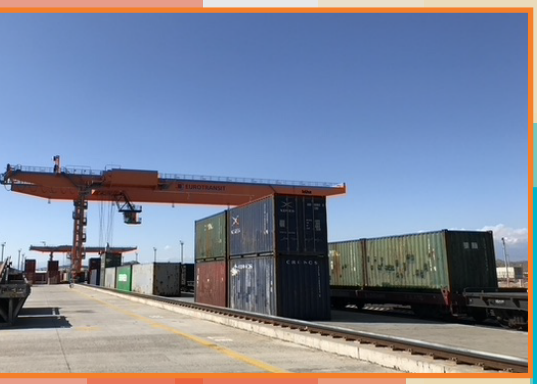

RAILWAY SECTOR ASSESSMENT FOR REPUBLIC OF KAZAKHSTAN

MARCH 2021

CAREC
Central Asia Regional Economic Cooperation Program

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Note:
In this publication, "$" refers to United States dollars.

Cover design by Edith Creus.

Photo credits on the cover, from left to right: Transloading containers from standard gauge to broad gauge near the border between Kazakhstan and the the People's Republic or China (photo by TA consultant). Locomotive assembly plant in Astana City (photo by Asian Development Bank). A container block train operating on the railway section between Almaty and Khorgos (photo by TA consultant).

Map: The boundaries, colors, denominations, and any other information shown on this map do not imply, on the part of ADB, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries, colors, denominations, or information.

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This country railway sector assessment is part of an Asian Development Bank (ADB) technical assistance (TA) project on *Railway Sector Development in Central Asia Regional Economic Cooperation (CAREC) Countries*. The project has been assisting CAREC member countries to identify promising opportunities for investment in cross-border railways and develop railway commercialization and reform measures to strengthen railway performance in accordance with the *CAREC Railway Strategy* approved by CAREC ministers in 2017.

Preparation and supervision of the project was led by Jurgen Sluijter, Senior Transport Specialist, and overseen by Dong-Soo Pyo, Director, Transport and Communication Division, Central and West Asia Department. Administrative support was provided by Krisanta Carissa Vila, Associate Project Analyst.

Project activities were guided by the members of the CAREC Railway Working Group, CAREC Railway Focal Points and national TA coordinators.

The Kazakhstan railway sector assessment was prepared by a team of TA consultants. Country-level consultations and research were carried out by Tyrrell Duncan, Team Leader/Railway Specialist, Udo Sauerbrey, Railway Reform and Restructuring Specialist and Yelena Vassilevskaya, Transport Specialist. Report preparation was led by Tyrrell Duncan.

Valuable insights and information were provided by Kazakh Railways, the Ministry for Industry and Infrastructure Development, other government departments, international development partners and representatives of the private sector. Useful comments were provided by ADB staff including Giovanni Capannelli and Guldana Sadykova.

ABBREVIATIONS

ADB	–	Asian Development Bank
ASCO	–	Azerbaijan Caspian Shipping Company
BTK	–	Baku-Tbilisi-Kars
CAREC	–	Central Asia Regional Economic Cooperation
CIS	–	Commonwealth of Independent States
CMO	–	corridor management organization
CRC	–	China Railway Corporation
EBITDA	–	earnings before interest, tax, depreciation and amortization
EBRD	–	European Bank for Reconstruction and Development
EEU	–	Eurasian Economic Union
FSU	–	former Soviet Union
ICT	–	information and communication technology
ITF	–	International Transport Forum
KTZ	–	Kazakhstan Temir Zholy (Kazakh Railways)
MC	–	Member Country
MIID	–	Ministry for Industry and Infrastructure Development
PRC	–	People's Republic of China
SOE	–	state-owned enterprise
TA	–	technical assistance
TEU	–	twenty-foot equivalent
TITR	–	Trans-Caspian International Transport Route
TRACECA	–	Transport Corridor Europe–Caucasus–Asia
UIC	–	International Union of Railways

CURRENCY EQUIVALENTS

(as of 1 June 2020)

Currency unit	–	tenge (T)
T1.00	=	$0.0024
$1.00	=	T412.41

1 INTRODUCTION AND BACKGROUND

A. Introduction

1. In 2017, the eleven Member Countries (MCs) of the Central Asia Regional Economic Cooperation (CAREC) program approved the CAREC Railway Strategy with a view to expanding the role of railway transport in the region.[1] The strategy aims to accelerate the identification, preparation and financing of feasible railway investment projects and, at the same time, advance the commercialization and reform of railways to improve their performance (ADB 2017).

2. In 2018, the Asian Development Bank (ADB) approved a $2 million regional technical assistance (TA) project for CAREC Railway Sector Development to assist MCs in implementation of the CAREC Railway Strategy (ADB 2018).[2] The TA is intended to accelerate the sound development of the railway sector in CAREC countries by providing support for railway transport market research, project identification and preparation, knowledge sharing and preparation of practical actions for commercialization and reform in MCs.

3. During the first part of TA implementation, the TA consultants conducted assessments of the railway sector in each MC. The purpose of these assessments was to examine the setting, characteristics, performance and prospects of railways, and identify promising investment opportunities, and commercialization and reform actions, that could be considered for support through the TA. This short report summarizes the findings of the railway sector assessment for Kazakhstan, based on a country visit on 16–21 September 2019.

B. The railway network and port facilities

1. Railway network

4. The Republic of Kazakhstan is a vast landlocked, upper-middle income country with a population of 18.28 million in 2018 (ADB 2019). With a land area of 2.72 million square kilometers, it is the ninth largest country in the world by area and the largest landlocked country. Much of the country consists of Kazakh steppe. The country has borders with the Russian Federation, the People's Republic of China (PRC), the Kyrgyz Republic, Turkmenistan and Uzbekistan. From the northwest to the northeast, the longest border is shared with the Russian Federation. In the east and southeast, mountains separate the country from Kyrgyz Republic and the PRC. In the west, the Caspian Sea forms the border.

[1] The eleven CAREC member countries are Afghanistan, Azerbaijan, People's Republic of China (specifically the Xinjiang Uygur Autonomous Region and the Inner Mongolia Autonomous Region), Georgia, Kazakhstan, Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, Turkmenistan and Uzbekistan.

[2] The TA is cofinanced by the People's Republic of China (PRC) Poverty Reduction and Regional Cooperation Fund and the United Kingdom Fund for Asia Regional Trade and Connectivity (under the Regional Cooperation and Integration Financing Partnership Facility).

5. Development of the Kazakh railway network began in the late 19th century, with the first section linking Oral with the Russian city of Saratov. Later, when Kazakhstan became part of the former Soviet Union (FSU), it was gradually expanded to become a fairly comprehensive network to bridge the country's vast plains for transport of its abundant raw materials over large distances (especially ores, coal, oil). Due to the orientation toward Russia within the centrally planned economy of the FSU, the majority of the network was developed with a north-south direction (Figure 1.1).

6. Following the collapse of the FSU, the state-owned enterprise (SOE), Kazakhstan Temir Zholy (KTZ), was founded in 1997 to manage and operate the country's railway network. Many of the railway's social responsibilities such as schools, hospitals, cultural facilities and sports centers were transferred to local authorities. In 2002, it was transformed into a closed joint-stock company with 100% of the shares held by the state. In 2006, the state's ownership was transferred to the newly formed national holding company, JSC Samruk, which became the country's sovereign wealth fund, JSC Samruk-Kazyna, in 2008.

7. In the early 2000, reforms were introduced to partially liberalize railway service provision and increase efficiency. For example, the private sector was permitted to own and supply wagons. A joint venture with foreign suppliers was established to manufacture rolling stock. However, railway infrastructure and traction were retained as a monopoly of KTZ.

