
CHALLENGES AND POLICY OF SPATIAL DEVELOPMENT
OF POST-SOVIET RUSSIA

International Transport Corridors in the Context of Developing Russia's Transit Potential¹

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Received July 15, 2022; revised August 30, 2022; accepted October 10, 2022

Abstract—The volume of transit and balance of sold and purchased transit services reflects the peculiarities of Russia's geoeconomic position, which the author understands as the position relative to the surrounding global economies and links that ensure their trade and economic ties. Russia's transit potential as an element of its geoeconomic position is still far from being used to the fullest extent. Federal strategic documents pose the problem of its fuller use, especially since, as a result of the shift in the global economy to Asia, the gap between its potential and actual use is widening. The volume of transit traffic depends on the dynamics of trade in Russia's neighboring countries, the development of transport infrastructure and logistics that ensure its connection with neighbors, the availability of alternative traffic options, geopolitical conditions, and the nature of national regulation of transit traffic between Russia and its neighbors. In the context of globalization, transit has changed from a way of overcoming natural or created political and economic isolation to a tool for accelerating trade turnover. In the current conditions of exacerbated geopolitical contradictions, transit is again becoming a tool for economic pressure and, at the same time, it is the result of searching for alternative traffic links. Problems involving the export of transit services have receded into the background compared to the problem of creating a new logistics for Russia's foreign trade. International transport corridors occupy a central place in its solution. Their formation depends on coordination of the transport and foreign trade policy of Russia and its neighbors. In turn, the effects of this coordination depend on the coordinated development of Eurasian regional associations: EAEU, CIS, SCO, Caspian Five, Belt and Road megaproject.

Keywords: Russia, neighboring countries, trade, transit, infrastructure, logistics, international transport corridors, regionalization, coordination, geopolitics

DOI: 10.1134/S2079970522700575

INTRODUCTION

The transit potential of Russia is still far from being used to the fullest extent. In strategic documents of recent years, the problem of using it more fully has been posed, especially since, as a result of the shift in the global economy to Asia, the gap between its potential and actual use is widening. This is due, on the one hand, to the growth in productivity of maritime transport, expansion of the capacity of the Suez Canal, the rapid development of logistics, and, on the other hand, insufficiently rapid modernization of Russian transport and a large number of bottlenecks in transport, which slow down and increase the cost of transportation along Russia's transcontinental highways. At

the same time, the geopolitical risks of transportation along traditional sea routes tend to increase, since they lie in areas of ongoing conflict, such as the South China, Arabian and Red seas. This forces the global community to seek alternative communication routes between Europe and Asia. The reconstruction of the Great Silk Road through the implementation of the Chinese Belt and Road mega-project is one of the directions of this search. In turn, Russia put forward the idea of a "Greater Eurasian Partnership," in which, as in the Chinese project, transport projects take the leading place.

In the "Comprehensive Plan for the Modernization and Expansion of the Trunk Infrastructure"² of September 30, 2018, the problem is to significantly expand transit traffic by rail and road, as well as through Russia's ports. According to this document,

¹ The article was written in 2020 based on the results of research carried out in 2009–2019 (see Glezer, O.B., Shvetsov, A.N., and Kotlyakov, V.M., *Reg. Res. Russ.*, 2023, vol. 13, no. 1, pp. 1–5) and does not reflect the impact on the subject matter considered therein from the latest events stemming from two global crises that erupted suddenly: the COVID-19 pandemic and aggravation of the military–political situation with Ukraine in 2022.

² Comprehensive Plan for the Modernization and Expansion of Trunk Infrastructure. National Projects: Targets and Results. 2019. <http://static.government.ru/media/files/mMrr-br3q9P6cGfWP3WxSmf71CvAhrLob.pdf>.

revenues from the export of transit services should grow by more than a third in 2024 compared to 2017. The main transport corridors occupy a central place in solving this problem. This chapter analyzes the role of international transport corridors (ITC) passing through Russia in the development of its transit position.

THE ESSENCE OF INTERNATIONAL TRANSPORT CORRIDORS

International transport corridors (ITC) play a key role not only in foreign economic relations, but also in interregional relations for most countries. The ratio of domestic and foreign relations in ITC activities is different in each case, in accordance with the degree and forms of the country's involvement in international economic relations. The international significance of transport corridors changes over time, reflecting changes in the structure of the national and global economic space, in the profile of the participation of the country and its regions in international economic relations, and, as a reflection of this, their position in global trade and transport.

The concept of transport corridor (TC) appeared in the mid-1980s, when the Inland Transport Commission of the United Nations Economic Commission for Europe (UNECE) commenced studies of transport flows in Europe in order to develop transit traffic (Shcherbanin, 2006).

In studies on physical planning, a TC is understood as a certain geographical space along the main direction of mass transportation of goods and passengers within or between agglomerations. Corridors can include both one road and a network of parallel routes along with adjacent territories (Corridor ..., 2007). It is in this, and not a linear, sense that the concept of TC is used in this paper.

Globalization of the economy, which began in the middle of the last century, was accompanied by continuous technological progress in transport. The "container revolution" played the most important role, which made it possible to significantly reduce the time and costs of transshipment of goods. The development of transport also proceeds deepening of the the specialization of vehicles for the transportation of certain goods in terms of the volume of transported cargo lots and combinations of vehicles used for faster and more timely delivery to consumers. Sequential transportation of goods by different modes of transport with the formation of transport service chains (multimodal and intermodal transportation), so-called seamless transportation, makes it possible to speed up traffic, improve its reliability, and quality.

With the development of the global transport infrastructure and change in the spatial structure of international trade, technological changes are taking place in transport corridors. The main links of the global

transport system are the largest seaports, which are connected by many container (feeder) lines with regional ports, and those, in turn, with local ports, as well as regular land routes with domestic shippers and recipients of goods. Large cities have become important links in the global transport system, acting as central links of national transport systems, forming as a result of their interaction ITC. Formation of a multi-level ITC system operating on the *hub and spoke* principle (a node and space gravitating towards it) entails the widespread involvement of countries and regions in international trade, in which an increasing place is occupied by intermediate goods: components, semi-finished products, and parts that require on-the-dot delivery.

