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The Northern Sea Route's Role in the System of International Transport Corridors

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The Northern Sea Route (NSR) is one of the cornerstones of the Russian Eurasian Transport Corridor and is a major component of the larger system of international east–west transport corridors. The Northern Maritime Corridor connects the Russian North both to the European continent and to the east coast of the United States. Together with inland water routes running north–south along the large Russian rivers, the NSR forms an integrated water transportation system of the North of Russia, as illustrated in Figure 1.

Due to its unique geographic location, the NSR offers a potentially shorter maritime route between Europe and the Asian-Pacific region, reducing the distance by up to 50 percent in comparison with existing routes via the Suez and Panama canals (see the distance comparison table in Fig. 1). Exploring this transit potential of the NSR was in the centre of attention of several international projects and programs from 1993 to 2007.

Famous Swedish Arctic explorer N. A. Nordenskjöld was the first to successfully transit the Northeast Passage aboard the sealing steamship Vega in 1878–1879. The expedition's success was to a considerable extent ensured by Russian industrialist A. M. Sibiryakov. However, assessing his experience, including the forced over-wintering on the seaway, Nordenskjöld concluded that the Northeast Passage was not suitable for commercial transit.

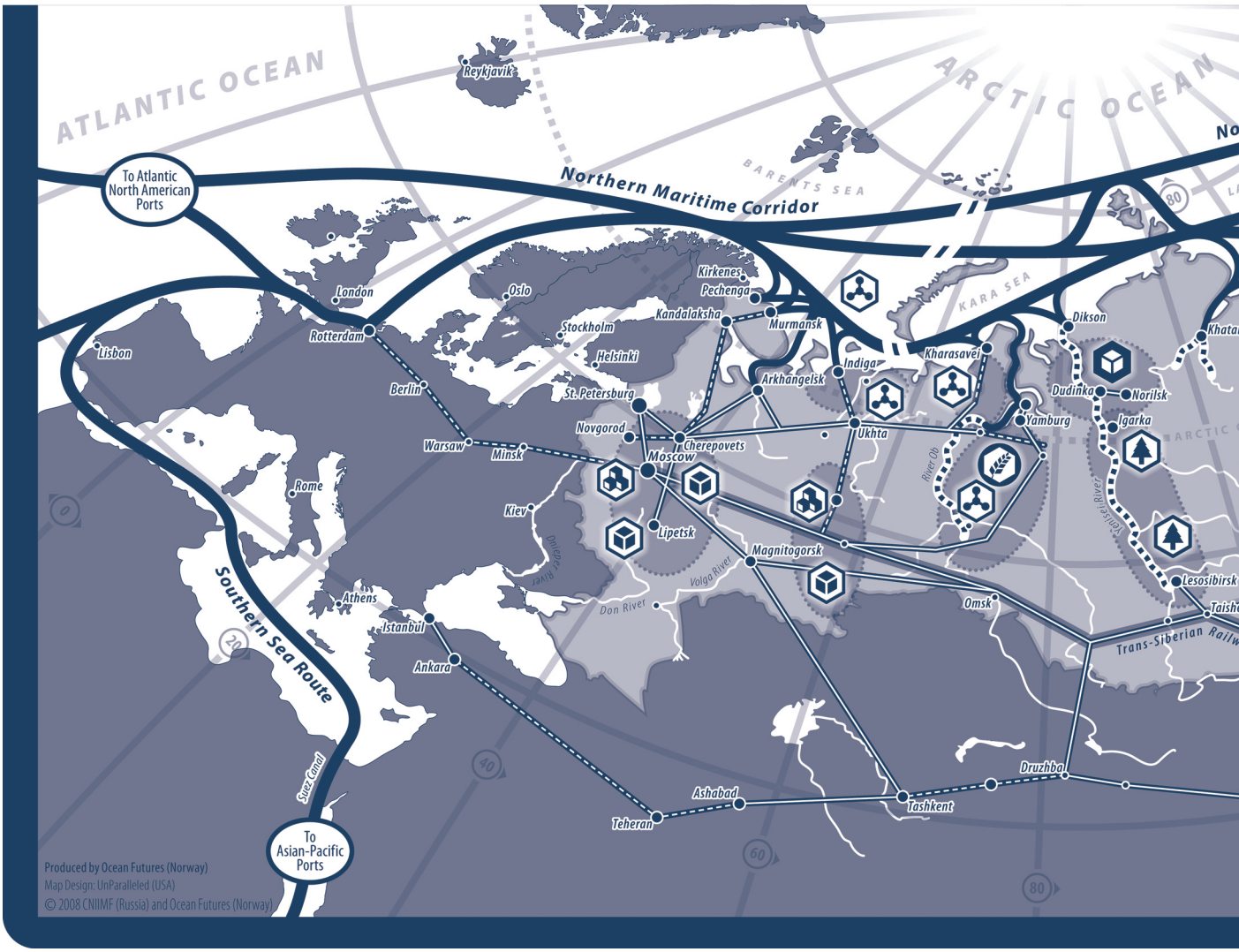
This conclusion was disproved in 1932 when the Russian icebreaking steamer Sibiryakov transited the passage during one season. The results of this legendary voyage were discussed at the general meeting of party and government leaders, as well as representatives of a number of people's commissariats. On 17 December 1932, a decree of the Council of People's Commissars of the USSR named the Northeast Passage the "Northern Sea Route" and established the Northern Sea Route Administration (Glavsevmorput) to make the NSR a functioning, practicable shipping route from the White Sea to the Bering Strait. Thus 17 December 1932 is taken as the beginning of the NSR as an administered sea route.

