

RAIL CONTAINER TRANSPORTATION IN EURASIA IN 2020



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OVERVIEW: HISTORIC YEAR FOR THE EURASIAN RAILWAY ROUTE

Against the background of restrictions related to combatting coronavirus, only a few industries and markets can boast of updated records and positive vision of the future. One of such success stories in 2020 is the Eurasian railway route.

COVID-19 outburst and subsequent surges of restrictions have drastically impacted functioning of the global economy and international trade. It is expected that by 2020 year-end, [a decline in the global economy](#) will constitute about 5%, in the international trade – 8% by value.

The pandemic has heavily impacted international transport. After a record drop in air traffic [by 94%](#) in April 2020, freight air traffic, which inherently depends on passenger traffic, is only starting to recover.

Sea cargo shipment has faced disruptions in global added value chains, which exacerbated structural imbalances of the market and led to accumulation of containers in North America, as well as a spike in freight rates. In December 2020, WCI Drewry index reflecting the state of sea traffic between China and Europe has reached \$4,011 per FEU, whereas ERAI index has remained steady after stabilizing at \$2,671/FEU in December.

Stability of railway service and additional price-related advantages have urged consignors to move “from sea to rail”, specifically in the Eurasian railway transit corridor. In April 2020, two-fold growth of traffic volumes has been captured for the first time in history in China-Europe-China route, amounting to 41.2 thousand TEU. As early as in July, the milestone of 50 thousand TEU per month has been exceeded, and in December the total traffic volume reached 500 thousand TEU.

As of 2020 year-end, traffic volume via the Eurasian route has amounted to 546.9 thousand TEU, which is an increment of 64% versus 2019. Out of this amount, 198.8 thousand TEU (+45%) have been dispatched to China and 348.1 thousand TEU (+77%) – to the European Union.

The impressive traffic growth has resulted in geographic expansion of routes, whose number has exceeded 200 by now. Another last year’s record of the Eurasian corridor is the number of trains – 5,649. The growing demand required an increase in the railcar fleet up to 7,472 and reduction in the share of empty containers down to 7% in both directions.

Despite the external constraints, the Eurasian transit has become one of the few railway segments with unprecedented dynamics in 2020 in contrast to universal stagnation. However, keeping this momentum in 2021 will require more effort, some of which has already been scheduled for implementation.

ABSTRACT

- 1.** Global COVID-19 pandemic has led to an increase in two-way trade between the EU and PRC and raised China to the position of key trade partner of the European Union.
- 2.** A collapse in the sea transportation market in contrast to reliability and stability of the railway channel has resulted in a surge of sea freight rates to exceed the railway PRC-EU rate by 50% in December 2020. All of it has objectively sped up the transition of consignors “from sea to rail”, giving the railway transport an additional advantage in the 1,520 mm space.
- 3.** In 2020, the share of railway container traffic in the China – Europe – China route vs. other modes of transport has grown up to 6–8% and, as some predict, will reach 10% with this momentum.
- 4.** Stability and reliability of railway transportation has enabled an increase in the traffic volume up to 547 thousand TEU, mean number of trains per day up to 15.54, and railcar fleet up to 7,472. In this context, both the rolling stock and the line infrastructure along the route have been able to handle the surging volumes despite little change in transit time and speed of trains.
- 5.** Despite the fact that the main categories of transported goods still are electrical devices (85,135 TEU), mechanical equipment (80,556 TEU) and automotive equipment (57,796 TEU), which in total account for more than 40% of overall transit volume, the assortment of the transported goods has grown up to 93, which suggests continuing diversification of goods.
- 6.** In 2020, 93% of all containers on the route were full, while the share of empty containers has reached a minimum of 7%.
- 7.** Presently the Eurasian railway transit corridor crosses Kazakhstan, Russia, and Belarus, and joins 21 countries and 100 cities. Stability of the main routes is complemented by dispatch and supply geography expansion.
- 8.** In 2020, the Eurasian railway route crossing the territories of Kazakhstan, Russia and Belorussia has shipped 91.29% containers through its border crossing points compared to railway border crossing points of Zabaykalsk, Naushki and several others in the Russian Far East. Only the Eurasian route has shown an increase in traffic volumes heading to China.

STATE OF MARKET: OPPORTUNITIES AND CONSTRAINTS OF TRANS- EURASIAN TRANSIT

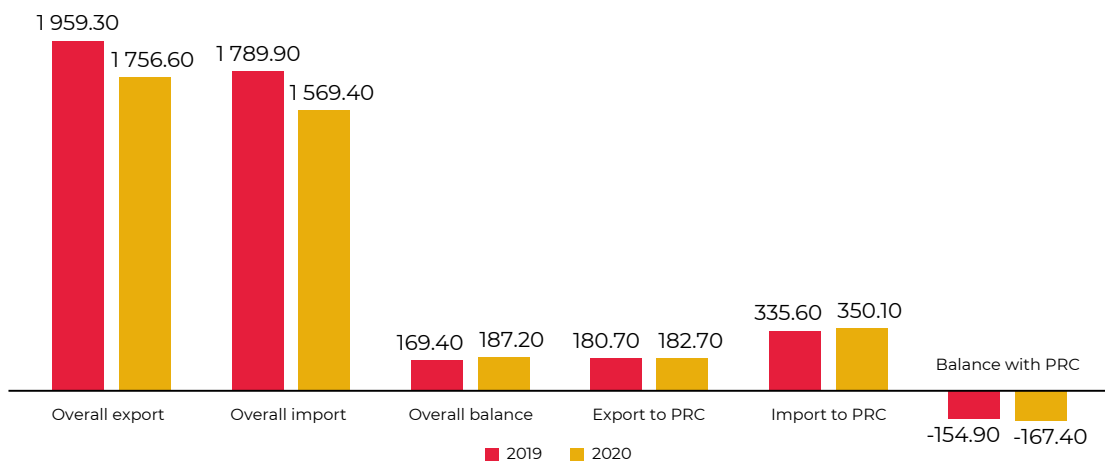
Growth of two-way trade between the EU and PRC

Spread of COVID-19 and efforts to contain the pandemic have been detrimental to global manufacturing chains and international trade. Nevertheless, the effect on economies and trade of countries and regions was diverse, depending on the geography and pandemic spread rates. Whereas the Chinese economy was mostly impacted by the pandemic in Q1 2020 r., the EU experienced the largest decline in trade in April-May: 30% for the European export and about 25% for import of the Eurasian Union.

