CHINA-EUROPE RAIL AND INTERMODAL SERVICES

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CHINA-EUROPE RAIL AND INTERMODAL SERVICES

Once known as part of the 'The Belt and Road Initiative', later the 'New Silk Road', and then the 'China-Europe Landbridge', over the past decade or more the rail network between China and Europe has emerged from obscurity to become a viable service. Its development is one of the most significant rail freight projects at a global level. Largely the initiative of the Chinese State Railway, it is no-longer just one rail line. Rather it is a complex of rail lines, intermodal hubs and roads linking Northern China, Central Asia, South East Asia, Russia, the Caspian Sea, southern Caucus and various parts of Europe. Its commercial realities are often unclear, including how economically viable it is and who really controls it.

SUMMARY

- The Eurasian rail and intermodal routes are not one homogeneous piece of infrastructure
- There are at least two major routes, with other minor deviations.
- The route with the largest volumes between China and Europe passes through Kazakhstan, Russia and Belorussia.
- The second route passing across the Caspian, the south Caucasus and the Black Sea has lower and is more intermodal.
- Although freight can be delayed at major hubs, the journey time between Europe and China is generally markedly less than sea freight, quite possibly by ten days or more.
- The cost is comparable to sea freight rates to China at present, although in the past sea freight have been much lower.
- The quality of service mediated by freight forwarders is generally high with good security and tracking services. Both Full-Containerload and Less-than-Containerload are available.

STRUCTURE OF THE NETWORK

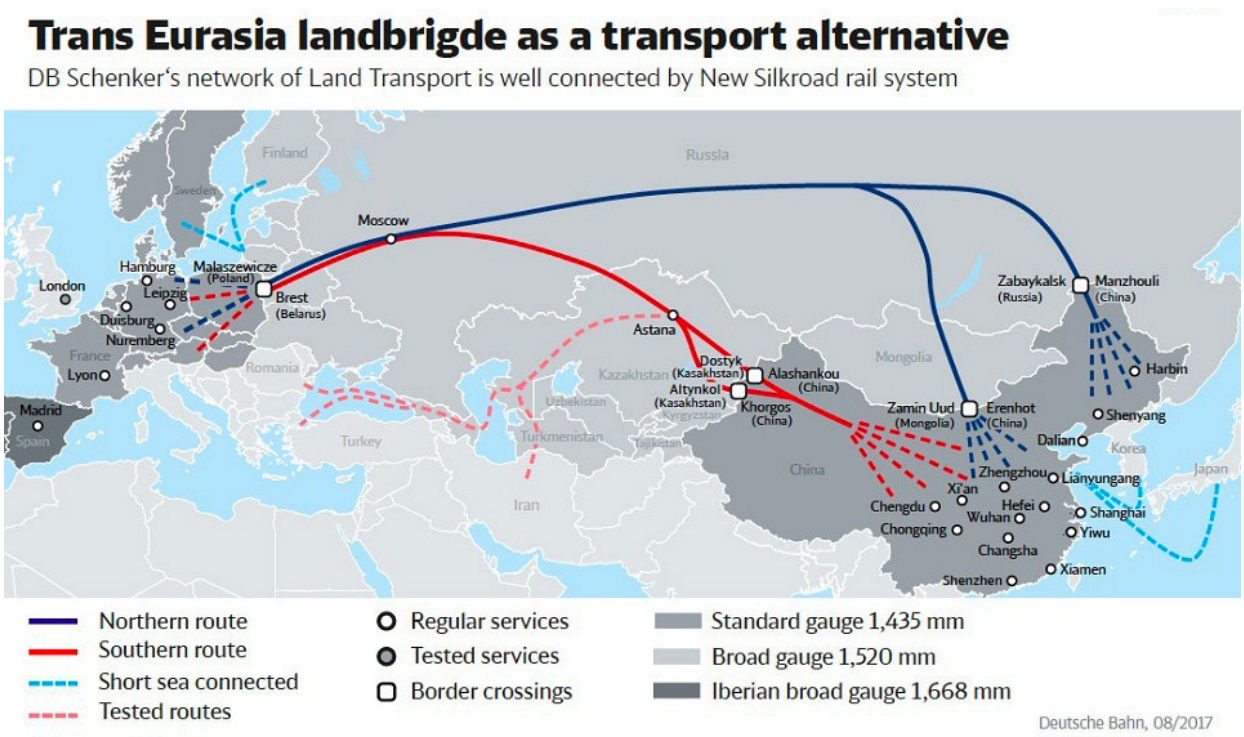
Undoubtedly the initiative for the construction of rail freight capabilities between China and Europe was that of Chinese state rail monopoly, 'China Railway'. This is a very large organisation with considerable autonomy and financial resources. It is also at the centre of the Chinese economy, playing a large role in areas such as energy logistics.