8. During 2001–2016, KTZ implemented a major investment program to construct missing links. Many of these were to reduce distances for

Figure 1.1: Railway Network of Kazakhstan, 2017

Source: UNECE 2019.

east-west traffic. As shown in Figure 1.1, KTZ built about 2,500 km of new railway lines, including the Zhezkazghan–Shalkar–Beyneu connection which is important for Eurasian traffic to and from the PRC and traffic to and from Uzbekistan, Kyrgyz Republic and Tajikistan; the link from Zhetygen (near Almaty) to the new dry port at Khorgos on the PRC border; and from Uzen (south of Kuryk) to the Turkmenistan border at Bolashak. In 2008, KTZ initiated an asset modernization programme with 1,000 locomotives upgraded and 37,500 freight and 1,500 passenger wagons manufactured or modernized. Some 4,700 km of track was renewed. KTZ also participated in investments to develop the rail-served ports of Aktau and Kuryk on the Caspian Sea, and the Khorgos dry port to serve railway traffic to and from the PRC. It was also a founder member of the Trans-Caspian International Transport Route (TITR).

9. The length of the railway network reached 16,040 km in 2019. The entire network is broad gauge (1,520 mm). It includes 4,216 km of electrified sections (Figure 1.1) and 4,900 km of double-tracking. Some of the single-track lines are now experiencing capacity bottlenecks that limit the capacity to serve additional freight and limit train speeds, especially during traffic peaks. Additional investments will be needed to address this issue (e.g., passing lanes, double-tracking, electrification).

10. In 2017, KTZ owned 1,732 locomotives (68% diesel, 32% electric). More than 78% of electric locomotives and 61% of diesel locomotives have been in use for at least 25 years. Consequently, KTZ will need to increase its investment in locomotive renewal in future. In the case of freight wagons, the number of privately freight wagons exceeded KTZ owned wagons for the first time in 2013, and by 2017 there were about 75,000 private wagons and 55,000 KTZ-owned wagons.[3]

11. KTZ has been steadily increasing train speeds. Between 2012 and 2017, the average speed on the network increased from 41.9 km to 44.2 km per hour.

2. Ports and shipping

12. Kazakhstan's main Caspian Sea port of Aktau has an annual throughput capacity of 17.7 million tons. A rail ferry service with capacity for 54 wagons operates to and from Baku (Azerbaijan). A roll-on/roll-off (Ro-Ro) ferry service is also available with capacity for 35 trucks. Both the rail ferry and the Ro-Ro ships take around 18–20 hours for the crossing. The nearby port of Kuryk was opened in late 2016. In addition to offering Ro-Ro services, it can handle grain, fertilizers, oil and other chemical products. About 25% of ferries from Baku now serve Kuryk.

Table 1.1: Rolling Stock, 2012–2017

	2012	2013	2014	2015	2016	2017
Locomotives	1,865	1,896	1,893	1,804	1,725	1,732
Freight wagons—KTZ owned	66,503	65,803	60,940	59,025	56,504	54,925
Freight wagons—privately owned	61,192	63,477	71,351	73,177	72,848	75,496
Traffic speed (km per hour)	41.9	42.8	42.9	44	44	44.2

Source: Ministry of National Economy 2019.

[3] Based on field interviews, the number of private wagons is reported to have reached 97,000 in 2019 compared with 50,000 wagons owned by KTZ.

13. The existing rail ferry and Ro–Ro services do not have a fixed schedule. The frequency of services to and from Aktau and Kuryk varies depending on weather conditions and demand. Vessels generally wait until fully loaded before departing, which is approximately every 3–5 days for Aktau–Baku and Kuryk–Baku.

14. Caspian Sea shipping services have been closely linked to the development of Caspian Sea oil and gas production and the shipment of oil to the Russian Federation. Many of the vessels are relatively small due to the need to operate on both the Caspian Sea and the adjoining Volga river and Volgadon canal. Shipping services for transporting railway wagons and containers are less developed.

15. Aside from Russian Federation, the largest shipping operator is the Azerbaijan Caspian Shipping Company (ASCO).[4] Its fleet includes 20 tankers, 13 ferries, 15 universal dry-cargo ships (12 on the Black Sea), and 2 Ro-Ro ships. As much of the fleet is old, ASCO is implementing a major investment program to replace the entire fleet by 2029. Kazakhstan's National Maritime Shipping Company, Kazmortransflot, operates Caspian Sea liquid bulk shipping services; while KTZ Express, a subsidiary of KTZ, operates solid bulk, general cargo and container services and logistics. KTZ Express recently introduced a container feeder ship, the Turkestan, to provide services between Aktau and Baku. Use of container feeder ships is more efficient as it enables railway wagons to be released once containers have been transferred to ship—instead of having to be shipped along with the cargo.

C. Institutional responsibilities for railways

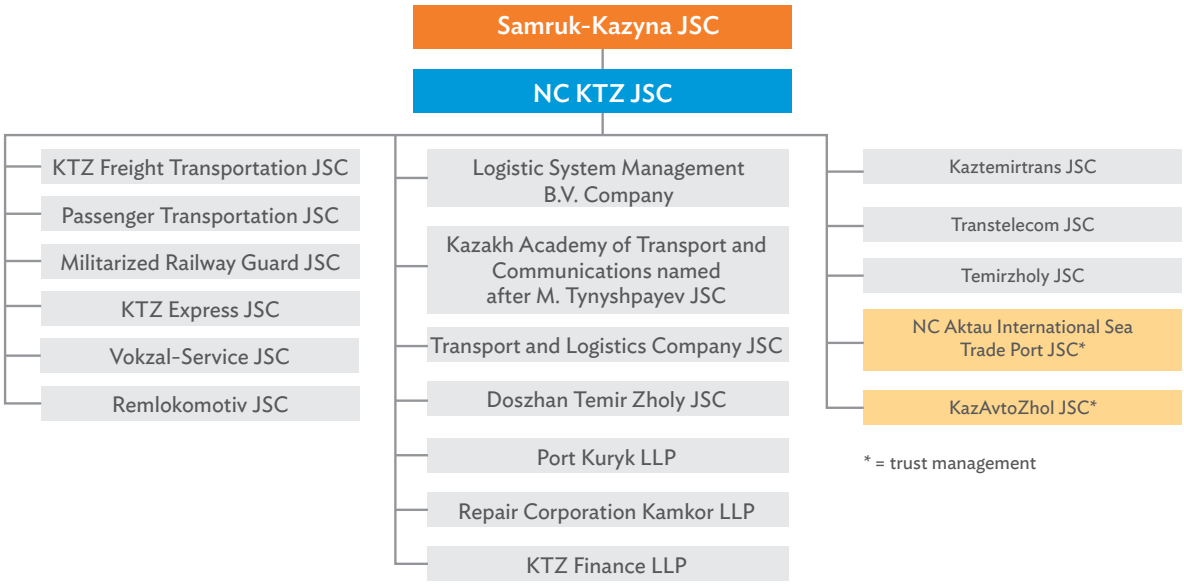
16. The Ministry of Industry and Infrastructure Development (MIID) is responsible for policy and oversight for railways, roads and other modes of transport. KTZ is responsible for railway operations, railway infrastructure, rolling-stock fleet and terminal operations. In recent years the government has also tasked KTZ with developing Kazakhstan's logistics service network, ports and shipping services on the Caspian Sea, and managing airports in the country. As of January 2018, KTZ employed around 130,000 persons.

17. KTZ is a closed joint stock company fully owned by JSC Samruk-Kazyna. It has controlling stakes and shares in thirteen business units and minority shares in three organizations (Figure 1.2). By a decree in 2017, KTZ Freight Transportation JSC was granted the status of the national freight carrier. Various of the non-core assets of the KTZ Group have been sold in order to promote privatization. In total, thirteen companies were sold, one was reorganized and nine were liquidated.

18. Railway tariffs are partly market-based and partly regulated as a natural monopoly by the Agency for Regulation of Natural Monopolies (the regulator). Tariffs for domestic, export and import freight railway operations are subject to regulation while tariffs for transit and container operations are unregulated. The railway tariff for domestic, export and import operations has four components: infrastructure, locomotive traction, freight and commercial services, and supply of freight wagons. On average, these account for 27%, 33%, 2% and 38% of the railway tariff for freight. A competitive market has been established

[4] In 2014, 39% of Caspian Sea vessels were from Russian Federation, with 35% from Azerbaijan, 14% from Iran, 6% from Kazakhstan and 65 from Turkmenistan (Schoen and Gueriot 2015).