Year-round navigation between Murmansk and Dudinka began in 1978. The portion of this route between Murmansk and Novaya Zemlya is outside the NSR proper but is part of the Northern Maritime Corridor (see Fig. 1).

In an early demonstration of the potential for year-round transit use of the NSR, the transport ship Kapitan Myshevsky conducted a high-latitude, trans-arctic voyage in 1978, carrying national economy cargo from Murmansk to Magadan while under escort of the nuclear icebreaker Sibir. The voyage was conducted in May–July during the period of maximum ice extent. This experimental voyage proved in principle the possibility of profitable, year-round, commercial transit with ships of the SA-25 type (currently under design), which will be over 25,000 deadweight tons (dwt) and have an ice classification of Arc7. (Arc is the new designation for ice-classed ships of the Russian Maritime Register of Shipping; it replaces the former designation, LU.)

All subsequent cargo transit transport has been carried out by Russian ships. Transit traffic reached its maximum volume in 1993 with 208,600 tonnes in 30 voyages of multi-purpose ships of the Norilsk type (SA-15, with ice class Arc7) and bulk carriers of the Dmitry Donskoy type (ice class Arc5), escorted by nuclear icebreakers of the Arktika type.

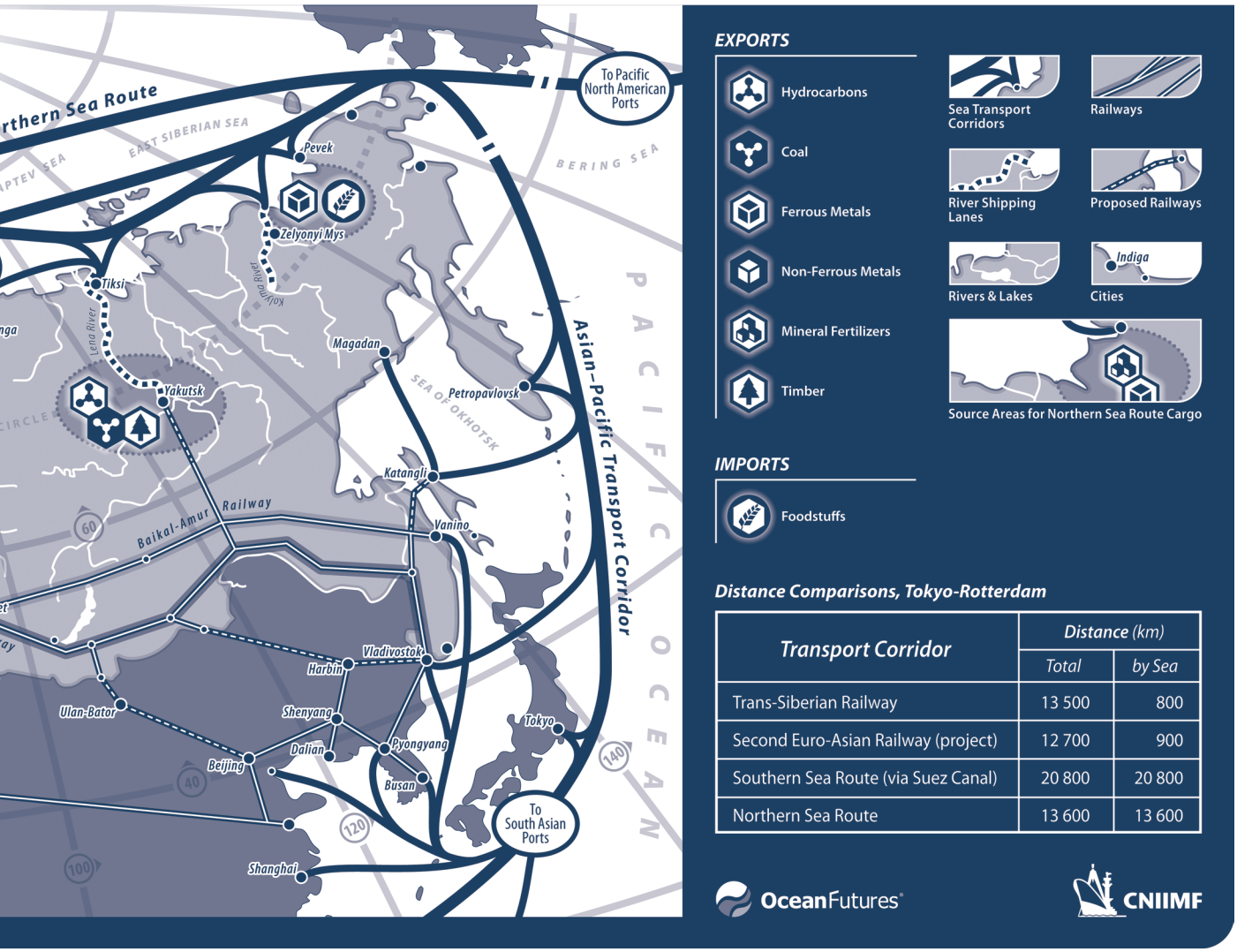
The principal reason for the suspension of transit transportation in recent years has been the high tariffs charged for icebreaking services. In 2003 these tariffs increased from $7.50 to $25.40 per tonne. Past experience (from 1985 to 1995) shows that transit traffic can be profitable with icebreaker tariffs of $5 to $7.50 per tonne.



