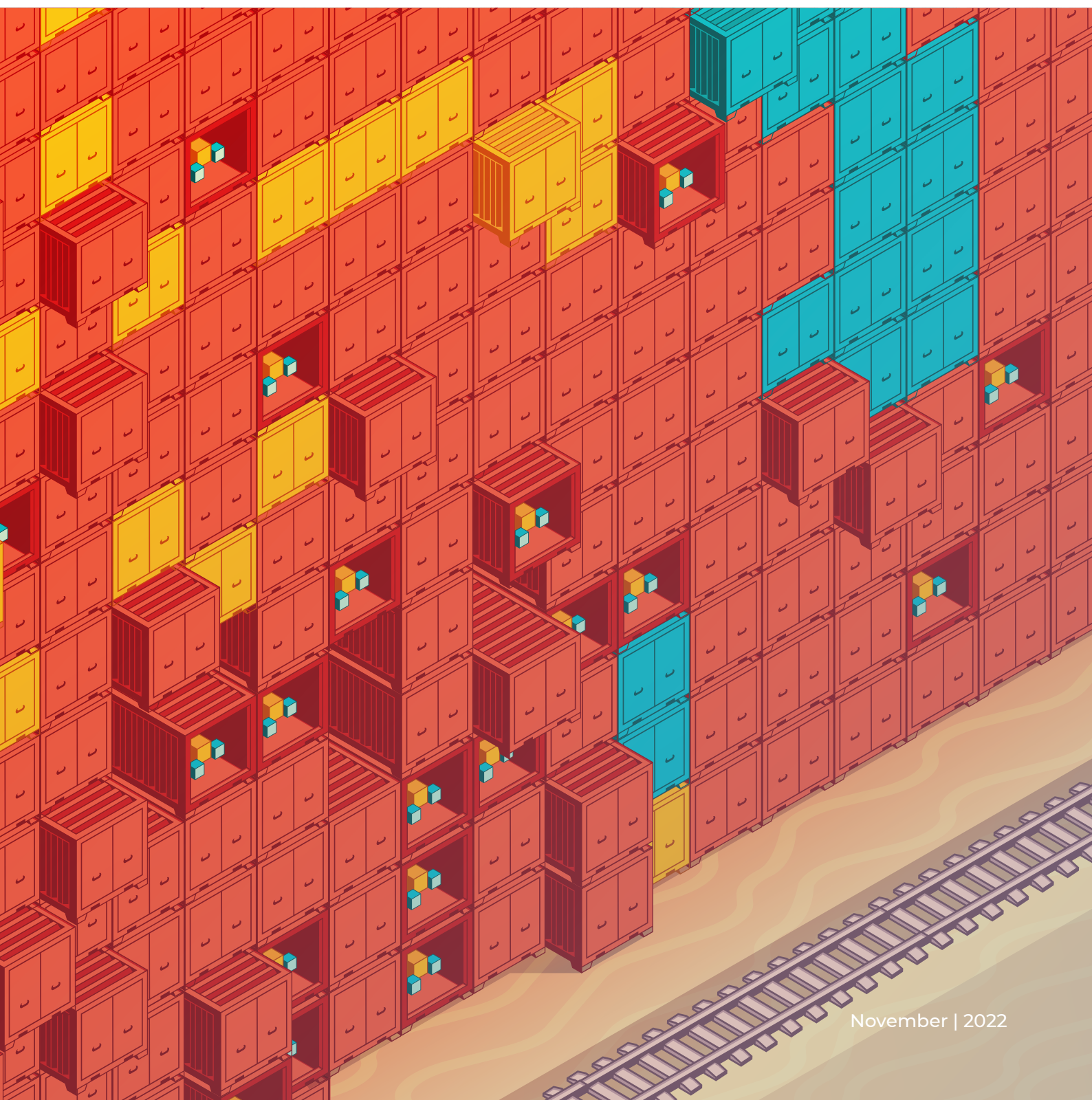

THE EURASIAN RAILWAY ROUTE: PROSPECTS FOR EXPORTS FROM RUSSIA TO CHINA



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INTRODUCTION

In 2022, the Russian transport administration faces unprecedented logistics challenges: massive trade restructuring prompted by restrictive sanctions has necessitated urgent operational decisions to combine different routes through friendly and neutral countries. The search for new multimodal supply chains and settlement schemes has compelled all private commercial enterprises to pursue a greater degree of flexibility and new logistical solutions. The biggest changes are expected in cargo turnover with Russia's largest trading partners — the European Union and China.

In the context of types of large transport, the sanctions have hit air and road traffic. Railway and maritime transport are less affected; however, significant changes in the natural resources market: fluctuations in the ruble exchange rate, the withdrawal of large Western carriers, and problems with insurance — have had a significant impact on the cost of transport. While maintaining the structure of the turnover of Russia's foreign trade, there is a significant change in its geography. Products from Western countries are gradually being replaced by goods from Asia. Thus, there is a high growth in the import of pharmaceutical products and pharmaceutical raw materials from India and China, which are major global manufacturers and exporters of products. Significant changes are being observed in the automotive components market: amid the curtailment of original spare parts being sold in Russia, the law on parallel imports opens up new opportunities for products from Turkey, Southern Europe, the United Arab Emirates, and Vietnam.

Complex routes for the delivery of goods through third countries expand transport diversity, delivery times, and the cost of the corresponding logistics services and transaction resources in general. This significant increase in the transport and logistics component of export and import costs must be leveled by all available means — both at the level of economic agents and on the scale of the country's economy. In this regard, the integrated optimization of logistics in the Greater Eurasian space has gained new relevance.

Support for the reorientation of export-import flows is provided by the reduction of economic ties with Europe and the state's 'pivot to the East' development policy. The need to diversify corridors has led to an increase in investment in infrastructure projects related to increasing transport links with China, as well as with India (North-South). According to the plan of the Ministry of Transport of the Russian Federation, the total volume of foreign investments in the border rail infrastructure of Kazakhstan, Mongolia and China could reach up to 30.8 billion US dollars by 2030.

THE ROLE OF RAILWAY ROUTES IN THE EXPORT OF GOODS FROM RUSSIA TO CHINA

As the world's leading economy in terms of production, China is already today Russia's largest trading partner. The complementary nature of the countries' economies, a common border, large-scale transport projects, as well as cooperation in key sectors today determine the prospects for trade relations between the two countries.