Figure 1.2: Administrative Structure of Kazakhstan Temir Zholy Group



Source: KTZ 2018.

for the supply of freight wagons so associated tariffs are market-based and not subject to regulation. The other three components of the tariff are regulated and follow a single, unified tariff. Infrastructure is treated as a natural monopoly so the regulator sets infrastructure tariffs, generally at intervals of 5 years or more. Tariffs for traction and commercial and freight services are regulated on the basis that they serve markets of social significance. The regulator updates the associated tariffs, generally at intervals of a year or more.

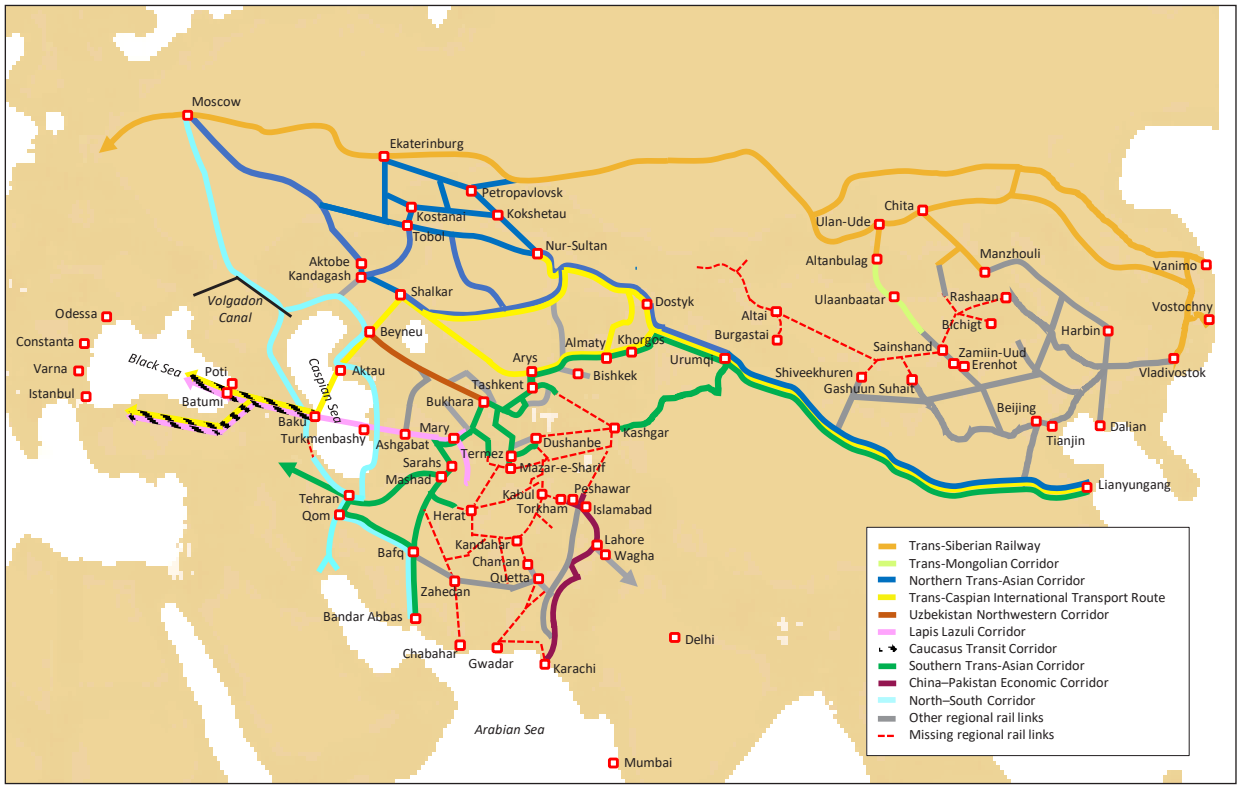
D. Routes relevant for cross-border freight

19. Due to Kazakhstan's strategic location—both within Central Asia and as a bridge between Europe and Asia—it is already a leading provider of cross-border railway freight services. This role is expected to increase in future. As Figure 1.3 indicates, passage through Kazakhstan offers the shortest route for many categories of trans-Asian railway traffic.

20. A recent report by JSC Samruk Kaznya (2017) identifies four main international railway corridors that traverse Kazakhstan:

(i) **Northern Trans-Asian Railway: connecting East Asia/Central Asia with the Russian Federation/Northeast Europe.** This corridor is already relatively well-developed. Within Kazakhstan it has a south-east to north-west orientation via Aktogay, Mointy, Karaganda, Nur-Sultan, Tobol and Aktobe. Alternative routings are also available to connect with the Trans-Siberian Railway via Petropavlovsk or Ekaterinburg. The total length of the corridor is 11,516 km. Many of the sections within Kazakhstan are electrified and double-tracked, although the section from Mointy via Aktogay to Dostyk is single-tracked and not yet electrified. One of the limitations of this route concerns interoperability. The PRC and European countries use standard gauge (1,435 mm) but Kazakhstan and other members of the Commonwealth of Independent States (CIS) use broad gauge

Figure 1.3: Regional Rail Links and Ports Serving Cross-border and Transit Traffic



Notes: (1) within the PRC the map covers principal railway trunk routes used for trade between the PRC and CAREC member countries and regional railway links relevant for Inner Mongolia and Xinjiang, the two PRC regions that participate in CAREC; (2) the boundaries, colors, denominations, and any other information shown on this map do not imply, on the part of ADB, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries, colors, denominations, or information.

Source: TA consultants.

(1,520 mm). Transshipment or bogie changes are therefore needed at the border which increases costs and handling times.[5]

(ii) **Southern Trans-Asian Railway: connecting East Asia, Central Asia, the Arabian Sea, Turkey, the Mediterranean and the Black Sea.** This corridor has an east–west orientation. It can offer distance savings for some traffic between the PRC, southern parts of Central Asia, Iran, Turkey and southern Europe but is less competitive in terms of journey time as there are many border crossings on route. Similar to item (i), gauge changes between broad and standard gauge are needed at both the PRC–Kazakhstan border and at the Turkmenistan–Iran border as Iran uses standard gauge. Currently, there is only limited traffic on the corridor due to the prevailing Iran economic sanctions and also because of capacity bottlenecks in Iran where the railway is single track and unelectrified. In future, the corridor could play a significant role in improving the trade

[5] There are also interoperability issues between the Kazakh railway and the Trans-Siberian railway. Much of the Russian railway is electrified with 3 kV DC but the electrification system in Kazakhstan was introduced later and uses the more economical 25kV AC. As a result, modern multi-system locomotives must be used or a locomotive change is required at the Russian Federation-Kazakh border.

competitiveness of landlocked Central Asian countries by providing them with access to Arabian Sea deep-water ports in Iran and Pakistan. After proceeding through eastern and central PRC to Urumqi, the main existing route enters Kazakhstan via Khorgos and proceeds via Almaty and Arys (as far as Arys this is the same route as the TITR) to Uzbekistan, Turkmenistan and Iran. In Iran, traffic can continue westwards to Turkey via Tehran without having to cross the Caspian Sea, although in Turkey trains have to cross Lake Van by ferry. Traffic can also proceed south through Iran to access international shipping services at the deep-water port of Bandar Abbas and potentially at Chabahar if missing links are built. An alternative route bypasses Kazakhstan by proceeded southwest by railway from Urumqi to Kashgar and then transferring to road to reach Kyrgyz Republic, Uzbekistan, Tajikistan, Afghanistan and Pakistan. Due to highly mountainous terrain, the associated costs of using road transport and very high. There are several proposals to build missing railway links southwest of Kashgar, including (a) via Kyrgyz Republic to northeast Uzbekistan, (b) via Kyrgyz Republic to Dushanbe, (c) through northeast Afghanistan to Mazir-e-Sharif, and (d) through northern Pakistan to reach the deep-sea ports of Karachi, Port Qasim and Gwadar. Each of these proposals would be very costly to build.

