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Trans-Arctic Transport Corridor: Political, Economic and Strategic Potential for Russia

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Abstract. The study is devoted to the large-scale Trans-Arctic Transport Corridor (TATC) project aimed at integrating major Russian port centers — St. Petersburg, Murmansk, Arkhangelsk and Vladivostok — in order to create a unified transport system combining sea, rail, road and inland waterways. This project aims to connect the key economic centers of Eurasia and form a seamless logistics corridor that can significantly increase the efficiency of international trade and enhance national transport sovereignty. The purpose of the work is to comprehensively assess the historical background of the project, its economic feasibility, as well as its political, diplomatic, and military-strategic significance for Russia and its partners along the Arctic route. The research uses methods of system analysis, in-depth historical review and expert assessment. The results highlight the uniqueness of TATC as a strategic instrument aimed at strengthening Russia's position in global trade and security. At the same time, significant climatic, infrastructural, hydrographic and international legal challenges have been identified, which should be taken into account when developing the transport route. In particular, navigation in the Arctic is complicated by the presence of ice cover along a significant part of the sea route for most of the year, which requires the development of an icebreaking fleet and innovative navigation technologies. The paper offers recommendations for improving interdepartmental coordination, developing the icebreaking fleet and port infrastructure, overcoming hydrographic difficulties, as well as actively involving the indigenous peoples of the North in the economic development of the region, taking into account environmental and social aspects. The authors emphasize that the successful implementation of the Trans-Arctic Transport Corridor will become the foundation for the sustainable development of the Arctic region and will strengthen Russia's geopolitical influence on the global stage, contributing to the formation of a new transport framework that provides unhindered access to the oceans and improves international trade relations with partners from Asia, Europe and America.

Keywords: *Trans-Arctic Transport Corridor, Northern Sea Route, international security, economic development, icebreaker fleet, indigenous peoples of the North, geopolitics, transport infrastructure*

Introduction

The Arctic as a new center of global economy and politics

In the 21st century, the Arctic is becoming a strategic region that determines global trends in economics, politics and security. Climate change, shrinking ice cover and new opportunities for shipping are making Arctic routes a key element of global logistics. In this context, the Trans-Arctic Transport Corridor (TATC), connecting St. Petersburg, Murmansk, Arkhangelsk and Vladivostok, is becoming an ambitious project capable of integrating Russia into global economic processes and

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strengthening its position as a leader in the Arctic region. The TATC project, announced in 2025 ¹, is a multimodal route that combines the Northern Sea Route (NSR) with railway and river arteries, which ensures the transit of goods between Europe and Asia with minimal time and resources.

The relevance of the study is due to the growing role of the Arctic in the context of geopolitical competition, increasing sanctions pressure on Russia and the need to diversify trade routes. The TATC not only expands the capabilities of the NSR, but also creates an infrastructural basis for sustainable development of the Arctic regions, the involvement of indigenous peoples in self-sustaining economic activities and strengthening national security. The purpose of the article is to conduct a comprehensive analysis of the TATC project, including its historical background, economic, political and military-strategic feasibility, as well as to identify key problems and offer the author's recommendations for its successful implementation. Particular attention is paid to comparing the TATC with other transport corridors, analyzing the St. Petersburg – Murmansk – Arkhangelsk – Vladivostok sections ², and the role of federal structures in ensuring route security.

The article is structured as follows: the first section considers the historical background of the emergence of the TATC; the second one describes the project and compares it with analogues; the third part analyzes the feasibility of implementation; the fourth — highlights the problems; the fifth — proposes short-term and medium-term measures; the sixth — details the key sections of the route; the seventh — summarizes the findings and emphasizes the importance of the TATC for Russia and the world.

The study is based on an interdisciplinary approach that takes into account economic, environmental, social and geopolitical aspects, data from the speech of Russian President V.V. Putin at the Arctic Forum in Murmansk on March 27, 2025 ³, where the priorities for the development of the TATC were outlined, as well as on the assessments and proposals of the Assistant to the President of the Russian Federation, Chairman of the Maritime Collegium of the Russian Federation N.P. Patrushev, Deputy Chairman of the Government of the Russian Federation — Plenipotentiary Representative of the President of the Russian Federation in the Far Eastern Federal District, Chairman of the State Commission for Arctic Development Yu.P. Trutnev, Advisor to the President of the Russian Federation, Special Representative of the President of the Russian Federation for International Cooperation in the Field of Transport I.E. Levitin, the heads of the Murmansk and Arkhangelsk Oblasts, federal ministries and departments (the Ministry for the Development of the Russian Far East, the Ministry of Transport of the Russian Federation, Roshydromet), state corporations Rosatom, Roscosmos and other companies.