The idea of opening the NSR to international shipping was put forward by the Murmansk Initiatives in a speech of President Mikhail Gorbachev on 1 October 1987. It was stated that the USSR was ready to render icebreaker assistance in escorting foreign vessels along the NSR subject to the international situation returning to normal. The decision was taken that only Soviet/Russian institutions would elaborate the appropriate legislation, draw up and enforce the documents regulating navigation along the NSR.

The 1991 Regulations for Navigation on the Seaways of the Northern Sea Route proclaim that the NSR is a historically established, integrated transport communication system of Russia in the Arctic. The Regulations take into account Russian legislation of previous years and experience in shipping control within the NSR, as well as rules for navigation on national seaways in straits and channels of other states.

The geographical scope of the Regulations extends from the Novaya Zemlya straits to the Bering Strait, where the NSR interconnects with the Northern Maritime Corridor in the West and the Asian–Pacific Maritime Corridor in the East (see Figure 1). The NSR was opened to international shipping on a non-discriminatory basis on 1 July 1991. The purpose of Russian regulatory controls is to ensure safety of navigation and to prevent pollution of the marine environment from



Transport Corridor	Distance (km)	
	Total	by Sea
Trans-Siberian Railway	13 500	800
Second Euro-Asian Railway (project)	12 700	900
Southern Sea Route (via Suez Canal)	20 800	20 800
Northern Sea Route	13 600	13 600

Fig. 1 – The Northern Sea Route within the East–West–East System of International Transport Corridors

ships. Table 1 lists the legal documents regulating the use of the NSR.

The International Northern Sea Route Programme (INSROP, 1993–1998) was a research programme dedicated to, among other things, substantiating the economic efficiency of transit transport via the NSR. Under the auspices of INSROP, the cargo ship Kandalaksha carried out a dual scientific/commercial voyage in August 1995 from Yokohama, Japan to Kirkenes, Norway via the NSR. Kandalaksha's voyage demonstrated the NSR's high level of efficiency when compared with either the Suez Canal or Panama Canal sea routes. Furthermore, a foreign shipper using the NSR could accelerate the delivery of cargo by up to 15 days, thus reducing voyage costs by as much as $500,000. In contrast, the cost for Russian icebreakers to escort one ship may exceed $100,000.

The INSROP projects were realized through scientific and technical collaboration between the Russian Central Marine Research and Design Institute (CNIIMF), Norway's Fridtjof Nansen Institute, and Japan's Ship and Ocean Foundation. About 470 scientists and specialists from fourteen countries participated in the investigations, including Canada, Finland, Japan, Norway, Russia, the United Kingdom, and the United States.