The development of ITC is greatly influenced by the geopolitical considerations of countries, in particular, the desire to strengthen their foreign policy influence via modern infrastructure, reduce the geopolitical risks of entering the main markets, and diversify options for linking with global markets. In general, the dynamics of ITC is a reflection of technological progress in transport, the progress of globalization and regionalization of the global economy, the growth of its polycentricity, the geopolitical and geoeconomic interests of the participating countries in the development of international communications, and the activities of international organizations.

Thus, the projects of intermodal transport corridors ESCAP should be noted, one of five regional organizations of the UN (Fig. 1). This regional organization of the UN actively promotes regional and subregional integration processes, giving a central role to the development of transport and logistics, as well as the creation of "dry ports"—junctions of the land transport networks of different countries. Simplification of transportation and improvement of logistics schemes is one of the goals of ESCAP, since the transport infrastructure contributes to the development of countries' foreign trade, and the latter, in the UN's view, is an important factor in their economic growth.

Today, the activities of ITC are closely linked to logistics and the widespread introduction of digital technologies. Since the advent of ITC, the essence of this concept has evolved from reflecting the geographical direction of international transportation to a high-tech digital transport and logistics system. Today, the ITC can be defined as "the coordinated development and unification of technical parameters of the national trunk routes of several countries that form the international direction of transportation between large production and consumption centers, national norms for regulating transit and foreign trade transportation, logistics activities, and the widespread introduction of multimodal technologies in cargo delivery in this direction" (Vardomsky and Turaeva, 2018, p. 12).

ITC carry out most foreign trade transportation of individual countries; these are the main intranational

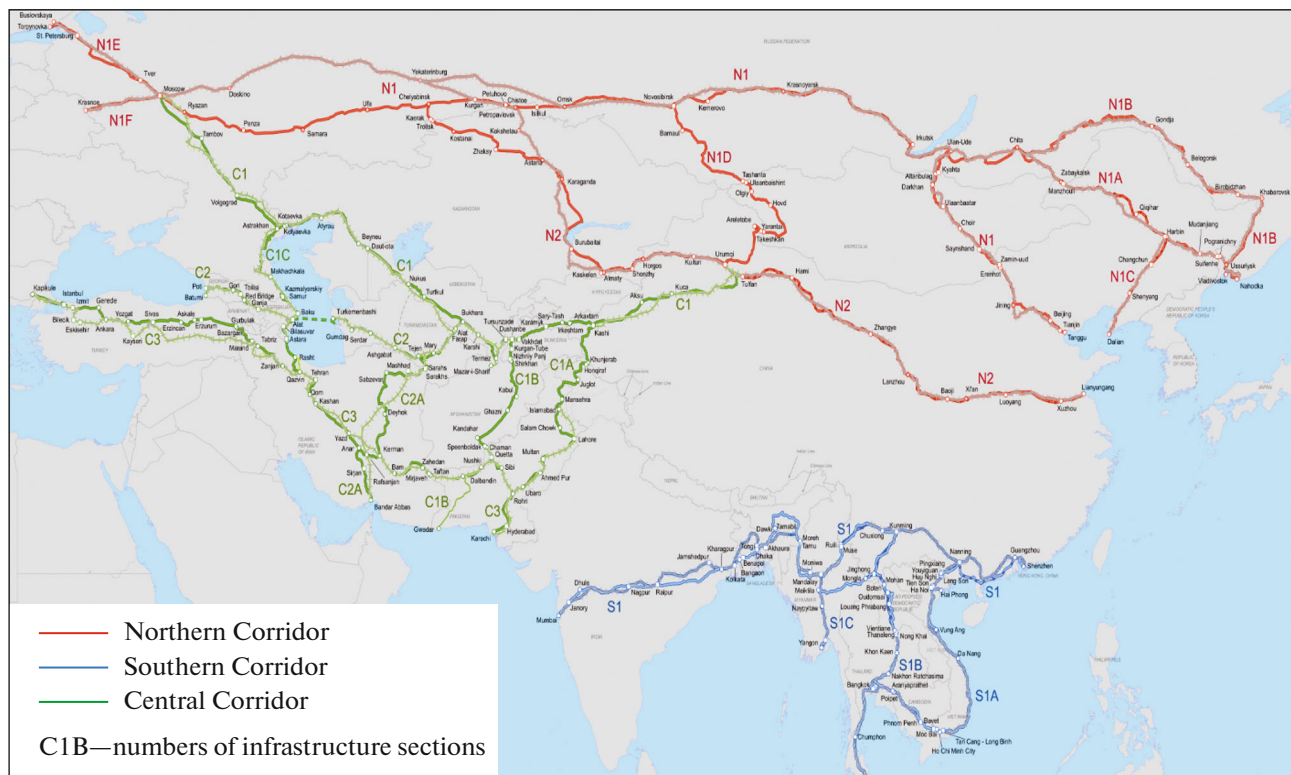


Fig. 1. ESCAP transport corridors.

Sources: (Chong, 2017; Integrated ..., 2017).

transportation arteries. However, one of the main criteria for the international significance of a transport corridor is the volume and diversity in the directions of transit traffic along it (Vardomsky, 2018a). In this context, development of ITC is closely related to regional integration processes and the creation of common markets for transport services.

TRANSIT REGULATION OF RUSSIA AND PROBLEMS OF ITS USE

Russia occupies a position in the Eurasian space close to central with a wide range of neighboring countries. Therefore, shorter land routes connecting European and Asian countries pass through it compared to the maritime traffic option, as well as the Northern Sea Route (NSR), the potential importance of which in the trade and transport connectivity of European and Asian countries will gradually increase.

The neighborhood with the EU, as well as Belarus and Ukraine in the west; China, Mongolia, Japan and South Korea in the east; and countries of Central Asia in the south, access to the seas of three oceans is an important part of the transit potential. Neighbors with which the Russian Federation is connected by land routes account for more than half of global trade and more than two-fifths of global GDP.

For a number of areas, Russia is the main transit country, primarily for Central Asian countries in their relations with the EU, Belarus, and Ukraine. However, Russia must compete for transit traffic in most directions. Here, a regularity is evident: the longer the transit route, the stronger the competition of other communication options. Among all possible transit directions, transcontinental transit is the longest, imposes special requirements on the speed and quality of transportation, and requires high-level logistics services and continuous monitoring of the movement of goods along the route. At the same time, the dynamics of transcontinental transit most accurately reflects the competitiveness of Russia's national routes in the global system. However, by weight, the largest transit flow through Russian routes is associated with foreign trade relations of Kazakhstan.