The international freight services of China Railway are generally described as the 'China Rail Express', something that might be described as a brand, although its services are marketed and developed by a specific division of China Railway. The routes from China to Europe are just one of these services, with other routes serving locations in Mongolia and South East Asia.

Services tend to originate in rail and intermodal hubs across in northern central China, particularly around Chongqing and Chengdu, but also Zhengzhou and Xi'an. Services then focus on delivering to the intermodal terminals at Khorgos on the China/Kazahkstan border, Manzhouli in Inner Mongolia, or Suifenhe in north eastern China. The latter two locations interface directly with the Russian rail system. It is unclear which of these hubs are the largest, with Khorgos probably handling the highest volume of containerised traffic for Europe destination/origins. The other routes are likely to have higher proportions of bulk consignments originating in Russia.

Volumes at all of these terminals are reported to have been buoyant.

- Khorgos: It is estimated that Khorgos is handling in excess of 200,000 per annum, with modest increases through 2021 accelerating through Q1 and Q2 2022. China Rail is estimating that rail volumes rose by 18.3% in H1 2022.
- Manzhouli: China Rail is estimating that volumes rose by 17.7% for H1 2022. This implies through-put volumes for 2022 of in excess of 15,000TEU.
- Suifenhe: China rail states that volumes through this eastern route rose by 36.5%.



KAZAKHSTAN

Although the volumes moving through the China-Russia border are significant and there are what might be called 'Block Trains' between these locations and Europe, the most important route of China-Europe traffic on the China side seems to be through Kazakhstan.

The entrance into Kazakhstan is at Khorghos although the Kazakhs are working on developing an alternative hub at Altykol/Dostyk.

The transport infrastructure in Kazakhstan is well developed, with double-track rail through the key freight routes, including the south and the west of the country which link into routes in southern Russia but also to the port of Aktau on the Caspian.

Fig.1 China-EU-China Rail Route Throughput in TEU

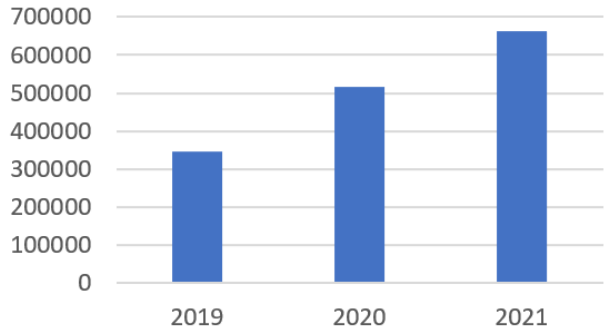
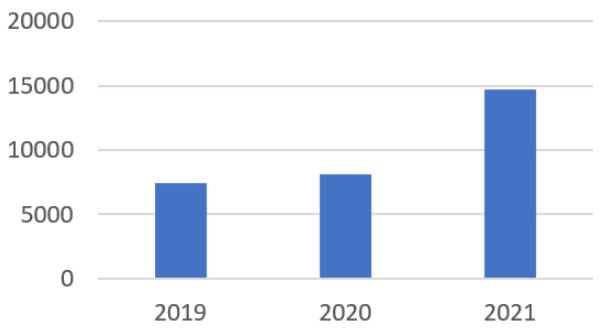


