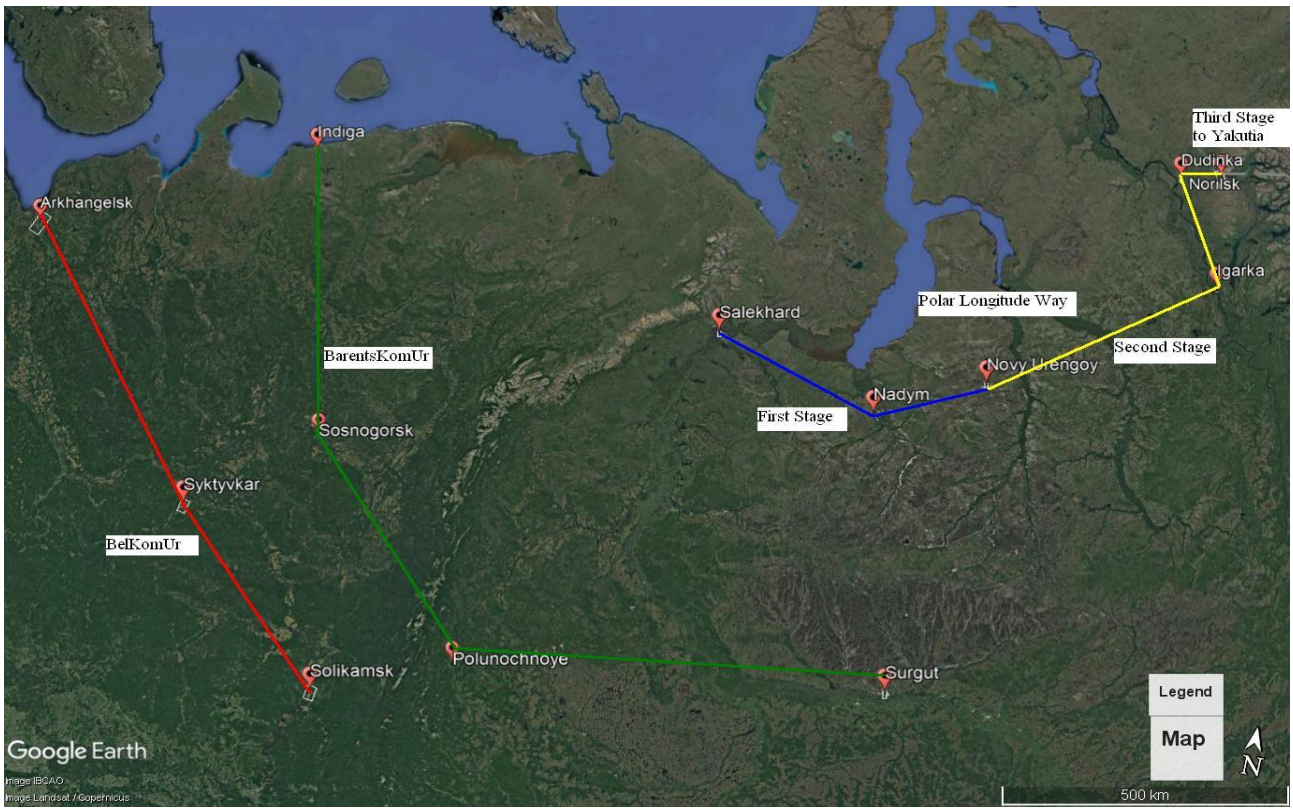

Figure 3. Prospects of railway construction in the Russian Arctic[6].

All large infrastructure projects are included in the State Program for Socio-Economic Development of the Arctic Zone of the Russian Federation.

Public-private partnership is one of the best ways to implement such initiatives. Such a partnership in the Arctic can use technological platforms.

The technological platform is a forum with many participants from different spheres (state, science, business), the purpose of which is to define development priorities, develop research and development program, and the establishment and coordination of horizontal links between project participants. Their use is provided by the Strategy of development of the Arctic zone of the Russian Federation and ensuring national security for the period up to 2020. Technology platform for Arctic mineral exploration (14 universities, 27 research centers, 18 project organizations, 17 mining enterprises, and 5 foreign companies) has been acting since 2011. It helps to ensure representation of business interests in the development of the project, modes of administration, the introduction of new technologies in exploration, an increase of social investor responsibility, increased cooperation among various stakeholders, and the publicity and transparency of financial flows and project results.