According to the latest [Eurostat data](#), from January to November 2020 EU export has dropped by 10.35% and import by 12.32%, increasing the EU trade surplus up to €187bn. However, the dynamics in the mutual trade between EU and PRC was distinctive in the way that was crucial for the Eurasian route. Despite the overall decline in the trade between EU and third countries, EU export and import in trade with PRC have grown by 1.11% and 4.32%, respectively.

EU-PRC TRADE

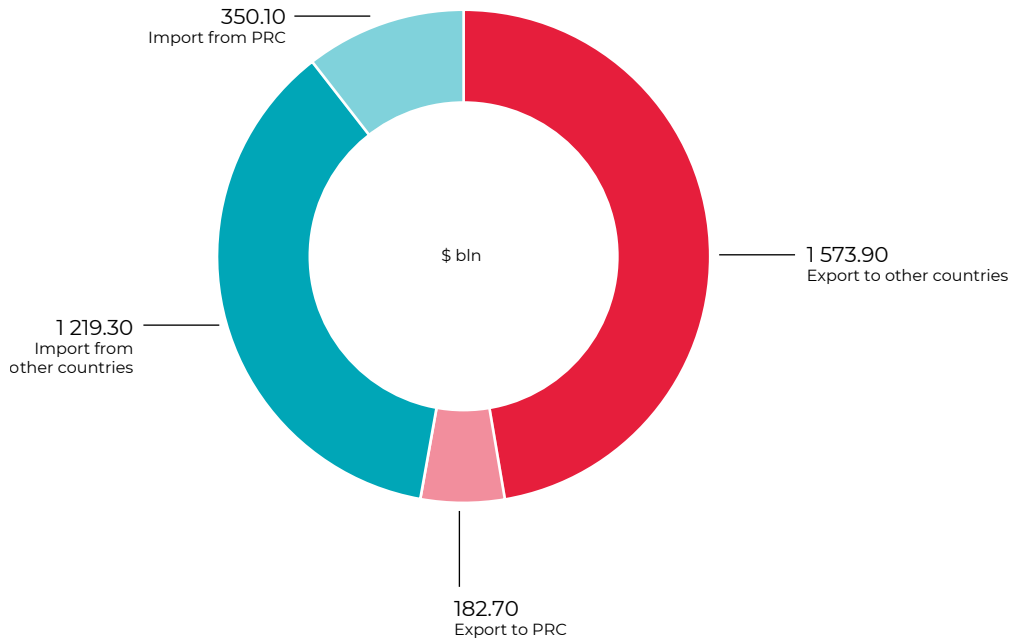
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Trade balance deficit in EU-PRC trade has grown from €153.9 bn to €167.4 bn. Traffic imbalance influences the Eurasian railway transit, requires additional effort of finding cargo in Chinese direction and solving the case of empty containers. All of it can be managed via having a single operator of the route and coordinating with partners in the East and West.

POSITION OF PRC IN EU FOREIGN TRADE

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Presently, transit between the EU and East Asia is one of the most promising and profitable global transportation segments. EU-PRC trade is among the few which have been able to grow in value despite the crisis. This has brought PRC to the position of key trade partner of the EU with the goods turnover of €532.8 bn, exceeding the same number for EU-US trade.

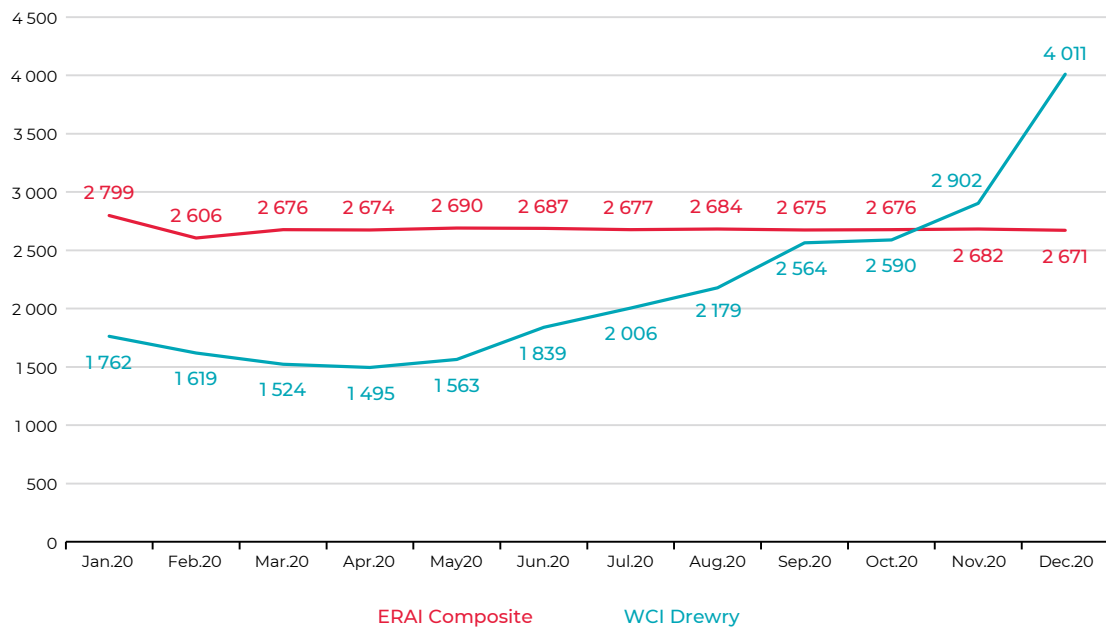
From sea to rail: dynamics of sea and railway cargo shipment rates

The year of 2020 confirmed the existing advantages of railway transportation - those of speed and reliability of delivery. Besides, the railway transit rates have become comparable to sea freight in October, and in November 2020, WCI Drewry index reflecting the cost of delivery of a container by sea between China and Europe has exceeded the railway index ERAI. This situation provided an additional impetus to the so-called modal shift, i.e. the trend for consignors to move from sea to rail.

