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Railway transport infrastructure development policy in the Pre-Caspian Region of Russia: applying China's experience

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Abstract. Russia's roadmap for achieving strategic objectives amid hybrid competition with the West represents a comprehensive framework of targeted measures to strengthen capacities across all domains, coupled with the dynamic advancement and renewal of technological capabilities. The state interests of the Russian Federation include the sovereign right to import and export goods. To successfully implement this right, it is necessary to develop a high-quality transport infrastructure as well as cargo and passenger transportation. To achieve this goal, it is essential to implement the most modern global models and practices, increase the number of people, and the capacity of the transport infrastructure. Russia cannot afford to lag behind in this area. After analyzing the information and interviewing experts on the transport infrastructure of the Pre-Caspian Region, we can say that the region has a weak innovative approach to railway transport policy. High-speed railways are the minimum that the Russian Federation should strive for and create infrastructure projects in this area. Transport infrastructure is one of the key resources for regional development. The Pre-Caspian Region of Russia, which includes the Astrakhan Region, Kalmykia, and the Republic of Dagestan, has a unique strategic position in the network of international transport and trade corridors connecting Europe and Asia. The Pre-Caspian Region is forming a transit hub that will stimulate economic growth, expand foreign economic relations, and increase the country's transport and logistics attractiveness. The study examines the current state of railway transportation in the Pre-Caspian Region, analyzes the infrastructure potential, development level, and prospects for modernization. It assesses the challenges and opportunities of the existing transportation system in the region. The study explores the implementation of new technologies to enhance transportation efficiency and improve the quality of services for both cargo and passenger traffic. It also focuses on issues related to government regulation, security, and international cooperation. As an example, the experience of China as one of the leading countries in the field of transport communications and infrastructure projects is analyzed. The possibility of adapting successful infrastructure transport projects and innovations in Russia is considered. The transport policy of the Russian Federation in the Pre-Caspian Region should be aimed at gaining a leading position and an innovative approach. Unlike other studies, this research does not simply consider infrastructure in Russia as a whole, but focuses on the Pre-Caspian Region and uses China's experience in high-speed rail as a model for adaptation.

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Политика развития инфраструктуры железнодорожного транспорта в Прикаспийском регионе России с применением опыта Китая

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Аннотация. План достижения стратегических целей России в условиях гибридных вызовов со стороны Запада — это конкретные действия по наращиванию мощностей во всех сферах деятельности, динамичное развитие и обновление технологических возможностей. В государственные интересы Российской Федерации входит суверенное право на импорт и экспорт товаров. Для успешной реализации этого права необходимо качественное развитие а, грузового и пассажирского сообщения, внедрение самых современных мировых моделей и практик, увеличение численности и наращивание мощности в транспортной инфраструктуре. Анализ информации и опрос экспертов по проблемам транспортной инфраструктуры Прикаспийского региона показали, что в этом регионе слабо развит инновационный подход в железнодорожной транспортной политике. Скоростные железные дороги — тот минимум, который должен быть обеспечен в России, необходимо создавать инфраструктурные проекты в этой сфере. Транспортная инфраструктура является одним из ключевых ресурсов регионального развития. Прикаспийский регион России, в состав которого входят Астраханская область, Калмыкия и Республика Дагестан, обладает уникальным стратегическим положением в сети международных транспортных и торговых коридоров, соединяющих Европу и Азию. Этот регион формирует транзитный узел, который сможет стимулировать экономический рост, расширит внешнеэкономические связи и повысит транспортную и логистическую привлекательность страны. Рассмотрено современное состояние железнодорожного сообщения в Прикаспийском регионе, проанализированы инфраструктурный потенциал, степень развития и перспективы модернизации. Приведена оценка проблем и возможностей существующей транспортной системы региона. Рассмотрены пути внедрения новых технологий для повышения эффективности перевозок и улучшения качества обслуживания как грузовых, так и пассажирских потоков. Уделено внимание вопросам государственного регулирования, обеспечения безопасности и международного взаимодействия. В качестве примера проанализирован опыт Китая как одной из лидирующих стран в сфере транспортных коммуникаций и инфраструктурных проектов. Рассмотрена возможность адаптации успешных инфраструктурных

транспортных проектов и инноваций в России. Политика РФ в области транспорта Прикаспийского региона должна быть нацелена на приобретение лидирующих позиций и инновационного подхода.

Ключевые слова: логистические коридоры, технологическая независимость, геополитические вызовы, конкурентные преимущества, международное сотрудничество, стратегические приоритеты

Заявление о конфликте интересов. Автор заявляет об отсутствии конфликта интересов.