Fig.2 Trans-Caspian Intermodal Route Throughput in TEU



Source. Kazakhstan Rail

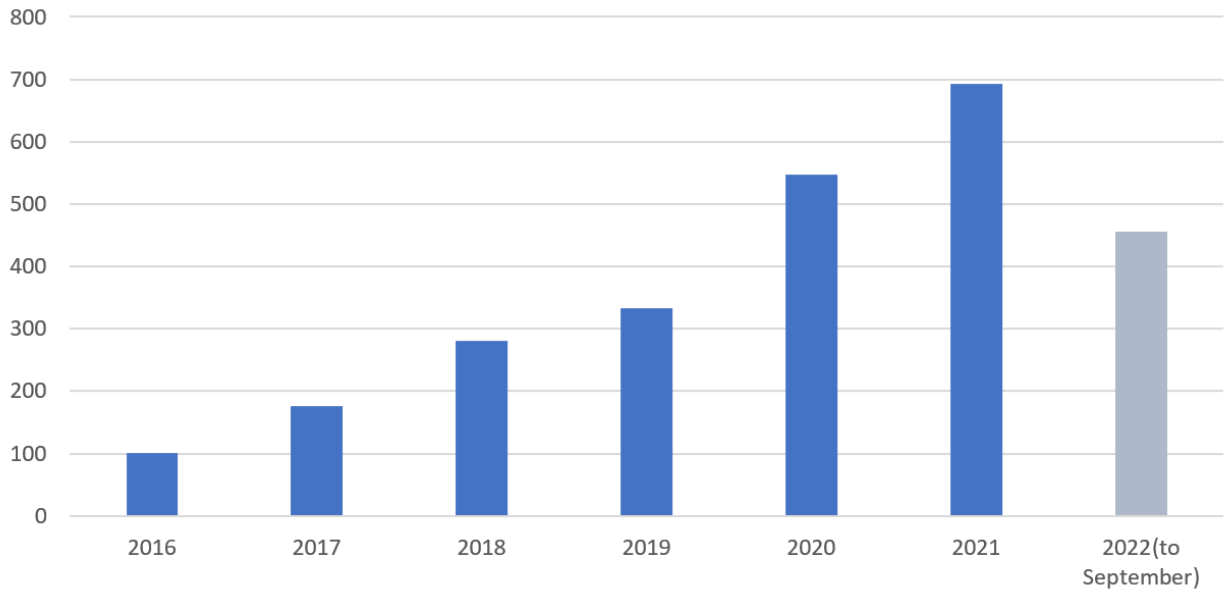
For Kazakhstan is not merely a transit route for China-Europe rail freight. Rather it acts as a pivot between at least two routes into Europe. The first, and at present the largest, is the route into Russia which, because Kazakhstan and Russian both use a broad gauge is not mediated through a rail freight hub.

The second route is through the south Caucasus, or what is marketed as the 'middle corridor'. At present this is a much less used route, as can be seen by the data above (fig2). It is also more complex, requiring as it does more handling at Caspian and Black Sea ports, use of the Caspian ferry and short-sea across the Black Sea. However, it does have the advantage of avoiding movement across Russia and avoiding the increasingly crowded intermodal hub at Malaszewicze.

RUSSIA

Along with Kazakhstan, Russia is the principal transit route, however the complexity of operations through the country is less with fewer opportunities for trans-shipments or alternative routes. That said Russia does interface directly with China through the routes utilising the Manzhouli and Suifenhe crossings.

Fig.3 Container Throughput on China-Kazahkstan-Russia-Belorussia Route in Thousands TEU



Source. UTLC ERA

The structure of the supplyside is complex in Russia, as it is in China, with several organisations apparently responsible for operations and marketing. However, in Russia it does appear that operational capabilities are the responsibility of Russian State Railways, RZD, whilst marketing is carried-out by a number of organisations including the RZD subsidiary Far East Land Bridge Ltd.

Indeed, it appears that the Russians are keen to retain a degree of control over the project even as the Chinese seeks to develop and integrate their route into their national rail provision. For example, RZD aspired to use their ownership of the French logistics service provider Gefco as a means of marketing their services on the route (RZD has reduced its holding in Gefco). However, the logistics resources within Russia are comparatively sparse as compared to other locations on the route such as Khorgos or Baku.