Experimental voyages were carried out in 1998 within the framework of the international Arctic

Table 1 – Legal documents regulating the use of the NSR

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1976	Regulations for Marine Operations Headquarters on the Seaways of the NSR
1991	Regulations for Navigation on the Seaways of the NSR
1996	Guide to Navigation through the NSR
1996	Regulations for Icebreaker-Assisted Pilotage of Vessels on the NSR
1996	Requirements for Design, Equipment, and Supply of Vessels Navigating the NSR
2001	Marine Doctrine of the Russian Federation for the Period to 2020
2005	Tariffs for Icebreaking Fleet Services on the Seaways of the NSR

Demonstration and Exploratory Voyage (ARCDEV) project. Russian and Finnish tankers transported gas condensate from the Ob Gulf and the Yamal Peninsula to European markets, demonstrating several apparent advantages of marine transport of oil and gas in comparison with pipeline transport: capital expenditures are less than half; the extent of land use is considerably less; environmental pollution is reduced to a minimum; and market flexibility is increased vis-à-vis shifting service to market demands.

The largest European and Russian industrial, transport and scientific organizations took part in the ARCDEV project, including: Finnish Neste Oy, Kværner-Masa Yards, Helsinki University of Technology, Nansen Environmental & Remote Sensing Centre, Hamburgische Schiffbau-Versuchsanstalt, Lloyd's Register of Shipping, Shell Dutch Oil, Wismar Shipyards, and other organizations. On the Russian side, CNIIMF supervised the scientific aspects of the project.

The international project Arctic Operational Platform (ARCOP) was undertaken during 2003–2005 to improve the competitiveness of the NSR and thereby develop a reliable system for transporting oil and gas out of the Arctic and exporting it to European customers. The project was justified by the fact that Russian Arctic oil and gas resources are the most significant source of energy supplies outside of the OPEC cartel and, owing to their geographical proximity to Europe, offer a competitive and stable source for satisfying European energy needs.

The ARCOP project was carried out under the support of the European Union. Some 21 commercial and scientific organizations from Russia, Norway and five EU countries (Finland, Germany, Italy, the Netherlands and the UK) took part in the project. The project was supervised by the Kværner-Masa Yards from Finland. Results of the ARCOP project are being used to establish and develop transport and technological systems for exporting oil from the White Sea (Arkhangelsk and Vitino terminals) and the Pechora Sea (Varandey, Indiga and Prirazlomnoye platform terminals); oil and gas condensate from the Ob Gulf; and liquefied natural gas from the Shtokman field (Teriberskaya Guba terminal) and the Yamal Peninsula (Kharasavey terminal).

Russian–American and Russian–German programs within the framework of the International Polar Year (2007/2008) will help to determine the trend of sea-ice changes in the Arctic against the background of global warming. The programs will address the need to consider climate change in the long-term development of navigation safety systems and the construction of icebreakers and ice class ships. As regards to climate change, however, there is another point of view in Russia. According to data from Russian and US polar stations, the average yearly air temperature in the Arctic was lower in 2007 by 0.6°C. Russian scientists came to the conclusion that nature, following its cycles, would soon reach a maximum peak in warming, giving place to gradual cooling and subsequent growth of ice cover in the Arctic basin.

The status of the NSR as an independent Eurasian transport corridor was put forward by Russia at the first International Eurasian Conference in 1998 at St. Petersburg and was supported by participants of the conference. Russia exercises centralized state control over the NSR, provides for icebreaker assistance, and ensures equal access to both foreign and domestic shipping in accordance with the Marine Doctrine of the Russian Federation for the Period to 2020.

According to a 1999 assessment carried out for INSROP by foreign experts, the potential volume for foreign transit cargoes via the NSR may reach 5–6 million tonnes per year in the eastern direction and 2–3 million tonnes in the western direction. This potential might be reached after 2020.[1]

The Northern Sea Route is evolving rapidly. Russia today has a fleet of ice-reinforced shuttle tankers plying the westernmost sector of the NSR and the northernmost part of the Northern Maritime Corridor. Cargo transport along the route is stepping into various mega projects associated with export of oil and gas from Russia's Arctic deposits, expected to reach 55–65 million tonnes by 2021. Supporting the mega projects will be a new generation ice-class tankers and liquefied natural gas carriers of up to 70,000 dwt capacity. These in turn are supported by five nuclear icebreakers, including three new twin-draft icebreakers of 60 megawatts power.