For Russia itself, transit dependence is high on neighboring Belarus, Kazakhstan, Ukraine, the Baltic countries, as well as Georgia—the only real option for cargo links with Armenia. Russia is the largest consumer of transit services provided by its neighbors, allowing them to generate significant revenues. The largest exporters of transit services for the Russian Federation among the CIS countries are Belarus, Kazakhstan and Ukraine.

The potential of the position and neighborhood is not supported by the proper development of transport

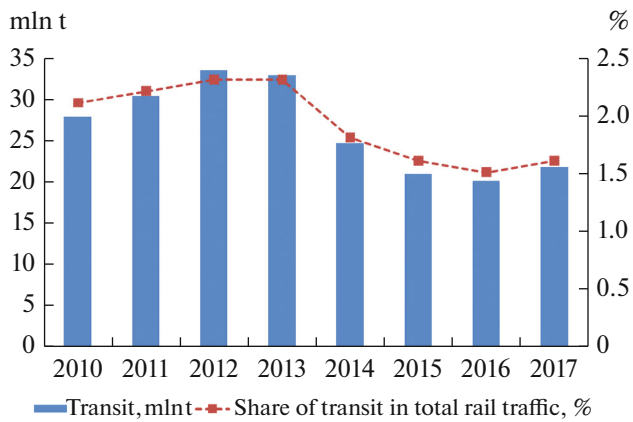


Fig. 2. Transit traffic of Russian Railways, 2010–2017.
Compiled from: (Butov, 2016; Doklad ..., 2019).

infrastructure and logistics. In the Transport Strategy of the Russian Federation up to 2030 of November 22, 2008, “integration into the global transport space and realization of the country’s transit potential” are among the priority directions. However, its implementation faces great difficulties. In this document, the plan was to increase the volume of international transit to 58 mln t in 2018, including by rail, to 56 mln t, and by road, to 2.2 mln t. In 2018, the volume of Russian rail transit amounted to 22.4 mln t, and automobile transit, to 1.3 mln t, which was less than the planned targets. Moreover, the volume of rail transit in the Russian Federation in 2017–2018 was significantly lower than in 2012 (Doklad ..., 2018; Doklad ..., 2019) (Fig. 2).

This is due to several reasons. The first is the decline in foreign trade among Russia’s transit partners in 2014–2016. The second is the West’s imposition of sanctions against the Russian Federation and the discord, for political reasons, in economic ties with Ukraine, which have greatly affected mutual transit. Russia and Ukraine have been each other’s largest transit partners since independence. Another reason is the appearance for transit partners of other transport opportunities for links with international markets via alternative routes, which were mentioned above.

An important constraint is also the fact that the volume of transport revenues from transit traffic in absolute terms is incomparably less than from servicing domestic and export traffic, which is dominated by bulk cargo. Transit traffic makes up a relatively small share in the volume of rail traffic in the Russian Federation. In 2017, they accounted for 1.6% of the total traffic volume, and in the structure of Russian Railways revenues, about 3%. Revenues from transit amounted to just over USD 700 mln, and from transit containers, USD 154 mln, i.e., about USD 32/t of transit cargo and about USD 400 per one standard

container.³ This is a very small part of the total export of transport services, which in 2017 was about USD 16.9 bln. Only with large traffic volumes will transit will be able to bring tangible revenues for Russian Railways and balance of payments.

In addition, the Russian Federation retains a monopoly in a number of areas, and therefore, there is a great temptation to overestimate transit tariffs. Moreover, transit traffic often competes for capacity with domestic and export–import traffic. This forces transit-dependent countries to either seek work-arounds or create infrastructure that provides new ways to connect with markets.

In some cases, construction of transport routes for the development of new mineral raw materials deposits is more important for the Russian Federation than increasing the throughput of the existing network. Approaches to modern transport construction are mainly determined by the interests of the country’s major raw materials companies. This was most clearly manifested in the delay in construction of the Russian section of the Western China–Western Europe Highway, which is of potentially great international importance. This has become one of the main reasons for the lack of growth in road transit.

TRANS-SIBERIAN TRANSPORT CORRIDOR: EXPORT COAL VERSUS TRANSIT CONTAINERS

The main transit traffic volumes are concentrated on Russia’s main latitudinal highway, the Trans-Siberian Railway, which, together with the Baikal–Amur Mainline (BAM), as well as the road and oil and gas pipelines running in the same direction, constitute the Trans-Siberian Transport Corridor (TSTC), which determines the vector of the country’s spatial development, ensuring its inclusion in the global economy and serving external demand for international transportation through Russian communications.

The continuation of the TSTC is the railways that fan out from the Urals to Belarus, Ukraine, and the Baltic, Caspian and Black seas, which, together with the railways and roads of neighboring countries, form a latitudinal transcontinental transport corridor. The highways extending from the TSTC in the direction of European and Asian countries can be considered regional ITC connecting the Russia’s main TC with neighboring countries, such as St. Petersburg–Helsinki, Volgograd–Astrakhan–Atyrau–Nukus–Chardzhou, Novosibirsk–Barnaul–Semey–Almaty, Rostov–Vladikavkaz–Tbilisi–Yerevan, etc.

Such corridors connecting with China are currently being formed in Russia’s Far East; these include Primorye-1 and Primorye-2. The first will connect

³ Calculated after (K. Mozgovoy, Containers Overtake Forecasts, *Gudok*, January 30, 2018).

Harbin via Suifenhe and Grodekovo to the ports of Vladivostok, Nakhodka, and Vostochny, through which transportation will go between Heilongjiang province and the southern provinces of China, as well as between this province and the Asia-Pacific countries along the shortest route. The Primorye-2 corridor is designed to provide the shortest access to the sea in Jilin province through Hongchun and the port of Zarubino. To increase the formation of these corridors, the customs regime of the Free Port of Vladivostok was extended to all ports of Primorsky krai. It is quite likely that a new corridor will be formed as a result of construction of a railway bridge across the Amur River near the Nizhneleninskoye–Tongjiang border checkpoint, which will shorten the railway route between Khabarovsk, Birobidzhan, and Chinese Harbin; it will also connect the BAM and Chinese railway network in the shortest manner.