¹ The Trans-Arctic Transport Corridor will be developed on the basis of a national digital platform. URL: <https://murman.tv/news-n-35050--transarkkticheskij-transportnyj-koridor-budet-razvivatsya-na-baze-nacionalnoj-cifrovoj-platformy> (accessed 16 July 2025).

² The NSR will become a key section of the Trans-Arctic Transport Corridor. URL: <https://ac.gov.ru/news/page/smp-stanet-klucevyim-uchastkom-transarkkticheskogo-transportnogo-koridora-28052> (accessed 16 July 2025).

³ International Forum "The Arctic — Territory of Dialogue". URL: <http://kremlin.ru/events/president/news/76554> (accessed 16 July 2025).

Prehistory of the TATC emergence

The idea of creating the TATC as a global route connecting St. Petersburg, Murmansk, Arkhangelsk and Vladivostok has its roots in the centuries-old history of the development of the Arctic and Northern sea routes. The first attempts to use Arctic routes for trade and economic purposes were recorded in the 16th–17th centuries, when Russian Pomors and merchants laid routes along the Northern Dvina and further to the mouths of the Ob and Yenisei rivers [1, Korovin V.P.]. These expeditions, known as the “Mangazeya sea route”, laid the foundation for the development of the northern territories, ensuring trade of furs, fish and other resources. In the 20th century, the NSR became a key element of the Soviet Arctic strategy [2]. During the Great Patriotic War (1941–1945), the NSR was used to transport strategic cargo, including military equipment and industrial resources, despite difficult ice conditions and the threat of attacks. In the post-war years, the Soviet Union actively developed the Arctic infrastructure: drifting stations were created, nuclear ice-breakers were built, and Arctic research received state support [3, Khimanych O.B.]. This created a technological and scientific basis for future transport projects. The modern prerequisites for the formation of the TATC began to take shape at the beginning of the 21st century against the backdrop of global geopolitical and climatic changes. Climate change, which led to a reduction in ice cover in the Arctic, opened up new opportunities for shipping, increasing the duration of the navigation period and turning the Arctic into a space for global mass development. Geopolitical factors, including sanctions against Russia and a shift in foreign policy towards the East, prompted a search for alternative routes for trade with China, India and other countries in the Asia-Pacific region ⁴. Competition for Arctic resources and routes with the United States, Canada and other countries also became an incentive for the development of the TATC. A key moment in the history of the project was the speech of Russian President Vladimir Putin on March 27, 2025 at the International Arctic Forum in Murmansk. In his speech, he described the TATC as a strategic project designed not only to expand the Northern Sea Route, but also to integrate it with railway and river routes, creating a multimodal corridor from the Baltic to the Pacific Ocean ⁵. This speech became the starting point for the rebranding of the ideas of the Great Northern Sea Route (GNSR) into a more ambitious TATC project aimed at global logistics integration ⁶.

⁴ Patrushev: Trans-Arctic Corridor should ensure comprehensive development of the Arctic Zone of the Russian Federation. URL: <https://tass.ru/ekonomika/24490189> (accessed 16 July 2025).

⁵ International Forum "The Arctic — Territory of Dialogue". URL: <http://kremlin.ru/events/president/news/76554> (accessed 16 July 2025).

⁶ Lvova A., Arzumanov I. The Great Northern Sea Route has been renamed the Trans-Arctic Transport Corridor. URL: <https://expert.ru/ekonomika/bolshoy-severnyy-morskoy-put-stal-transarkticheskim/> (accessed 16 July 2025).

General description of the TATC project and comparative analysis

The TATC is a comprehensive multimodal route combining sea, rail and river transport, connecting Saint Petersburg, Murmansk, Arkhangelsk and Vladivostok ⁷. The main objective of the project is to create a cost-effective, safe and shortened route for transit shipments between Europe and Asia, providing guaranteed access to the countries of Southeast Asia, India, the Persian Gulf and Africa, trade relations with which are actively developing, as well as ensuring northern supplies and comprehensive development of the Arctic regions of Russia. The length of the maritime part of the route, including the NSR, is about 14,000 km, an additional 10,000 km is made up of land infrastructure, including railway lines (Arctic Polygon, Northern Railway), roads and inland waterways (Lena, Yenisei, Ob rivers). The key transport hubs are the ports of Ust-Luga, Murmansk, Arkhangelsk, Dudinka, Sabetta, Tiksi, Pevek and Vladivostok. The projected cargo flow along the corridor by 2030 will reach 109 million tons, which is due to the export of hydrocarbons, minerals and transit cargo ⁸. A distinctive feature of the TATC is its focus on year-round navigation, ensured by the development of the nuclear icebreaker fleet and the modernization of port infrastructure, as well as integration with international transport corridors, such as the “North-South”, to attract cargo from Asian countries.