Rapid growth in sea freight rates was brought about by structural imbalances, exacerbated by a decline in trade and the pandemic combatting efforts. Higher Chinese export vs. import was also aggravated by accumulation of goods in ports due to a deficit in containers and sanitary restrictions. At the same time, PRC accounts for about 20% of global trade of intermediate industrial goods. As a result, many empty containers have accumulated in the North America and Europe, resulting in a surge of sea freight rates. Subsequently, trade by sea transport is expected to drop by 4.1% at 2020 year-end.

RATIO BETWEEN ERAI AND WCI DREWRY INDICES

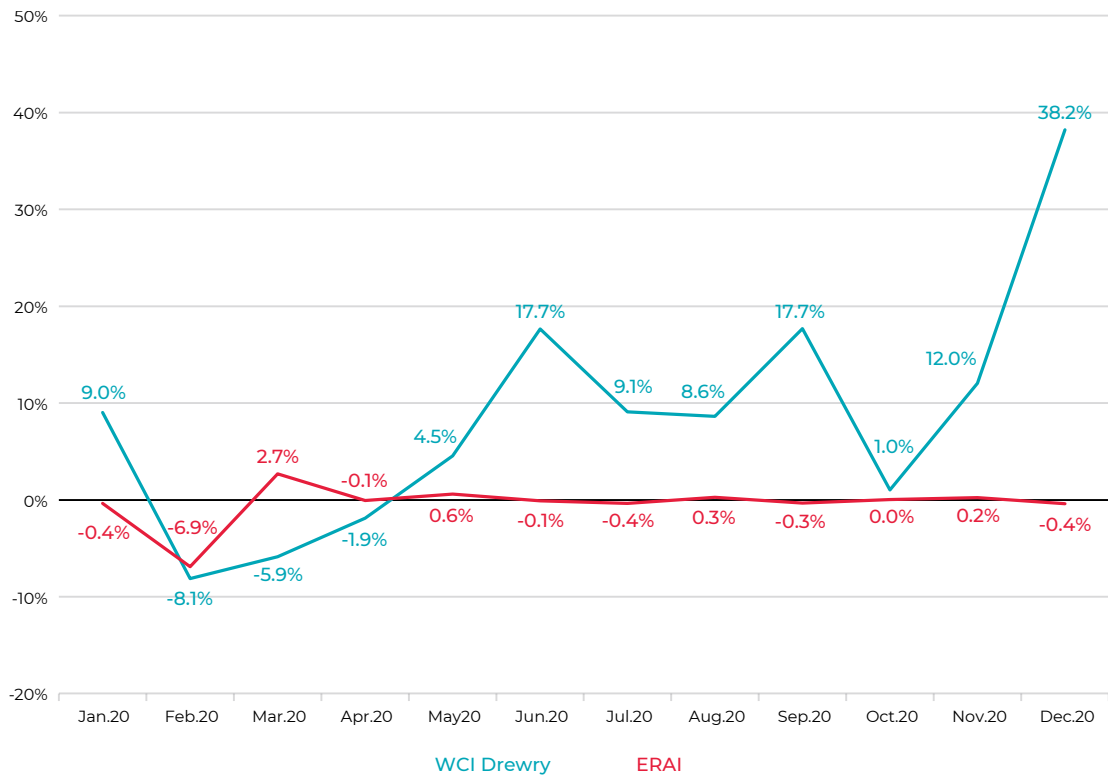
\$/FEU



The railway container transit index for the Eurasian route (ERAI Composite) in December 2020 amounted to \$2671/FEU, which is 4.9% less year-on-year. The cost of transportation from China to Europe (ERAI West) has traditionally remained slightly higher than the rates for transportation from Europe to China (ERAI East), having stabilized at the level of \$2753/FEU and \$2531/FEU, respectively.

Against the background of volatile sea freight rates, railway freight rates have remained stable. During the recent year, maximum change in ERAI index was captured in February and amounted to -6.9%. At the same time, the sea freight indexes have been very volatile, which increased the consignors' costs and spurred their transition to rail.

ERAI AND WCI DREWRY RATE CHANGE DYNAMICS



In addition to traditional advantages of railway, such as higher speed of delivery versus sea transport and lower cost of delivery compared to air, railway transportation have become cheaper than sea freight. This fact helped “draw” significant traffic volumes from other modes of transport.

Other important factors were resilience and reliability of rail even when subject to shocks caused by the global pandemic. Many medical goods, including medical equipment and masks, have been dispatched by rail in the most acute period when their delivery was crucial for Europe. Thus, the Eurasian railway route did not only confirm its reliability but also helped combat COVID-19.

2020 STATISTICS AND TRENDS: ADVANTAGES AND BOTTLENECKS

In 2020 rail container transit delivered excellent service and proved its exceptional resilience and reliability, whereas other transport modes were burdened with rate volatility, capacity restrictions and equipment shortages. Rail transport has taken on the strategic role of a “land bridge” between Europe and Asia, offering exactly what consignors needed: regular services, fast delivery times and stable prices.

