

## POLITICAL PROCESSES AND INSTITUTIONS

Arctic and North. 2022. No. 46. Pp. 66–88.

Original article

UDC [332.14+338.2](045)

doi: 10.37482/issn2221-2698.2022.46.79

### Economical and Legal Barriers and Its Potential Overcoming During the Northern Sea Route Exploitation in the Context of Pan-Asian Trade \*

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**Abstract.** The article provides a systematic analysis of the critical economic and legal factors affecting the current state of cargo flow in the Northern Sea Route in the convergence of the Asian and European markets. First of all, these are legal norms, environmental standards, economic efficiency and organizational and managerial motives, and the development of transport and port infrastructure along the route of the “historically developed national unified transport communication of Russia in the Arctic”. The authors propose specific steps and recommendations to overcome obstacles that create an unfavorable barrier environment for logistics companies to strengthen cooperation and interaction on an equal and mutually beneficial basis with Russia and counterparty partners in the market. These include irregular deliveries due to the seasonal functioning of the transport route and ice conditions, a high level of tariffs due to low cargo flow, and the inability to transport return goods. Particular attention is paid to the need for international cooperation to implement large infrastructure projects for the development of the NSR and the industrial and economic development of the Arctic territories. The authors propose specific steps and recommendations to overcome obstacles that create an unfavorable barrier environment for logistics, stevedoring and insurance companies, infrastructure operators, ship-owners and regulatory authorities to enhance cooperation and interaction on Russia’s equal and mutually beneficial basis and counterparty partners in the international market.

**Keywords:** *Russian Arctic, Northern Sea Route, logistics, international trade, barrier, environmental standard*

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For citation: Grigorishchin A.V., Sorokina T.Yu., Zadorin M.Yu., Yakhyaev D.B., Bashkina I.E. Economical and Legal Barriers and Its Potential Overcoming During the Northern Sea Route Exploitation in the Context of Pan-Asian Trade. *Arktika i Sever* [Arctic and North], 2022, no. 46, pp. 66–88. DOI: 10.37482/issn2221-2698.2022.46.79

### ***Acknowledgments and funding***

The article is part of a project that received funding from the SD EC NEAR under the grant agreement ENI / 2017 / 387-477 “Development of a think tank functions of the Northern Dimension Institute”.

The article was funded by the FSRU-2020-006 project within the framework of the state assignment for fundamental scientific research for 2020–2022.

### ***Introduction***

The Arctic zone is currently a prime example of heterogeneity in the context of territorial exploitation and development. The main problem of this macroregion is the discrepancy between its potential opportunities due to its favorable economic and geographical position, for example, in terms of the Northern Sea Route possibilities, high natural, resource and investment potential, very low level of infrastructure development and sparsely populated territory [1, Chiknova M.S.].

The article attempts a system analysis of the key economic and legal factors influencing the current state of cargo traffic in the waters of the Northern Sea Route in the context of convergence of Asian and European markets, namely, legal regulations, environmental standards, economic efficiency and organizational and managerial motives, as well as the level of development of transport and port infrastructure along the NSR route. The paper is divided into four paragraphs that outline the above-mentioned factors, as well as recommendations for overcoming obstacles that create unfavorable barrier environment for developing the potential of the NSR.

### ***Materials and methods***

First of all, it should be noted that a sufficient number of publications have been written on the development of the NSR as a transport route. Certainly, these are such authoritative researchers in the scientific and educational world as Vylegzhanin A.N., Skaridov A.S., Gutsulyak V.N. and others. We should also mention the works of such authors as Smirnova O.O., Lipina S.A., Kudryashova E.V., Kreydenko T.F., Bogdanova Yu.N. (formation of supporting zones), Bhagwat D. (safety in the NSR), Zalyvskiy N.P. (comparative potential of the NSR), Voronenko A.L., Grezyk S.V. (international cooperation with Northeast Asia within the framework of the NSR), Gudev P.A. (international cooperation in the field of maritime transit in general). Besides, a massive block of articles has been published in 2021–2022 on geoinformation support in the field of digitalization of the NSR during the period of climate change and the COVID-19 epidemic [2, Istomin E. et al.], internationalization of external costs for cabotage transportation [3, Ramalho M.M., Santos T.A.], digitalization of the NSR in general [4, Vicentiy A.V.], digital risk management of oil companies operating in the NSR [5, Bianco I. et al.], mathematical modeling of port management systems failure [6, Khripko T.], ICT solutions for ports [7, Fiorini M., Gupta N.], etc.

This article, in addition to the system analysis of the NSR economy, included the study and review of international agreements and Russian regulatory documents on the protection of the

marine environment during navigation in the Arctic. The texts of these documents were taken from official websites of, for example, the United Nations (UN), the International Maritime Organization (IMO), the Government of the Russian Federation, the Administration of the Northern Sea Route, the ConsultantPlus legal reference system, etc.

The research is also based on published works of specialists in international law, maritime law, environmental law, political science, ecology and other fields of knowledge. The authors studied the law enforcement practice, as well as some of the political processes on which shipping along the Northern Sea Route is based today.

General scientific methods, methods of data grouping and systematization, comparative analysis were used to analyze the infrastructural development of the Northern Sea Route.

Data from federal legal acts, strategic documents on the Arctic, federal ministries and the main economic entities of the transport route — Rosatom, Atomflot and Hydrographic Enterprise — were used as an information base.

## **Results**

### **Legal aspects**

The study presented in this article was based on the idea of the NSR status, specified in Article 5.1 of the Merchant Shipping Code of the Russian Federation, namely:

“The water area of the Northern Sea Route is understood as the water space adjacent to the northern coast of the Russian Federation, covering the internal sea waters, the territorial sea, the contiguous zone and the exclusive economic zone of the Russian Federation, and bounded by the line of delimitation of maritime spaces with the United States of America and the parallel of Cape Dezhnev in the Bering Strait on the east, by the meridian of Cape Zhelaniya to the Novaya Zemlya archipelago, the eastern coastline of the Novaya Zemlya archipelago and the western borders of the Matochkin Shar, Kara Gates, Yugorskiy Shar straits on the west. The rules of navigation in the waters of the Northern Sea Route are approved by the Government of the Russian Federation and are applied in order to ensure the safety of navigation, as well as to prevent, reduce and control pollution of the marine environment from ships...”<sup>1</sup>

Many works of Russian and foreign specialists have already been devoted to the legal status of the Northern Sea Route, in this regard, we will not dwell on this in detail, but will analyze only the legal barriers to the development of navigation along the NSR routes.

The key factor in the development of commercial navigation in the NSR waters is “navigation safety”. A lot of international and national legal acts refer to the concepts of “safety”, “transport safety”, “safe place”, “safe facilities”, “safety of maritime navigation”, “safe crewing”, “ensuring transport security”, etc. For example, the procedure for radiotelephone conversations

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<sup>1</sup> Merchant Shipping Code of the Russian Federation (as amended on June 11, 2021)]. URL: <https://docs.cntd.ru/document/901732423> (accessed 25 September 2021).

related to ensuring the safety of navigation on ships defines a number of concepts related to navigation safety issues: “distress” (MEDE), “urgency” (PAN), “safety” (SECURITE).