There are also regional investment projects. Thus, the administrations of the circumpolar regions of Russia have already offered partners from North-East Asia several investment initiatives and developed business plans. The Chukotskiy Autonomous Okrug proposed the establishment of reindeer herding farms and processing enterprises, as well as projects on traditional hunting of

[6] Source: developed by the authors

indigenous peoples; the Republic of Sakha (Yakutia) — breeding of polar animals and production of leather and fur products based on traditional crafts; the Krasnoyarsk Krai and the Arkhangelsk Oblast — tourist and recreational centers and skiing resorts. In total, the administrative districts of the Far North of Russia offer more than 40 socially oriented investment projects.

Cooperation in the field of science, research and technology

The growth of economic activity in the Arctic requires new environmentally friendly technologies adapted to harsh climatic conditions. Until recently, no significant demand for "Arctic innovation" revealed in the business environment, government, and other stakeholders. However, today the situation has changed significantly in connection with the offshore projects on exploration and development of hydrocarbons, the growth of cargo traffic via the Arctic sea routes and the need to develop infrastructure to support all these activities. At the same time, the international community has realized the need to protect the environment and ensure comfortable living in the Arctic.

Many elements of production, energy, transport, utilities, and other technical systems have emerged in the region. Such systems were developed in climatic conditions other than the northern ones, and then partially adapted to the Arctic. In this regard, their effectiveness in the Arctic is relatively low.

Further development of the Arctic will need the following innovations: new building technologies, food production technologies, health care, transport technologies, energy technologies, innovations in robotics and new technologies for oil and gas exploration (sub-glacial, offshore technology, shore — to — sea horizontal drilling, etc.). Also, most countries lack effective offshore development technologies. That is why economic competition in the region will be a technological one.

Russia has a long tradition and great potential in Arctic research. The main institutes involved in the study of the Arctic are the Northern (Arctic) Federal University (Arkhangelsk) and the Research Institute of the Arctic and Antarctic (St. Petersburg). Russian universities organize new promising scientific institutions for Arctic research: The Arctic scientific community at the Tyumen State University of Oil and Gas; Research Center of the Shanghai Cooperation Organization and Asia-Pacific region at the Khabarovsk State University of Economics and Law; Far Eastern Arctic Engineering Center at the Far Eastern Federal University; Department of the University of the Arctic at Far Eastern State University of Railway Transport, etc.

Russia has achieved good results in geophysical research in the Far North. On the continental shelf of the Arctic Ocean, Russian scientists are studying natural geological hazards that can lead to catastrophic consequences during exploration work oil and gas. A new complex of geophysical information system for emergencies is being developed.

In 2013, a base was developed to monitor the temperature of the seabed in the Arctic Ocean. The system of online monitoring for underwater pipelines is under development. The

technology for assessing the impact of climate change on the nature and population of the Arctic has been developed. Research is also being done in oil spill prevention, climate change, environmental conservation and carbon, and methane reduction.

For scientific purposes in Russia, several modern polar stations and more than 30 research vessels operate, incl. the latest scientific expedition vessel "Academician Treshnikov". Four modern research vessels of the ice-class category "Ark-7" are being built.

However, problems remain in marine, sub-glacial, and horizontal drilling technologies. Russia has no drilling facilities to produce hydrocarbons (drilling vessels, drilling platforms, etc.).

So, Russia and the countries of North-East Asia can complement each other in terms of scientific cooperation in the Arctic. Russia can bring its experience, fundamental knowledge, and significant scientific research into joint work. China, Japan, and the Republic of Korea can provide their enormous technical and industrial capabilities for research projects in energy, robotics, oil and gas exploration, transport, etc.