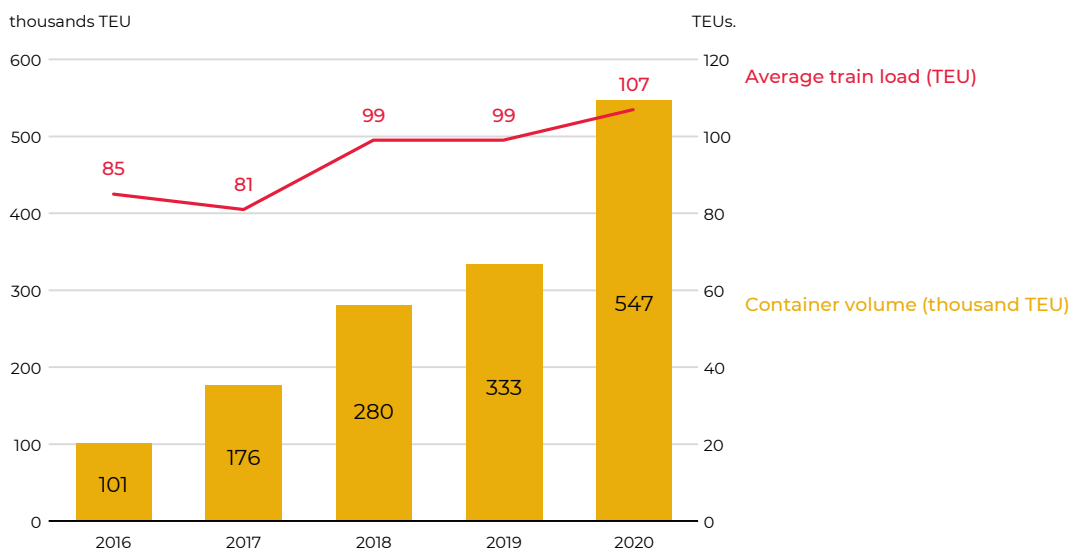
Key transit indicators

Stability of railway transit rates against various disturbances and shocks significantly improved the appeal of the Eurasian railway transit route in 2020. Consequently, traffic volumes via the Eurasian route have grown from 101 thousand TEU to 547 thousand TEU within last five years, whereas growth for the recent year amounted to 64 %.

In April 2020, we saw a two-fold growth of traffic volumes, the total amount transported for the month was 41.2 thousand TEU. As early as in July, the milestone of 50 thousand TEU per month has been reached, and in early December the total container volume for the year reached 500 thousand TEU.

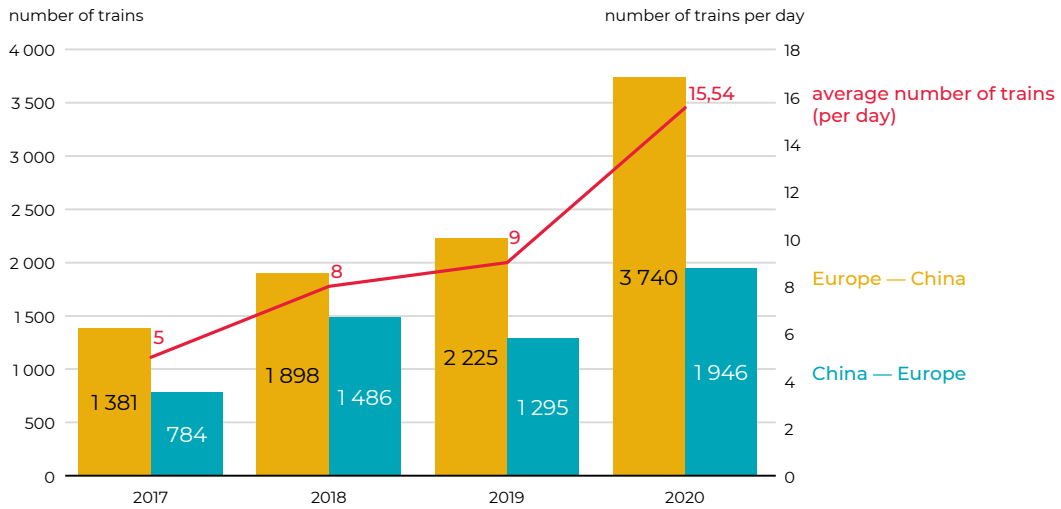
In 2020 average train load has increased from 99 to 107 TEU. On the graph below, which demonstrates total volumes transported and average train load for the period 2016 through 2020, could be observed how traffic volumes and train load almost perfectly correlate.

CONTAINER VOLUME AND TRAIN LOAD



Increase in demand for railway transportation also had a profound impact on the number of dispatched trains. The figure went up from 9 trains per day in 2019 to about 15.54 (+65.44%) in 2020. Over the recent year, the highest growth was observed in the number of trains heading to Europe: from 2225 to 3740. Trains heading to China amounted to 1946. Similar dynamic could be observed in traffic volumes: 198.8 thousand TEU (+45 %) have been moved to China and 348.1 thousand TEU (+77%) — to the European Union.

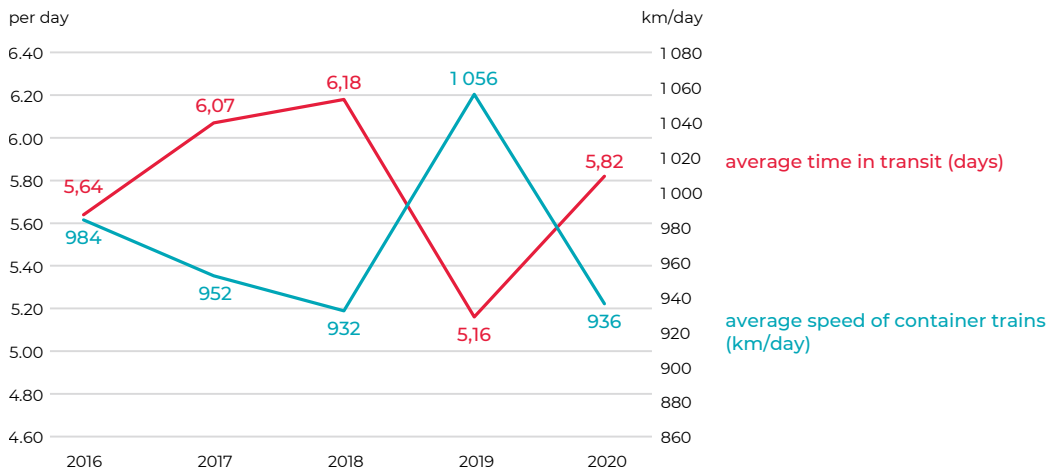
NUMBER OF TRAINS WEST/EAST BOUND TRAINS



The main reason for the remaining disproportion between traffic flows is characterized by EU's negative trade balance with China.