Neither the Polar Code, nor other international documents that relate to the law of the sea, provide a universal definition of navigation safety. The IMO only makes recommendations on key security issues, and there are quite a lot of them, not only emergencies, but also piracy and armed robbery, terrorism, smuggling and drug trafficking, unsafe mixed migration at sea, port security, war, cybersecurity<sup>2</sup>.

That is why the lack of a universal international legal definition of maritime security leads to a situation where each shipping company’s commanders have their own understanding of the concept. The surveys conducted among the crews show that there can be up to 30 different answers, each of which does not coincide with the others. However, general criteria have been identified as a result of summarizing the responses:

- 1) set of measures aimed at preventing emergency situations at sea;
- 2) organization and training of the crew in ship damage control;
- 3) knowledge of theory: navigation, safety, regulatory legal acts, ship systems, etc.;
- 4) practice: work experience, proven qualifications; crew knowledge testing; first aid, training, etc.;
- 5) adherence to and compliance with all rules and regulations of safety;
- 6) protection of human life at sea;
- 7) provision of vessel with all the necessary ship equipment and supplies, ship documentation for safe navigation.

Ensuring maritime safety in the Russian Federation is the prerogative of the state. State supervision over the safety of navigation, as well as over a number of other types of activities in the field of maritime transport, is carried out by the relevant government bodies in the form of administrative monitoring, control over compliance with the requirements of laws, regulations and international treaties in which Russia participates [8, Kolodkin A.L., Gutsulyak V.N., Bobrova Yu.V.].

The Russian Federation is a party to many international treaties (according to the IMO list, Russia has ratified over 35 conventions<sup>3</sup>). However, it should be noted that ratification of international maritime conventions in itself does not prove proper compliance with their provisions.

Nevertheless, according to the data of the International Chamber of Shipping, presented in the summary table by country for the period 2018–2019, the assessment of the Russian Federation’s — “flag state” — compliance with certain international requirements for the shipping industry is one of the highest compared to other states. With regard to Russia, the International Chamber of Shipping’s report presents extremely positive performance indicators, except for one single

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<sup>2</sup> Maritime security. IMO. URL: <https://www.imo.org/en/OurWork/Security/Pages/GuideMaritimeSecurityDefault.aspx> (accessed 18 January 2022).

<sup>3</sup> Status of Conventions. Official website of the International Maritime Organization. IMO. URL: <http://www.imo.org/en/About/Conventions/StatusOfConventions/Pages/Default.aspx> (accessed 25 September 2021).

indicator regarding “port state control” in the category “Paris Memorandum of Understanding on Port State Control of Ships”<sup>4</sup>.

For example, referring to the ratified international treaties adopted to promote the safety of navigation, in accordance with the Order of the Ministry of transport of the Russian Federation<sup>5</sup>, Russia has enacted the International Code for Safety Management (ISM Code).

As Skorokhodov D.A., Borisova L.F. and Borisov Z.D. point out, “Certain issues of security in maritime transport are reflected in a number of legislative acts: the Maritime Doctrine of Russia up to 2020 (current, relevant)<sup>6</sup>, as well as the new Maritime Doctrine of 2015<sup>7</sup>, the Merchant Shipping Code<sup>8</sup>, the Inland Water Transport Code<sup>9</sup>, as well as in regulations such as the Technical Regulations on the Safety of Maritime Transport Facilities<sup>10</sup>. The system for ensuring the safety of navigation in Russia is formed by legislative, executive and judicial authorities and specialized organizations in the field of maritime transport safety, state centers for training specialists in this field” [9, Skorokhodov D.A., Borisova L.F., Borisov Z.D.].

There are also a number of strategic documents that contain certain types and priorities of maritime safety, including those on the NSR. These are documents such as the still valid Arctic Strategy of Russia 2020 (current, relevant)<sup>11</sup>, as well as the new Arctic Strategy of Russia 2035<sup>12</sup>, Shipbuilding Strategy of Russia 2020 (current, relevant)<sup>13</sup>, Transport Strategy of Russia 2030<sup>14</sup>.

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<sup>4</sup> Shipping Industry Flag State Performance Table 2018/2019. URL: <http://www.ics-shipping.org/docs/default-source/Flag-State-Performance-Table/flag-state-table-2019.pdf> (accessed 25 September 2021).

<sup>5</sup> Prikaz Ministerstva transporta Rossiyskoy Federatsii ot 26.07.1994 № 63 «O merakh po povysheniyu bezopasnosti moreplavaniya» (s izmeneniyami na 26 noyabrya 2002 goda) [Order of the Ministry of Transport of the Russian Federation of July 26, 1994 No. 63 "On measures to improve the safety of navigation" (as amended on November 26, 2002)]. URL: <http://docs.cntd.ru/document/9008566/> (accessed 25 September 2021).

<sup>6</sup> Maritime Doctrine of the Russian Federation for the period up to 2020. URL: <http://docs.cntd.ru/document/902010411> (accessed 25 September 2021).

<sup>7</sup> Maritime Doctrine of the Russian Federation. URL: <https://docs.cntd.ru/document/555631869?section=text> (accessed 18 January 2022).

<sup>8</sup> Merchant Shipping Code of the Russian Federation (as amended on June 11, 2021). URL: <https://docs.cntd.ru/document/901732423> (accessed 25 September 2021).

<sup>9</sup> Inland Water Transport Code of the Russian Federation (as amended on July 2, 2021). URL: <http://docs.cntd.ru/document/901782478/> (accessed 25 September 2021).

<sup>10</sup> Decree of the Government of the Russian Federation No. 620 dated August 12, 2010 “On approval of the technical regulations on the safety of maritime transport facilities”. URL: <http://docs.cntd.ru/document/902230358> (accessed 25 September 2021).

<sup>11</sup> Strategy for the development of the Arctic zone of the Russian Federation and ensuring national security for the period up to 2020. URL: <http://docs.cntd.ru/document/499002465> (accessed 25 September 2021).

<sup>12</sup> Strategy for the development of the Arctic zone of the Russian Federation and ensuring national security for the period up to 2035. URL: <https://docs.cntd.ru/document/566091182> (accessed 18 January 2022).

<sup>13</sup> Strategy for the development of the shipbuilding industry for the period up to 2020 and beyond. URL: <http://docs.cntd.ru/document/902071488> (accessed 25 September 2021).

<sup>14</sup> Decree of the Government of the Russian Federation dated November 22, 2008 No. 1734-r “On approval of the Transport Strategy of the Russian Federation for the period up to 2030”. URL: <http://docs.cntd.ru/document/902132678> (accessed 25 September 2021).

At the international level, the Agreement on Cooperation in Aviation and Maritime Search and Rescue in the Arctic<sup>15</sup>, as well as the bilateral agreement between Russia and Norway on cooperation in search and rescue of persons in distress in the Barents Sea are worth mentioning<sup>16</sup>.

Thus, at the legal level, Russia is trying to fully ensure the safety of sea traffic in the waters of the NSR, based on the international obligations taken while respecting the rights of the coastal state and sovereignty over the “national maritime transport route” in the Arctic.

The “permissive procedure for navigation” in the NSR seems to be an unavoidable necessity and cannot be considered as discriminating against foreign carriers. The positive economic impact of using the route should not outweigh the need to maintain high environmental standards in the Arctic.