The importance of Russia as a trade partner of China has been growing in recent decades due to the rapid economic and social development of China and the boom in demand for the purchase of raw materials, supplies and agricultural goods from abroad.

Russia has become China's largest supplier in such categories of imports as frozen fish (29.6% of China's imports in 2021), fertilizers (28%), and timber (16.7%), as well as fuel (13% of all coal, oil, oil products and gas). Thus, Russian fertilizers, timber and food are as important to China as raw materials. Russia also leads the Chinese import market in the supply of asbestos, electricity, magnesium hydroxide, buckwheat, newsprint, flax seeds, sunflower oil and other goods.

In the first half of 2022, under the pressure of sanctions, a significant proportion of Russia's export trade flows were reoriented from West to East, primarily to the Chinese market. In the first half of 2022, China significantly increased imports from Russia, by 48% in value and 57% in tonnage. The largest increase in supplies is observed for oil: imports increased by 55%, or by \$10 billion in value terms and by 19.8 million tons in quantitative terms.

The table below shows the commodity items by the largest absolute increase in exports to China from Russia in 2022 in physical terms. The most significant import items — coal, oil and oil products — are also leading in terms of growth. Non-primary goods also stand out: potash fertilizers, lumber, veneer, fish, flax seeds, nuts and many others. In addition, there is an increase in China's demand for supplies from Russia of semi-finished products made of unalloyed steel, synthetic rubber, frozen fish, and rapeseed oil.

Table 1.

CHANGE IN CHINESE DEMAND FOR GOODS IMPORTED FROM RUSSIA, TONS IN 2022

№	HS4	Commodity position	Import, tons		Share	Growth 2022/2021	
			6 months. 2021	6 months. 2022		Absolute	Relative
		Total	91 667 458	144 102 792	100%	52 435 334	57%
1	2701	Coal	33 519 688	62 824 863	43.6%	29 305 175	87%
2	2709	Oil	35 926 148	55 776 779	38.7%	19 850 631	55%
3	2702	Brown coal	428 139	3 601 906	2.5%	3 173 768	741%
4	2710	Oil products	166 367	1 079 601	0.7%	913 234	549%
5	3104	Potash fertilizers	998 549	1 866 078	1.3%	867 528	87%
6	7207	Semi-finished unalloyed steel	271 766	957 656	0.7%	685 890	252%
7	2713	Petroleum coke, bitumen and other refining residues	560 945	1 238 304	0.9%	677 358	121%
8	2711	Natural gas and other hydrocarbon gases	338 084	970 406	0.7%	632 322	187%
9	4407	Lumber	3 823 503	4 230 582	2.9%	407 079	11%
10	0303	Frozen fish	205 301	403 704	0%	198 404	97%
11	1204	Flax seeds	42 981	234 084	0%	191 103	445%
12	2503	Sulfur	41 001	227 241	0%	186 240	454%
13	2604	Nickel ores and concentrates	343 784	526 438	0.4%	182 654	53%
14	4408	Veneer	74 626	197 949	0%	123 323	165%
15	0802	Nuts	58 650	166 267	0%	107 617	183%
		Other	14 867 926	9 800 933	6.8%	-5 066 993	-34%

Source: China Customs

It is obvious that in the conditions of intensification of cargo flows, the importance of the entire transport system and its ability to work in the conditions of daily changing realities increases. At the same time, the task of diversifying and increasing the level of added value of Russian exports remains relevant. In this regard, the structural features of cargo flows and regional aspects of trade are the most important components of the analysis of the potential for expanding Russia's exports to China.

STRUCTURE OF RUSSIAN EXPORTS TO CHINA BY COMMODITY GROUPS, 2021

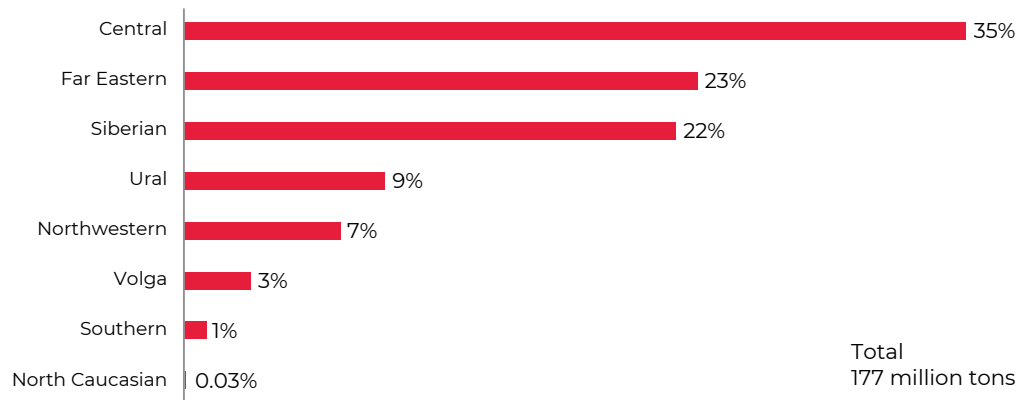


Source: Federal Customs Service (FCS) of Russia

China is the largest consumer of Russian energy resources. Fuel makes up almost 80% of Russia's exports to China. Despite fluctuations in world prices for the main types of raw materials, the physical flow of Russian energy resources to China (oil, oil products, coal and lignite, gas) has been steadily expanding from year to year over the past decades. If in 2002 the export of fuel (27th group of HS Code) amounted to 5.3 million tons, in 2011 it was already 36.1 million tons, and by 2021 it had reached 137.8 million tons.