Compared to other Arctic and international transport projects, the TATC stands out for its multimodality and strategic importance for Russia ⁹. In particular, the TATC includes the Northern Sea Route as a maritime component, but expands it by integrating land and river routes, which allows connecting the Baltic region with Asia and increasing transit potential. Unlike the NSR, which is limited to sea transportation in the Arctic zone, the TATC provides wider coverage and increased accessibility for cargo from Siberia and Central Russia by connecting railway lines and river highways. Compared to the GNSR, the TATC represents its evolution with an emphasis on multimodality, international cooperation and year-round navigation with the support of nuclear icebreakers. Unlike the Northwest Passage (Canada), which is characterized by more difficult ice conditions and less developed infrastructure, the TATC has a developed port infrastructure and integration with land routes ¹⁰. Compared to the pan-European transport corridors passing through the Suez Canal and having a greater length and cost of transportation, the TATC shortens the route by 30-40% and reduces costs due to the use of Arctic waters and icebreakers [4].

Extension of the Northern Sea Route to the TATC, including St. Petersburg and Vladivostok, solves a number of strategic problems. The economic benefit is manifested in a significant reduction in the time and cost of transportation between Europe and Asia: for example, the route from

⁷ Kondakova T. Trans-Arctic Transport Corridor — news of Russia and the world. URL: <https://allestate.pro/news/19.05.2025/ledyanoy-reys-buduschego-transarkticheskiy-transportnyy-koridor-menyaet-igru> (accessed 16 July 2025).

⁸ Ibid.

⁹ Trans-Arctic Corridor, Lavna and Gasification. V. Putin gave a number of important instructions following his trip to Murmansk. URL: <https://neftegaz.ru/news/transport-and-storage/884623-transarkticheskiy-koridor-lavna-i-gazifikatsiya-v-putin-dal-ryad-vazhnykh-porucheniy-po-itogam-poezd/> (accessed 16 July 2025).

¹⁰ Northwest Passage. URL: <https://goarctic.ru> (accessed 16 July 2025).

Shanghai to Hamburg via the TATC takes about 20 days versus 30–35 days via the Suez Canal. The transit potential is increasing due to the attraction of cargo from the countries of the Asia-Pacific region, which contributes to achieving the projected cargo flow of 109 million tons by 2030. In addition, the integration of the NSR with rail and river routes ensures the availability of cargo for Siberia, the Far East and the Baltic region, promoting the development of these territories and ensuring their connectivity. The geopolitical significance of the project is increasing in the context of growing international tensions, providing Russia with free access to the World Ocean and strengthening the country's transport infrastructure. An important aspect is the integrated approach to the development of the corridor, including the creation of logistics and port infrastructure, the development of geological exploration of raw materials and the modernization of ship-building capacities ¹¹. The project also provides for the formation of the necessary icebreaker fleet, including the construction of new nuclear icebreakers, and the creation of an ice monitoring system using remote sensing spacecraft. Particular attention is paid to attracting investments, including foreign ones, and creating a project office under the auspices of VEB (Bank for Development and Foreign Economic Affairs) to support transport and infrastructure projects in the Arctic ¹².

Thus, the TATC is a strategically important infrastructure project aimed at integrating the Arctic and internal transport systems of Russia with international routes, ensuring economic efficiency, year-round navigation and development of the Arctic regions in the context of modern geopolitical challenges.

Feasibility of the TATC implementation

The economic, political, diplomatic, and military-strategic feasibility of the TATC determines its key role in strengthening Russia's position in the economic, geopolitical and defense spheres.

The economic feasibility of the TATC is based on the projected freight flow of about 109 million tons by 2030, which is associated with the growth of exports of hydrocarbons, minerals and transit cargo [5]. The cargo base is formed by large companies: NOVATEK with annual deliveries of 24.3 million tons of liquefied natural gas and gas condensate via the port of Sabetta (Yamal LNG project) ¹³, Rosneft with oil deliveries within the framework of the Vostok Oil project (up to 30 million tons via the port of Dudinka) ¹⁴, Norilsk Nickel with the export of nickel, copper and platinum (about 2 million tons via the port of Dudinka), as well as Russian Platinum and Severnaya Zvezda, engaged in the extraction and transportation of precious metals and coal [6, Zhuravel V.P., Nazarov V.P., pp. 146–147]. The TATC provides a significant reduction in time and cost of transportation

¹¹ Patrushev: Trans-Arctic Corridor should ensure comprehensive development of the Arctic Zone of the Russian Federation. URL: <https://tass.ru/ekonomika/24490189> (accessed 16 July 2025).