### *Environmental standards and principles*

Before considering economic and infrastructural barriers to development of the NSR, it is necessary to identify the environmental standards that are in force in Russia in relation to commercial shipping in the waters of the Northern Sea Route.

Shipping, like any human activity, has a negative impact on the environment. This is particularly pronounced in the Arctic, as the northern ecosystem is extremely vulnerable in the face of increasing anthropogenic pressure.

The development of shipping in the Arctic is associated with the following types of harmful impacts:

- chemical pollution (includes oil and petroleum product spills);
- physical impact (temperature, light, noise, vibration);
- microbiological (closely related to climate change and permafrost thawing, which make it possible for new to the Arctic microorganisms to survive);
- increase in all types of waste.

The increase in the volume of shipping traffic in the Northern Sea Route requires the development of port infrastructure. This implies that negative anthropogenic impacts occur both on the Arctic Ocean marine environment and on the Arctic terrestrial environment.

In order to protect the fragile ecosystem when navigating the NSR, environmental legal regulations have been developed, which include both international and national ones. Most of the international legal acts do not have a specific focus on the Arctic, but regulate the protection of the marine environment when using the World Ocean.

Such international acts contain, for example, prohibitions on the pollution of marine ecosystems with toxic pollutants (radioactive substances, oil, etc.). Thus, the Convention on the Pre-

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<sup>15</sup> Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic (2001). URL: <https://www.ifrc.org/docs/idrl/N813EN.pdf> (accessed 25 September 2021).

<sup>16</sup> Treaty between the Kingdom of Norway and the Russian Federation concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean (1995). URL: [https://www.regjeringen.no/globalassets/upload/ud/vedlegg/folkerett/avtale\\_engelsk.pdf](https://www.regjeringen.no/globalassets/upload/ud/vedlegg/folkerett/avtale_engelsk.pdf) (accessed 25 September 2021).

vention of Marine Pollution by Dumping of Wastes and Other Matter 1972<sup>17</sup> establishes the illegality of any flooding of ships, aircraft, platforms or other artificial structures located at sea, deliberate dumping into the marine environment of highly hazardous waste containing, in particular, radioactive substances, organohalogen components, mercury, cadmium, oil and oil products, stable plastics and other synthetic materials.

The International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)<sup>18</sup> was developed and adopted by the International Maritime Organization (IMO). This Convention is considered as the basic document aimed at prevention of pollution of the marine environment from ships in the course of operational activity and in case of emergencies [10, Djadjev I.]. Prohibiting norms apply to intentional and accidental discharges of oil and other harmful substances from ships, fixed and other floating platforms. The convention contains six technical annexes:

- Annex I Regulations for the Prevention of Pollution by Oil (entered into force 2 October 1983);
- Annex II Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk (entered into force 2 October 1983);
- Annex III Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form (entered into force 1 July 1992);
- Annex IV Prevention of Pollution by Sewage from Ships (entered into force 27 September 2003);
- Annex V Prevention of Pollution by Garbage from Ships (entered into force 31 December 1988);
- Annex VI Prevention of Air Pollution from Ships (entered into force 19 May 2005).

In 2014, the IMO Marine Environment Protection Committee approved draft amendments to MARPOL 73/78, namely Annexes I, II, IV, V in terms of their compliance with the new international document specifically dedicated to the regulation of navigation in Polar waters.

The new international legal document, which essentially clarifies the legal regime of navigation in Arctic and Antarctic waters, entered into force on 1 January 2017. This refers to the International Code for Ships Operating in Polar Waters (Polar Code)<sup>19</sup>. Its creation was carried out for more than 20 years and began back in 1993. "The Polar Code is an international legal response to the key environmental risks associated with navigation in polar waters: in terms of structural safety of ships allowed to navigate in such waters, in terms of ensuring a full range of measures to

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<sup>17</sup> Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972. URL: <https://docs.cntd.ru/document/1901638> (accessed 25 September 2021).

<sup>18</sup> The International Convention for the Prevention of pollution from Ships (MARPOL 73/78, 1972/1978). URL: <https://treaties.un.org/doc/Publication/UNTS/Volume%201340/volume-1340-A-22484-English.pdf> (accessed 25 September 2021).

<sup>19</sup> International Code for Ships Operating in Polar Waters (Polar Code, 2017). URL: <http://www.imo.org/en/MediaCentre/HotTopics/polar/Pages/default.aspx> (accessed 25 September 2021).

protect the marine environment in these environmentally sensitive areas” [11, Vylegzhanin A., Dudykina I., pp. 90–100].

The scope of the Polar Code is limited to polar waters, i.e. the Arctic waters and the Antarctic sea area.

Part II of the Polar Code contains provisions for the protection of the environment. “It is prescribed that any oil operations conducted by a ship’s crew in polar waters must be properly recorded in the Oil Record Book, the Shipboard Oil Pollution Emergency Plan and the Shipboard Marine Pollution Emergency Plan. Such accounting is carried out in accordance with the rules established in Annex I to MARPOL 73/78. The Polar Code contains special conditions for the transport of liquid toxic substances harmful to the environment, measures to prevent pollution by sewage, and prescribes procedures for dumping waste from ships. The waters of the Northern Sea Route are classified as “ice-covered area” in accordance with Article 234 of the 1982 UN Convention on the Law of the Sea (UNCLOS 1982). For Article 234 of UNCLOS 1982 to be applicable, the water area must satisfy two conditions:

- presence of particularly severe climatic conditions;
- presence of ice covering during most of the year.

Such conditions “create obstacles or increased danger to navigation, and pollution of the marine environment could seriously harm the ecological balance or irreversibly disrupt it”, as follows from the text of the Convention [12, Vylegzhanin A.N., Ivanov G.G., Dudykina I.P.].

The ongoing climate and ice cover changes in the NSR water area, on the one hand, create favorable conditions for the development of navigation, on the other hand, cause debate about the applicability of Article 234 of UNCLOS 1982. In particular, experts from the USA point out: “In a place like the Arctic where there’s less and less ice, will Article 234 still be a valid justification for what Russia and Canada are trying to do, with respect to their portions of the Arctic? The answer is probably no” [13, Dremluga R., pp. 128–135].

Of course, one cannot agree with this point of view. Anyone who has ever lived in the North or had experience of navigation in Arctic waters knows that in addition to ice, “obstacles or increased danger to navigation” are also created by especially severe climatic conditions. Navigation through the NSR will never be similar to navigation in the southern seas. Many experts, including Russian ones, have repeatedly drawn attention to this. The literature describes in detail those factors that determine the particular severity of the Arctic climate<sup>20</sup>. For example, short daylight hours in winter severely limit the ability to search and rescue, as well as eliminate the consequences of marine pollution. There is no doubt that the failure to take timely measures will necessarily cause “serious harm to the ecological balance or irreversibly disrupt it” [14, Grigoriev M.N.].

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<sup>20</sup> The New Arctic: Navigating the Realities, Possibilities, and Challenges. Wilson Center. URL: <https://www.wilsoncenter.org/event/the-new-arctic-navigating-the-realities-possibilities-and-challenges> (accessed 25 September 2021).

Therefore, it is completely justified that the Russian Federation, as a coastal state, has assumed the obligation to organize navigation in the NSR to protect the marine environment. They are the environmental issues and tasks to ensure the safety of ships and people that determine the permissive procedure for navigation, mandatory icebreaking and ice pilotage<sup>21</sup>.