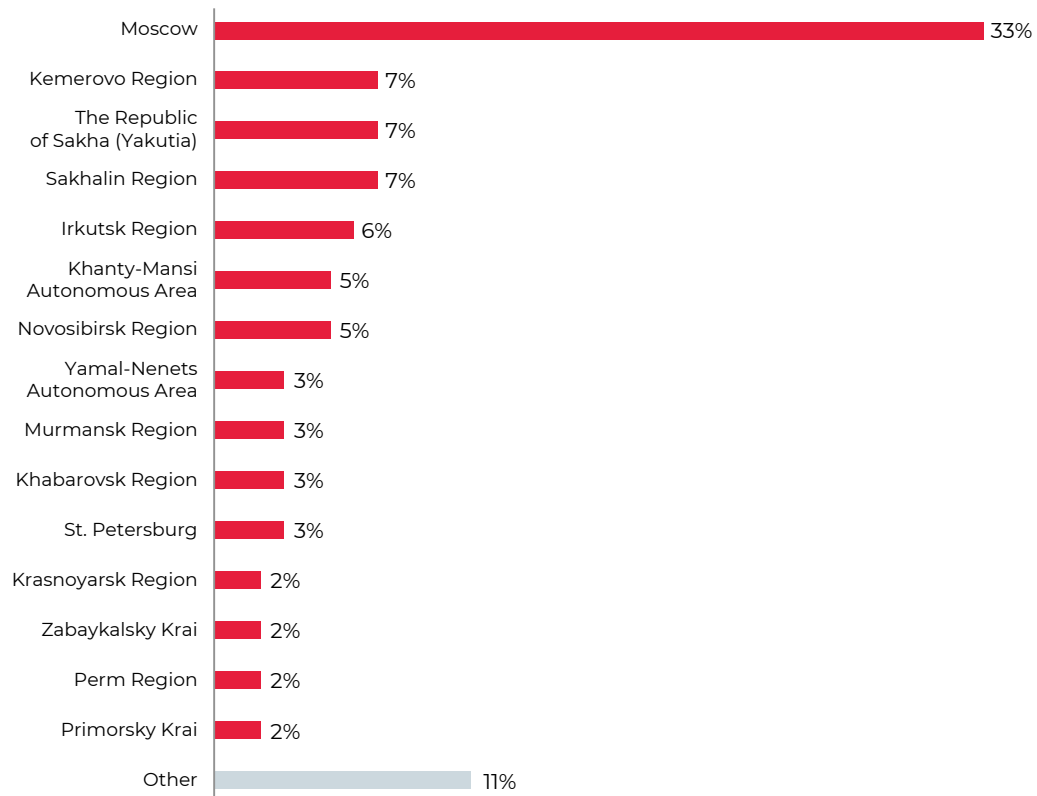
According to the statistics of the Federal Customs Service of Russia, in the regional context, Moscow is the largest exporter due to the peculiarities of the geography of registration of energy exporting companies.

STRUCTURE OF RUSSIA'S EXPORTS TO CHINA BY FEDERAL DISTRICT, 2021



Source: Federal Customs Service (FCS) of Russia

STRUCTURE OF RUSSIA'S EXPORTS TO CHINA BY REGION, 2021



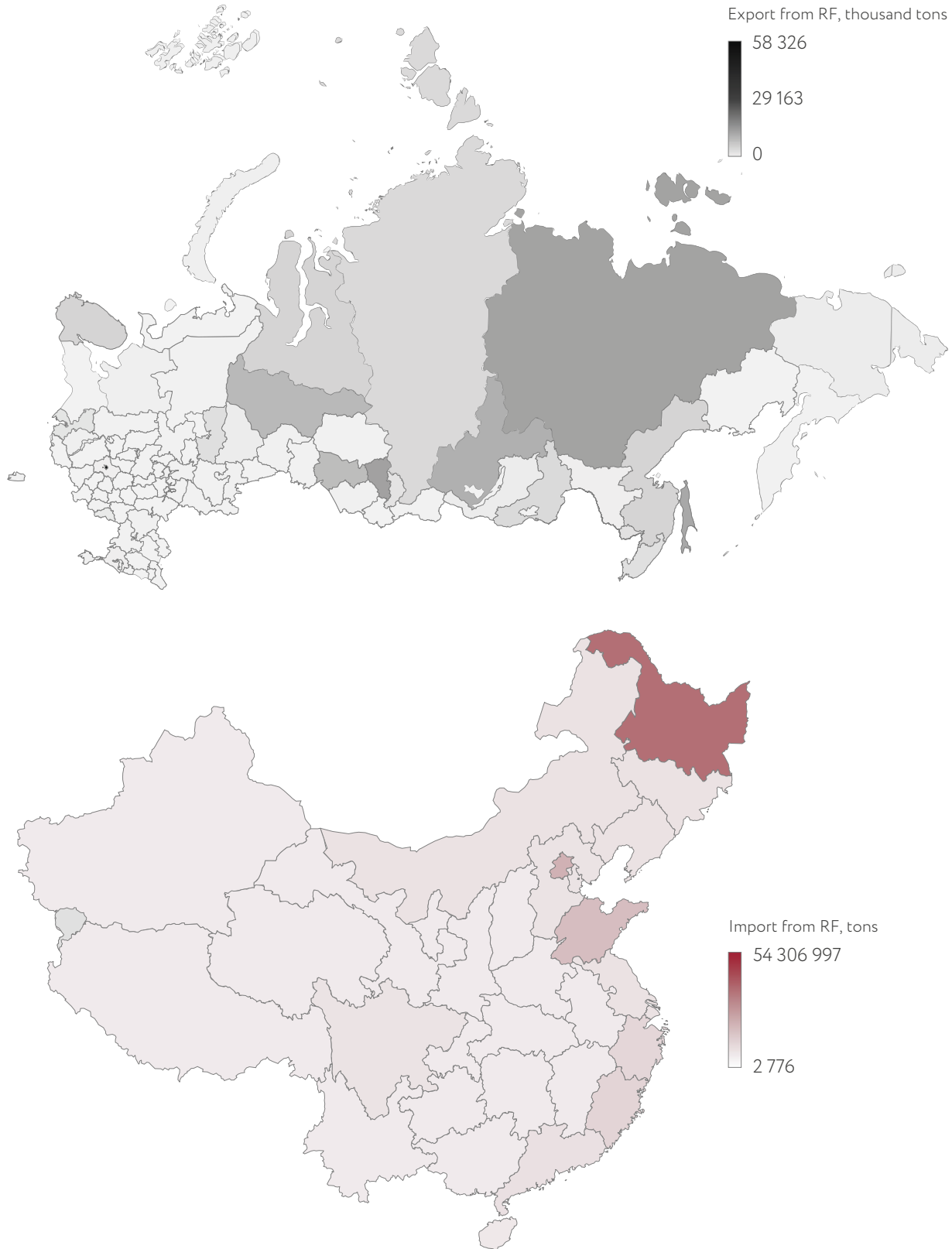
Source: Federal Customs Service (FCS) of Russia

After Moscow, in terms of physical exports to China, the largest coal mining and export regions are the Kemerovo Region, Yakutia, Sakhalin and Irkutsk Region.