(iii) **Transport Corridor Europe–Caucasus–Asia (TRACECA): connecting East Asia, Central Asia and Southern/Southeast Europe.** This offers the shortest route between east/central Asia and southern/southeast Europe via the Caspian Sea. There are several east–west routes between the PRC and the Caspian Sea. The two main routes through Kazakhstan are via Shu and Arys, or via Dostyk and Kharyk. Both routes then proceed to Beyneu and Aktau port to cross the Caspian Sea to Baku (Azerbaijan). These routes are the same as the TITR. A further option from Arys is to proceed to Tashkent (Uzbekistan) and then along Uzbekistan's northwest railway corridor via Bukhara to Beyneu. Another option from Bukhara is to enter Turkmenistan and proceed along its east-west corridor via Ashgabat to Turkmenbashy port to cross the Caspian to Baku. This is the same as the Lapis Lazuli Corridor. After reaching Baku, all the route options proceed by rail through Azerbaijan and Georgia, and either continue to Georgia's Black Sea ports to connect with shipping services to ports on the west coast of the Black Sea or proceed directly by rail to Turkey using the newly completed Baku–Tbilisi–Kars (BTK) Railway. As in the case of item (i), gauge changes between broad and standard gauge are required at the borders with PRC and Turkey. Use of the TRACECA corridor is complicated by the need to use both railways and shipping services. To become more competitive in future, the participating countries need to make coordinated efforts to streamline and harmonize pricing, improve service quality and reliability, and reduce border crossing delays. Kazakhstan is playing a leading role in such efforts through its involvement in the TITR.[6]

(iv) **North–South Corridor: connecting Central Asia and the Russian Federation with the Middle East, South Asia and the Indian Ocean.** This corridor covers north–

[6] The members of the TITR International Association comprise Azerbaijan Caspian Shipping, Azerbaijan Railways, Aktau Port, Baku Port (Azerbaijan), Georgian Railways, KTZ, Turkish Railways and Ukraine Railways. Associate members include the Polish Broad Gauge Railway, Batumi Port (Georgia), Kaskor-Transservice, Port Kuryk, Anaklia Development Consortium (Georgia), Lianyungang Port Holdings Group (PRC), Grampet Group (Romania), Astyk Trans, Kazakhh National Maritime Shipping Company, and Eastcomtrans.

south traffic on the eastern side of the Caspian Sea. The main countries involved are the Russian Federation, Kazakhstan, Turkmenistan and Iran. Within Kazakhstan, the corridor extends via Atyrau, Makat, Beyneu, Aktau and Uzen. Kazakhstan, Turkmenistan and Iran have made investments to develop the Uzen–Kyzylkaya–Bereket–Etre section. Similar to item (ii), traffic on the southern part of the route is currently limited due to Iran economic sanctions.

21. While each of these international railway corridors has traffic growth potential, they also face competition from other modes and routes:

(i) In the case of intercontinental freight between East Asia and Europe, the majority of traffic is transported by ocean shipping due to lower cost.

(ii) Railways are used for a small proportion of high-value intercontinental traffic that requires faster delivery. Much of the existing traffic uses the Trans-Siberian Railway which, although greater in length, is able to achieve faster delivery times by minimizing the number of border crossings and associated interoperability issues.[7] Eurasian railway routes through the PRC are more attractive for origins/destinations located far from the Russian Railway network (e.g. southern, central and western PRC). Both Russian Railways and the PRC have been offering price discounts or subsidies to build up traffic on their Eurasian routes, so there is some uncertainty over how traffic levels may be[8] affected when these are eventually withdrawn.

(iii) For shorter distance international traffic that only traverses part of an international railway corridor—for example between Central Asia and the PRC, Europe or the Russian Federation—railways also face competition from road transport.

(iv) Over the medium-to-long term, KTZ may face increased competition for some of the traffic between Central Asian countries and Europe, both from ocean shipping via Arabian Sea ports in Iran and Pakistan, and from Trans-Caspian railway services via Uzbekistan's northwest railway corridor, the Lapis Lazuli Corridor that crosses the Caspian Sea via Turkmenbashy, and the Southern Trans-Asian Railway if missing links are built.

(v) The proposed PRC–Kyrgyz Republic–Uzbekistan railway would be expected to divert some traffic away from Kazakh routes, especially traffic between PRC and Uzbekistan.

(vi) The TRACECA corridor currently faces problems of imbalances between outbound and inbound freight. Between the PRC and both Europe and Central Asia, more cargo is shipped from east to west. Also, between Europe and Central Asia more cargo is shipped from west to east. In both cases, the imbalances make it necessary to transport significant volumes of empty wagons and containers back in the opposite direction. This has negatively affected asset utilization, containerization and the efficiency of the Caspian and Black Sea ferry lines. As Central Asian economies grow and their exports expand in future,[8] these east-west trade imbalances are expected to diminish.

[7] One of the main routes to Europe using the Trans-Siberian Railway is via the Russian Federation, Belarus and Poland.

[8] For example, Uzbekistan has considerable potential to expand exports of manufactured goods and food products.

E. Relevant CAREC corridors

22. The CAREC corridors that are relevant for railway development in Kazakhstan are Corridors 1, 2, 3 and 6. These correspond quite closely with the four main international railway corridors identified by JSC Samruk Kaznya (para.20).

23. **CAREC Corridor 1: Europe–East Asia**. CAREC Subcorridor 101 stretches from the PRC to Russian Federation and northern Europe. Within Kazakhstan it extends from the PRC border-crossing at Dostyk via Aktogay, Mointy, and Nur-Sultan towards the Russian Federation at Petropavlovsk and Kostanai (Figure 1.4). This corresponds closely with the Northern Trans-Asian Railway corridor identified by JSC Samruk Kaznya. The corridor is relatively well developed compared with other parts of the CAREC corridor network, but faces capacity bottlenecks on sections that have not yet been double-tracked or electrified.

24. CAREC Subcorridors 102 and 103 enter Kazakhstan from the PRC at the new terminal and dry port facilities at Khorgos, and proceed west through Almaty to Shu. Subcorridor 102 continues west to Arys and then northwest to the Russian Federation via Shalkar, Kandagash and Aktobe. Subcorridor 103 proceeds north from Shu, then west from Zharyk to Saksaulskaya (south of Shalkar) where it rejoins Subcorridor 102 to proceed to the Russian Federation. Subcorridors 102 and 103 are similar to the Kazakh sections of the TRACECA corridor (and the TITR) except that at Shalkar, instead of continuing west to cross the Caspian Sea, they proceed northwest to the Russian Federation.

25. The rail section connecting with the Dostyk border crossing is not electrified and requires change between standard and Russian gauge. Document handling and customs procedures also take longer than at borders between members of the Eurasian Customs Union (EEC) such as at the Kazakhstan–Russian Federation border. In 2019 KTZ announced

Figure 1.4: Sections of CAREC Corridor 1 Relevant for Kazakhstan

Source: CAREC Secretariat.

that the capacity of the Dostyk border crossing had reached 12–14 trains per day in favorable weather conditions (Van Leijen 2019). During autumn and winter, the capacity is often reduced by heavy snowfalls and winds.