The rules of navigation in the waters of the Northern Sea Route<sup>22</sup> are the main specialized Arctic document in the field of navigation. These Rules were developed in accordance with Article 5.1 of the Merchant Shipping Code of the Russian Federation<sup>23</sup>. They contain, among other things, “requirements for ships regarding safety of navigation and protection of the marine environment from pollution from ships”. The following environmental requirements must be complied with by the vessel when navigating in the waters of the Northern Sea Route:

- the capacity of tanks for collecting oil residues (oily sediments) should be sufficient, taking into account the type of ship’s propulsion system and the duration of the voyage in the NSR waters. Discharge of oil residues (oily sediments) in the waters of the Northern Sea Route is prohibited;
- containers with sufficient capacity for collecting waste (sludge) generated during the vessel’s operation should be available onboard, taking into account the duration of the voyage in the waters of the Northern Sea Route. The document does not contain an explicit prohibition on waste discharge, but it follows from the meaning of the legislation<sup>24</sup>.

The environmental requirements also include the obligation of the captain, when the vessel follows the route in the water area of the Northern Sea Route after crossing the Western or Eastern boundary and before leaving the water area of the NSR. In case of detection of environmental pollution, the NSR Administration must be immediately informed about this. The detection of pollution should be facilitated by the fulfillment of the requirement that the captain of the vessel or the senior assistant to the captain ought to be on the navigation bridge of the vessel in the NSR waters in ice conditions with an ice concentration of more than three points [15, Polar Law].

Thus, there are not many exclusively environmental provisions in the text of the document. It follows that anything not regulated by the norms of this act is regulated either by the national environmental legislation or by international agreements.

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<sup>21</sup> Prikaz Ministerstva transporta Rossiyskoy Federatsii ot 17.01.2013 № 7 «Ob utverzhdenii Pravil plavaniya v akvatorii Severnogo morskogo puti» [Order of the Ministry of Transport of the Russian Federation dated January 17, 2013 No. 7 “On Approval of the Rules for Navigation in the Waters of the Northern Sea Route”]. URL: <http://docs.cntd.ru/document/902396546> (accessed 25 September 2021).

<sup>22</sup> Ibid.

<sup>23</sup> Merchant Shipping Code of the Russian Federation (as amended on June 11, 2021). URL: <https://docs.cntd.ru/document/901732423> (accessed 25 September 2021).

<sup>24</sup> Prikaz Ministerstva transporta Rossiyskoy Federatsii ot 17.01.2013 № 7 «Ob utverzhdenii Pravil plavaniya v akvatorii Severnogo morskogo puti» [Order of the Ministry of Transport of the Russian Federation dated January 17, 2013 No. 7 “On Approval of the Rules for Navigation in the Water Area of the Northern Sea Route”]. URL: <http://docs.cntd.ru/document/902396546> (accessed 25 September 2021).

There are no other special acts regulating environmental protection in the course of navigation along the NSR routes in the Russian national legislation. Environmental protection (including marine) in the Arctic is regulated by general Russian environmental regulations.

The basic act is the Federal Law “On environmental protection” of 2002<sup>25</sup>. This law contains general provisions on:

- environmental quality standards, standards for permissible environmental impact, standards for permissible emissions and discharges;
- ecological expertise;
- state environmental monitoring;
- state environmental supervision, etc.

These provisions are disclosed in more detail in other special federal laws and regulations. The Law on environmental protection also establishes 23 principles of environmental protection (Article 3).

Let us analyze some of them from the point of their applicability to navigation in the Arctic.

1) Payment for natural resources use and compensation for environmental damage<sup>26</sup>

Natural resources use in this context refers to any use of nature or its individual components, such as the use of the marine environment for the purposes of navigation. In this context, this principle means that navigation in the waters of the NSR, as well as the construction and operation of the necessary infrastructure, are carried out on a paid basis. Payment may be expressed in the form of fees for permits and licenses, lease payments for the use of land plots, etc. If environmental damage is caused during the use of natural resources, it must be fully compensated.

2) Presumption of environmental hazard of planned economic and other activities

This means that even at the planning stage of any project related to the development and/or use of the NSR, it must be assumed that its implementation will or may harm the environment.

3) Obligatory environmental impact assessment in decision-making on the implementation of economic and other activities

This principle is related to the previous one. It means that the degree of impact of the planned project on the Arctic environment must be assessed. This procedure is regulated by the Federal Law of November 23, 1995 No. 174-FZ “On environmental expertise”<sup>27</sup>. The nuances of

<sup>25</sup> Federal'nyy zakon ot 10.01.2002 № 7-FZ «Ob okhrane okruzhayushchey sredy» (s izmeneniyami na 2 iyulya 2021 goda) [Federal Law No. 7-FZ of January 10, 2002 “On Environmental Protection” (as amended on July 2, 2021)]. URL: <http://docs.cntd.ru/document/901808297/> (accessed 25 September 2021).

<sup>26</sup> Comment on the Federal Law of January 10, 2002 No. 7-FZ “On Environmental Protection” (edited by O.L. Dubovik). Especially for the GARANT system, 2010

<sup>27</sup> Federal'nyy zakon ot 23.11.1995 № 174-FZ «Ob ekologicheskoy ekspertize» (s izmeneniyami na 2 iyulya 2021 goda) [Federal Law No. 174-FZ of November 23, 1995 “On Environmental Expertise” (as amended on July 2, 2021)]. URL: <http://docs.cntd.ru/document/9014668/> (accessed 25 September 2021).

these procedures have already been repeatedly covered in the literature<sup>28, 29, 30</sup> [16, Environmental Assessment..., pp. 114–125].

4) Consideration of natural and socio-economic peculiarities of territories when planning and carrying out economic and other activities

This principle seems to be the “most Arctic” among those mentioned above. It means the need to take into account the natural, climatic and socio-economic features of the region when planning and implementing Arctic projects, shipping in “ice-covered areas”. This applies to the planning stage, the project implementation stage and the stage of compensation for environmental damage, if any.

5) Ensuring the reduction of the negative impact of economic and other activities on the environment

This principle means that, while mastering and developing the NSR, it is necessary to minimize environmental risks as much as possible. For that purpose it is necessary to use the best available technologies and to constantly implement new and well-proven technologies in the field of environmental protection.

6) Prohibition of economic and other activities leading to degradation of the ecosystem

This principle seems to be very intriguing. On the one hand, it is enshrined in Russian legislation. On the other hand, both Russia and other states have actively taken up the development of the Arctic territories and the waters of the Arctic Ocean. In the Arctic, as is well known, the consequences of some human activities are difficult to predict. This is due to the poor knowledge of the region, the particular vulnerability of the Arctic ecosystems, as well as the ongoing climate change, which, with enviable constancy, presents us with new surprises. So far, this has not stopped anyone. However, perhaps in the future, it will be possible to see examples of the implementation of a ban on any type of activity in the Arctic based on this principle. Even today, some financial institutions refuse to support projects related to CO2 emissions.

7) Responsibility for violation of environmental legislation

This principle means that legal liability for violations of environmental regulations is unavoidable. We have already outlined that the environmental requirements to be complied with when navigating in the NSR waters are contained in both international legal acts and Russian national legislation.