As can be seen in Figure 4, in China, the greatest demand for the supply of products from Russia (in terms of physical imports) comes from the provinces of the Northeast (especially Heilongjiang), which border Primorsky Territory, Zabaikalsky Territory, Khabarovsk Territory and the Amur Region, as well as Beijing, which is the administrative center and place of registration of many large importing companies, and the provinces of the East Coast, which have a developed seaport infrastructure.

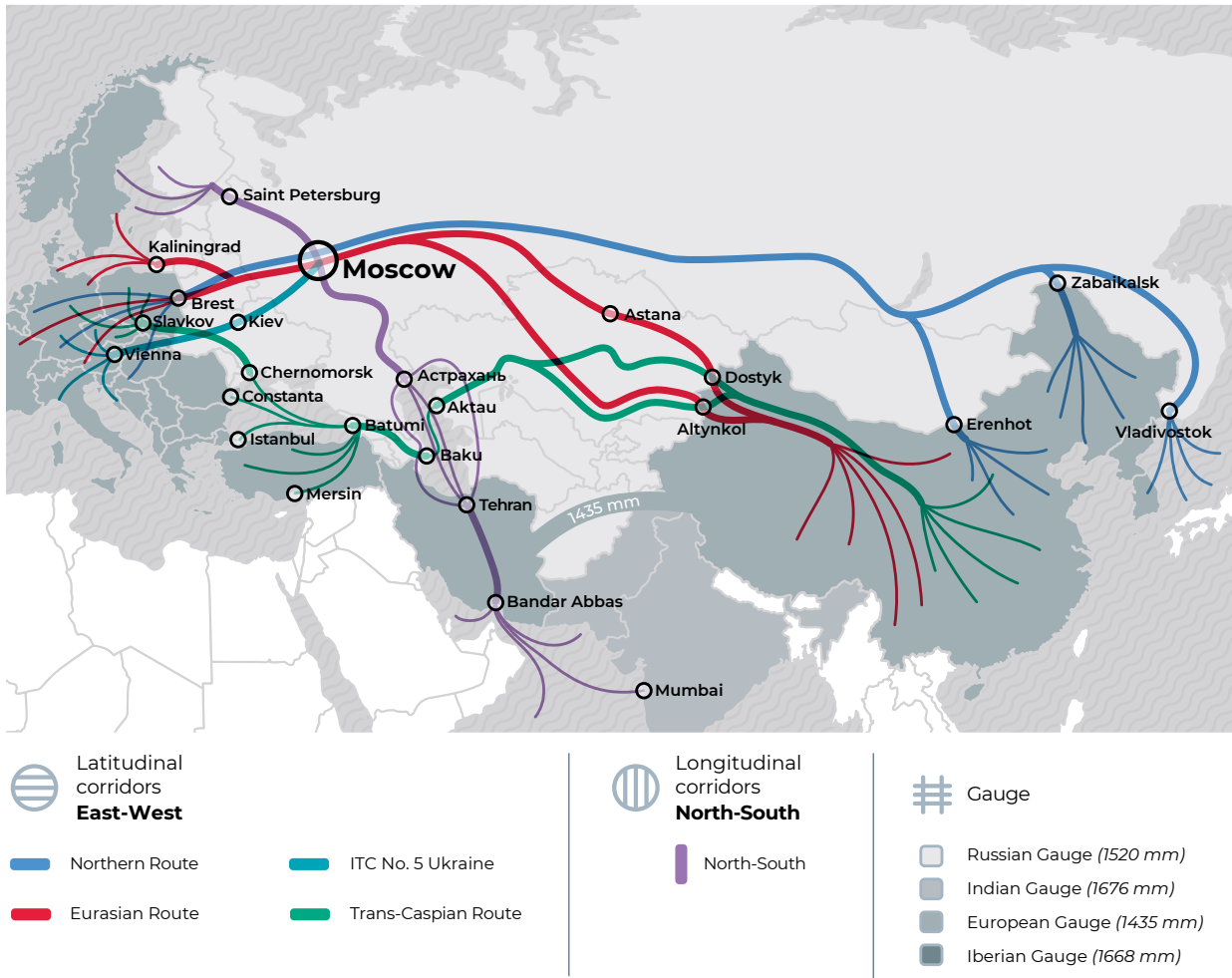
The above regions are more focused on sea cargo traffic from Russia, or on the northern Eurasian railway routes connected with the Trans-Siberian Railway — through the border crossings of Zabaikalsk or Naushki.

RUSSIAN REGIONS EXPORTING TO CHINA AND THE CORRESPONDING CHINESE IMPORTING REGIONS, 2021, THOUSAND TONS



Source: FCS of Russia, China Customs

THE MAIN CONTINENTAL RAIL TRANSPORT CORRIDORS OF EURASIA



Source: ERAI

Basic export routes from Russia to China:

- Through Kazakhstan: Moscow — Chongqing (Western China) — from 12 days;
- Through Zabaikalsk: Moscow, Nizhny Novgorod, Yekaterinburg, Novosibirsk, Krasnoyarsk, Irkutsk— Suzhou (Eastern Coast) — 16 days;
- Moscow — Vladivostok — then to seaports in northern China (Shanghai, Qingdao, Dalian) — from 30 days.

In April 2022, the construction of a cross-border railway crossing across the Amur was completed on a section of the Russian-Chinese state border, near the village of Nizhneleninskoye (JAO) and the city of Tongjiang in Heilongjiang Province (PRC), which is capable of providing a throughput capacity of eight pairs of trains per day with a train length of 72 cars. In the future, transport infrastructure will be created to provide access to the Trans-Siberian Railway along the existing Birobidzhan-Leninsk railway line through the Nizhneleninskoye-Tongjiang railway crossing to China's state railway. The new border crossing will make it possible to export iron ore, coal, mineral fertilizers, and timber products.

According to the Ministry for the Development of the Far East, the bridge will shorten the journey taken by products made by Russia's Far Eastern enterprises to consumers in China and Southeast Asia by 700 km. The seasonality in the operation of existing river border crossings will also be eliminated, which will increase the competitiveness of Russian Far East industry in the Asia-Pacific markets. Cargo turnover after the commissioning of all facilities will be up to 20-24 million metric tons per year in both directions.