THE MIDDLE CORRIDOR OR SOUTH CAUCASUS ROUTE.

This is very much an alternative to the routes through Russia and its development underlines the dynamic nature of freight transport both within Central Asia as well as between China and Europe.

Essentially the route diverts from the dominant China-Kazakhstan-Russia-Europe route at the Caspian port of Aktau in Kazakhstan. Utilising a ro-ro/container ferry to cross the Caspian, the cargo is landed at Baku, which has a sophisticated port. The intermodal facilities in Baku can either strip the container and/or move it via rail or road to the Georgian Ports of Poti and Batumi. An alternative is to utilise the rail and road links into the north Turkish coast and Istanbul. All of these options enable access into Southern and Central Europe. In particular the port of Constanza in Romania is a useful hub, however the intermodal routes through Istanbul are growing in their ability to link destination in southern, central and western Europe.

It is important to understand that the intermodal and other logistics resources in the South Caucasus

are growing in capability. The port of Aktau in Kazakhstan has been developed in recent years as an oil and gas logistics support location, however increasingly it is attempting to develop its capacity to handle containerised and road freight cargoes moving between China and Europe. This includes a container shipping services across the Caspian as well as a ro-ro service to Baku. However, it has to be admitted that the ferry service across the Caspian to Baku is still a weak point, despite new vessels. The service appears slow and unpredictable.

Baku is an important location for logistics in the region on the routes between China and Europe. The port at Baku is well developed, both in terms of cargo handling, ro-ro capabilities and associated intermodal ports and warehousing. Baku also has a large airport, possibly capable of handling air/land services although these types of operations are not that well developed at present.

An important development over the past five years has been the building of a large capacity rail network between Baku, Tbilisi, the Georgian Black Sea ports and Turkey. This is complemented by a well-developed road network between Azerbaijan and Georgia. This network offers a fast, high-capacity capability to move consignments across the South Caucasus and into all of Europe. (see also the CEVA service under Road Freight).

TURKISH INTERMODAL SERVICES

A useful aspect of the growing web of services across 'Eurasia' is the intermodal services out of Turkey, especially those pivoting around Istanbul and the west of country. A number of Turkish logistics providers have established large-scale intermodal capabilities, exploiting Turkey's position between Central Asia and Europe. Turkey also benefits from large container ports, an increasingly competent rail-freight network extending both east and west, large hub airports and a fairly good road system that benefits from bridges across the Bosporus. This has facilitated the growth of logistics service providers such as Ekol who know how to work these assets. With the potential growth of the South Caucasus route these providers have an opportunity to stitch together the traffic-flows entering Kazakhstan from the East and intermodal traffic into Europe. It is questionable whether this is being fully exploited at present.

WESTERN INFRASTRUCTURE

The key intermodal hub for entrance into the main European markets is the Polish facility of Malaszewicze, on the border of Poland and Belorussia. Malaszewicze is a large rail freight facility, which has a handling capability of 500,000 TEU. Approximate to the crossing-point there are both intermodal handling and cross-docking facilities. Malaszewicze has suffered from congestion in the past, although heavy investment has eased the situation considerably.

There are smaller crossing points on the Polish-Belorussian border with cargo-handling facilities, at Siemianovska and Bruzhi as well as one at the Polish-Kaliningrad border at Svislach.

However, a characteristic of the Eurasian service is its extension into much of western Europe. In theory there is a seamless service into locations as distant as London, Milan and Madrid, with dedicated blocktrain services to these locations. Generally however, these services are trans-shipments from other

intermodal hubs in western Europe. It seems there are core locations for this, with Duisburg being a particularly large destination. Indeed, the ability of Duisburg to act as a trans-shipment hub for Eurasian cargo has amplified its importance.

RAIL GAUGES

The rail infrastructure along much of the Eurasian route has different rail gauges. China operates a standard gauge, however Kazakhstan, Russia and Belorussia operate a broad gauge.