However, problems may arise in determining the so-called “applicable law”, when the issue of bringing to one or another type of legal liability is being decided. This is partially regulated in the Merchant Shipping Code of the Russian Federation (MSC)<sup>31</sup>.

<sup>28</sup> Information on the Russian Environmental Impact Assessment. Arctic Center. URL: <https://www.arcticcentre.org/RussianEIA> (accessed 25 September 2021).

<sup>29</sup> Environmental Assessment in Countries in Transition. Ed. by Bellinger E., Lee N., George C., Paduret A. Central European University Press, 2000, pp. 114–125.

<sup>30</sup> Environmental Policy and Regulation in Russia: The Implementation Challenge (OECD, 2006). URL: <https://www.oecd.org/env/outreach/38118149.pdf> (accessed 25 September 2021).

As a general rule, the law applicable to relations arising from merchant shipping with the participation of foreign citizens or foreign legal entities, or complicated by a foreign element, is determined in accordance with the international treaties of the Russian Federation, this Code, other laws and merchant shipping customs recognized in Russia. The parties to the contract may choose the law to be applied to their rights and obligations under the contract. If the parties fail to agree on the law to be applied, the rules of this Code should be applied. In case of environmental damage in the territorial sea of the Russian Federation or its exclusive economic zone, the MSC is applied. The Code specifically regulates relations arising from damage caused by:

- oil pollution from ships;
- maritime transport of hazardous and harmful substances;
- pollution by bunker fuel [17, Law of the Sea].

8) International cooperation of the Russian Federation in the field of environmental protection

Environmental problems are not local, especially in the Arctic. Any pollution can acquire a transboundary character. In the era of globalization, it is difficult to imagine that any state alone will be able to deal with negative environmental changes, especially those caused by global factors. In this regard, Russia relies on international cooperation in the field of environmental protection in the Arctic. This is evidenced by numerous international projects that are currently being implemented in the Russian Arctic and funded by the state [18, Sorokina T.Y., pp. 341–355].

Not all international and national standards and principles of organizing navigation in the waters of the NSR have been listed in this part, but the most important ones.

As Vylegzhanin A. and Dudykina I. note, the Polar Code offers international legal ways to respond to the main risks associated with navigation in polar waters, in terms of the structural safety of a vessel allowed to sail in such waters, and to ensure the full range of measures to protect the marine environment in these ecologically sensitive areas. Thus, both the Polar Code and Article 234 UNCLOS 1982 are now applicable. On their basis, as well as on historical legal grounds, Russia retains the right to regulate navigation along the Northern Sea Route [11, *ibid.*].

Consequently, in the waters of the Northern Sea Route within the territorial waters of Russia and its exclusive economic zone, Russian national standards and principles in the field of marine environment protection are valid and applied. They must be taken into account.

Russian legislation, which enshrined these standards and principles, is characterized by the following features:

- compliance of the initial principles of the Russian legislation with the universally recognized norms of international law;
- environmental protection as a priority in the regulation of navigation organization in the water area of the NSR by the coastal state (Russia);

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<sup>31</sup> Merchant Shipping Code of the Russian Federation (as amended on June 11, 2021). URL: <https://docs.cntd.ru/document/901732423> (accessed 25 September 2021).

- compliance of the principles of regulation of environmental protection and nature management activities in the Russian Federation with the basic principles of international environmental law.

### *Economics, management and cooperation in the NSR*

#### **NSR cargo traffic: current state**

The evolution of cargo traffic along the NSR can be traced in the following years: the increase in cargo turnover along the NSR began only in the late 2000s, and in 2016 its volumes exceeded the record figures of 1987, amounting to 7.5 million tons. In 2017, the indicators continued to grow, reaching 10.7 million tons (including 0.8 million tons by river vessels). At the same time, it should be noted that the increase in volumes is directly and almost completely associated with the expansion of Russia's activity in the Arctic, and, to a lesser extent, with the transit of goods in the Arctic. Thus, only 194 thousand tons (less than 2%) were in transit out of 10.7 million tons transported in 2017<sup>32</sup>.

In 2018, 18 million tons of cargo passed along the Arctic coast of Russia, which is 4 times more than in 2013 and 80% more than in 2017. Just five years ago, there was almost no traffic on the route for several months (December to May).

Currently, on average, up to 20 ships are active every day during the entire winter season. Despite an increase in cargo volume compared to 2017, the number of vessels operating on the route year-round has decreased by about 20%, especially during the summer months. This indicates that larger ships, used primarily to transport hydrocarbon resources, are now visiting this route more frequently than smaller cargo ships used to supply building materials in previous years. In 2018, all Russian Arctic seaports handled 92.7 million tons of cargo, 70% of which was liquefied natural gas and oil. Murmansk remains the largest port in the region, with a cargo turnover of more than 60.7 million tons. One of the promising ports along the NSR is Sabetta, where the Yamal LNG plant for the production of liquefied natural gas (LNG) is located, the volume of exported cargo (liquefied natural gas and gas condensate) through this port is growing annually and reached 19.7 million tons in 2020<sup>33</sup>.

By 2018, the route was already used by 164 companies, including 45 foreign ones. Transit traffic was also at its highest level since 2013 — 491 thousand tons and 26 trips between Europe and Asia. This compares with 194 thousand tons on 27 transit shipments in the previous year<sup>34</sup>.

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<sup>32</sup> Severnyy morskoy put' protiv Suetskogo kanala. Plyusy i minusy nazrevayushchey konkurentсии mezhdu Moskvoy i Kairom [Northern Sea Route against the Suez Canal. Pros and cons of the brewing competition between Moscow and Cairo]. URL: [http://www.ng.ru/energy/2018-06-19/11\\_7247\\_nord.html](http://www.ng.ru/energy/2018-06-19/11_7247_nord.html) (accessed 25 September 2021).

<sup>33</sup> Ob'em vyvezennykh cherez port Sabetta v 2020 godu gruzov sostavil 19,7 mln tonn [The volume of cargo exported through the port of Sabetta in 2020 amounted to 19.7 million tons]. URL: [https://www.korabel.ru/news/comments/obem\\_vyvezennyh\\_cherez\\_port\\_sabetta\\_v\\_2020\\_godu\\_gruzov\\_sostavil\\_19\\_7 mln\\_tonn.html](https://www.korabel.ru/news/comments/obem_vyvezennyh_cherez_port_sabetta_v_2020_godu_gruzov_sostavil_19_7 mln_tonn.html) (accessed 29 December 2021).

<sup>34</sup> Russia's Northern Sea Route sees record cargo volume in 2018, by Malte Humpert, High North News, February 20, 2019, Arctic today. URL: <https://www.arctictoday.com/russias-northern-sea-route-sees-record-cargo-volume-in-2018/> (accessed 25 September 2021).

If we take the most recent statistics, according to the Department of Communications of the State Corporation Rosatom, with reference to the FSBI “Administration of the NSR” of the Ministry of Transport of the Russian Federation, as of September 30, 2021, the volume of transit traffic on the Northern Sea Route amounted to more than 1.440 million tons. This is almost 160 thousand tons more than in 2020, when 1.280 million tons were transported.

The bulk of the cargo was iron concentrate and coal transported through the NSR in the eastern direction. The largest number of voyages of cargo vessels was made under the flags of China (12), Portugal (10), Liberia (9), Marshall Islands (8). Containerized cargo was carried on three trips and amounted to just over 22 thousand tons.