¹² VEB has been tasked with creating a project office to handle Arctic infrastructure development tasks. URL: <https://www.interfax.ru/russia/1017002> (accessed 16 July 2025).

¹³ NOVATEK has signed a long-term contract with Shenergy Group for the supply of LNG from the Arctic LNG 2 project. URL: <https://www.novatek.ru> (accessed 16 July 2025).

¹⁴ Cargo delivery to Vostok Oil facilities via the Northern Sea Route has begun. URL: <https://www.rosneft.ru/press/news/item/213073/> (accessed 16 July 2025).

compared to the traditional route through the Suez Canal, shortening the journey from Europe to Asia by 30–40%, which reduces fuel and freight costs. In addition, the project promotes the development of northern supplies, ensuring the supply of Arctic regions with fuel, food and construction materials, which is critical for the sustainable development of the Murmansk Oblast, Yamalo-Nenets Autonomous Okrug, Krasnoyarsk Krai and Chukotka. The development of port infrastructure (Ust-Luga, Murmansk, Arkhangelsk) and integration with railways and river routes (Lena, Yenisei, Ob) create a multiplier effect for the economy, stimulating employment and investment in the regions. To ensure the competitiveness of the corridor, an integrated development model is important, including the creation of the necessary transport, energy and logistics infrastructure, as well as public-private partnerships for the implementation of projects for the extraction and processing of natural resources in the Arctic [7].

The political and diplomatic expediency of the TATC is manifested in the strengthening of Russia's position in global Arctic geopolitics. The project promotes deepening cooperation with Asian countries such as China and India, which are interested in joint investments in the corridor infrastructure, as confirmed by memorandums with COSCO Shipping and Indian logistics companies¹⁵. This strengthens economic ties within the framework of the "pivot to the East" policy. At the same time, the TATC serves as a tool to counteract competition from the US, Canada and the EU, which are developing alternative routes, but with less developed infrastructure. Russia promotes the TATC as a safe and environmentally friendly route that meets the standards of the International Maritime Organization (IMO), which increases its international authority. An important diplomatic event was the speech of Russian President Vladimir Putin at the Arctic Forum in Murmansk in March 2025, where he emphasized the need to integrate the TATC with the international North-South transport corridor linking Europe, Asia and the Middle East through the Russian Arctic, which enhances the geopolitical significance of the project [8, Zhuravel V.P., pp. 175–185].

The military-strategic feasibility of the TATC is a key element of Russia's national security in the Arctic [9, Konyshev V.N.]. Control over the Arctic zone, including the exclusive economic zone of 200 nautical miles, ensures the protection of strategic resources such as oil, gas and rare earth metals. The implementation of the project requires the participation of federal structures: the Ministry of Defense (patrolling the route by the Northern Fleet, deploying bases on Novaya Zemlya and in Pevek), the FSB — the Federal Security Service (control of shipping and prevention of smuggling), the Rosgvardia — the Russian National Guard (protection of key infrastructure facilities), the Ministry of Emergency Situations (organization of rescue operations and elimination of oil spills), the Ministry of Internal Affairs (ensuring public order in port cities) [10, Grinyaev S.N., Zhuravel V.P., pp. 59–69]. The Arktika-M satellite constellation plays an important role in monitoring ice conditions, navigation and communications during the polar night, with a planned expansion to 10

¹⁵ A. Ostrovskiy. How China will take over the Northern Sea Route. URL: <https://zen.yandex.ru/media/freeconomy/kak-kitaipriberet-k-rukam-severnoi-morskoi-puti-5c55730aa68c1000ad5eb48b> (accessed 16 July 2025).

satellites by 2030¹⁶. The development of the nuclear icebreaker fleet (Rosatomflot), as well as the construction of five new icebreakers by 2030, including the super-powerful icebreaker Lider with a capacity of 120 MW, will ensure year-round navigation and the sustainability of the corridor¹⁷.

The introduction of a new spatial structure — a list of key settlements in the Arctic, which includes 16 agglomerations with 1.6 million people — significantly increases the economic component of the Arctic Zone of the Russian Federation, as it will contribute to the growth of number of qualified specialists and the development of coastal territories.