Currently, paths are being worked out to implement the Agreement on Creation of the Russian–MPR–China Economic Corridor, which is based on modernization of the Ulan-Ude–Naushki–Ulaanbaatar–Erlan–Beijing–Tianjin railway and construction of a number of new lines connecting the railway networks of the Russian Federation and China via Mongolia. This is the shortest route connecting Moscow and Beijing (7622 km), as well as the provinces of Hebei, Tianjin, and Liaoning, with Russian regions located on the Trans-Siberian Railway. It should be noted that, in parallel, these corridors include roads, creating the basis for development of multimodal traffic.

Regional transport corridors branching off from the TSTC play an important role in Eurasian integration. The mutual position of EAEU countries and adjacent CIS countries is such that the maximum transit rent and differentiation of connections with global markets can only be obtained in the case of coordinated development of their transport networks. The EAEU Treaty provides for implementation of a coordinated (agreed upon) transport policy aimed at consistent and gradual formation of a unified transport space. Moving towards the creation of a common market for transport services, the EAEU space will become a unified transit space with a single transit tariff for certain modes of transport (Vardomsky and Turaeva, 2018, pp. 23, 33–34).

The latitudinal transcontinental transport corridor plays a key role in the economic link between the Russian Federation and the EU with China, Japan, South and North Korea, Mongolia, and the CIS countries. The TSTC performs significant transit functions related to provision of foreign trade from Central Asian countries with the countries of Europe and East Asia, as well as between the latter. This entire system of international routes forms the transport framework of the Greater Eurasian Partnership, which Russia is striving to create.⁴

Since the beginning of the 2010s, major changes have been taking place in the TSTC's transport functions, associated with rapid growth in the transportation of export coal. In 2018, about 80 mln t of export coal were transported in the direction of Far Eastern ports, and about 100 mln t, in the western direction. By 2025, coal exports in the eastern direction will increase to 126.5 mln t, and in the western direction, to 148.9 mln t.⁵

Another driver of development of the Trans-Siberian Railway is the transportation of heavy transit containers. For 2010–2018, the transportation volume of transit containers on Russian Federation railways increased from 153000 TEU to 557 thousand TEU⁶ (Doklad ..., 2019; Kholopov and Rarovsky, 2019). However, this is significantly less than planned in the 2008 Transport Strategy: 910000 TEUs.

The history of transit through the Trans-Siberian Container Bridge dates back to the late 1960s, when the Suez Canal was blocked as a result of the Arab–Israeli wars until 1975. Under these conditions, Japan, which was seeking shorter traffic routes with Europe, together with Soviet transport organizations, opened combined sea–rail transportation of containers through the port of Nakhodka. Today, container transit is dominated by China, which accounts for two-thirds of transcontinental container transit (Vardomsky and Turaeva, 2018, pp. 40–46). In 2018, the total volume of rail transit container traffic (including traffic with Belarus) in China–Europe–China traffic, according to Russian Railways, amounted to 370000 TEUs, 35% more than the year before.⁷

In addition to China, an important role in transcontinental container transit via the TSTC is played by South Korea and Japan, which again began to show interest in this option of connection to the European market. This is facilitated by the formation of a free trade zone between the EU and Japan, as well as modernization of this transport artery.

The development of transit traffic is facilitated by implementation of the Transsib in 7 Days Program, within which accelerated container trains at an average rate of 1200 km/day or more began to be formed,⁸ as well as implementation of the program for expanding

⁴ The Greater Eurasian Partnership, in the author's view, denotes a certain area of international cooperation on the Eurasian continent, the filling of which with specific projects and the creation of international institutions for this depends on the will and interests of the participating countries.

⁵ N. Skorlygina and A. Dzhumaylo, The Great Coal Road: Kuzbass Lays Claim to Two-Thirds of the BAM and Transsib, *Kommersant*, no. 131, July 26, 2018, <https://www.kommersant.ru/doc/3696019>.

⁶ TEU, 20-foot container equivalent unit, in which container turnover is calculated.

⁷ K. Mozgovoy, New Points on the Map, *Gudok*, April 6, 2019, <https://www.gudok.ru/1520/newspaper/detail.php?ID=1459455>.

⁸ A fast container train follows without reconfiguration to the destination stop, and it travels 1200–1500 km/day.

the throughput capacity of the Eastern Zone of the TSTC (the railway network east of Taishet), which began in 2013 and is closely linked to increased coal exports. In 2018, it was expanded to 120 mln t/year. Owing to implementation of the Comprehensive Plan for the Modernization and Expansion of the Trunk Infrastructure up to 2024, it should increase to 182 mln t.⁹

The growth in exports of bituminous coal covers most of the increase in throughput of the Eastern Zone, which constrains the growth in heavy container transit traffic along the China–EU–China route. Limitations in throughput and related difficulties in ensuring contractual transportation terms have become the reasons for the redistribution of transit container flows. Whereas before 2014 almost all of the transit rail container traffic from the EU to China passed through the Russian checkpoint of Zabaikalsk (95–100%), in 2016, its share decreased to 22%, while 67% passed through Dostyk and Altynkol in Kazakhstan, and another 11%, through the Russian checkpoint of Naushki (Kholopov and Rarovsky, 2019, p. 76).

In addition, the Kazakhstan option of transcontinental transit, as a shorter one (by about 1000 km) and with more mileage on Chinese railways (about half the entire route), proved more in demand for the main suppliers of goods in central China (the cities of Chongqing, Xian, Wuhan, Chengdu, etc.) to the European market. Most of the trade flow between China and the countries of Central Asia and a significant part of trade with European Russia has also gravitated to the Kazakhstan route. According to the Federal Customs Service, in 2017, Moscow accounted for about 45% of the total trade turnover between the Russian Federation and China, but most of it is maritime (Vardomsky, 2018b). So far, the overland option accounts for 3–4% of the total volume of container traffic between EU countries and countries of East Asia.

From the viewpoint of the total length of the route to Europe, transit along the Trans-Siberian Railway has mainly gravitated towards the northern and north-eastern regions of the PRC. The assumed participation of Japanese logistics business in developing the TSTC will significantly increase its transit attractiveness not only to Japanese companies, but also to companies from China, South Korea, and other Asia-Pacific countries.