In accordance with the passport of the federal project “Development of the Northern Sea Route”, the target figure for 2021 is 31 million tons. According to the instructions of the President of the Russian Federation, the volume of traffic along the Northern Sea Route must be increased to 80 million tons per year by 2024<sup>35</sup>.

Not only the private sector is engaged in and interested in cargo transportation along the NSR. For example, the share of the Russian Ministry of Defense accounts for more than 1/3 of government orders in the Arctic. According to the relevant order of the Government of Russia, Oboronlogistika was determined as the sole contractor for the delivery of military cargo to the Arctic zone. Since 2018, the company has been participating in the Northern Delivery. In 2018, Oboronlogistika delivered more than 11 thousand tons of cargo to Arctic locations. In the navigation of 2019, ships operated by Oboronlogistika performed 13 voyages to Arctic locations and transported more than 40 thousand tons of various military cargo, weapons and military equipment, as well as cargo of the Russian Defense Ministry’s military construction complex, including: airfield slabs, building materials for modular housing, school equipment. In the opposite direction, as part of the program to clean up the Arctic, 3.5 thousand tons of scrap metal and obsolete equipment were transported to the mainland<sup>36</sup>.

However, despite the growth in cargo traffic along the NSR, all of Russia’s Arctic seaports do not operate at full capacity, and many pan-Asian shipments are being routed through the Suez Canal.

The factors that constrain the development of the NSR as a “Pan-Asian transport hub” will be discussed below.

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<sup>35</sup> Ob'em tranzitnykh gruzoperevozok po Sevmorputi po sostoyaniyu na 30 sentyabrya 2021 goda prevysil pokazatel' za ves' 2020 god [The volume of transit cargo transportation along the Northern Sea Route as of September 30, 2021 exceeded the figure for the entire 2020]. URL: <https://www.rosatom.ru/journalist/news/obem-tranzitnykh-gruzoperevozok-po-sevmorputi-po-sostoyaniyu-na-30-sentyabrya-2021-goda-prevysil-pok/> (accessed 21 January 2022).

<sup>36</sup> Razvitie effektivnoy transportno-logisticheskoy sistemy v Arktike [Development of an efficient transport and logistics system in the Arctic]. URL: <http://oboronlogistika.ru/pressa/smi/513/> (accessed 25 September 2021).

### *Constraint factors*

Logistics companies operating beyond the Arctic Circle face certain barriers and risks that do not allow organizing the service for international merchant shipping:

- Customs escort of cargoes. Customs escort of cargo is a highly bureaucratic process in many Arctic ports. The customs clearance process itself can take longer than the unloading and loading operations. Vessels can simply stand idle waiting for long bureaucratic decisions. Besides, complicated processes of obtaining permission for passage through the route and icebreaking assistance should be mentioned here;
- The problem of so-called “returning” cargo. The economic feasibility of carrying out cargo transportation along the NSR in one direction does not cover the cost of returning the vessel to the original point of departure. This is due to the lack of integrated infrastructure development of the Arctic regions. First of all, this is the development of transport infrastructure. This problem could be solved by launching the Belkomur project, which would create an export base for the Pan-Asian market and partially solve the problem of “returning” cargo;
- Unresolved issue of insurance in the NSR waters. The issue of insurance in the NSR waters remains unresolved at the moment, which affects the activities of logistics companies. Standard maritime insurance contracts exclude or partially limit insurance coverage by introducing geographic restrictions on navigation routes in the Arctic. The solution of this problem would accelerate the growth of cargo traffic along the NSR;
- Seasonality of transportation. Ice conditions create risks of inability to meet the transit window<sup>37</sup>. Although the average annual (monthly) temperature in the Arctic is rising every year (according to the National Snow and Ice Data Center, the average monthly temperature in December from 1980 to 2020 drops by 3.6% every decade), ice conditions are the obstacles that are difficult to predict. More precisely, it is difficult to predict ice movement and thickness. It is worth noting that the constant melting of ice opens up various little-studied coastal routes, which require special attention;
- High and low tides. Many Arctic coastal regions are known for their high tides. They can reach several meters, which can lead to the vessel waiting for the required water level, leading to its downtime and increase in the expenditure component;
- Currency fluctuations and icebreaking base.

### *Forecasts*

The Russian Federal Atomic Energy Agency (Rosatom) plans to increase the volume of cargo transported along the Northern Sea Route to 92.6 million tons by 2024. Liquefied natural gas and gas condensate are expected to become the main types of cargo shipped in 2024 with 41 mil-

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<sup>37</sup> National Snow and Ice Data Center. Arctic Sea Ice News & Analysis. Average Monthly Arctic Sea Ice Extent (December 1979–2019). URL: <http://nsidc.org/arcticseaicenews/files/2020/01/Figure3.png> (accessed 25 September 2021).

lion tons. In addition, shipment volumes of 23 million tons of coal and more than 17 million tons of oil are planned <sup>38</sup>.

### *Infrastructure*

The realization of the infrastructure potential of the Arctic territories of Russia is possible through the construction of industrial infrastructure, roads, airports, power plants and other facilities, which becomes in many ways a decisive factor in overcoming the heterogeneity of the development of the northern territories of the Arctic states, the sustainable development of the Arctic <sup>39</sup>.

In the context of accelerating scientific and technological progress, the differentiation and complication of production structure makes the problems of infrastructure development as the main driving force for ensuring exchange and implementation of spatial socio-economic ties relevant. Accordingly, as Chikinova M.S. notes, constant and continuous monitoring of new factors in the development of the infrastructure of the territory is currently an urgent issue of great scientific and practical importance [1, *ibid.*]. One of these factors at the present stage of development of the world economy is international cooperation in the implementation of major infrastructure projects. An example of such interaction is the transport and logistics development of the Northern Sea Route.

The scientific problem is the mismatch between the potential capabilities of the Arctic and its current level of infrastructure provision. At the same time, objective prerequisites for the creation of centers that are able to perform certain functions, for example, in the distribution and redistribution of transport, information and financial flows, have now been formed on the territory of the Arctic zone of Russia [1, *ibid.*].

The famous scientist Shlichter S.B. notes that transport is widely used as a means of regional policy and indicates that at present, advanced infrastructure development is the most important trend in the development of the world economy [19, pp. 115–122].

According to Pchelintsev O.S., infrastructure is of paramount importance for the territorial development of the state: in an ideal model of a market economic system, the state manages socio-economic development, primarily through the construction of housing stock, roads, ports, gas pipelines and other infrastructure [20, Pchelintsev O.S.].

It should be noted that the study of infrastructure development is carried out by representatives of various sciences. Thus, the researches of geographical scientists are distinguished by a spatial approach to the objects under study, in which the territory is often considered as a resource base, a kind of “carrier” of infrastructure. For example, Maergoyz I.M. defines infrastructure as “the general fund base of the territory, that is, a system of spatially expressed elements of

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<sup>38</sup> Business data platform Statista Forecasted cargo volume via the Northern Sea Route in Russia by 2024, by type (in million metric tons). URL: <https://www.statista.com/statistics/1063330/northern-sea-route-cargo-volume-by-type/> (accessed 25 September 2021).