The return trip of cargo flows from the north-west to the south and east is limited by underdeveloped infrastructure in new areas. In order to expand the flow of trade to East Asia, more border crossings, port facilities, railway and road capacity, as well as a balance between cargo flow and container turnover are required.

A key component of continental cooperation in Eurasia is the realization of the colossal transport potential of the region. The reconstruction of ancient routes linking the economically developed countries of East Asia and Europe is the cornerstone of China's foreign economic strategy in the form of the One Belt, One Road initiative. The creation of extensive infrastructure along the length of the Silk Road Economic Belt from the western borders of China through the countries of Central Asia to Europe will significantly optimize logistics within the Eurasian continent, redistributing and expanding existing trade flows. The further development of the trade infrastructure, in particular the railway transport links between the export-producing regions of Russia and the corresponding importing provinces of China is becoming increasingly important.

Although today most exported rail freight traffic in Russia is handled via the northern routes (through Zabaikalsk, Naushki, and border crossings in the Far East), the routes of the Eurasian railway route (through Kazakhstan) have significant potential. According to various estimates, the share of cargo traffic in this direction today represents no more than 1% of exports from Russia to China. This is due to the large transit load at the existing border points, Dostyk and Altynkol from China-EU-China cargo traffic, as well as the general configuration of export logistics through the Far East.

At one time, the increase in the capacity of the Dostyk railway checkpoint, as well as the creation of the Altynkol railway checkpoint in 2011, were due to the development strategy of Kazakhstan's railways to increase the country's role as a transit hub in China — EU — China transit, including using the Trans-Caspian route.

The recent doubling of capacity at the Khorgos terminal, a dry port within the Altynkol railway station complex, may signal a new approach to the congested Kazakh-Chinese border crossings. In the context of growing trade between China and the EU from year to year, even the slightest increase in railway capacity is of great importance.

The construction of a new border crossing between Kazakhstan and China on the Bakhty-Ayagoz railway line is designed to increase the capacity of the New Silk Road routes. The launch of the Bakhta railway checkpoint is scheduled for 2025, and it opens up new opportunities for the redistribution and expansion of Russian exports to China. The location of the Karamay-Bakhty-Ayagoz section under construction to the north of other border crossings of the Central Eurasian Corridor provides quicker and more convenient access to the Russian regions of Southern Siberia, the Southern Urals, as well as the Trans-Siberian Railway line. In connection with this, there are prerequisites for the fact that the Bakhty railway checkpoint will be mainly oriented for handling cargo turnover along the Russia-China route, while the rest of the passages of the corridor will be dedicated to China-EU transit.

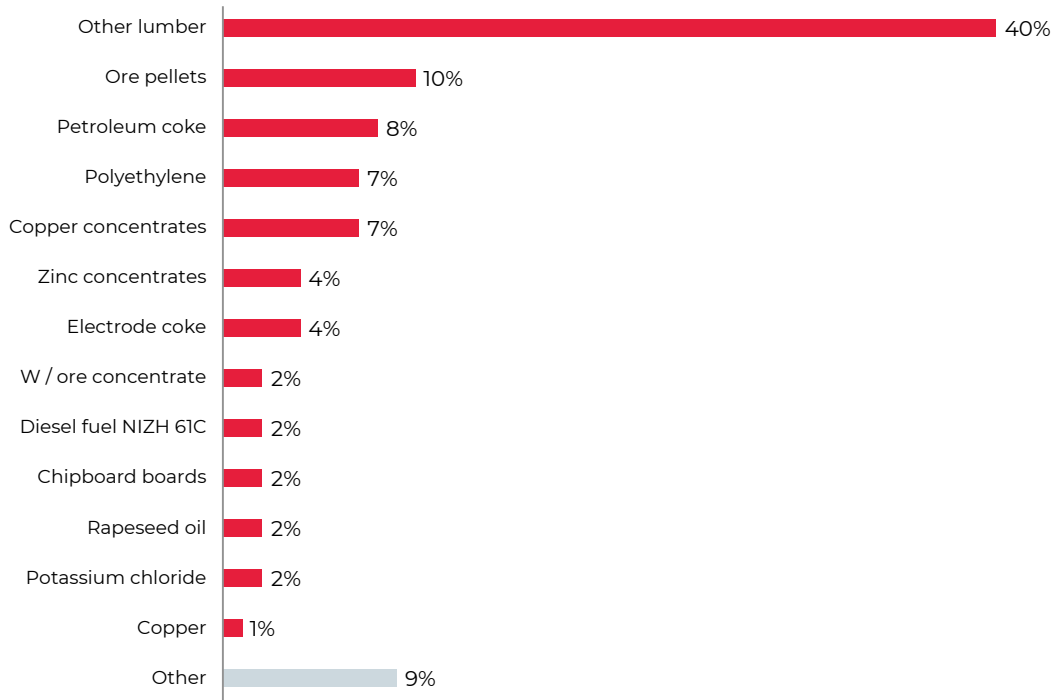
In turn, the largest operator of the railway network of Kazakhstan, NC KTZ JSC, notes that the need for a third junction is due to the forced containment of both transit and domestic goods flowing from Kazakhstan to China. The new WBCP is of the greatest interest, first of all, for the development of agricultural exports to China from the densely populated Ayagoz and Urdzhar regions of Kazakhstan. According to the operator, shippers from Russia and Belarus are ready to ensure the flow of up to 20 million metric tons of goods per year through Kazakhstan to China, regardless of sanctions.

Current and potential cargo traffic through the Eurasian railway route

Given the congestion of existing routes with European transit and the geographic location of the new border crossing, it is highly likely that it will take over the current cargo flow of Russian exports to China. As shown in Figure 5, the Central Eurasian Corridor currently has two RWBCPs in Kazakhstan: Dostyk and Altynkol. Both stations are focused on the further movement of goods through southern and central Kazakhstan, while the prospective railway checkpoint will be focused on traffic through the northern regions of Kazakhstan, with access to the territory of Russia in the area of Semipalatinsk or Petropavlovsk.

Dostyk is a priority crossing for most regions, with the exception of the Voronezh region (supplies of synthetic rubber), Krasnodar Territory (agricultural combines) and Moscow (meat by-products), which are focused on Altynkol, but the volumes of supplied products themselves are not so significant. Therefore, it seems appropriate to further consider these two transitions as a whole.