Thus, the Trans-Arctic Transport Corridor has high economic efficiency, strengthens Russia's geopolitical influence and serves as an important instrument for ensuring national security in the Arctic. It creates the basis for Russian leadership in global Arctic logistics and promotes the complex development of the northern regions.

Problems of the TATC implementation

Implementation of the TATC is a complex multi-aspect project that requires an integrated approach to overcome significant infrastructural, environmental, geopolitical, hydrographic and social problems.

Infrastructure constraints include an acute shortage of emergency rescue vessels on the NSR — only 8 units are in operation by 2025 instead of the required 54 ones, which reduces the safety and efficiency of navigation^{18,19}. In addition, Russian shipbuilding, represented by the Zvezda and Baltic Shipyards, is functioning at full capacity, which hinders the timely construction of new icebreakers and cargo ships. The railway network north of 60°N, in particular the Northern Railway and branches in the Yamalo-Nenets Autonomous Okrug, requires large-scale modernization for effective integration with Arctic ports (Ust-Luga, Murmansk, Dudinka), which is a key condition for the development of multimodal transport hubs and ensuring sustainable cargo flow [7]. Two or three new railway routes to the NSR logistics hubs should be built.

The hydrographic features of the Arctic seas create additional constraints [11, Tereshkov V.I.]. Shallow waters, narrow straits (for example, Vilkitskiy and Sannikov) and unstable ice conditions impede the passage of large-tonnage vessels with a draft of more than 12–13 m, including container ships and Aframax class tankers [12, Neronov N.N.]. The average depth in the NSR sections is 12–15 m, which requires the use of vessels with an ice class of no higher than Arc7, in-

¹⁶ New satellites will provide continuous monitoring of Arctic waters and communications in the Arctic. Arctic Russia. URL: <https://arctic-russia.ru/news/novye-sputniki-obespechat-nepreryvnyy-monitoring-arkticheskikh-akvatoriy-i-svyaz-v-zapolyare/> (accessed 16 July 2025).

¹⁷ Super-powerful icebreaker leader. What will it be like? URL: <https://morvesti.ru/themes/1699/113346/> (accessed 16 July 2025).

¹⁸ Fleet deficit for NSR could grow to 55% by 2030. URL: <https://www.eastrussia.ru/news/defitsit-flota-dlya-smp-mozhet-vyrasti-do-55-k-2030-godu/> (accessed 16 July 2025).

¹⁹ Two rescue vessels for the Northern Sea Route will be delivered in 2024. URL: <https://portnews.ru/news/371428/> (accessed 16 July 2025).

creasing the costs of their construction and operation²⁰. Navigational difficulties are aggravated by the difference in displacement of icebreakers and escorted vessels, as well as the insufficient capacity of the vessels' power plants for independent navigation along the ice channel.

Environmental risks are associated with the growing transportation of hydrocarbons, such as LNG and oil, which increases the risk of accidents and spills that could cause significant damage to fragile Arctic ecosystems [13, Zhuravel V.P.]. Strict compliance with international standards, including IMO requirements and the Polar Code, complicates the design of vessels and routes, but is necessary to minimize environmental impact.

There are 39 airports in the Arctic zone of Russia. Ten of them will be modernized only by 2027²¹; there are no new aircraft for use in the Arctic territory.

Decisions need to be made on the modernization of the White Sea–Baltic Canal, the construction of the Indiga deep-water seaport and the Sosnogorsk–Indiga railway line.

Geopolitical challenges are determined by active competition in the Arctic from the United States, Canada, and China, which are developing their own Arctic routes, creating pressure on transit flows and access to resources [14, Qu S.]. Western sanctions limit Russia's access to advanced technologies and international financing, which hinders the modernization of ports and the fleet, and complicates the implementation of shipbuilding and icebreaker support projects.

Social aspects include the need to take into account the interests of the indigenous peoples of the North (Nenets, Khanty, Chukchi, etc.), whose traditional territories and way of life are at risk due to the construction of infrastructure and the growth of shipping [15, Khadyko A.I.]. Programs for the involvement of indigenous communities and compensatory measures are necessary to reduce social conflicts. In addition, the shortage of qualified personnel to work with the icebreaker fleet and port infrastructure requires the creation of specialized educational programs and training centers.