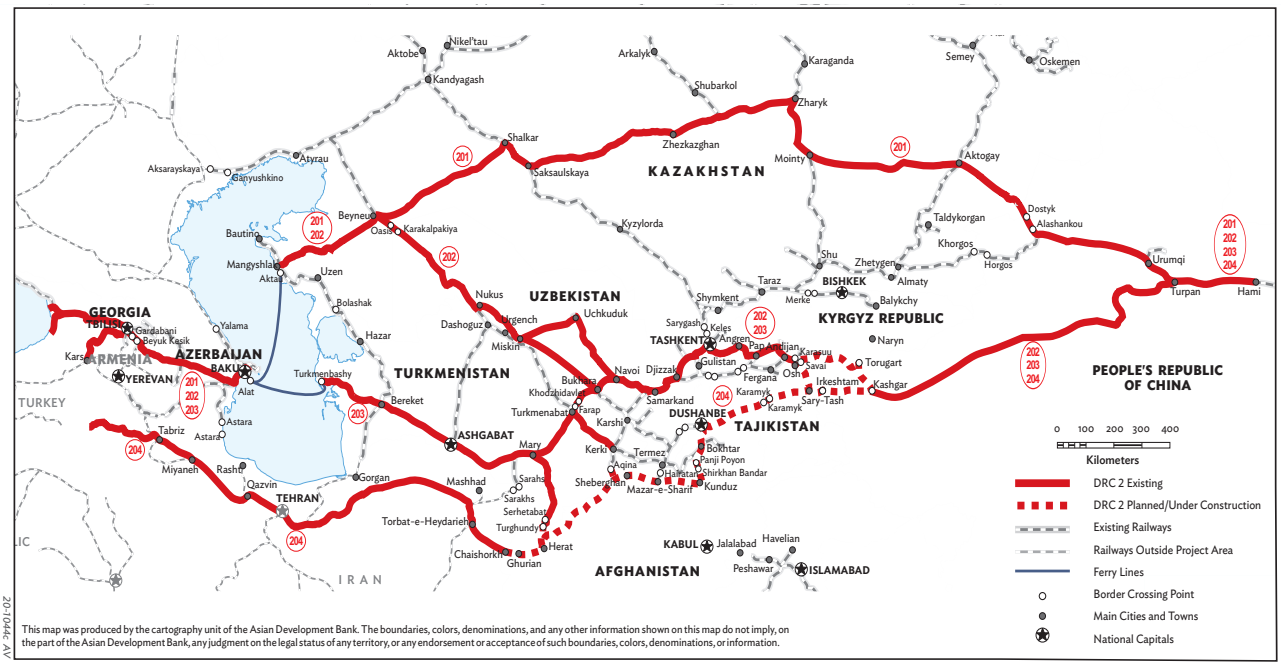
26. Compared with Dostyk, the new Khorgos (Altynkol) border-crossing has less severe weather conditions, higher capacity for freight handling, and better train assembly capabilities due to the availability of sufficient tracks and terminal facilities. Khorgos also has better road access as a result of the newly-built highway.

27. **CAREC Corridor 2: Mediterranean–East Asia—Subcorridor 201.** This corridor has an east–west orientation, connecting the PRC, Turkey and Southern Europe via Central Asia (Figure 1.5). Although not widely used at present, it could become more important in future as trade grows between the PRC and the Caucasus countries, Turkey and Southern Europe; and if the multiple border crossings and Caspian Sea ferry services can be streamlined.

28. Subcorridor 201 corresponds with the northern section of both the TRACECA corridor and the TITR. It connects the PRC with the Caucasus via Kazakhstan and Caspian Sea shipping services at Aktau. Within Kazakhstan it proceeds via Dostyk, Aktogay, Mointy, Zharyk, Saksaulskaya, Sharkar, Beyneu and Aktau. The final section of the subcorridor from Zhezkazghan to Saksaulskaya was completed in 2015. The total length of the subcorridor is about 4,200 km, with 24% electrified and 19% double-tracked. About 800 km of further electrification projects are planned between Aktogay and Mointy (ADB 2017). The corridor extends to Georgia and also serves Turkey following completion of the BTK Railway. The frequency and reliability of the Caspian Sea shipping services between Aktau and Baku remains an issue.

29. Subcorridors 202 and 203 follow an alignment through neighboring countries south of Kazakhstan. Subcorridor 202 proceeds via Kashgar (PRC), Torugart and Osh (both Kyrgyz Republic), Tashkent and Nukus (both Uzbekistan) and crosses the Uzbekistan–Kazakhstan border at Oasis,

Figure 1.5: Sections of CAREC Corridor 2 Relevant for Kazakhstan

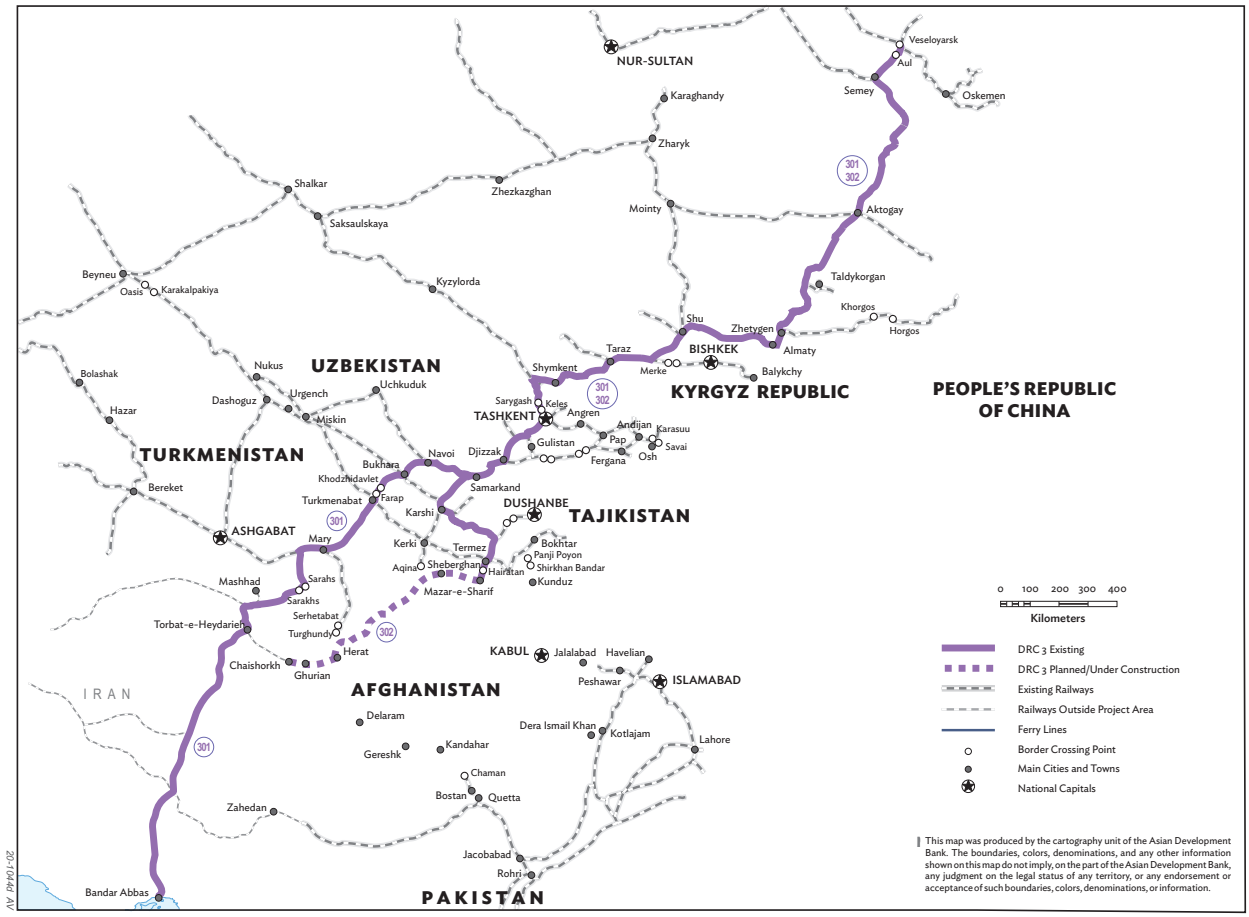


Source: CAREC Secretariat.

south of Beyneu. Subcorridor 203 proceeds further south through Turkmenistan to cross the Caspian Sea using Turkmenbashy–Baku shipping services. From Navoi and Bukhara (both Uzbekistan), it proceeds via Turkmenabat, Mary, Ashgabat and Turkmenbashy (all Turkmenistan). These two subcorridors are relevant for Kazakhstan because over the medium to long-term they may provide increased competition for Subcorridors 102 and 201. At present Subcorridors 202 and 203 have the disadvantages of requiring multiple border crossings and transfer to road transport for the sections in Kyrgyz Republic. However, both routes can be also accessed from Subcorridor 102 via Arys, were heavily used during the FSU, and could play a greater role in future, particularly if the missing link through Kyrgyz Republic is built and countries cooperate and coordinate to improve route performance.