STRUCTURE OF RUSSIAN EXPORTS TO CHINA VIA KAZAKHSTAN BY RAIL IN 2020–2022 BY CATEGORY



Source: Authors' assessment

The largest components of the cargo flow through Kazakhstan to China in recent years (2021, 2021, 2022) are as follows:

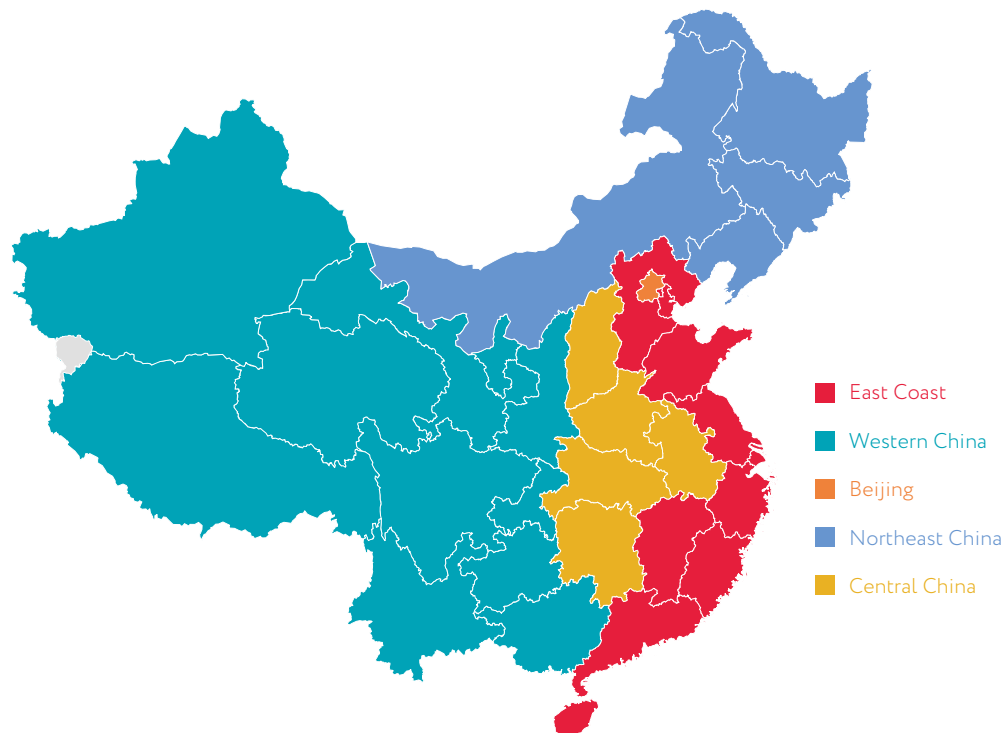
- lumber from Krasnoyarsk Territory (about 21% of all deliveries);
- iron ore pellets from the Kursk region (only in 2020);
- polyethylene from the Tyumen region;
- copper concentrates from the Chelyabinsk region;
- lumber from the Irkutsk region and Altai Territory;
- electrode coke from the Perm region;
- petroleum coke from Tatarstan;
- zinc concentrates from Khakassia, etc.

This year, the total increase in exports from the Russian Federation to China through these border crossings in physical terms amounted to +12% in the first seven months compared to the same period last year. According to preliminary estimates, by the end of 2022, the volume of deliveries will reach a million tons. This volume is by no means limiting — the above and other export items are significantly limited by the current capacity of the railway checkpoint on the border of China and Kazakhstan. This is indicated by the fact that China's demand for these products significantly exceeds Russia's supplies. It should be noted that an indicator of China's demand is the current volume of China's imports of these products from Russia (by all routes and modes of transport). In addition, for a more accurate assessment of the forecast cargo flow of exports from Russia to China through the additional railway checkpoint of the Central Eurasian Corridor, it seems appropriate to consider the demand of not all of China, but only those of its regions for which the new route is justified by logistics.

One of the trends in China's domestic economic development is the transfer of industrial and economic activity from the already developed coastal regions to the developing regions of Central and Western China. The shift of the economic «center of gravity» will contribute to the growth of trade between the western regions of China and Russia, in connection with which the Bakhta railway checkpoint seems to be a more convenient access to the most industrialized regions of Central Russia.

To assess potential cargo traffic, regionalization is proposed, shown on the map below. The priority regions for the new route are the provinces of Western and Central China, as well as Beijing.

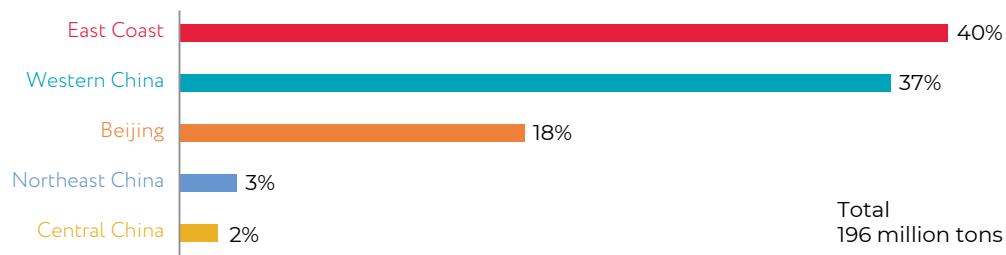
ECONOMIC REGIONS OF CHINA



Source: compiled by the authors

Of the 196 million tons of Chinese imports from Russia, priority regions (the provinces of Western and Central China, as well as Beijing) account for a total of 45 million tons. Of these, the goods of the nomenclature of railway exports — 21 million tons. According to preliminary estimates, today no more than 4% of this volume flows through the Central Eurasian Railway Corridor.