In general, the key problems in implementing the TATC are insufficient infrastructure, the complex hydrography of the Arctic seas, environmental risks, geopolitical competition and sanctions restrictions, as well as the need to take into account the social interests of indigenous peoples and staffing issues. Successful implementation of the project requires coordination between the state, business and international partners, including the development of a financial and economic model, modernization of ports and the railway network, and the introduction of innovative technologies and international safety standards.

²⁰ Launch of the Trans-Arctic Corridor requires multimodal ports and a dredging fleet. Association of Commercial Sea Ports. URL: <https://www.morport.com/rus/publications/zapusk-transarkticheskogo-koridora-trebuuet-multimodalnyh-portov-i-dnougubitelnogo> (accessed 16 July 2025).

²¹ Yuri Trutnev spoke at a meeting of the Federation Council during government hour. URL: <http://government.ru/news/43443/> (accessed 16 July 2025).

Recommendations for the successful implementation of TATK

Ensuring the successful implementation of the TATC requires a comprehensive approach that includes short-term and medium-term measures in the economic, infrastructural, diplomatic and social spheres²². Some recommendations are presented below.

Short-term measures (2025–2027):

- *Formation of a financial and economic model of the TATC.* The development and approval of the model with the participation of VEB.RF, Rosatom and private investors will ensure transparency of financing and attract international partners, which is in line with the instructions of the President of the Russian Federation on the formation of an effective organizational structure of the project.

- *Modernization of port infrastructure.* Acceleration of the development of key ports — Ust-Luga, Murmansk, Arkhangelsk, Dudinka — in order to increase throughput capacity. In particular, the completion of the construction of the Lavna port in the Murmansk Oblast for the transshipment of coal and oil products plays an important role in the formation of the cargo base of the corridor.

- *Purchase and construction of vessels.* In the context of limited domestic shipbuilding capacity (for example, the Baltic Shipyard is capable of building no more than two icebreakers per year), it is proposed to temporarily purchase rescue vessels abroad, taking into account the shortage of 8 vessels with a requirement for 54, or to lease them.

- *Personnel training.* Implement new educational programs at the Murmansk Arctic University and the Northern (Arctic) Federal University named after M.V. Lomonosov, cooperate with specialized universities (for example, the Maritime College of the Sevastopol State University) to train specialists in the field of icebreaker fleet (icebreaker crews) and Arctic logistics, which will provide qualified personnel to service the TATC infrastructure.

- *Strengthening scientific research.* Intensifying the work of the Scientific and Technical Council of the State Commission for Arctic Development and institutions of the Russian Academy of Sciences and the Ministry of Education and Science of the Russian Federation.

Medium-term measures (2027–2030):

- *Construction of nuclear icebreakers.* Acceleration of Rosatomflot's program for the construction of 120 MW Lider-class icebreakers for year-round navigation along the NSR. It is planned to increase the number of icebreakers to 12 by 2030, which will significantly increase the throughput capacity and safety of navigation, as well as create conditions for year-round navigation.

- *Integration with the North–South transport corridor.* Development of railway lines (Krasnoyarsk–Lesosibirsk, Salekhard–Nadym) to ensure the connection of the TATC with the international North–South corridor, which will allow cargo from India and the Persian Gulf countries to transit through the Arctic.

²² The model for the formation of the Trans-Arctic Transport Corridor will be approved by August 1, 2025. URL: <https://portnews.ru/news/377065/> (accessed 16 July 2025).

- *Development of a space grouping.* Increase the number of launches and expand the use of satellites for ice monitoring, navigation and communication with the aim of achieving full coverage of the Arctic zone by 2030 (up to 10 satellites), which will improve the safety and efficiency of the transport corridor.

- *Involvement of indigenous peoples.* Creation of cooperatives for representatives of the indigenous peoples of the North (Nenets, Khanty, Chukchi and others) with the aim of involving them in logistics and environmental projects, including ecosystem monitoring and production of local goods for export, which contributes to the social sustainability of the region.

Diplomatic measures:

- *Strengthening cooperation with China and India.* Signing bilateral agreements on the joint use of the TATC, including investments in ports and icebreakers, for example, attracting Chinese companies to finance the Sabetta seaport, the Arkhangelsk sea trade port and the implementation of the Arctic LNG 2 project. This will contribute to international recognition and development of the corridor.

- *Developing international safety standards.* The initiative within the Arctic Council to create uniform standards for shipping in the Arctic, including environmental requirements, will increase the attractiveness of the TATC for foreign partners and ensure the sustainable development of shipping.

Economic measures:

- *Preferential financing.* Introduction of subsidies and tax breaks for ship owners participating in the TATC will reduce transportation costs and attract new operators, contributing to the growth of cargo traffic and infrastructure development.