Although previously operating a broad-gauge, Kazakhstan constructed its key rail freight route from Khorgos to Aktau in standard gauge, however the rest of the system runs on broad gauge. The Russian and Belorussian network is broad-gauge. Azerbaijan and Georgia are also broad gauge, however Turkey and Poland are standard gauge.

FREIGHT FORWARDERS

The commercial realities of the Eurasian intermodal are complex. The issues of ownership, control and responsibility are often opaque. For example, the role of China Railways is fundamental, however regional governments in China also appear to have a role, not least through a network of subsidies paid to China Railways. In addition, the national rail service providers also have an important role, with RZD clearly regarding the service as an important part of its product portfolio. However, RZD has also created a marketing company called UTLC ERA to co-ordinate both operations and relationships with customers, the latter generally being freight forwarders.

The role of forwarders is key through-out the whole service. Overwhelmingly they are the contact-point with shippers for both operations and marketing. There are both highly active forwarders in China and in Europe. Examples of the latter are:

- Gefco
- Deutsche Bahn Schenker
- Ceva
- Kuehne and Nagel

However, despite the large number of different organisations and companies involved with the service, the core service is essentially the same, utilising the same physical assets and management structures. How much control freight forwarders- either Western or Chinese – have over service delivery and pricing.

CHINESE SUBSIDIES

An insight into the true nature of the rail services between China and Europe is the role that Chinese regional governments play in subsidising, or possibly used to play, in subsidising the service. It appears that the entire service was unprofitable for many years, with a study by Donghua University claiming that

provincial governments were subsidising the service and had by 2017 sunk the equivalent of US$303m into block train services from their regions. These were designed to stimulate and assist economic enterprises in these regions.

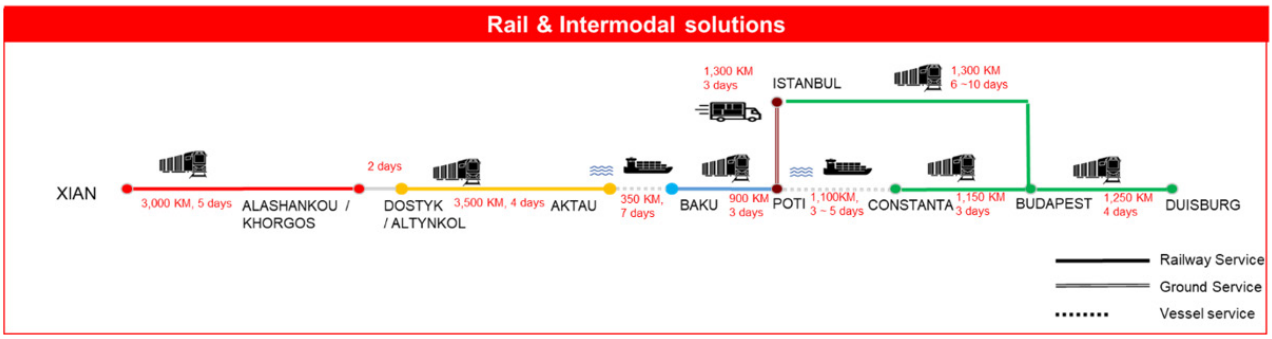
It is unclear if these subsidies are still paid and what role they play in viability of the service. It is quite possible that the prices charged for western shippers moving product either east-west or west-east do not reflect the real costs of the service. The Donghua University study suggested that the cost of moving a container from China to Europe was US$10,000, which would be slightly higher than present rates from central locations in China. Bearing in-mind the growth in volumes on the service it may be that the service is now economically viable. As is so often the case with this service, not all is transparent.

ROAD FREIGHT

In keeping with the complex nature of provision on the route, the options to use road freight are considerable. The road network in China and Kazakhstan is of generally good quality, although this does not apply particularly in Russia where road conditions are demanding of both vehicle and driver. This has led a number of logistics service providers to take the opportunity to create road freight services, both trailer-load and less-than-trailer load services, between China and Europe.