CHINA'S IMPORTS FROM RUSSIA BY ECONOMIC REGION, 2021, TONS



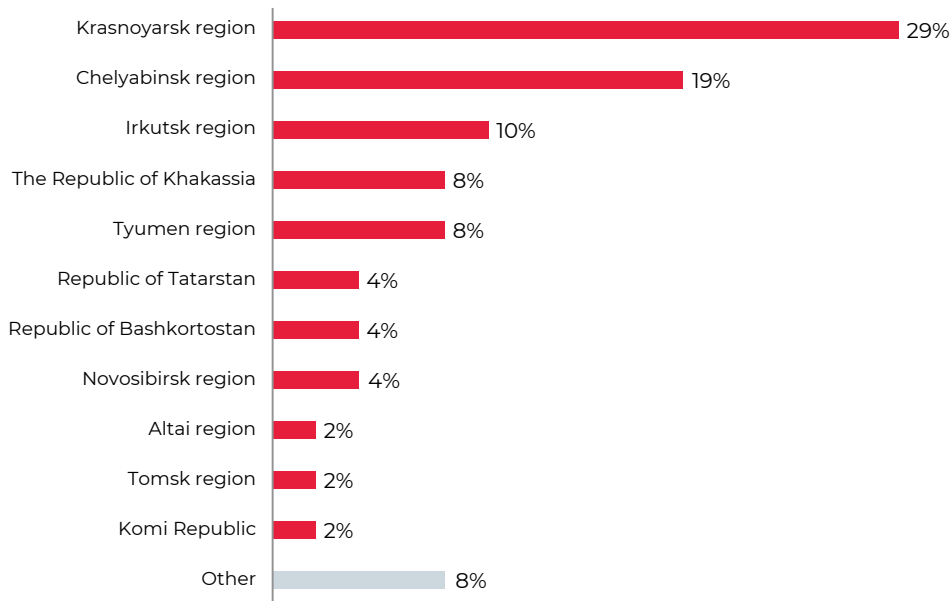
Source: compiled by the authors based on data from China Customs

While hard coal dominates imports in priority regions, Western China's import mix is more diversified. In addition to coal, lumber, iron and copper ore, a significant cargo flow is made up of such items as sulphate cellulose, petroleum coke, bitumen and other oil refining residues, zinc ores and concentrates, and refined copper. All these export items are the main candidates for loading new transport capacities.

Regional strategic priorities for Russian exports

In the current configuration of the logistics of Russia's exports to China, the largest users of the Central Eurasian Railway Corridor are the exporters of the Krasnoyarsk Territory, which account for almost a third of deliveries in terms of physical cargo traffic. In second place is the Chelyabinsk region, and in the third — Irkutsk.

REGIONS FOCUSED ON THE RAILWAY ROUTES OF KAZAKHSTAN, 2021, TONS (MAP)



Source: Authors' assessment

An analysis of the cargo flow through Kazakhstan as part of the total imports of China's priority regions showed that this railway route is of the greatest importance for the supply of such goods as lumber, polyethylene, and refined copper. At the same time, the route through Kazakhstan plays an even greater role in the logistics of exporting Russian chipboard, semi-cellulose, peat, polypropylene, plywood, sulphite pulp, other wood products, paper and cardboard, sunflower, flour confectionery, bread, ferrous metal fittings, because through it they go not so much to the priority regions of China, but to more remote provinces — Northeast China and coastal regions.

LONG-TERM TRENDS AND FORECAST OF CHANGES IN EXPORTS BY RAIL FROM RUSSIA TO PRIORITY REGIONS OF CHINA

China, being the world's leading economy, is already today Russia's largest trading partner. In February 2022, following the results of the Russian-Chinese summit in Beijing, a Roadmap was adopted for the high-quality development of Russian-Chinese trade in goods and services, which became an important basis for the full-scale expansion of direct economic ties between Russian business and Chinese importers in the context of the forced reorientation of the Russian export flow c West to East.

In accordance with the Plan to increase the volume of Russian exports of goods and services to China, adopted as part of this Roadmap, by 2024 it should reach 107 billion dollars. The growth will reach 50% compared to the level of 2021, in which the export of goods and services amounted to about 71.2 billion dollars. In order for the Plan to be implemented, Russia must ensure the growth of total exports of goods and services to China by an average of 15% per year.

The plan assumes the following industry dynamics (relative to 2018):

- for energy products — an increase of 50% (mainly due to the expansion of oil and gas supplies, including LNG);
- for agricultural products — an increase of 2.8 times (due to the expansion of Russian supplies of grain, vegetable oils, feed, fish);
- for industrial goods - an increase of 2.2 times (metals, aircraft, turbojet engines, fuel elements for nuclear power plants, chemical products, lumber, etc.).

An indicator of the long-term prospects of Russia's export offer to the Chinese market is its structural changes over the past ten years. To determine the average annual dynamics by industry, the data on the value of Russia's exports to China from 2012 to 2021 for the commodity items of Russia's railway exports to China through Kazakhstan were aggregated to the level of industries, for each of which the CAGR (English compound annual growth rate) was calculated is the cumulative average annual growth rate.

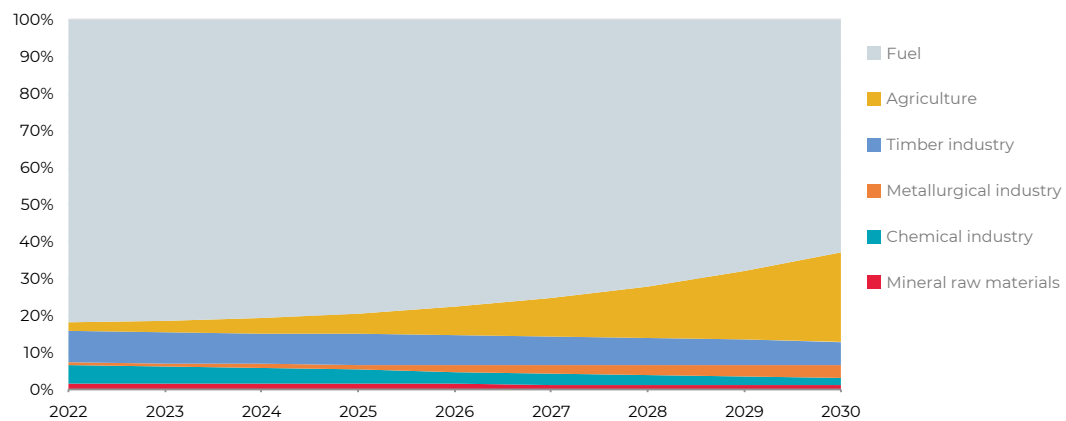
Table 2.