30. **CAREC Corridor 3: Russian Federation–Middle East and South Asia.** CAREC corridor 3 has a southwest–northeast orientation. Subcorridor 301 is relevant for Kazakhstan (Figure 1.6). It extends from the Iranian port of Bandar Abbas via Mary (Turkmenistan), Tashkent (Uzbekistan) and Arys, Almaty, Aktogay and Semey (all Kazakhstan) to Veseloyarsk (Russian Federation). The section between Bandar Abbas and near to Mary corresponds with part of JSC Samruk Kaznya's North-South Railway and the portion from Mary to Almaty corresponds with its Southern Trans-Asian Railway. The northern part of the subcorridor currently serves substantial traffic between Kazakhstan and the

Figure 1.6: Sections of CAREC Corridor 3 Relevant for Kazakhstan

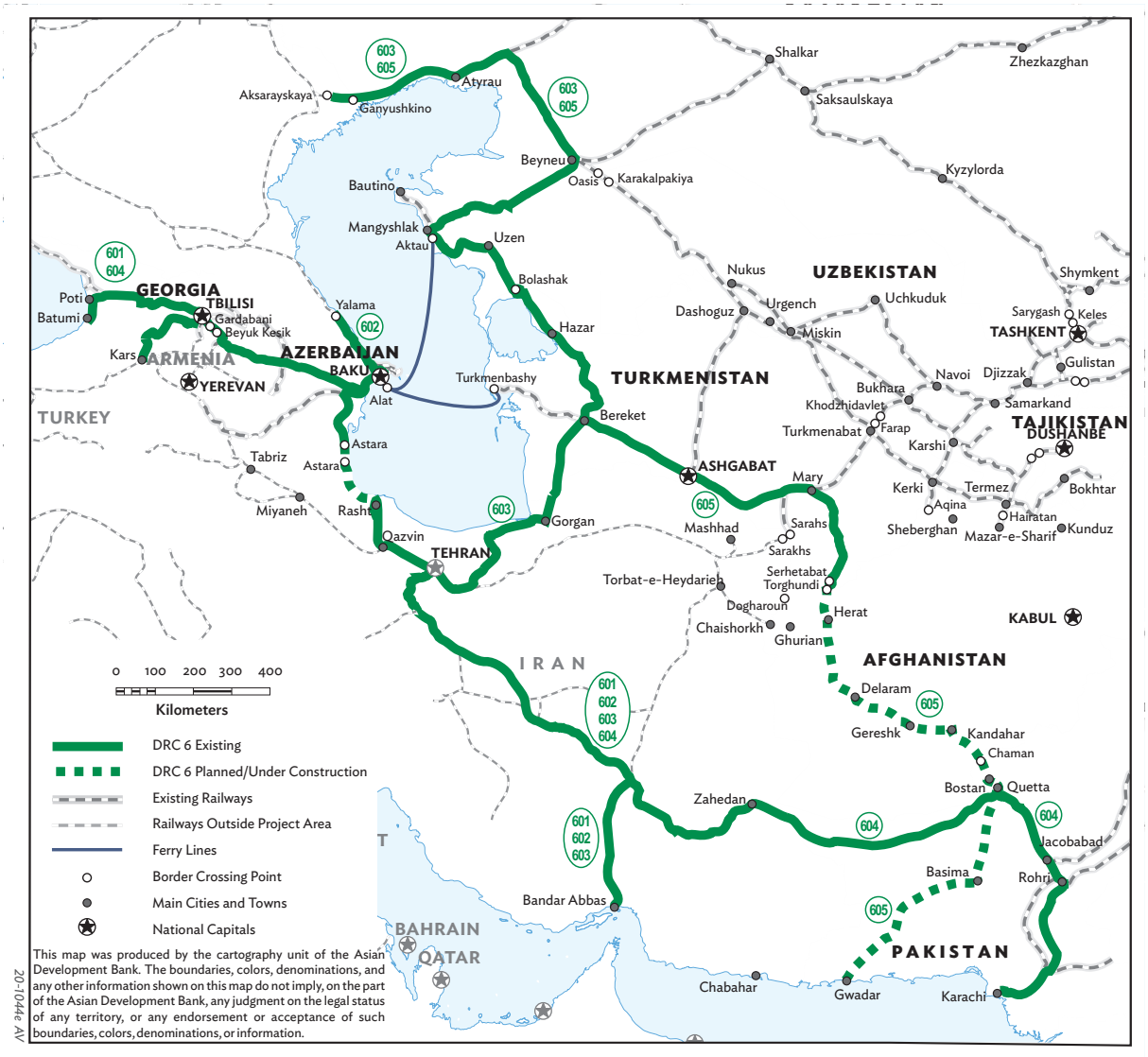


Source: CAREC Secretariat.

Russian Federation,[9] but there is currently little cross-border traffic south of Uzbekistan to Turkmenistan and Iran. Prior to the present economic sanctions on Iran, Bandar Abbas served larger volumes of traffic to and from Uzbekistan and other Central Asian countries, so over the medium to long-term, once economic sanctions have ended and border crossings have been streamlined, there is potential for significant traffic growth on this subcorridor.

31. **CAREC Corridor 6: Europe–Middle East and South Asia.** CAREC corridor 6 extends from the Iranian and Pakistan ports on the Persian Gulf and Arabian Sea to the Russian Federation and the Caucasus (Figure 1.7). It has a north–south orientation. In combination Subcorridors 603 and 605, provide connections along the eastern side of the Caspian Sea connecting Russian Federation, Kazakhstan and Turkmenistan with the Iranian port

Figure 1.7: Sections of CAREC Corridor 6 Relevant for Kazakhstan



Source: CAREC Secretariat.

[9] Annual freight of 7.5 million tons currently crosses the Russian–Kazakh border between Vesseloyarsk and Aul.

of Bandar Abbas. This is similar to JSC Samruk Kaznya's North–South Corridor. From Bandar Abbas the subcorridor proceeds via Tehran and Gorgan (both Iran) and Bereket (Turkmenistan) to enter Kazakhstan at Uzen and proceed via Aktau, Beyneu and Atyrau to connect with the Russian railway network at Aksarayskaya. The Kazakh section is non-electrified. Subcorridors 603 and 604 together provide Russian Federation, Kazakhstan and Turkmenistan with access to the Pakistan ports of Karachi and Port Qasim. However, railway services between Iran and Pakistan are infrequent and the route is seldom used by transit traffic. Subcorridor 605 provides a relatively direct route between Russian Federation, Kazakhstan, Turkmenistan, Afghanistan and Pakistan's Gwadar port, and also connects to Karachi and Port Qasim via Subcorridor 604. However, for this route to become competitive, Afghanistan and Pakistan would need build the missing links between the Turkmenistan–Afghanistan border at Turghundy, and both Quetta and Gwadar in Pakistan.

2 TRENDS IN RAILWAY TRAFFIC

A. Introduction

32. Kazakhstan's extensive railway network was developed to carry large volumes of coal, oil and other minerals for processing and consumption, and to receive production inputs and finished goods. Apart from domestic freight, much of the traffic was to and from the present-day Russian Federation as well as other countries in Central Asia. These patterns of traffic have continued since Kazakhstan's independence, although KTZ has been seeking to diversify its markets by serving intra-regional and Eurasian transit traffic, including block trains to and from the PRC.

B. Analysis of traffic

33. As shown in Table 2.1, railway is the leading mode for freight transport in Kazakhstan, carrying 398 million tons equivalent to 283 billion ton-km in 2018. Although railway accounted for only 10% of total freight volume (tons) in 2018, this was equivalent to 47% of total freight turnover (ton-km). This reflects the large size of the country; the long travel distances required for domestic freight transport, trade with other countries and transit traffic; and the advantages of railway compared with road transport over long travel distances. [10]

Table 2.1: Trends in Total Freight Transport and Railway Freight Transport, 2007–2017

	Volume (million tons)		Rail share	Turnover (billion ton-km)		Rail share
Year	All modes	Railway	(%)	All modes	Railway	(%)
2007	2,124	261	12.3	351	201	57.3
2008	2,189	269	12.3	370	215	58.1
2009	2,103	248	11.8	337	198	58.6
2010	2,439	268	11.0	385	213	55.3
2011	2,975	280	9.4	449	224	49.8
2012	3,232	295	9.1	478	236	49.4
2013	3,508	294	8.4	495	231	46.7
2014	3,750	391	10.4	555	281	50.6
2015	3,734	341	9.1	546	267	48.9
2016	3,729	339	9.1	519	239	46.1
2017	3,946	387	9.8	564	267	47.3
2018	4,104	398	9.7	610	283	46.5

Source: Ministry of National Economy 2019.