<sup>39</sup> Speech at an expanded meeting of the State Council "On the development strategy of Russia up to 2020". URL: <http://www.kremlin.ru/events/president/transcripts/24825> (accessed 25 September 2021).

material and technical nature, which together form the most general prerequisites for managing in any region” [21, pp. 9–17].

### ***NSR infrastructure management***

In accordance with the Federal Law of the Russian Federation No. 525-FZ of December 27, 2018, which amended the Federal Law “On inland sea waters, territorial sea and contiguous zone of the Russian Federation” and the Merchant Shipping Code of the Russian Federation, the NSR is managed on the basis of the “two keys” principle, held by the Russian Ministry of Transport and Rosatom State Corporation.

In terms of managing the transport corridor, the Ministry of Transport regulates the navigation of the NSR, implements Russia's international obligations, carries out the federal state supervision in the field of transport and state port control over the ships and the safety of navigation. The relevant ministry also manages seaport captains and approves the list of port charges.

According to the regulation, Rosatom is recognized as a single infrastructure operator of the NSR, the purpose of which is to ensure the needs of users in safe, uninterrupted, cost-effective and year-round navigation. In order to achieve this goal, the corporation manages the state Arctic icebreaker fleet, prepares proposals for the formation of state policy on the NSR, the creation of NSR seaports and infrastructure facilities, and manages state property. The most important function of Rosatom is to ensure safety in terms of organizing maritime traffic.

For the purpose of effective performance of these functions, two federal state unitary enterprises, Atomflot and Hydrographic Enterprise, were established under the Directorate of the Northern Sea Route.

Atomflot deals with the organization of shipping, including information support for Arctic shipping and icebreaker assistance, as well as the construction of the Arctic fleet (nuclear icebreakers, LNG icebreakers, auxiliary fleet). The company also provides support services (port and pilotage services, rescue preparedness).

The tasks of the Hydrographic Enterprise are navigation and hydrographic support, involving route recommendations and positioning system for ships, as well as construction and management of the NSR infrastructure (sea channels, hydraulic structures and ship traffic control systems).

“Rules of navigation in the waters of the Northern Sea Route” and “Transport artery infrastructure development plan” are approved by the Russian government on the basis of proposals from the Ministry of Transport and Rosatom<sup>40</sup>.

At the end of December 2019, a plan for the infrastructure development of the Northern Sea Route for the period up to 2035 was approved by the Russian Government<sup>41</sup>.

<sup>40</sup> Federal'nyy zakon ot 27.12.2018 № 525-FZ «O vnesenii izmeneniy v ot del'nye zakonodatel'nye akty Rossiyskoy Federatsii» [Federal Law No. 525-FZ dated December 27, 2018 “On amendments to certain legislative acts of the Russian Federation”]. URL: <http://docs.cntd.ru/document/552045960> (accessed 25 September 2021).

<sup>41</sup> Rasporyazhenie Pravitel'stva Rossiyskoy Federatsii ot 21.12.2019 № 3120-r «Ob utverzhdenii plana razvitiya infrastruktury Severnogo morskogo puti na period do 2035 goda» [Decree of the Government of the Russian Federation of

The plan was formed on the basis of forecasts of all existing and prospective groups of cargo flows, including export-import and transit cargo flows passing through the seaports of Murmansk and Arkhangelsk in the direction of the Asia-Pacific region <sup>42</sup>.

In May 2020, the Ministry for the development of the Russian Far East, together with Rosatom, the Ministry of energy and regional governments, presented a list of projects planned for implementation as part of the development of the Northern Sea Route.

### ***Analysis of the current state of the NSR infrastructure: maritime transport and ports***

In the autumn of 2018, the Russian Government approved the “Comprehensive plan for the modernization and expansion of the main infrastructure for the period up to 2024”, the source of financing for the plan is mixed, the budget is 6.348.061.474.000 rubles. The objectives of the comprehensive plan are:

- development of transport corridors “West-East” and “North-South” for the transportation of goods;
- increasing the level of economic connectivity in the Russian Federation through the expansion and modernization of railway, aviation, road, sea and river infrastructure.

Of all the tasks of the Comprehensive plan, solving the logistical problems of the Arctic, it is possible to include:

- increasing the capacity of seaports of the Russian Federation (up to 1.3 billion tons); development of the Northern Sea Route; increasing cargo traffic along the Northern Sea Route up to 80 million tons;
- formation of multi-modal transport and logistics hubs.

The planned development of the Northern Sea Route is aimed at building port infrastructure, equipping it with a modern icebreaker fleet, developing and improving all transport routes associated with it, including pipelines, river and automobile routes, and railway lines.

The existing traffic flows of the Arctic shipping in the NSR solve various problems. According to their purpose, they can be divided in the following way:

- international transit;
- cabotage;
- delivery to ports and points of the NSR water area;
- export of products from the NSR water area;
- interport transportation in the NSR water area.

For the purposes of this research, it is especially important to study in detail the international transit that ensures cargo traffic between the markets of the North Atlantic Ocean (mainly European)

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December 21, 2019 No. 3120-r “On approval of the Northern Sea Route infrastructure development plan for the period up to 2035”. URL: <http://docs.cntd.ru/document/564069513> (accessed 25 September 2021).

<sup>42</sup> Utverzhdennyy plan razvitiya infrastruktury Severnogo morskogo puti do 2035 goda [Plan for the development of the infrastructure of the Northern Sea Route up to 2035 was approved]. URL: <https://portnews.ru/news/289357/> (accessed 25 September 2021).

and the Asia-Pacific region (mainly Asian countries).

In order to analyze the current state of the NSR infrastructure development in the context of pan-Asian trade, it is necessary to consider the availability of transport that provides maritime cargo traffic, as well as the qualitative and quantitative composition of ports, transport and logistics complexes in the NSR water area.

As Balmasov S.A. notes, the main element of the NSR infrastructure is the nuclear icebreaker fleet, without which the safe and efficient organization of transit voyages is impossible even in light ice conditions.

The geographical location of the NSR routes necessitates comprehensive support for vessels when operating in remote areas. In fact, the icebreaking fleet provides not only the physical assistance of the ship in the ice, but, no less important, the safety of the passage in general. Insurance companies usually do not approve independent transit voyages on the NSR.

Availability and accessibility of icebreaking services will continue to be one of the key elements in the organization of transit navigation on the NSR. In this regard, the timely construction and commissioning of new nuclear icebreakers is a prerequisite for the growth of traffic in the foreseeable future [22, Balmasov S.A., pp. 60–64].

Currently, the icebreaking fleet of Russia consists of 38 ships, 5 of which are nuclear-powered (Table 1), and it is the largest in the world.

Table 1

Information on operating nuclear-powered vessels<sup>43</sup>

No.		Reactor facility project	Main facility capacity	Start date	End date
1	Nuclear icebreaker "50 Years of Victory"	2 reactors of OK-900A type	55 MW (75 000 hp)	23.03.2007	2039
2	"Yamal"	2 reactors of OK-900A type	55 MW (75 000 hp)	28.10.1992	2028
3	"Taimyr"	reactor of KLT 40 type	37 MW (50 000 hp)	30.06.1989	2025*
4	"Vaigach"	reactor of KLT 40 type	37 MW (50 000 hp)	25.07.1990	2027*
5	"Sevmorput"	reactor of KLT 40 type	29 MW (40 000 hp)	30.12.1988	2023
* Work to further extend the resource is underway					

In the next few years, Rosatomflot will include three universal nuclear icebreakers (UNI), designed to guide large vessels independently and to lead caravans year-round in the Western Arctic region. These icebreakers will be able to conduct convoys of ships in arctic conditions, breaking through ice up to 3 meters thick. The deadline for the delivery of the lead UNI "Arktika" has already been completed in 2019, for the first serial UNI "Siberia" — November 2020, for the second serial UNI "Ural" —

<sup>43</sup> Source: Compiled by the team of authors based on open data from the Internet, ROSATOM official website. URL: <https://rosatom.ru/> (accessed 25 September 2021).