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Introduction

Russia, facing sanctions pressure from Western countries, has set as a priority task the establishment of sovereignty in all spheres of activity, including the transport system. **The aim of the study** is to analyze the development of high-speed railway communication in the Caspian region, which will contribute to economic growth, security, positively influencing the development of social policy and international relations.

Special research methods include expert survey (civil servants, transport workers, scientists), analysis of regulatory documents, comparative analysis.

Literature Review

Russian and foreign authors examine the policy of developing railway transport infrastructure in the Caspian region of Russia using the experience of China, from the perspective of legal, economic, environmental, and political aspects. G.E. Artemikova and E.G. Khitarova note the impact of sanctions against Russia in 2022 on logistics processes [1]. Golovunina and Bulatova examine international cooperation between Russia and China in the transport sector, with an emphasis on the role of railway transport [2]. S. Khan, Zh. Tleubaeva, I. Laukhin, G. Kalambaeva describe the development of an intelligent cargo flow management system for selecting the optimal route for a vehicle carrying cargo [3]. S.A. Karaganov believes that Russia can emerge victorious from the current aggravation with Western countries [4]. L.Yu. Medovkina, O.A. Prodanova consider the Caspian-Black Sea region as a zone of collision of geopolitical interests of states, transnational companies, national, political and religious movements [5]. M.O. Turaeva notes that the Caspian states are interested in sustainable transport partnership [6]. E.E. Sergienko speaks about the rapid technological development of railway transport in China [7]. S. Zhang examines the connectivity of facilities in the eastern regions of China and Russia within the framework of the “One Belt,

One Road” initiative. He describes the progress in the construction of transport infrastructure over the past five years [8]. L. Chu examines the integration of the “One Belt, One Road” initiative (China) and the Greater Eurasian Partnership (Russia) [9]. S.S. Zhiltsov and B.M. Tulinov examine the geopolitical re-formatting of the Caspian region [10].

The author’s literature review covers various factors influencing the development of transport infrastructure and research on various ways to improve the cargo delivery process using modern Chinese practices.

Research Results

Russia’s transport infrastructure is one of the key resources for regional development. Considering the current trend of globalization and a significant increase in freight turnover, railway transport is becoming increasingly important as a key element of national and international economic infrastructure. The Caspian region of the Russian Federation requires consistent modernization of existing transport systems and the introduction of modern technologies. Investments are needed in infrastructure renewal, capacity expansion, route optimization, and improved service efficiency. In this matter, the revenue side takes a back seat; primarily, this is a matter of state sovereignty. The strategy for the development of Russian railway transport until 2030 aims to reduce total transport costs, including by increasing the efficiency of railway transport. Only under the condition of comprehensive and systematic development of the transport system will the Caspian region be able to fully realize its potential in the field of transit transportation, which will become an important driver of the economy of the region and the country as a whole.

China’s positive experience, which has radically improved its infrastructure and logistics capabilities, is an example of effective strategies and results that Russia may find interesting. Beijing’s reorientation and Moscow’s turn to the East, and Turkey’s turn away from the West, laid the foundation for the political and economic formation of Eurasia as the main subject of the future world map [4; 9]. Thus, the exchange of experience and the introduction of Chinese innovations in the field of railway transport fully meets Russia’s interests. Russia’s cooperation with China in railway transport is also connected with the Trans-Siberian Railway and BAM [2; 8]. The Chinese railway network has long impressed many countries due to its advanced technological development and high efficiency [3]. By 2030, China plans to extend the length of its modern world-class railway network to 180 thousand kilometers, including about 60 thousand kilometers of high-speed lines. Russia also has high-speed trains: for example, the “Sapsan” reaches speeds of up to 250 km/h, operating on the Moscow — St. Petersburg, Moscow — Nizhny Novgorod routes; the “Lastochka” moves at speeds of up to 160 km/h, used on routes such as Moscow — Ivanovo, St. Petersburg — Veliky Novgorod, and others; the “Nevsky Express” can accelerate to 200 km/h, operating on the Moscow — St. Petersburg route. According to information as of January 2025,

the average speed of trains in Russia at the end of 2024 was 35.7 km/h, which is comparable to the level of 1992. According to the results of the review of the work of freight railway transport by the Union of Railway Transport Operators (SOZhT) for the 12 months of 2024, the average section speed of a freight train on Russian Railways infrastructure was 35.7 km/h, which is 5.1 % lower than the same indicator for 2023 (37.6 km/h) (Table).