The Western China–Europe ITC through Kazakhstan, Russia (the European section of the Trans-Siberian Railway), and Belarus began to form in the late 2000s (Fig. 3). As a result of construction of a number of railways in Kazakhstan, the length of this railway route has decreased by almost 1000 km. The

accelerated formation of the ITC was due to China's great interest in reducing the time of connection with the European market. This corridor consists of several lines connecting border checkpoints on the Kazakhstan–China border with Russian Railways in the Urals and the Volga region. An important element of this corridor will be the Western China–Europe highway. As well, two options for traveling the mainline will be implemented in Russia: Orenburg–Kazan–Nizhny Novgorod–Moscow and farther to Minsk, Brest, Baltic seaports, and bypassing Moscow: Orenburg–Samara–Tambov–Bryansk–Smolensk (toll road)—both roads are to be commissioned in 2024.

The Trans-Siberian and Kazakhstan branches of Chinese transit have been combined into a single route in the Southern Urals, then it goes to the “dry ports” on the Belarusian–Polish border or to Baltic ports. In addition, the TSTC has several connections with the latitudinal highways of Kazakhstan leading to Caspian ports and transport links of Iran, which increase the transit potential of the TSTC and also provide shorter access for Russia's Siberian and Ural regions to the markets of Central Asian countries, Iran, the South Caucasus, and Turkey.

On the whole, development of the transcontinental latitudinal corridor and increase in its international significance are closely related to the coordinated development of the transport routes of Belarus, Kazakhstan, and Russia included in it. This reflects the activities of the international company JSC UTLC ERA, which transported 280500 TEU in 2018, exceeding the 2017 volume by 60%. Significant growth in the volume of UTLC ERA traffic on the route from China to the EU in 2018 (by 91% compared to 2017) was due to the active expansion of the geography of regular container trains between the cities of European countries and China, as a result of which the total number of regular services increased to 57.¹⁰ The company accounts for three-fourths the volume of overland container traffic between China and the EU and half the transit traffic by Russian Railways in 2018.

In addition to UTLC ERA, operations with transit containers are carried out by the Russian companies Fesco, RZD Logistic, and TransContainer, which organize the movement of container transit trains. The development of transit links along the transcontinental transport corridor is facilitated by the Coordinating Council for Trans-Siberian Transportation, established in 1997, which includes companies and organizations from 23 states, among them the Association of European Trans-Siberian Operators and Korean Association of International Freight Forwarders.

⁹ National Projects: Targets and Main Results. As of February 7, 2019 <http://static.government.ru/media/files/mMrr-br3q9P6cGfWP3WxSmf71CvAhrLob.pdf>.

¹⁰ K. Mozgovoy, New points on the Map, *Gudok*, April 6, 2019. <https://www.gudok.ru/1520/newspaper/detail.php?ID=1459455>.



Fig. 3. Scheme of transcontinental ITC of EAEU countries and China.

Source: (Kovalev et al., 2018).

THE NORTH–SOUTH ITC: A PROJECT WITH UNMET EXPECTATIONS

The North–South Corridor, which formally opened in 2002, was designed to provide a shorter route than the maritime option through the Suez Canal from Russia and countries of the eastern Baltic Sea and the CIS to Iran, countries of the Persian Gulf, India, and Pakistan. It was assumed that containers in this direction would be moved by a combined railway–sea route. However, the reality proved more complicated than the assumptions, and so far this path has been quite successfully serving only links between Russia and a number of other countries with the Caspian states (Karavaev and Tishekh'yar, 2019). There has been no talk of any alternative to the option through the Suez Canal.

Formally, the Russian section of the North–South ITC starts from Buslovskaya station on the border with Finland and ends in the ports of Astrakhan and Makhachkala and at the Derbent–Yalama border checkpoint on the Russian–Azerbaijani border (Fig. 4). The total distance from St. Petersburg to the port in Mumbai is 7200 km, which is shorter than through the Suez Canal. However, the gain in time is not as large as for container transit in the China–EU–

China direction. This confirms that out of the total container turnover associated with Russian–Indian trade (in 2016, 124000 TEU), no more than 15% is transported along this corridor (Strategiya ..., 2017; Karavaev and Tishekh'yar, 2019, p. 12). However, the most important thing is that the trade turnover between India and the EU is about five times less than between China and the EU, and for most EU countries, the traditional option of links with India is shorter than through Russia.

The North–South transport corridor relies primarily on a commercial basis, is deprived of significant subsidies from the participating states, despite the fact that the level of development of transport and its innovativeness are significantly lower than those of countries participating in the organization of latitudinal transit traffic. Until recently, significant funds have not been allocated to the development of a container-oriented corridor. In contrast to the latitudinal transcontinental corridor, regular train transportation has not been established on the meridional corridor, and to a limited extent multimodal technologies are used.

The development of the North–South corridor has long been held back by international sanctions imposed on Iran, as well as the relatively small trade



Fig. 4. East–West and North–South ITC.

Source: Russian Railways in global transport system. <http://inter.rzd.ru/dbmm/images/6/121/81316>.

volume between countries of the southern leg of the corridor with countries of its northern leg. In contrast to China, India has no synergy of geopolitical and economic interests in the development of transportation along this corridor. In addition, US sanctions against Iran were recently restored and reinforced, and tensions have grown significantly in the Strait of Hormuz zone, which hinders the participation of Iran's Arabian neighbors.

It seems to the author that the North–South corridor is a system of meridional railway, road, and water links descending to the Caspian region. An important feature of this region is that it lies at the intersection of latitudinal and meridional transcontinental routes passing through Russia, EAEU countries, Azerbaijan, Georgia, and Turkmenistan, which increases the transit potential of all these countries (see Fig. 4).

The North–South transport corridor is important primarily as an element of the country's territorial structure, since it crosses many regions of the Russian Federation and connects its largest urban agglomerations. It can play an important role in development of the southern regions of the country. However, its transport significance for foreign economic relations is significantly less than that of the TSTC, since the main trade and transit partners of Russia and the post-Soviet countries are on the latitudinal course.

In technical terms, a meridional corridor across the territory of the CIS has actually been created: railways and roads leading to Iran pass along both shores of the Caspian Sea; the seaports of Azerbaijan, Kazakhstan, Turkmenistan have been expanded and modernized,

and a railway-ferry service has been organized between the port of Kuryk in Kazakhstan and the port of Alyat in Azerbaijan. The created infrastructure has significantly improved the transport and logistics conditions for servicing trade relations between the Urals and Siberian regions of the Russian Federation with the Caspian countries, as well as the eastern regions of Turkey and Middle Eastern countries.