[10] In the case of passenger transport such advantages are less, partly because civil aviation become a competitive alternative to railway over long distances. In 2018, railway carried less than 1% of passengers equivalent to 6.6% of total passenger turnover.

34. In contrast with railways in many other countries, railway freight in Kazakhstan grew steadily over the past decade. During 2007–2018, railway traffic volume increased at an average annual rate of 3.9% and turnover increased at 3.2% (Table 2.1). However, traffic using other modes, particularly road transport, grew even faster, so the railway share of total freight gradually declined in both volume and turnover terms.

35. While KTZ's domestic freight traffic exceeds its international traffic[11] in volume terms, the opposite is true for freight turnover (Table 2.2). In 2017, about 62% of freight volume was domestic and 38% was international, whereas 54% of freight turnover was international and 46% was domestic. This is because average trip distances on the Kazakh railway are higher for international freight—on average 980 km per trip compared with 510 km for domestic traffic.

36. The government and KTZ only publish limited data on the composition of international freight between exports, imports and transit traffic. Based on a recent UNECE study (2019), in 2017 total railway freight exports and imports may have contributed 31% of freight volume and 43% of freight turnover; and transit traffic may have contributed 5% of freight volume and 11% of freight turnover.[12] While it was not possible to obtain reliable statistics on the breakdown of export and import freight traffic, some reports suggest that export freight turnover is about twice the size of import freight turnover (Moody's Investor Service 2019), so exports may amount to about 20% of freight turnover and imports about 11%. This reflects the importance of mining and other resource extraction industries as contributors to the economy, and the historic pattern of exporting large volumes of such outputs to the Russian Federation.

37. The importance of international freight traffic is further evident from its contribution to KTZ revenues. According to the Kazakhstan Statistics Committee, KTZ's freight revenues were T696.2 billion in 2017, with T423.3 billion from international freight and T272.9 billion from domestic freight (Ministry of National Economy 2019).

38. As shown in Table 2.3, the majority of domestic and international railway freight is comprised of bulk cargo such as oil, gas and liquid bulk; coal and coke, ores and metals, chemicals and fertilizers and grain.

Table 2.2: International and Domestic Railway Freight, 2012–2017

	Freight volume (million tons)			Freight turnover (billion ton-km)		
Year	Total	International	Domestic	Total	International	Domestic
2012	295	136	159	236	144	92
2013	294	137	156	231	143	88
2014	391	121	154	281	129	87
2015	341	137	204	267	160	108
2016	339	131	208	239	130	109
2017	387	147	241	267	144	123

Note: International comprises exports, imports and transit traffic.

Source: Ministry of National Economy 2019.

[11] Exports, imports and transit traffic.

[12] KTZ's 2017 Annual Report referred to transit traffic contributing 13% of freight revenues (KTZ 2018).

Table 2.3: Commodity Composition of Railway Freight Volume, 2016
(million tons)

	Domestic	International	Total
Oil, oil products, gas and other bulk liquid/gas	10,369	12,387	22,756
Coal and coke	61,645	31,484	93,129
Ores, metals and sulfur	30,722	21,402	52,125
Timber	306	4,181	4,487
Construction materials	29,044	5,857	34,900
Chemicals and fertilizers	1,627	1,061	2,688
Grain	3,086	5,847	8,933
Other	71,522	48,389	119,910
Total	208,321	130,608	338,928

Source: Ministry of National Economy 2019.

39. The majority of KTZ's cross-border freight traffic is to and from the Russian Federation, Uzbekistan and the PRC. This also includes transit traffic to, from or via these countries. KTZ's 2018 Sustainability Report provides the following indications about such traffic in 2018 (KTZ 2019a):

(i) **Russian Federation.** Traffic volume of 85 million tons. This included coal, ores, grain, and chemical exports. KTZ also carried 13 million tons of transit traffic between Central Asian countries and the Russian Federation.

(ii) **Uzbekistan.** Traffic volume of 23.5 million tons, a 15% increase on 2017. This included Kazakh exports to Uzbekistan of grain, ferrous metals, crude oil, cement, wheat flour; imports from Uzbekistan of chemicals, ferrous metals, citrus fruits, fresh vegetables, vehicles; transit traffic to Uzbekistan of ferrous metals, iron ore, grain, wood, and chemical goods from the PRC, and machinery and equipment from the PRC and Republic of Korea; and transit traffic from Uzbekistan of fertilizers to Ukraine and Malaysia, and fruits and vegetables to Russian Federation and the PRC.

(iii) **PRC.** Traffic volume of 14 million tons, a 37% increase on 2017. This included Kazakh exports of metal ores, grain, oil products, non-ferrous metals, ferrous metals, vegetable oil, chrysolite asbestos, bran and flour milling; imports from PRC of coke, chemicals, food cargo; and transit traffic from the PRC of fertilizers, containerized freight, chemicals, construction cargo and food.

40. The main destination countries for transit traffic through Kazakhstan are Central Asian countries, notably Uzbekistan (45% of transit volume in 2018), Kyrgyz Republic (20%), Turkmenistan (6%), Tajikistan (9%) and Afghanistan (5%). Other destinations of transit traffic are the Russian Federation (5.6%) and the PRC (4.5%) (UNECE 2019). In 2018 major transit traffic flows included chemicals from Uzbekistan to Russia; oil from the Russian Federation to Kyrgyz Republic, Uzbekistan and the PRC; ferrous metals to Uzbekistan, Kyrgyz Republic and Tajikistan; food cargo and sugar to Central Asian countries; grain to Iran; fertilizers to the PRC and Kyrgyz Republic, iron ore to Uzbekistan, as well as transit through Kazakhstan and Russian Federation of fertilizers from Uzbekistan to Ukraine, and machinery and equipment from the PRC and Republic of Korea to Poland and Germany (KTZ 2019a).

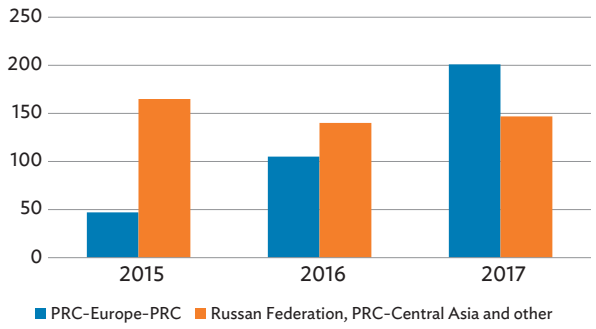
41. A significant recent trend has been growth in container block train traffic between the PRC and both Europe and Central Asia. This generally serves higher-value, time sensitive cargo. The expansion of such traffic is being supported by the PRC's Belt and

Road Initiative, with close involvement of the China Railway Corporation (CRC). According to UNECE (2019), about 2% of PRC's trade with Europe is carried by railways. This is expected to amount to goods worth about $20 billion by 2020.

42. Kazakhstan is aiming to play a major role in transporting PRC container transit traffic. KTZ's development strategy until 2015 recognized that its business is changing from a railway operator to a transport and logistics provider, and targeted a doubling of transit traffic from 2015 to 2020, and a 10-times increase to reach 1.7 million twenty-foot equivalents (TEUs) by 2050 (KTZ 2016). Key initial steps have included development of the new dry port at Khorgos and offering more competitive tariffs for container transit traffic. The first PRC block train via Kazakhstan was in May 2016. Between 2015 and 2017, there was a four-times increase in the number of TEUs transported (Figure 2.1). By 2018, 2,925 container trains were organized along the PRC-Europe-PRC route, an increase of 955 trains over 2017.

43. Kazakhstan is also targeting growth in containerized traffic on the TITR. Existing traffic levels are very low, with only about 300 TEUs carried by KTZ on this route in 2017 (KTZ 2018). This reflects the initial challenges of coordinating and harmonizing services on the route, as well as limitations in existing shipping services on the Caspian and Black Seas. Nonetheless, Kazakhstan and other TITR members have indicated a strong commitment to overcoming such problems, so containerized traffic on the TITR could expand rapidly in future, especially once traffic levels become sufficient to schedule regular block trains. There are also indications that container shipping companies are expecting an acceleration in containerization within Central Asia, particularly in view of recent economic liberalization in Uzbekistan. This would further improve the competitiveness of railway freight compared with road transport.