Rapid growth of traffic volumes has been somewhat bottlenecked by constraints of the existing infrastructure, resulting in temporary delays at border crossing points. Average transit time on the route via Kazakhstan, Russia and Belarus in 2020 amounted to 5.82 days, which is less than in 2018 but is only slightly higher compared to 2019 (5.16 days). Average transit speed slightly declined in 2020 compared to 2019. However, considering the vision of key railway administrations along the 1520 mm gauge which plan to speed up the trains up to 1350 km/day by 2024 (hence also decrease the average transit time down to 4 days), undoubtedly certain measures would be implemented to counter the temporary setback in speed.

AVERAGE SPEED AND TIME IN TRANSIT



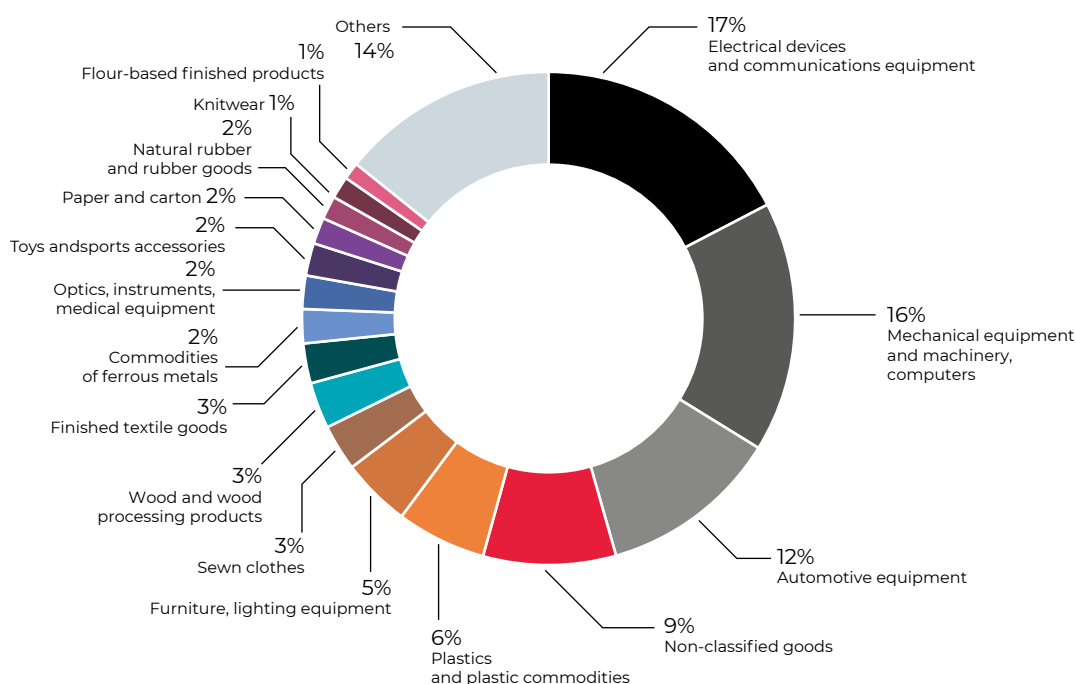
Cargo base and containerization

To provide a breakdown of goods that were transported via rail in 2020, the top spot is occupied by electrical devices (85 135 TEU), next go mechanical equipment (80 556 TEU) and automotive (57 796 TEU), all of those in total account for more than 40% of overall transit volume. Nevertheless, this share is consistently, albeit marginally, decreasing due to the diversification in the shipment geography and increase in the route’s popularity with various consignors.

Against the background of a general decline in the international cargo transportation market, including rail, the Eurasian space has become an exception, demonstrating both quantitative and qualitative growth in terms of the volume and range of goods transported by rail.

The number of product categories transported along the route in 2020, according to the HS classifier, has grown to 93 (from 79 last year), which indicates an increasing interest in Eurasian rail transport from shippers from various sectors of the economy. New groups of transported goods are represented by such industries as agriculture, natural resource extraction (cocoa, silk, oilseeds, plant extracts, zinc, vegetables, lead, animal and plant products). Despite the relatively small share, these products are promising areas for cargo diversification.