- *Creation of free trade zones.* Organization of such zones in the ports of Ust-Luga, Murmansk and Arkhangelsk, similar to the port of Chabahar (Iran), will simplify customs procedures and attract transit cargo, which will increase the economic attractiveness of the corridor.

Table 1

The role of federal structures in ensuring the safety and accessibility of the TATC

Federal structure	Main tasks
Ministry of Defense	Strengthening patrols of the Northern Sea Route using the Northern Fleet and Coast Guard to protect the route from external threats
Federal Security Service	Ensuring cybersecurity of navigation systems and monitoring foreign vessels in the exclusive economic zone
Rosgvardia	Ensuring security of key infrastructure facilities: ports, terminals, icebreakers
Federal Rescue Service	Establishment of a network of rescue centers along the NSR (at least 10 by 2030) for rapid response to emergencies, including oil spills
Ministry of Internal Affairs	Ensuring law and order in the Arctic regions, preventing illegal activities in ports
Federal Customs Service	Ensuring timely customs clearance of goods in ports and at anchor, preventing their smuggling

Thus, the proposed recommendations form a comprehensive and balanced approach to the implementation of the TATC, aimed at minimizing risks and maximizing the economic, diplomatic and strategic potential of the project. They reflect the priorities of state policy in the Arctic, take into account modern challenges and opportunities, and contribute to strengthening Russia's global leadership in the region.

Analysis of key sections of the TATC ***St. Petersburg – Murmansk – Arkhangelsk section***

This section plays a key role in linking the Baltic-Scandinavian macro-region with Arctic transport routes, providing strategic access to European markets and transit cargo flows. The ports of Ust-Luga and St. Petersburg are the most important logistics hubs, enhancing Russia's export-import potential and reducing dependence on traditional routes through the Suez Canal. Significant growth in traffic volumes on this route is forecasted — up to 30 million tons by 2030, including container cargo, oil products and mineral resources.

From economic point of view, the development of this section stimulates the growth of the Murmansk Oblast²³, in particular through the implementation of gasification projects (for example, Murmansk LNG), as well as the development of the port of Lavna and the coal terminal²⁴. The Arkhangelsk Oblast is receiving an impetus for infrastructure modernization and the creation of new jobs due to improved logistics. In terms of infrastructure, the section is represented by the largest port in the Baltic region, Ust-Luga, specializing in the transshipment of oil, coal and containers, as well as the Northern Railway, being modernized on the Volkhovstroy – Murmansk section, which is aimed at increasing throughput capacity. In the future, it is planned to build a high-speed highway from St. Petersburg to Murmansk, with completion scheduled for 2035.

Arkhangelsk – Vladivostok section

This section is the main sea route of the Trans-Arctic Transport Corridor, covering the Northern Sea Route (NSR) within the exclusive economic zone of Russia. It ensures the transit of goods between Europe and Asia, reducing delivery time by 30–40% compared to traditional routes through the Suez Canal. The section supports the export of Russian resources, including liquefied natural gas (LNG), metals and coal, as well as transit goods from China, India and the Asia-Pacific region.

Its regional significance is manifested in the development of coastal Arctic territories — the Yamalo-Nenets Autonomous Okrug (YNAO), Krasnoyarsk Krai, Yakutia and Chukotka. Key projects include the development of the Vostok-Oil (Rosneft) fields, the expansion of the Sabetta port (NOVATEK) and the development of Dudinka as a logistics hub for the Norilsk industrial region. The infrastructure includes the ice-free port of Murmansk, an icebreaker support and cargo transship-

²³ Gasification of the Murmansk Oblast: course for 2030. Government of the Murmansk Oblast. URL: <https://mininform.gov-murman.ru/info/news/545127/> (accessed 16 July 2025).

²⁴ New terminals in the Arctic zone of Russia. URL: <https://morvesti.ru/themes/1698/94936/> (accessed 16 July 2025).

ment center; the port of Arkhangelsk, specializing in the export of timber, metals and minerals; the port of Dudinka for the transshipment of nickel, copper and platinum (Norilsk Nickel); as well as the ports of Pevek and Tiksi, which provide northern deliveries and transit transportation. River transport arteries play an important role – the Lena, Yenisei and Ob Rivers ensure the delivery of goods deep into Siberia; for example, the port of Osetrovo on the Lena River is crucial for Yakutia.