Responding to the active transport and transit activities of its neighbors in the Caspian region, Russia in 2017 adopted the Strategy for Development of Seaports and Land Routes in the Caspian Regions of the Russian Federation, and in 2019, the Plan for Implementation of this Strategy. These somewhat belated documents reflect the anticipated development of economic cooperation in the region, due to deepening of Eurasian integration, expansion of cooperation between the EAEU and Azerbaijan and Turkmenistan, the creation of a free trade zone between the EAEU and Iran, and development of economic relations within the Russia–Azerbaijan–Iran economic corridor. These projects generate a favorable atmosphere for the creation of joint logistics companies and, on this basis, expansion along the transit corridor between the EU and South Asia.

LIQUEFIED NATURAL GAS EXPORT AS A FACTOR OF THE TRANSFORMATION MISSION OF THE NORTHERN SEA ROUTE

The Northern Sea Route (NSR), like the Trans-Siberian Railway, has a latitudinal orientation, but the

latter runs 3000–4000 km to the south. These paths are also united by the fact that they bear great influence on the development and modernization of the Russian space. The NSR was opened for international navigation in 1991. In Federal Law no. 155-FZ On Inland Sea Waters, Territorial Sea, and Contiguous Zone of the Russian Federation of July 31, 1998, the NSR is defined as “the historically established national unified transport route of the Russian Federation in Arctic.” In the same year, at the First International Eurasian Conference on Transport, a proposal was made to consider the NSR as a Eurasian transport corridor (Peresyphkin and Yakovlev, 2006). An argument in favor of this is that it is the shortest sea route from Northern Europe to China and other East Asian countries. The route from Shanghai to Rotterdam along the NSR is 8100 miles, and through the Suez Canal and Strait of Malacca, 10 500 miles.

In the scientific literature, different authors understand the NSR as: “the main latitudinal transport route linking the Arctic regions” (Evdokimov et al., 2000), “the main national transport route” (Veretenikov et al., 2016), “the transit route of the China Belt and Road project” (Kheifets, 2018), and a “new international water transport artery” (Zhimin, 2019). However, so far this route, which passes through Russian territorial and economic waters and serves as one of the symbols of the achievements of the Soviet and Russian economies, has mainly coastal and export significance.¹¹

Regular, but seasonal, commercial traffic along the NSR started in the early 1930s. For 1933–1987, their volume increased from 130 000 to 6.7 mln t. In the 1950s–1980s, supply of military units stationed in the Arctic zone occupied an important share in transportation.

As a result of market and geopolitical transformation, traffic volumes in the 1990s declined significantly and in 1998 amounted to 1.2 mln t (Evdokimov et al., 2000, p. 102). In the course of economic recovery, transportation along the NSR began to gradually increase, reaching 2 mln t in 2006. After LUKOIL’s Varandey oil terminal was commissioned, transportation began to increase faster: 3.1 m t in 2011, 5.4 mln t in 2015 and 7.3 mln t in 2016, surpassing the 20-year-old record of 6.7 mln t.

In 2015, explosive growth in traffic along the NSR began: 10.7 mln t in 2017 and more than 20 mln t in 2018. It was associated with an increase in oil exports, the start of exports of liquefied natural gas (LNG) from Yamal in 2018, an increase in coastal shipping servicing oil and gas exploration in the Arctic zone, NOVATEK’s construction of the LNG production plants YAMAL LNG and Arctic LNG 2, and the port

of Sabetta, as well as deployment of military groups in the Arctic zone.

Transit traffic along the NSR had a different dynamic. In 1993, the volume amounted to 209 000 t, then up to 2011, they remained at the level of 100 000–200 000 to 300 000 t.¹² In contrast to the railway option, external demand for transcontinental transit along the NSR is still rather limited.

The restrictions on foreign shipping imposed in Russia exert a certain influence on this. At the end of December 2017, amendments were made to the Russian Merchant Shipping Code, according to which ships flying the Russian flag received the exclusive right to transport gas and oil along the NSR. From January 1, 2019, restrictions were introduced on the use of foreign-built ships for transportation along the NSR and mandatory notification for foreign civil and military ships to pass through it.

If we hew to the above definition of the ITC, then the NSR does not have all the features of such a corridor. It can be defined as a national (Eurasian) transport link, with a rapidly growing role in providing hydrocarbons to European and Asian countries.

In 2018–2019, there was a serious amendment to state administration of the NSR. The state corporation Rosatom was appointed by presidential decree as the single infrastructure operator of the NSR. Permits for navigation along the NSR are administered by the Ministry of Transport in agreement with Rosatom, and navigation rules are determined by the Russian Federation Government. The transition of the NSR to the competence of Rosatom is explained by the presence in its structure of Rosatomflot, which manages a group of nuclear icebreakers.

In turn, for the logistical development of this corridor in 2018, NOVATEK created the Sea Arctic Transport shipping company, which, along with the Russian company Sovcomflot, will include Chinese COSCO and the Silk Road Fund. The new company is designed to establish year-round delivery of hydrocarbons via the NSR to the countries of the Asia-Pacific Region and organize transit between the countries of Northeast Asia and Northwest Europe.¹³ Owing to the entry of Chinese partners into the new company, Russia will receive loans from China for the construction of an Arctic fleet, which is a necessary condition for increasing international traffic along the NSR.

The NSR, in its emerging mission, is in many ways similar to the TSTC. In both corridors, energy exports predominate, both to European and Asian countries. In the development of both corridors, a leading role is played by both large Russian state-owned and private companies, which ensure satisfaction of external

¹²Northern Sea Route Administration data, <https://en.wikipedia.org/wiki/>.

¹³A. Vedeneva, The Northern Sea Route Will Become Like the Silk Road, *Kommersant*, 2018, September 4, 2018, p. 19.

¹¹A. Nevelsky, The First Container Ship Passed along the Northern Sea Route, *Vedomosti*, September 29, 2018.

demand for Russian goods and services, as well as foreign companies linking Russian supply and demand emerging in corresponding countries. For both the Trans-Siberian and NSR, China's economic and geopolitical interests play a leading role in their development. China includes the Trans-Siberian in the overall arrangement of the Belt and Road project as part of the Silk Road Economic Belt.¹⁴ The NSR is considered by the Chinese side as a separate cargo (blue) corridor of the "Belt and Road, called the Ice Silk Road. It is becoming an important structure for Russian–Chinese economic and political cooperation. China hopes to extend the NSR from Vladivostok to various seaports on the east coast and connect its Maritime Silk Road through them, thereby closing the maritime transport ring around Eurasia (Zhimin, 2019).