November 2021. Six diesel-electric icebreakers were also put into operation<sup>44</sup>.

International transit requires a developed system of ports and other transport and logistics facilities. At present, there are over 70 transshipment bases and ports located along the NSR. The main points of the Northern Sea Route are the ports located in Sabetta, Igarka, Dudinka, Tiksi and Pevek.

The authors believe that it is necessary to amend the Merchant Shipping Code of the Russian Federation (Article 5.1) and to expand the established boundaries of the NSR water area by adding the seaports of Arkhangelsk and Murmansk to it as the most important transport and logistics centers of the Arctic Basin.

The largest share in the total cargo turnover of the Arctic basin ports is held by Murmansk (60–65%) and Sabetta (about 25%), while the remaining ports provide only 10–15%. Transshipment volumes by ports in the Arctic basin are growing every year. Thus, in 2016, the total volume of cargo turnover of all Arctic ports was 49.7 million tons, and by 2018 it had already reached 92.7 million tons, including 60.7 million tons in the port of Murmansk and 17.4 million tons in Sabetta (the port increased its cargo turnover by 234.7% compared to the previous year) [23, Serova N.A., Serova V.A., pp. 42–56].

According to the NSR infrastructure development plan for the period up to 2035, the reconstruction of facilities in the seaport of Pevek in the Chukotka Autonomous Okrug was completed in 2020, and by the beginning of 2022, the reconstruction of the Sabetta sea channel is to be completed. Comprehensive development of the Murmansk transport hub is also envisaged.

In October 2021, Yu.P. Trutnev, Deputy Prime Minister and Presidential Plenipotentiary Envoy to the Russian Far Eastern Federal District, made a report on the implementation of the AZRF strategy at the Council of Federations of the Federal Assembly of the Russian Federation. The report focused a great deal of attention on the development of infrastructure in the Arctic. For the purposes of this study, information concerning the problems and prospects for the development of the NSR infrastructure, as well as the measures taken and being implemented at the moment, are of the greatest interest.

Among the main challenges limiting infrastructure development in the Arctic are the severity of the climate, the spatial remoteness from major land transport routes, and the long-term underfunding of infrastructure projects.

These and other factors have affected the current state of the NSR infrastructure, the development of which is impossible without the construction of an additional ice fleet (including cargo ships of a high Arctic class), the improvement of port infrastructure and connecting transport arteries, and the creation of hydrographic infrastructure. Besides, to improve the safety of cargo transit along the NSR, it is necessary to develop a rescue system and to create an Arctic satellite constellation. Particular attention should be paid to improving the quality of life of people in settlements along the NSR and participating in the efficient functioning of the transport corridor (social infrastructure).

Currently, an institutional environment is being formed that contributes to the development of the NSR infrastructure. A legislative framework has been created to increase the investment attrac-

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<sup>44</sup> Nuclear icebreaker fleet. URL: <https://www.rosatom.ru/production/fleet/> (accessed 25 September 2021).

tiveness of the studied areas. Differentiated system of preferences has been introduced to ensure accelerated economic development of the macroregion. For example, mechanisms are used to subsidize the construction of infrastructure in the amount of 30% of the total declared level of investment. There are tax preferences for shippers to stimulate export traffic (0% VAT, etc. State support is provided in the creation of related infrastructure for the implementation of investment projects (floating nuclear power plants, power lines, access roads).

The icebreaking fleet has impressive development prospects. In addition to the construction of new nuclear icebreakers, projects for LNG-powered icebreakers are being developed. The cargo fleet will be more than tripled by 2030. To achieve this, subsidies have been allocated for construction of 18 ships at the Zvezda shipbuilding complex with a total volume of 59 billion rubles. Active implementation of digital and space technologies is planned to improve the quality of navigation <sup>45</sup>.

### *Discussion and conclusions*

Currently, it becomes evident that it is impossible to bring the transport and logistics infrastructure of the Northern Sea Route to a high level, which would allow it to compete with alternative transport routes, primarily the route through the Suez Canal, only by the existing economic entities in the Arctic (mainly oil and gas companies).

At the same time, all countries interested in the NSR understand the economic efficiency of using the Arctic transport maritime corridor in international trade.

The main focus of corporations involved in the resource development of the Arctic is aimed at building infrastructure to meet their own needs and to sell the minerals extracted. Therefore, it is necessary to look for new mechanisms and approaches to the development of the NSR infrastructure in the context of international transit. Such an approach will require a change in the development strategy of the Arctic in the countries concerned.

Based on the analysis of existing political, legal and infrastructural barriers, the following general recommendatory positions have been formulated that will contribute to infrastructure development and increase in international transit along the NSR:

1. International cooperation and pooling of resources from different countries for the development of the NSR transit infrastructure.
2. Project-based approach to the development of the NSR infrastructure on the principles of public-private partnerships and the economic feasibility of investments.
3. Development of a crewless navigation system (development and implementation of digital systems in transport and logistics facilities) to offset the impact of negative factors on human health in the Arctic.
4. Introduction of the latest scientific and technological achievements in the development of the NSR infrastructure.

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<sup>45</sup> 509 Meeting of the Federation Council. URL: <http://council.gov.ru/events/multimedia/video/167784/> (accessed 25 September 2021).

5. Improvement of navigation and hydrographic support in the NSR water area.
6. Creation of a network of rescue coordination centers (land and sea) along the NSR route for the safety of transport and logistics operations.
7. Increasing the icebreaking base and improving the port infrastructure of the NSR.
8. Application of the caravan-based cargo transportation system to optimize the costs of different countries.
9. Creation of a single international transport and logistics operator of the NSR.
10. Admission of international Arctic carriers to work on the NSR (change in the regulatory framework).
11. Creation of a transparent and profitable tariff system for cargo transportation along the NSR.
12. Correction of the strategic and tactical plans of the Arctic countries for the development of the NSR. Focus on mutually beneficial cooperation and development of the global economy, taking into account national interests.
13. Implementation of a set of measures to reduce bureaucratic barriers in the customs escort of goods.
14. Creation and ongoing support of a unified system of interaction between all stakeholders (logistics companies, shippers, consignees, port authorities). This system should solve the problem of “return” cargo.
15. Starting point in solving the problems of the unsettled issue of insurance is the consolidation of the countries of the Arctic Eight in the creation of a universal convention that would contain the rules of insurance in the NSR waters, namely:
  - cargo insurance;
  - hull and machinery insurance;
  - liability insurance for losses caused to third parties.

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*The article was submitted 13.06.2021; approved after reviewing 18.11.2021; accepted for publication 23.01.2022*

*Contribution of the authors: the authors contributed equally to this article.*

*The authors declare no conflicts of interests.*