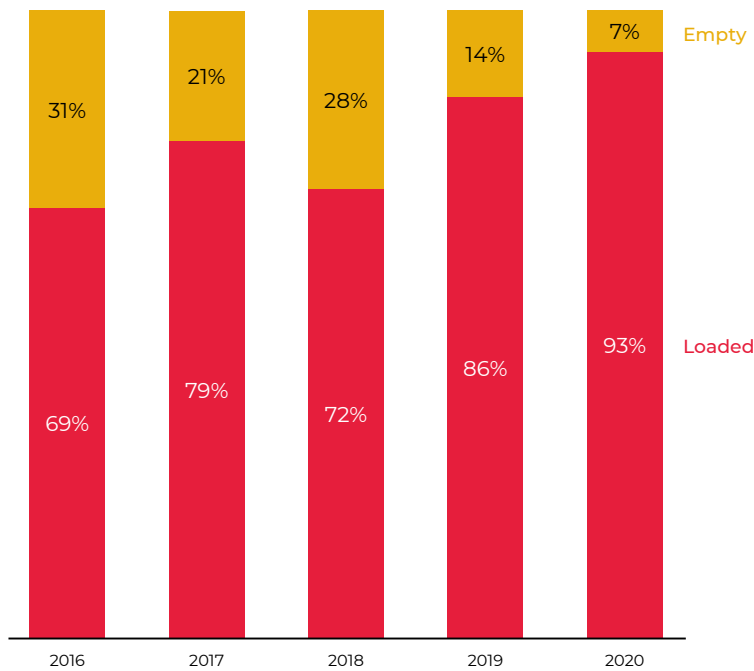
MAIN TRANSPORTED GOODS IN 2020



Among the groups of commodities which have shown the most impressive growth in 2020 are plastics (28 838 TEU, +143.3 %), timber (14 859 TEU, +545.2 %), finished textile items (12 825, +482.9 %), optics (10 704, +176.9 %), raw rubber and rubber goods (7509, +229.9 %). There is also notable growth in the segments of nonwoven materials (+320.9 %) and copper (+362.3 %).

In 2020, the share of empty containers has continued to shrink. Whereas in 2016 the share of empty containers in both destinations reached 31%, in 2020 93% of all containers on the route were full and only 7% were empty.

SHARE OF LOADED AND EMPTY CONTAINERS



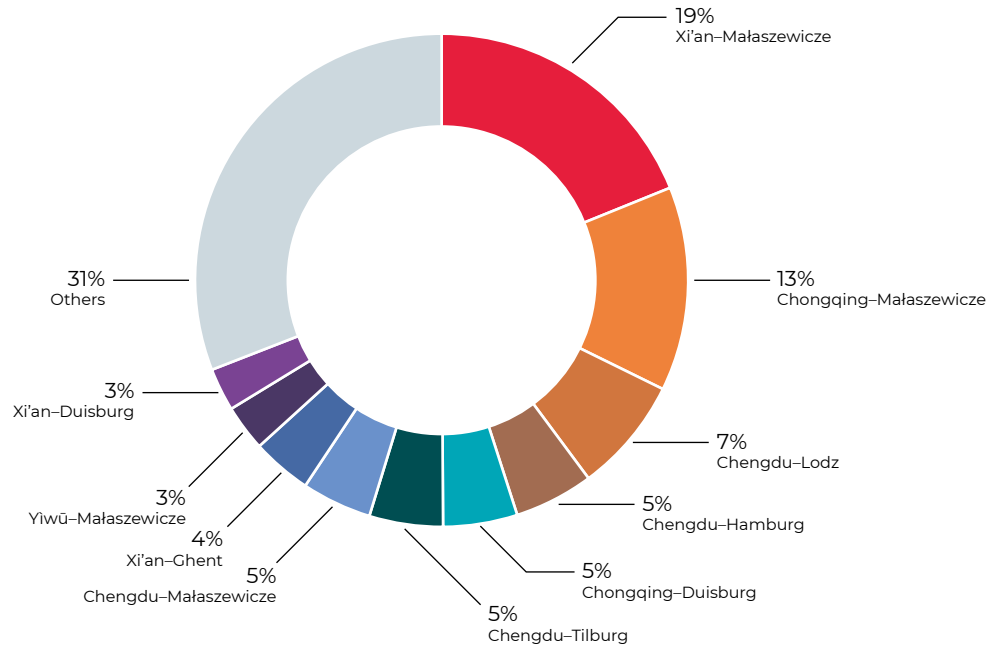
— Transportation geography

Presently the Eurasian railway corridor crosses Kazakhstan, Russia, and Belarus, and connects 21 countries and 100 various locations. In Europe, Poland (222 672 TEU) and Germany (183 565 TEU) account for the major [share of exported and imported goods](#) in 2020. Another important destination is Belgium (35 854 TEU) with a growth in volumes dispatched and destined at 95.45 % in 2020.

In order to diversify and improve efficiency, new routes and methods of cargo delivery are being utilized. In 2020, Kaliningrad (Port of Baltiysk) became an important hub for multimodal transportation. Over the year more than 46,000 TEUs were transported through Kaliningrad region, mainly to German ports.

The key railway transit routes from PRC to EU are: Xi'an–Małaszewicze (64,460 TEU, 19% PRC-EU transit), Chongqing–Małaszewicze (45,724 TEU, 13% transit), Chengdu–Lodz (25,836 TEU, 7%). Overall, the 10 main routes between China and Europe accounted for 69% of trans-Eurasian railway transit.