The prospects for transportation along the NSR largely depend on growth in global market demand for LNG. With NOVATEK's commissioning of the Yamal LNG plant, Russia can supply the global market with about 27 mln t of LNG, or about 9% of current global demand. The resource base in the Gulf of Ob makes it possible to produce up to 140 mln t of LNG and increase its share in global production and exports by several times. By 2030, NOVATEK will be able to increase LNG production to 70 mln t.¹⁵

In 2024, according to the Ministry of Natural Resources, 82 mln t of cargo will be transported along the NSR, the vast majority of which will be exported, including 31.1 mln t of LNG (20.2 mln t will be carried by Yamal LNG and 11.1 mln t by Arctic LNG-2, the first stage of which will commence in 2022), 21 mln t of oil, 21.5 mln t of coal, and 2.5 mln t of gas condensate. According to Rosatom, transportation along the NSR in 2024 may reach 92.6 mln t,¹⁶ which will be about half the transportation along the Trans-Siberian Railway (in 2018, the difference was about 6 times).

To implement such a large-scale program for development of NSR transportation, it is necessary to create an icebreaker fleet with adequate capacity, tankers, gas carriers, and other types of Arctic-class vessels capable of independently sailing in difficult ice conditions, to provide reliable hydrometeorological support for Arctic shipping, infrastructure for its technical, and social and information support. It is intended that an important role in the growth of transportation due to its year-round schedule, security, and reliability will be played by the creation of hub ports for transshipment of LNG, as well as, possibly, oil,

coal, and other cargo, to conventional ships in Murmansk oblast and Kamchatka krai.

The rapid growth of traffic along the NSR is difficult to overstate. It creates an additional impetus for development of the Far Eastern and Northern regions due to deployment of capacities in shipbuilding, port, and airfield infrastructure and overcoming the isolation of northern territories adjacent to it from the economic space of mainstream Russia. In the context of geopolitical struggle, strengthening of the Arctic vector of development means strengthening Russia's economic and political influence in the world. Therefore, the NSR should be considered in the context of not only growth of the international importance of hydrocarbon reserves in the circumpolar regions and issues of Russia's security, but also implementation of the concept of the Greater Eurasian Partnership.

As traffic along the NSR grows, transport costs will decrease and the attractiveness of this route for mutual links between Asian and European countries will increase. However, for now, their growth will be mainly along the TSTC and railways of Kazakhstan, since this is more profitable for freight carriers in terms of costs. The NSR is far inferior to the Suez Canal route in that vessels with a much smaller container capacity (4000 versus 19000 TEU) can sail along it. This makes transportation along the NSR much more expensive per unit payload. In addition, the NSR is about three times inferior to the overland transcontinental route in terms of speed of cargo delivery. For foreign shippers and consignees, the NSR remains a backup route in case transportation through the Suez Canal becomes complicated. However, if the capacity of the TSTC, Western China–Europe corridor, and the Southern Sea Route becomes exhausted, the transit value of the NSR will increase. However, it is still difficult to determine by how much, since in 2015, an alternate to the Suez Canal was built, which doubled its capacity.

CONCLUSIONS

It should be emphasized that in conditions of fierce competition of transit routes, growth in transit means that the international community recognizes the competitiveness of national transport in global transport and logistics chains. To use the transit potential, considerable investments in transport and logistics are needed; it is necessary to lift various kinds of administrative restrictions, to carry out close cooperation with neighboring countries in the technological and customs unification of the transportation process, and to jointly introduce a transit product to the global market of transport services.

At the same time, transit has become a means of geopolitical struggle for Russia. It seeks, on the one hand, to minimize its transit dependence on countries hostile to it, and on the other, to make it difficult for

¹⁴In 2019, the ice-class LNG carrier *Vladimir Rusanov* delivered a load of LNG from the port of Sabetta to the Chinese port of Tianjin in 16 days, twice as fast as through the Suez Canal.

¹⁵O. Matveeva Arctic Status, *Kommersant Thematic Supplement*, April 9, 2019, p. 15.

¹⁶The volume of traffic along the NSR will exceed expectations. <https://www.pnp.ru/politics/obyomy-perevozok-po-sevmor-puti-prevozoydut-ozhidaniya.html>.

these countries to transit through Russian routes. In practical transport policy, in the author's opinion, it is necessary to combine the currently inevitable consideration of geopolitical restrictions for transit routes with a policy of more complete use of the transit potential of the country and its neighbors, relying on cooperation with EAEU states and other interested countries. Of particular importance is Russia's cooperation with Kazakhstan, which is actively expanding the transport network to increase options for connection with international markets, which simultaneously increases the transit attractiveness of not only Kazakhstan, but also Russia (Vardomsky, 2015). The Comprehensive Plan for the Modernization and Expansion of Trunk Infrastructure envisages an increase in container transit from 415000 TEU in 2017 to 1656000 TEU in 2024.¹⁷

The increase in the country's transit potential is associated mainly with development of the capacity of the BAM and Trans-Siberian Railway, as well as seaports, and the creation of new links to China's transport system. An important place in the plans to increase Russia's transit attractiveness is occupied by the introduction of multimodal transport technologies and modern logistics and digitalization of the transportation and logistics process, which will significantly speed up transportation. According to the plan, the average rate of transportation of transit containers across the network will increase from 810 km/day in 2017 to 1319 km/day in 2024, i.e., 1.6 times. For comparison, the average network commercial rate of goods movement on rail transport during this period will increase by 1.2 times: from 362 to 440 km/day. Increasing the rate of transportation of transit containers is one of the main factors in developing Russia's transit potential. Quadruple growth in container transit envisaged in the plans of Russian Railways is apparently based on extrapolation of the dynamics of transit container traffic for 2011–2017. However, it is not certain that this will continue in 2018–2024. Transit traffic is highly dependent on how the trade of the countries linked by the transcontinental transport corridor will develop, primarily between China and the EU. At present, its volumes do not show a significant dynamics. It is difficult to predict how the trade war between China and the United States will affect it. If trade between Europe and China does not show a high dynamics, then growth of transit can be ensured by expanding Russia's share in the market for these cargoes. However, China has a fairly wide choice of transport options for connection with Europe, and China will decide how trade volumes will be distributed along individual routes based on its own interests. There is no doubt that the interests of the Russian Federation will collide with the interests of competing countries in

the transit services market. At the same time, Russia cannot ignore the dynamic growth of the economy of Central Asian countries, which is accompanied by growth of their foreign trade relations, which may become a significant factor in the growth of Russia's transit traffic.