A good example is the large logistics service provider CEVA logistics. It offers services which are a mix of road freight and rail freight. In the past it has offered a truck-based service from locations in northern China to Europe, passing through Russia and Belorussia exiting in Poland. However, it appears that the service offering has changed, with CEVA switching to an intermodal service passing through the Southern Caucasus, with alternative routes of either Baku-Istanbul by road or Baku-Poti-Constanza via rail and ship. The service terminates in Duisburg.

CEVA's Service Through South Caucasus Route



Source. CEVA.

It is worth noting that this service avoids Russia and appears to be motivated by the effects of the war in the Ukraine.

It also appears that the length of time of the service is markedly greater than the 10-15 days that CEVA quoted for the previous road freight service. Looking at the diagram from CEVA above, there seem to significant delays in the ferry service between Aktau and Baku and surprisingly the rail service between Istanbul and Duisburg also appears slow. That said the company states that the route takes "30-35-days

port-to-port" compared to "40-45 days" for a similar journey with a start point in Xi'an in the Yangtze valley. CEVA also state that costs are similar to the Ocean route.

TIMINGS

The issue of the length of journey-time is critical in judging the market viability of Eurasian freight services. As with so much about services along this route, opinions on timings vary.

- The majority opinion of forwarders is that the 'route' will take from 13-18 days.
- ULTC ERA quotes a time of 5 days for transit between Khorgos and neighbouring facilities and Malaszewicze and neighbouring facilities.
- CEVA in the past has quoted a time of 13 days for road freight services, although this may have changed not least to the effects of the war in the Ukraine. Its latest estimates seem longer. This may be due to using the 'Middle Corridor' through Baku.
- However, there are significant qualifications on this timing:
- Origin/Destination in China is a major variable, with locations in southern and Eastern China adding several days onto the route as compared to locations in Northern or Western China.
- Delays at hubs and customs can be considerable. In the past congestion at Malaszewicze has added several days onto the route.

COST/PRICE

Normally pricing of services in logistics is one of the most opaque and uncertain questions. However, this is not the case. Certainly, judging by the quotes issued by ULTC on:

- West From Khorgos/Dostyk on Kazakh border. Loaded Forty-Foot Equivalent Unit 'Basic Rate, non-discounted rate US$3,520. Twenty Foot Equivalent Unit 'Basic Rate non-discounted' US$2,090
- East from Khorgos/Dostyk on Kazakh border. Loaded Forty-Foot Equivalent Unit 'Basic Rate, non-discounted rate US$2,090. Twenty Foot Equivalent Unit 'Basic Rate non-discounted' US$ US$1,580

This rate includes:

- rail rate and customs duty on Kazakhstan, Russian, Belarusian railways;
- transit customs declaration for loaded container;
- handling operations at terminals
- freight forwarder's fee.
- rail rate and customs duty on Kazakhstan, Russian, Belarusian railways;
- transit customs declaration for loaded container;

- freight forwarder's fee.

The rates do vary according to types of containers, number of containers moved in a consignment and the exact destination/origin point.

It should be observed that these prices apply to services starting at the borders of Kazakhstan and Belorussia. They do not include the costs of moving consignments from shippers location through Europe to the border intermodal hubs, nor the cost of movement through China. These costs are likely to be a comparable to the cost of the core Belorussian-Russia-Kazakh route. As of September 2022, inclusive rates from Western Europe to major destinations are estimated to be in the region of US$8,000-$10,000 per Forty Foot Equivalent Unit. Rates will, of course vary by consignment size.

It is also worth noting that rates vary between East-West and West-East routes, which is a reflection of the imbalance of demand on the routes.

WAR

The impact of the war in the Ukraine has been considerable. Many shippers and logistics service providers claim to be avoiding passing through Belorussia and Russia. However, volumes do not appear to be falling that heavily, see for example fig.3. Recent figures from China Railways imply volume increases of 5% year-on-year. Possibly this is due to activity on the South Caucasus route, but it seems unlikely there could be such a large increase on a route that is starting from a relatively modest level of traffic compared to the routes that pass-through Russia.

The implication is that although the rate of growth may have slowed, the Russian routes are still handling a large volume of freight.

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