**TOP 10 MAIN ROUTES FROM CHINA TO EUROPE
TEU.**

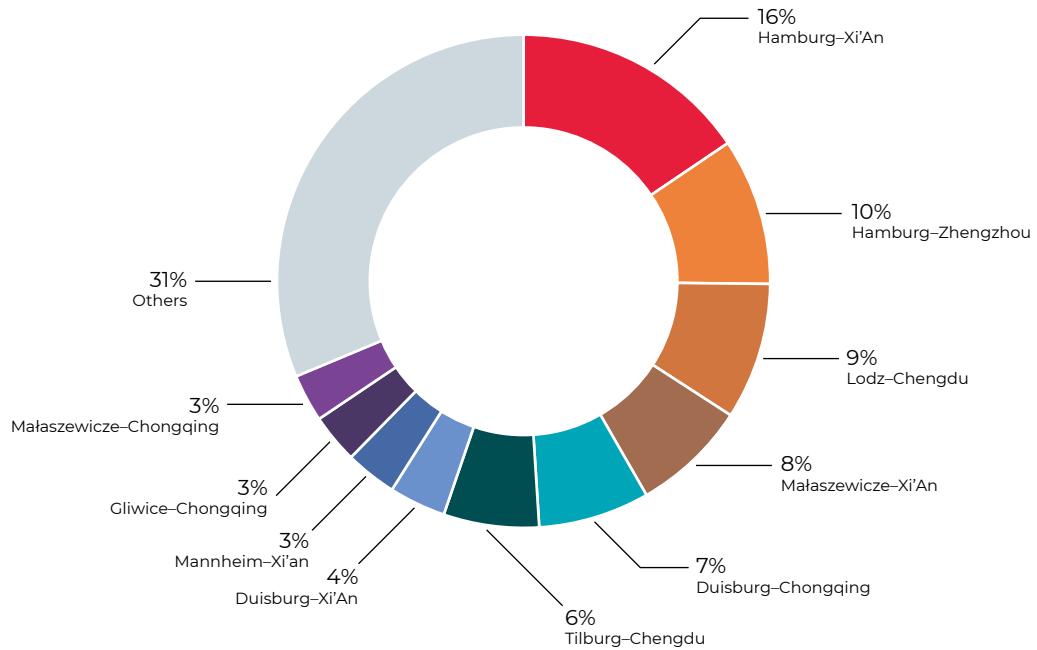


In China, Shaanxi province with a capital in Xi'an accounts for the major volume of export and import traffic (172,798 TEU). It is followed by Sichuan province (Chengdu city) – 108,918 TEU and the city of Chongqing – 100,278 TEU. A significant increment in volumes was also registered in the province of Zhèjiāng – 70.16% (a total of 16,730 TEU). Most of the cargo base in the route to PRC is still provided by the regions of the Central and South-East China.

Just like in the European direction, ten main routes from Europe to China account for 69% cargo traffic. The Cargo mainly comes from Germany (Hamburg, Duisburg, Mannheim) or Poland (Łódź, Małaszewicze, Gliwice) as cargo consolidation points. The main routes are: Hamburg–Xi'An (23,572 TEU, 16% China–Europe traffic), Hamburg–Zhengzhou (14,624 TEU, 10% traffic), Lodz–Chengdu (13,614 TEU, 9%). The geography of the main points of destination also includes such Chinese cities as Xi'an, Zhengzhou, Chengdu, Chongqing.

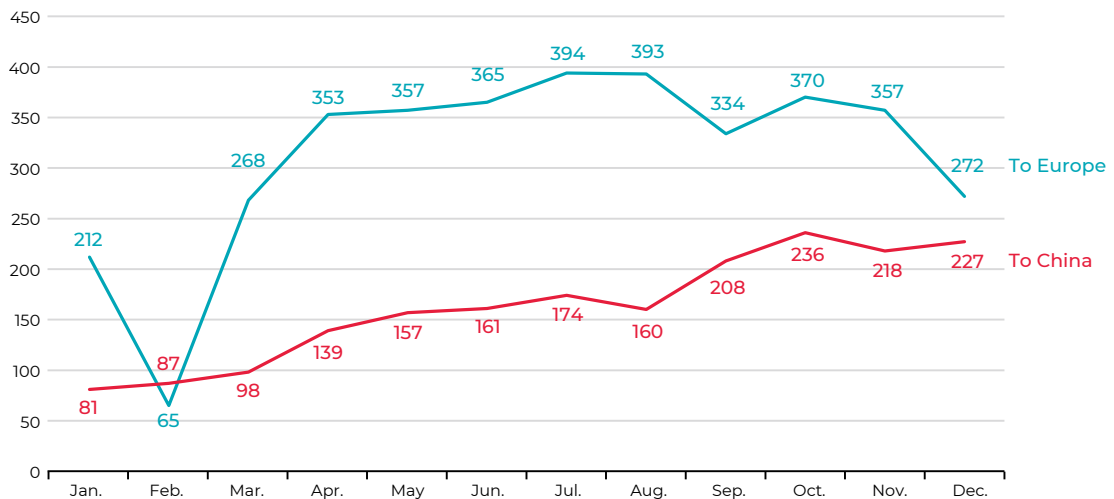
TOP 10 MAIN ROUTES FROM EUROPE TO CHINA

TEU



The dynamics of trade between the EU and China and the nature of restrictions related to combatting COVID-19 have had substantial impact on the number of trains dispatched in 2020. Having reached its minimum level in February 2020 (65 trains to China and 87 trains to Europe), the number of dispatched trains has dramatically grown since, reaching its peak in October: 606 trains (236 to China and 370 to Europe). The last months' dynamics shows a decreasing gap between the number of trains heading in the Western and Eastern directions.