GROWTH RATES OF RUSSIAN EXPORTS TO CHINA OVER THE PAST 10 YEARS

Industry	CAGR, 2012–2021.
Total	7%
Fuel	7%
timber industry	6%
mechanical engineering	8%
Chemical industry	–2%
Mineral raw materials	6%
Agriculture	50%
Metallurgical industry	33%

Source: Authors' calculations based on the Federal Customs Service of the Russian Federation

The resulting sectoral growth rates are more moderate than those envisaged by the Plan: growth in total exports — 7%, fuel — also 7%. The exception is the production of the agro-industrial complex, which is growing by an average rate of 50% per year, which exceeds the dynamics provided for by the Plan. This is due to the fact that within the framework of this study, the product coverage is limited to the nomenclature transported by rail through Kazakhstan (for agriculture, these are only 8 product groups out of 24).

CHANGES IN THE STRUCTURE OF IMPORT DEMAND IN KEY REGIONS OF CHINA FOR GOODS DELIVERED FROM RUSSIA TO CHINA VIA KAZAKHSTAN BY RAIL

Source: Authors' calculations based on data from the Federal Customs Service of Russia and Customs Statistics of China

The aggregation of the received volumes of import demand to the level of industries allows us to observe important structural changes that may occur in the next decade. By 2030, fuel will remain the largest item in Russia's cargo traffic sent to key regions of China, but its share in the overall supply structure will decrease due to the outpacing growth in Russian food exports.

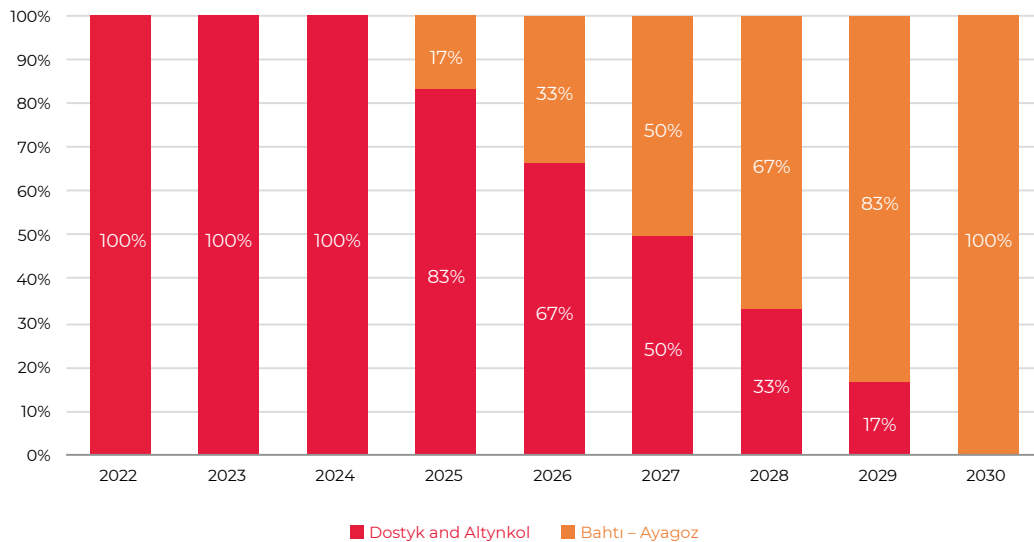
Significance of the new railway route of the Bakhty-Ayagoz line in expanding Russia’s exports to China

The real-time reorientation of Russian export volumes from West to East in connection with the sanctions imposed on Russia is largely being carried out through the Far Eastern railway routes. The creation and use of a new export route through Kazakhstan will allow Russia to diversify the directions of deliveries to China and reduce the burden on the infrastructure of the Far East.

The opening of a new transport channel for the export of Russian products to China through Kazakhstan also makes it possible to expand its range in accordance with Chinese demand trends. On this route, this is primarily oil and coal; however, due to the inexpediency of their containerization, goods that occupy a smaller share, but benefit from intense immediate demand are of interest — semi-finished products from unalloyed steel, sulfur, nickel ores and concentrates, as well as food products (frozen fish, nuts) and other goods.

From the point of view of transport policy, the optimal distribution of cargo traffic through Kazakhstan seems to be as follows: a significant or complete reorientation of Russian exports to China from the existing railway routes through Dostyk and Altynkol to the new Bakhty border crossing, while ensuring a minimum throughput of this crossing of 3 million tons per year.

STRUCTURE OF RUSSIAN EXPORT CARGO TRAFFIC TO CHINA THROUGH KAZAKHSTAN BY CROSSING



Source: Authors’ assessment

The change of priorities in foreign trade forces the participants of the logistics market to quickly rebuild supply chains. To accelerate the diversification of trade and supply chains, the construction of supporting infrastructure seems to be the most relevant at the moment. The capacities of the Trans-Siberian Railway were not originally intended for such volumes of cargo, which were transported primarily from the ports of the North-West of Russia, and therefore the transport infrastructure of the Far East is experiencing difficulties in handling the increased cargo flow.

The transport corridor through Russia and Kazakhstan is the most important part of the Chinese initiative of the Silk Road Economic Belt. As for Russia, in addition to expanding the transit flow, localizing industry along the trans-Eurasian transport corridors, increasing the connectivity of regions, the development of land transport infrastructure will significantly reduce the time and cost of delivering exports to China, in particular from the central regions and Western Siberia.

The current range of Russian exports to China through the railway routes of Kazakhstan is due to the current configuration of logistics from the regions of Russia and is represented mainly by non-energy goods of the primary sector: sawn timber, iron ore pellets, copper and zinc concentrates, polyethylene, coke. At the same time, China has significant demand for a broader range of goods, especially for fuel and foodstuffs. Since, in the current international political conditions, the efforts of the state will be focused on diversifying Russia's trade in favor of China and India, it becomes relevant to realize the potential of new routes for the delivery of goods, especially by rail.

The construction of a new border crossing between Kazakhstan and China (the Bakhty-Ayagoz railway line) creates prerequisites for redirecting export cargo traffic from Russia to China and unloading the Dostyk and Altynkol railway checkpoints for European transit.

The new route may become a priority way to deliver goods from the regions of Central Russia and Western Siberia to the regions of Western and Central China. An analysis of imports from China's priority regions showed a significant potential for increasing supplies from Russia, which is provided by a stable expansion of demand for goods in the range of Russian railway exports to China, primarily agriculture and the forestry industry.