In this connection, development of the NSR as an international Eurasian transport corridor should be carried out at the Russian national level and international levels according to the following principal directions:

At the Russian national level

- Retaining standards on the NSR for ensuring navigational safety and environmental protection, in compliance with international standards.

- Fulfilling measures of the Development of Export Transport Services subprogram, a part of the federal target program "Modernization of the Russian Transportation System (2002–2010)." These measures will contribute to securing the NSR's status as an independent Eurasian transport corridor connecting states of the European Union with those of the Asian-Pacific region, particularly in light of the long-term outlook for the Russian Arctic as a key source of minerals (oil, gas, coal, apatite, tin) and raw materials (timber)—not only for Russia, but also for the world as a whole.

- Developing infrastructure for the purpose of ensuring large-scale international transit traffic along the NSR. This includes constructing by the turn of 2020: a nuclear icebreaker with a power of 110 megawatts to serve year-round transit traffic; delivery of at least 30 large-capacity container carriers, bulk carriers and multi-purpose ships with ice classes Arc5 to Arc6 intended for service along the NSR.

- Developing a new system of NSR tariffs for the payment of services. In order to improve the NSR's competitiveness vis-à-vis other alternative routes, the goal should be a general reduction of tariffs for both transit and import/export cargoes.

- Organizing three to four experimental commercial transit voyages along the NSR, using ice-classed Russian and foreign cargo ships under economically profitable terms.

- Proving information to interested foreign cargo and ship owners about the measures carried out in Russia for developing the NSR, including a complete description of transport services for international navigation.

At the international level

Continuing international scientific cooperation on projects concerning the development of transit transportation and technological systems for the NSR using novel ice-class ship designs. Such projects include the following:

- Aker Arctic Technology (Finland) and the Institute of the North (Alaska) performed model investigations in 2006 on the operation of Arctic container ships with a capacity of 750 TEU (such as the Norilsky Nikel) and 5000 TEU for voyages from the Aleutian Islands to Iceland via the NSR. (TEU, for Twenty-foot Equivalent Unit, is an industry measure of container capacity). Modelling results indicate the capability of operating cargo ships on the NSR without icebreaker assistance.

  The cost of transporting one container by ship with a capacity of 750 TEU would be $1244/TEU under normal winter conditions and $1887/TEU under severe conditions with icebreaker assistance in special cases. When operating container ships with a capacity of 5000 TEU and an ice class of Arc8, the cost of transporting one container would be $354 and $526, respectively. These figures are comparable with the delivery cost of containers by the Southern Sea Route from Japan to Europe ($1700/ TEU).

- The US Merchant Marine Academy evaluated the prospects for container transport along the route New York, Reykjavik, NSR, Petropavlovsk-Kamchatsky and Bremerton (on the Pacific coast of the USA), using a 120 megawatt nuclear container ship with a speed of 30 knots and a capacity of 8000 TEU.

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The proposal assessed the time and ecological aspects of such a service, taking into account affects of global warming on Arctic ice cover. Over the period 1979 to 2006, Arctic ice cover has receded by 20 percent. If such a trend continues, such a container ship could navigate the Arctic year-round without icebreaker escort.[2]

- In 2007, the Canadian firm Broe/Omni TRAX announced its intention to participate with Russian companies in the international project "Arctic bridge" for large-scale transport of transit cargoes via the NSR in the west–east direction. Broe/Omni TRAX owns and operates the Canadian port of Churchill and the largest private railway company in the United States.

- Developing international cooperation to solve economic and legal challenges associated with the NSR, operating within the framework of the Arctic Council and its initiatives that touch on marine transport,[3] as well as the Barents Euro-Arctic Council and its Working Group on the NSR, the EU's Northern Dimension (supported by funding through the EU's Tacis, Interreg, and Phare programs), and the interregional Northern Forum.

As a whole, the fulfilment of the above measures at the national and international levels will contribute to further development of the Northern Sea Route as an International Eurasian Transport Corridor.

1 T. R. Ramsland, Economic Evaluation of NSR Commercial Shipping, INSROP Working Paper 140 (1999).

2 Ice-Tech 2006 Symposium, Canada.

3 [These include, among others, the Arctic Council's Working Group on the Protection of the Arctic Marine Environment (PAME), the Arctic Marine Strategic Plan, and the Arctic Marine Shipping Assessment. —Editors]

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Hegland trykkeri a.s

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