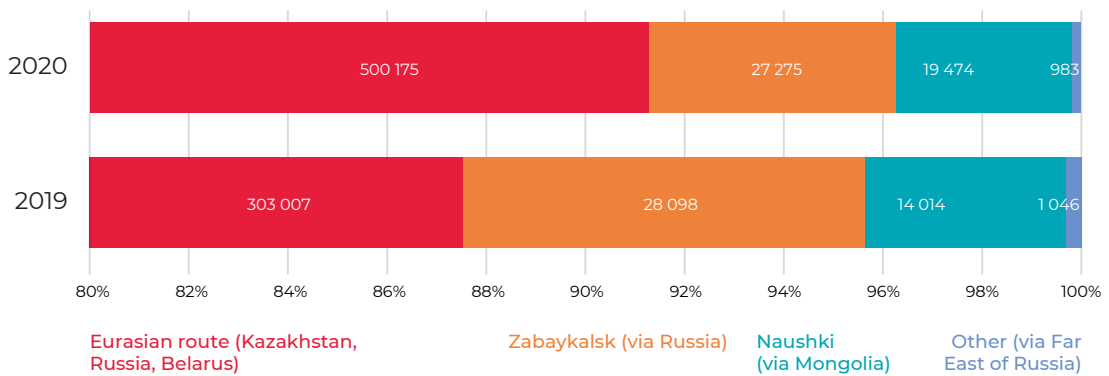
TRAINS DISPATCHED IN 2020 BY DIRECTION



Position of the Eurasian corridor and alternative corridors

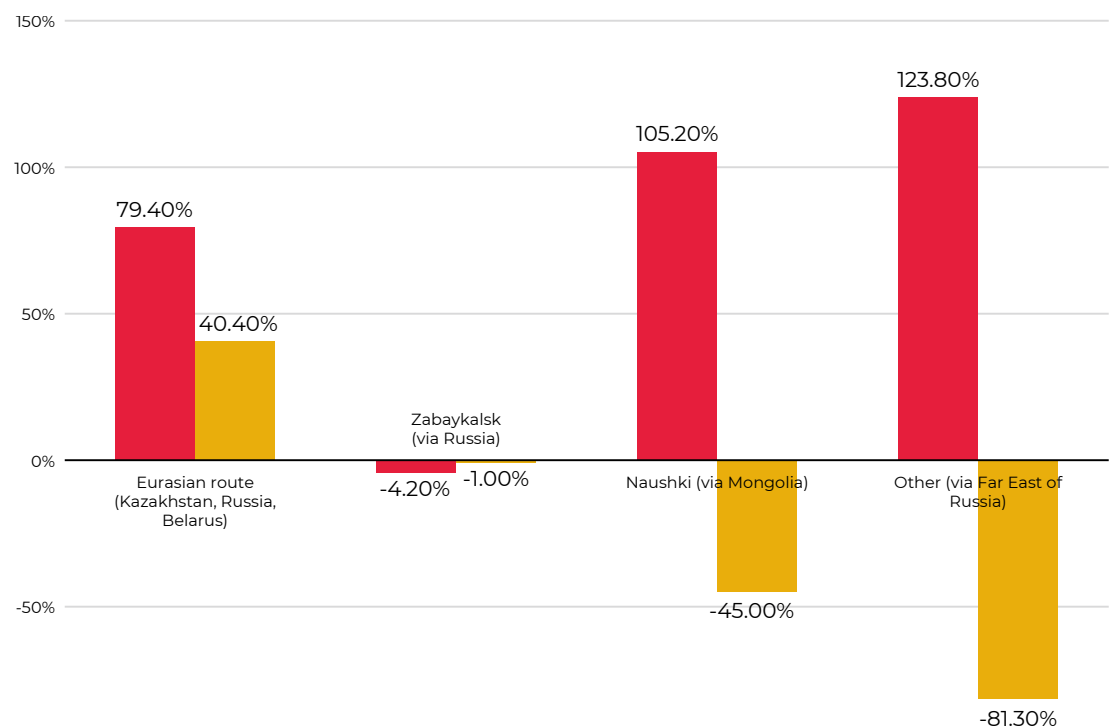
The Eurasian railway transit corridor via Kazakhstan, Russia and Belarus dominates the competition in China – Europe – China container transit. In 2020 the share of the Eurasian corridor accounted for 91.29% of all railway container trade between China and the EU. Thus, the share expanded even further, by around 3,76% when comparing with 2019.

SHARE OF CORRIDORS IN THE CHINA - EUROPE - CHINA RAIL CONTAINER TRANSIT



It is noteworthy that in 2020 only the Eurasian railway route managed to increase volumes in the eastern direction (+40.4 % y-o-y), whereas a significant drop could be observed at other corridors in this segment. At the same time, the Eurasian route has also demonstrated substantial growth in the western direction (+79.4% y-o-y).

CHANGE IN THE VOLUMES OF CHINA-EUROPE-CHINA RAILWAY CONTAINER TRANSIT IN 2020 IN CORRIDORS



2021 PROSPECTS

The record figures of 2020 were mostly enabled by the cumulative effect of many years of effort and work to develop the Eurasian railway transit route. Competitive advantages of railway transport backed up by long-standing reliability of the route's services and established relations with partners and consignors have been coincident with the favorable trade and economic environment.

After the challenge of the pandemic was accepted and successfully addressed, against the background of leaps in demand in the railway container transportation, the 2021 agenda includes the challenge of retaining the volumes and the acquired market share of cargo transit between the EU and China.

In addition to the traditional advantages of rail transport, sustainability is becoming increasingly important. Railways are the most environmentally friendly mode of transport, which is especially important in the context of the implementation of the UN Sustainable Development Goals. In the EU, only railways are consistently reducing emissions amid an overall increase in emissions from the transport sector. Railways in the EU account for less than 0.5% of the transport sector's greenhouse gas emissions. In this regard, in Europe, 2021 has been declared the "Year of Rail", which is intended to facilitate a modal shift in favor of freight and passenger rail transport.

In 2020, ERAI portal launched its [CO2 meter](#) as a quantitative indicator of environmental impact of trans-Eurasian railway transit, to enable the comparison between actual direct and indirect carbon footprint of railway corridors vs. air, road and sea transport. In 2020, the cumulative volume of direct emissions from the Eurasian railway route amounted to 36.5 thousand t CO₂. If this cargo had been transported by air, the emissions would have amounted to 19,273.8 thousand t CO₂, by road – 3,249 thousand t, and by sea – 36.5 thousand t CO₂. This is yet another proof of environmental advantage of transportation by rail.

Transit of cargo from food industry and agriculture sectors has a huge potential. Due to the sanctions and restrictions imposed by Russia on entry of goods of certain categories, this cargo segment has been largely unavailable for trans-Eurasian railway transportation. Use of electronic navigation seals guarantees cargo integrity and ensures inclusion of sanctioned goods, mostly foods, in the Eurasian route's nomenclature.

In 2020, the route has carried [two full-length trains](#) with sanctioned European goods to China, as a pilot project. In 2021, transit of sanctioned goods [is expected to](#) increase to 100 containers per month. In the future, according to some estimates, traffic of this category of goods can reach 50 thousand TEU per year.

Finally, the development of the Eurasian railway transit is accompanied by growing trust and media profile improvement. To reinforce this effect, ERAI portal has launched [Events](#) section, whose target audience is market professionals, analysts and everyone who is interested in transit railway shipments in the 1,520 mm gauge territory. Now, apart from delivering the latest news and analytical materials, ERAI index can offer participation in an open discussion with the experts and leaders of the industry.