The events of 2022 in Ukraine and subsequent tightening of Western economic sanctions against Russia have greatly influenced the geography of transit flows. In addition to large foreign trade and financial restrictions, the transport and logistics segment occupies a central place in the sanctions. Among the consequences of sanctions for transit are a reduction in container traffic on the EU–China direction, an increase in the role of Belarus in servicing road transport on the EU–Russia and EU–Central Asian directions, a sharp increase in the transit significance of Turkey, South Caucasus countries, and Kazakhstan for the Russian Federation, and an increase in the load on the TSTC, the capacity of which requires urgent expansion.

The altered geoeconomic situation requires more rapid formation of the North–South ITC, development of the Russia–MPR–PRC economic corridor, and the inclusion of the NSR in the system of global links. In forming the Eurasian Transport Partnership (Vardomsky, 2018a), an important place should be occupied by Russian and foreign private transport and logistics companies and coordinated actions of EAEU and CIS countries and the Shanghai Cooperation Organization, which in modern conditions has gained a second wind.

FUNDING

The study was carried out in accordance with Fundamental Research Programs of the Presidium of the Russian Academy of Sciences.

CONFLICT OF INTEREST

The author declares that he has no conflicts of interest.

REFERENCES

- Butov, A.M., *Rynok perevozok tovarov zheleznodorozhnym transportom* (Market for the Transportation of Goods by Rail), Moscow: Vyssh. Shk. Ekon., Tsentrazvitiya, 2016.
- Chong, Ed., Enhancing regional integration of landlocked developing countries in North and Central Asia through infrastructure connectivity (Agenda 6), Issyk-Kul, 2017. https://www.unescap.org/sites/default/files/ESCAP_Transport%20Division.pdf.
- Corridor planning guide towards a more meaningful integration of transportation and land use, Delaware Valley Regional Planning Commission, September 2007. <https://www.dvrpc.org/Reports/07028.pdf>.
- Doklad o realizatsii transportnoi strategii RF na period do 2030 g. Otchetnyi period 2017* (Report on the Imple-

¹⁷National Projects: Targets main results. As of February 7, 2019. <http://static.government.ru/media/files/mMrrbr3q9P6cGf-WP3WxSmf71CvAhrLob.pdf>.

- mentation of the Transport Strategy of the Russian Federation for the Period Up to 2030. Reporting Period 2017), Moscow: Ministerstvo Transp. Ross. Fed., 2018. <https://www.mintrans.ru/documents/7/9489>.
- Doklad o realizatsii transportnoi strategii RF na period do 2030 g. Otchetnyi period 2018* (Report on the Implementation of the Transport Strategy of the Russian Federation for the Period Up to 2030. Reporting Period 2018), Moscow: Ministerstvo Transp. Ross. Fed., 2019. <https://www.mintrans.ru/documents/7/10041>.
- Evdokimov, Yu.A., Batskikh, Yu.M., and Istomin, A.V., Northern Sea Route: Problems, opportunities, prospects for revival, *Ekon. Nauka Sovrem. Ross.*, 2000, no. 2, pp. 101–112.
- Integrated Map of AH, TAR & Dry Ports of International Importance. https://www.unescap.org/sites/default/files/AH-TAR-DryPorts-2017_0.pdf.
- Karavaev, A.V. and Tishekh'yar, M., International transport corridor “North – South” and scenarios of transregional integration, Report of the Valdai International Discussion Club, June 2019.
- Kheifets, B.A., Northern Sea Route – a new transit route “One belt – one way,” *Mezhdunar. Zhizn'*, 2018, no. 7, pp. 68–87.
- Kholopov, K.V. and Rarovskii, P.E., Conceptual directions for the development of international container transit in Russia's foreign trade, *Ross. Vneshneekon. Vestn.*, 2019, no. 2, pp. 72–83.
- Peresypkin, V. and Yakovlev, A. Northern Sea Route in the problem of international transport corridors, *Transp. Ross. Fed.*, 2006, no. 3, pp. 16–19.
- Shcherbanin, Yu.A., Transport corridors: Still in fashion?, *Transp. Ross. Fed.*, 2006, no. 5, pp. 7–9.
- Strategy for the development of seaports in the Caspian basin, rail and road approaches to them for the period up to 2030, Moscow, 2017. <http://government.ru/docs/30086/>.
- Transport Development Strategy of Russia until 2030, Appendix no. 3, Moscow, 2008. <http://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=LAW&n=297899&fld=134&dst=102745,0&rnd=0.27059465121586546#05258469105759629>.
- Vardomsky, L.B., Transit potential of Kazakhstan in the context of Eurasian integration, *EKO*, 2015, no. 8, pp. 59–78.
- Vardomsky, L.B. Issues of the geography of transit communications in the EAEU countries, *Reg. Issled.*, 2018a, no. 2, pp. 120–130.
- Vardomsky, L.B., Participation of regions in trade with China as a reflection of the spatial structure of the Russian economy, *Reg. Issled.*, 2018b, vol. 62, no. 4, pp. 53–63.
- Vardomsky, L.B. and Turaeva, M.O., *Razvitie transportnykh koridorov postsovetskogo prostranstva v usloviyakh sovremennykh geopoliticheskikh i ekonomicheskikh vyzovov. Nauchnyi doklad* (Development of Transport Corridors of the Post-Soviet Space in the Context of Modern Geopolitical and Economic Challenges. Scientific Report), Moscow: Inst. Ekon. Ross. Akad. Nauk, 2018.
- Veretennikov, N.P., Gerashchenko, L.V., and Evgrafova, L.E., Reality and prospects for the development of communications of the Northern Sea Route, *Vestn. Mosk. Gos. Tekhn. Univ.*, 2016, vol. 19, no. 2, pp. 377–382.
- Zhimin, V., Ice Silk Road, *Kitai*, 2019, no. 3, pp. 36–37.