Today, several joint research institutes and projects have already been established in Russia and North-East Asia:

- Institute of Peripheral Seas and Arctic Research (Far Eastern Federal University and Shanghai University of Transport) (2014));
- Scientific and educational project "Ice School" (Far Eastern Federal University in cooperation with Chinese scientists) (2015));
- Joint Chinese and Russian Arctic Research Expeditions (2016, 2017);
- Joint Arctic Journal (Far Eastern Federal University, St. Petersburg State University, Shanghai Ocean University, and Shanghai Transport University) (2015);
- Russian-Korean Center for Maritime Transport and the Arctic (Maritime State University (Vladivostok) and Maritime University of (the Republic of Korea) (2015));
- GAME-Siberia Climate Research Project (North-Eastern Federal University in cooperation with Hokkaido University, Japan) (2016).

Individual projects should be systematized into a single common plan for the establishment of comprehensive scientific cooperation. It will give a significant impetus to research activities in the Arctic. The business environment, government, and society should be involved in developing such a plan to increase the practical relevance of research in the Arctic.

The Far East of Russia as an Arctic link for the North-East Asian states

Interregional cooperation is very important for the development of cooperation in the Arctic. Any agreement concluded at the highest level will not work without economic, investment, research and humanitarian exchange between the regions involved. Interregional cooperation between Russia and North-East Asia in the Arctic, of course, includes cooperation with the regions of the Russian Far East.

The Russian leadership is actively working to create the most comfortable conditions for doing business in the Far Eastern Federal District. Thus, in 2013, Russia created a new Ministry for the Development of the Far East (since January 2019 — Ministry for the Development of the Far East and the Arctic). Several laws were adopted to help business, namely the "Law on Territories

of Advanced Socio-Economic Development" and the "Law on Free Port of Vladivostok", which applies to most of the Far East ports.

The new legislation provides for several preferences for business and investments: tax incentives (exemption or reduction of taxes on profits, property, and land), simplification of customs and visa procedures, and reduction of administrative barriers. Examples of cooperation projects include the Chukotskiy Autonomous Okrug and the Republic of Sakha (Yakutia) ("Kangalassi" Industrial Park) and the Beringovskaya Zone of Advanced Social and Economic Development (TOR "Beringovskiy")). The administrations of the two territories have already proposed a list of investment projects, incl. development of minerals (rare earth metals in Yakutia), processing of reindeer husbandry products, traditional hunting, tourism and recreation, breeding of polar animals, etc.

The Far East of Russia can become a kind of a springboard for the development of the Arctic. Given the fact that Asian states are the most promising consumers of oil and gas resources of the Arctic, significant expansion of export flow with a high probability of creation of ports-hubs will be in the Far East. In addition, the region can be a transshipment base for the delivery of the NSR products from North-East Asia to Europe (both Arctic seaports and ports of Kamchatka, Primorsky and Khabarovsk Krai). Also, the Far East is a promising region for auxiliary production based on existing enterprises of Khabarovsk and Komsomolsk-na-Amure.

Conclusion

Currently, no country can independently achieve the ambitious goal of sustainable development of the Arctic. Only multilateral cooperation could become an effective mechanism for creating Arctic economic system. The countries of North-East Asia and Russia have one of the best starting positions for establishing such cooperation. They do not have serious geopolitical differences, are neighbors and share common interests in the region. In addition, economic ("Russia's turn to the East", stable trade relations between Russia and North-East Asia) and political (instability near the Suez and on the Middle East, "trade war" between China and the US) reasons for a new model of sustainable development of the Arctic exist in the format of cooperation between Russia, China, Japan and the Republic of Korea.

North-East Asia and Russia have different advantages in terms of the development of the Arctic and can complement each other. Russia has extensive experience in economic activities in the Arctic, traditions of scientific research and importance in the region. The Russian Arctic has become a key hydrocarbon province and transport route in the circumpolar region. Unlike Russia, China, Japan and the Republic of Korea have the significant technological, industrial and financial potential for large projects, accelerating the development of the Arctic and promoting the establishment of an economic system in the Far North. Therefore, achieving their economic benefits, North-East Asian states can help Russia to achieve the goals proclaimed by the "Strategy of development of the Arctic zone of the Russian Federation and ensuring National Security for the period

up to 2020” and “State Program of Socio-Economic Development of the Arctic Zone of the Russian Federation”.

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