**Average speed of delivery of one shipment by rail in Russia
from 2020 to 2024, km/day**

Year	2020	2021	2022	2023	2024
Average speed, km/day	401.5	375.0	401.3	397.9	381.0

Source: developed by E.F. Sadykova based on internet research^{1, 2}.

In practice, there is an inverse relationship between delivery speed and wagon turnaround time: the lower the speed, the longer the turnaround time takes. An increase in turnaround time leads to an increase in the cost of transportation, which is ultimately included in the price of the goods.

Calculation example: If the turnaround time on route X is 10 days, then the cost of providing the wagon is calculated as follows: 10 days × 2,000 rubles / (wagon day) = 20,000 rubles. The speed has slowed down, on the same route the delivery time has become 12 days, then for the provision of the wagon you will pay 12 * 2000 = 24,000 rubles^{3,4}.

Delivery speed is influenced by various factors: for example, 1. Total weight of the transported batch; 2. Weather conditions, incidents; 3.

¹ By the end of 2020, the average shipping speed on the Russian Railways network was 16.7 km/h. *Russian Railways-Partner.ru* information agency. URL: <https://www.rzd-partner.ru/zhd-transport/news/po-itogam-2020-goda-srednyaya-skorost-dostavki-otpravki-na-seti-rzhd-sostavila-16-7-km-ch> (accessed: 13.12.2025). (In Russ.).

² Average freight delivery speed on Russian railways: The neglected fate of a key railway performance indicator. *The official website of GUDOK information and analytical publication*. URL: <https://vgudok.com/lenta/srednyaya-skorost-dostavki-gruza-po-rzhd-nevazhnaya-uchast-vazhneyshego-zheleznodorozhnogo> (accessed: 13.12.2025). (In Russ.).

³ By the end of 2020, the average shipping speed on the Russian Railways network was 16.7 km/h. *Russian Railways-Partner.ru* information agency. URL: <https://www.rzd-partner.ru/zhd-transport/news/po-itogam-2020-goda-srednyaya-skorost-dostavki-otpravki-na-seti-rzhd-sostavila-16-7-km-ch> (accessed: 13.12.2025). (In Russ.).

⁴ Average freight delivery speed on Russian railways: The neglected fate of a key railway performance indicator. *The official website of GUDOK information and analytical publication*. URL: <https://vgudok.com/lenta/srednyaya-skorost-dostavki-gruza-po-rzhd-nevazhnaya-uchast-vazhneyshego-zheleznodorozhnogo> (accessed: 13.12.2025). (In Russ.).

Emergencies. Russia, considering the features of its transport system and resources, could apply useful ideas and adapt some elements of the Chinese approach to ensure more efficient development of its transport network in the Caspian region and beyond.

Let us consider some achievements in Chinese technology: 1. In March 2024, it was reported that testing had been completed in China on the first urban train with an integrated hydrogen energy power system. The train, developed by Changchun Railway Vehicles, achieved an operating speed under full load of 160 km/h, a possible range of 1,000 km, and consumed only 5 kW/h of energy per 1 km; 2. In July 2024, it was reported that a subsidiary of CRRC Corporation (Changchun Railway Vehicles Co., Ltd.) introduced a new type of bogie for high-speed trains moving at 400 km/h; 3. On December 19, 2024, Line 27 of the Chengdu Metro (Sichuan Province, China) opened for service. It became the second fully automated (driverless) urban metro line [7]; 4. On December 29, 2024, a prototype of the CR450 high-speed electric train capable of reaching speeds of up to 450 km/h and intended for operation at 400 km/h was presented in Beijing [3].

Thus, using China's experience and technologies in shaping one's own infrastructure development strategies can become an important factor in increasing the competitiveness of Russian railway transport.

Despite the positive prospects, railway transport in the Caspian region faces a number of significant difficulties:

1. Infrastructure limitations;
2. Discrepancies in standards and technological features — lack of infrastructure for servicing container, general, and dry cargo, as well as the absence of unified cargo flow management systems;
3. Problems associated with the traditional (sometimes outdated) approach to organizing the transport process;
4. Low level of digitalization of transit documents and procedures;
5. Shortage of specialized wagon fleets and sea or railway ferry equipment;
6. Lengthy customs procedures, insufficient coordination of cargo management work;
7. Lack of implementation of high-speed railway projects for many years.