Railway and motorway lines

An important element of transport system integration is the modernization of railway lines in the Komi Republic, Yamalo-Nenets Autonomous Okrug and Krasnoyarsk Krai, aimed at integration with the TATC. Key railway lines include the Krasnoyarsk – Lesosibirsk road, providing access to timber industry complexes and the Yenisei River; Salekhard – Nadym, connecting Yamal projects with gas fields; and Arkhangelsk – Karpogory, supporting the export of timber and minerals. It is also necessary to develop the Northern Latitudinal Railway, ensuring a connection between the Northern and Sverdlovsk railways.

Road infrastructure is being developed through the construction of the Nadym – Salekhard highway, providing year-round traffic, and the modernization of roads in the Murmansk Oblast to improve connections between the port and inland regions²⁵. Such integration of railway and river routes ensures the multimodality of the TATC, connecting seaports with the industrial centers of Siberia. It is predicted that the share of rail transportation in the TATC structure will reach 20% of the total freight traffic by 2030.

It is obvious that the St. Petersburg – Murmansk – Arkhangelsk section of the TATC project strengthens transport links with Europe and contributes to the economic development of Russia's northwestern regions. The Arkhangelsk – Vladivostok section forms the core of the Trans-Arctic Transport Corridor, enhancing transit potential and supporting the export of natural resources. Rail and river arteries create a multimodal transport network, ensuring the sustainability and accessibility of the route.

Conclusion. Significance of the TATC for Russia and the world

The Trans-Arctic Transport Corridor is an ambitious project that goes beyond the national logistics initiative, becoming a key element of the global transport system. The study demonstrates that the TATC is capable of radically changing the approach to the development of the Arctic, providing Russia with leadership in the economic, political and strategic spheres, as well as creating new opportunities for international cooperation. To achieve this, it is important to combine the resources of the state, regions, businesses, public and private banks, as well as to expand international economic cooperation with interested countries. The NSR should be self-sustaining and have the status of a national project.

²⁵ Manufacturers propose integrating all-terrain vehicles into the Trans-Arctic Corridor strategy. URL: <https://tass.ru/ekonomika/24322395> (accessed 16 July 2025).

Research results

The TATC, which combines sea, rail and river routes from St. Petersburg to Vladivostok, solves several problems at once. Firstly, it strengthens the economic potential of Russia by increasing cargo traffic to 109 million tons by 2030, which is ensured by the export of hydrocarbons, minerals and transit shipments. Secondly, the project strengthens Russia's geopolitical influence, allowing it to control a strategically important Arctic route and compete with alternative corridors, such as the Northwest Passage. Thirdly, the TATC promotes sustainable development of northern regions, ensuring their supply and integration into global economic processes. Particular attention is paid to social responsibility: involving indigenous peoples of the North in economic projects and minimizing environmental risks are becoming an integral part of the TATC implementation.

Feasibility and significance

The economic feasibility of the TATC lies in reducing the time and cost of cargo delivery between Europe and Asia, which makes the route competitive with the Suez Canal. The project stimulates the development of port infrastructure (Ust-Luga, the Port of St. Petersburg, Murmansk, Arkhangelsk, Sabetta, Dikson, Dudinka, Pevek, Petropavlovsk-Kamchatskiy, Vladivostok) and railway networks, creating new jobs and attracting investment. Geopolitically, the TATC strengthens Russia's position as a leader in the Arctic, ensuring control over key routes and resources in the context of global competition with the United States, the European Union, Canada and China. The military-strategic significance of the project is reinforced by increased route security through the participation of the Ministry of Defense, other security agencies and the space group, which provides navigation and monitoring of the NSR. The socio-ecological aspect includes improving the standard of living of residents of the Arctic Zone of the Russian Federation, supporting indigenous peoples, preserving their traditional way of life and introducing environmental standards to minimize the impact on the Arctic ecosystem.

Prospects

The TATC has the potential to become the basis for a sustainable global transport system linking Europe, Asia and other regions. Its successful implementation requires a comprehensive approach: modernization of the fleet, construction of icebreakers, icebreaker-class vessels, development of port and railway infrastructure, as well as active international cooperation, especially with China and India. The project not only strengthens the economic and political power of Russia, but also contributes to the formation of a new understanding of the Arctic as a region uniting continents and peoples. The TATC is not just a transport corridor, but also a symbol of a new stage in the development of the North, where economic benefits are combined with responsibility to nature and society.

The Arctic space of the TATC should be approached as a strategic vector of internal development and external positioning of the Russian Federation, which, on the one hand, will ensure

the connectivity of the territory and, on the other hand, will secure Russia's indisputable primacy in the global North.

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