There is intense competition in the development of transport infrastructure among the Caspian Basin countries, which Russia cannot afford to lose. Already, Azerbaijan, Turkmenistan, Kazakhstan, and Iran are increasing the pace of transport infrastructure development in their Caspian territories [1]. "The countries of the region are actively building up cooperation in the energy sector, which remains the foundation for development for the new Caspian states" [10]. For leadership in the Caspian, it is necessary to introduce modern technologies and not hesitate to adopt this positive experience from China. Security issues also come to the forefront of international relations problems [5; 6]. In connection with the sabotage of the Nord Streams pipelines on September 26, 2022, Russia must consider the security of not only transport

but also the transport infrastructure of its state. Infrastructure security issues in the Caspian must be constantly raised at the intergovernmental level. To ensure security along the route of trains, it is necessary to create additional jobs for drone operators.

Conclusion

Russia must take a leading position in the development of the North-South International Transport Corridor, as competition among transport projects in the Caspian Basin countries is increasing. In the Caspian region, when implementing long-term policy, it is necessary to lay down an integrated approach to modernizing transport infrastructure, digitalizing processes, introducing modern technologies, and creating conditions for convenient interaction among market participants. It is necessary to consider both the needs of the local economy and international challenges. Applying China's experience in high-speed infrastructure projects could be the key to creating an efficient and competitive transport system that contributes to the economic growth of the region. It is important that Russia more actively uses existing opportunities to attract investment, modernize infrastructure, and improve international cooperation. Only with this approach will the region be able to overcome infrastructure limitations, increase capacity, and provide reliable and fast transport corridors that meet the challenges of the 21st century.

REFERENCES

1. Artemenkov GE, Khitarova EG. The impact of changes in logistics transport routes on Russia's foreign economic activity. *Economy and Business: Theory and Practice*. 2023;(2):24–26. (In Russ.). <https://doi.org/10.24412/2411-0450-2023-2-24-26> EDN: UROUHU
2. Golovunin GG, Bulatova NN. International cooperation of Russia and China in the transport sphere. *Science and Technology Innovations: A collection of articles of the 6th International scientific and practical conference, Petrozavodsk, 18 October 2021*. Petrozavodsk: Mezhdunarodnyi tsentr nauchnogo partnerstva «Novaya Nauka» publ.; 2021:93–98. (In Russ.). <https://doi.org/10.46916/20102021-2-978-5-00174-348-4> EDN: KLWBSZ
3. Khan S, Tleubaeva Zh, Laukhin I, Kalambayeva G. Development and research of an intelligent cargo flow control system. *KazATC Bulletin*. 2025;136(1):147–154. <https://doi.org/10.52167/1609-1817-2025-136-1-147-154> EDN: PNNGPL
4. Karaganov SA. About the Third Cold War. *Rossia v global'noj politike*. 2021;19(4). (In Russ.). <https://doi.org/10.31278/1810-6439-2021-19-4-21-34> EDN: BMWVWO
5. Medovkina LYu, Prodanova OA. The Caspian-Black Sea Region as a zone of clash of geopolitical interests of states in the context of contemporary international relations. *Journal of History, Politics and International Studies*. 2015;(1):96–103. (In Russ.). EDN: VTFTJB
6. Turaeva M.O. Transport communications in the Caspian Region in the new conditions. *Public Administration*. 2023;25(4):63–72. (In Russ.). <https://doi.org/10.22394/2070-8378-2023-25-4-63-72> EDN: MVQZDQ
7. Sergienko EE. China's railway transport as an example of technological development of the transport complex. *ETAP: Economic Theory, Analysis, and Practice*. 2025;(3):101–106. (In Russ.). <https://doi.org/10.24412/2071-6435-2025-3-101-106> EDN: OFIQHT

8. Zhang X. Facilities connectivity in eastern regions of China and Russia and the “Belt and Road” initiative. *R-Economy*. 2019;5(3):144–150. <https://doi.org/10.15826/recon.2019.5.3.015> EDN: HUGTFQ
9. Chu L. Integration of the initiative “One Belt, One Road” and the Greater Eurasian partnership: Prerequisites, motives and priorities for implementation. *Sociopolitical Sciences*. 2021;11(1):95–100. (In Russ.). <https://doi.org/10.33693/2223-0092-2021-11-1-95-100> EDN: XJEBXR
10. Zhiltsov SS, Tulinov BM. Geopolitical transformation of the Caspian Region: Directions and development outcomes. *World Economy and International Relations*. 2023;67(2):130–138 (In Russ.). <https://doi.org/10.20542/0131-2227-2023-67-2-130-138> EDN: URRZKL

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