Figure 2.1: Trends in Container Transit Traffic, 2015–2017 (TEU '000)



Source: KTZ 2018.

44. According to JSC Samruk-Kazyna (Table 2.4), the railway corridor (para. 20) with highest freight

Table 2.4: Freight Volume and Turnover by Main Route and Railway Corridor, 2017

International railway corridor	Railway section	Turnover (billion ton-km)	Length (km)	Volume (million tons)
Northern Trans-Asian	Ozinki–Kandagash–Arys–Almaty–Dostyk[a]	22.9	3,708	6.2
Northern Trans-Asian	Presnogorskya–Kokshetau–Nur-Sultan–Dostyk[a]	22.6	2,043	11.0
Northern Trans-Asian	Petropavlovsk–Nur-Sultan–Dostyk[a]	19.9	1,902	10.4
Northern Trans-Asian	Tobol–Nur-Sultan	14.4	665	21.7
TRACECA	Aktau–Beyneu–Makat–Kandagash–Arys–Almaty–Dostyk[a]	29.6	4,121	7.2
TRACECA	Saryagash–Arys–Aktogay– Dostyk[a]	13.7	1,824	7.5
TRACECA/North-South	Iletsk–Aktobe–Kandagash–Shalkar–Arys–Saryagash[b]	11.3	1,754	6.4
North–South	Aksarayskaya–Makat–Beyneu–Oasis	7.0	826	8.5

[a] In future the new land port at Khorgos is expected to be used instead of Dostyk for various traffic types including container traffic.

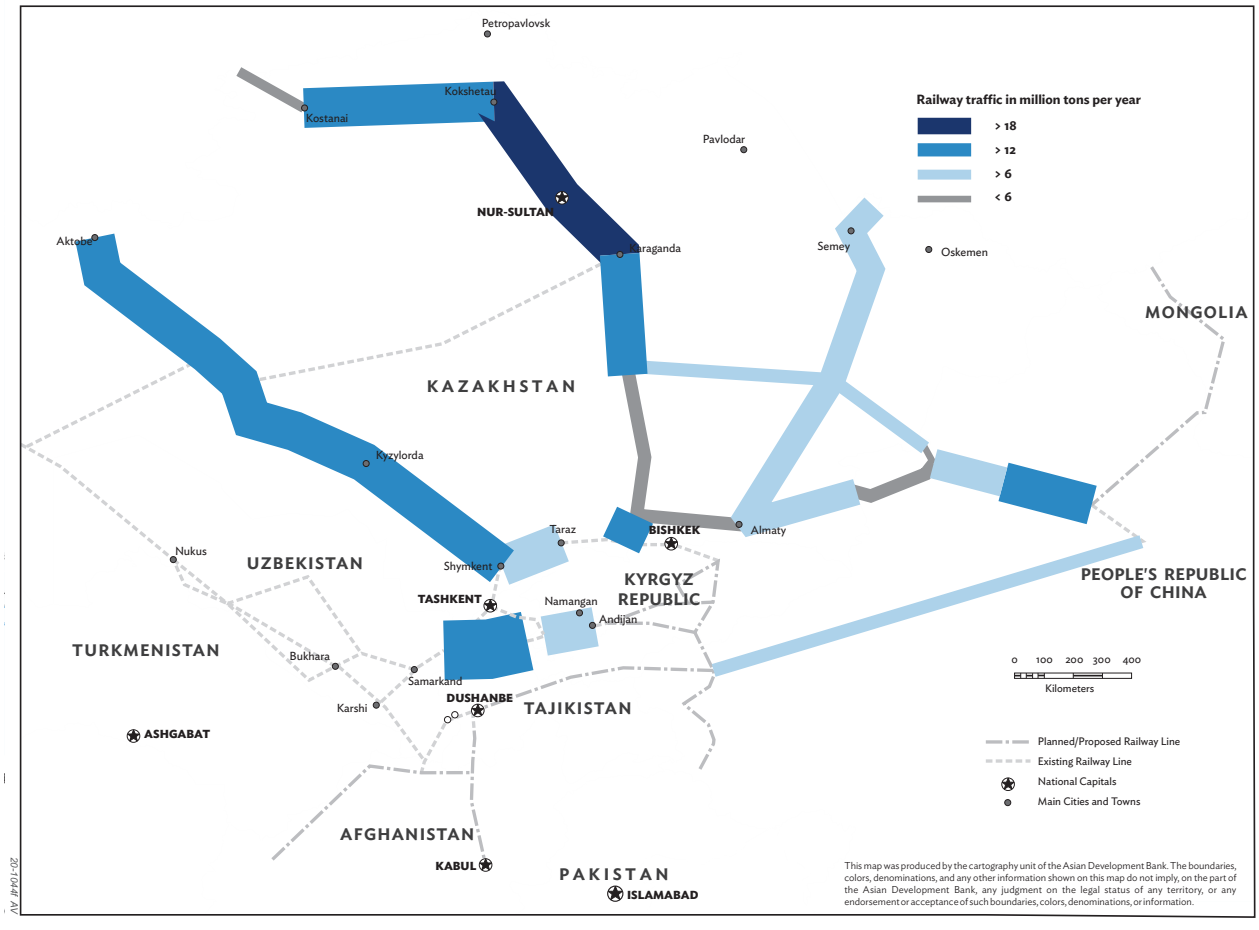
[b] This section follows the TRACECA corridor between Shalkar and Saryagash and the North-South Corridor between Iletsk and Shalkar

Source: JSC Samruk-Kazyna 2017.

turnover is the Northern Trans-Asian Railway, including (i) the section connecting Presnogorskya, in the northwest, to Dostyk via Kokshetau and Nur-Sultan, (ii) the section between Petropavlovsk, in the north, and Dostyk via Nur-Sultan; and (iii) the section between Tobol, in the northwest, and Nur-Sultan. Other busy freight corridors include the TRACECA corridor, that connects Aktau on the Caspian Sea to the Kazakh–PRC border crossing via Almaty (this is similar to the TITR); and the route between Ozinki, in the Russian Federation, to the northwest of Kazakhstan, and Dostyk, that follows the TRACECA corridor until proceeding northwest from Shalkar (JSC Samruk-Kazyna 2017).

45. Data from a recent modelling study by the International Transport Forum (ITF) corroborates that the Northern Trans-Asian Railway and the TRACECA routes are the busiest railway freight corridors. This is shown in Figure 2.2.

Figure 2.2: Traffic Volume on CAREC Railway Corridors, 2015



Source: ITF 2019.

3 MARKET COMPETITIVENESS

A. Introduction

46. Due to its large land area, well-developed railway and strategic geographical location, Kazakhstan offers a relatively attractive setting for railway freight transport. Since railway operational efficiency generally improves as trip distance increases,[13] the large average trip distances within Kazakhstan—for both domestic and international traffic—contribute to railway competitiveness. Moreover, most railway freight carried by KTZ consists of bulk commodities (Table 2.3) that are difficult and costly to transport over long distances using other modes. KTZ has considerable potential to serve international railway transit traffic since much of the railway freight between the PRC and Central Asia and between Central Asia and the Russian Federation has to pass through Kazakhstan, and routes through Kazakhstan are also attractive for some traffic between the PRC and Russian Federation and between the PRC and Europe.

B. Market feedback

47. To gain insights into market perceptions and requirements for using railways, a limited program of interviews was conducted with shippers, receivers, freight associations, freight forwarders and a private railway operator. The findings are summarized in Table 3.1.

Table 3.1: Market Feedback on Rail Competitiveness for Different Traffic Types

Competitiveness	Traffic type	Examples	Explanation of rail competitiveness
Rail is competitive	Bulk transport	Coal, oil products, metal ores, chemicals, construction materials	Large scale bulk operations are generally the core business of freight railways and still provide the largest revenues to KTZ
	International container traffic	PRC–Europe, PRC–Central Asia, Central Asia–Russian Federation, Central Asia–Europe, Kazakhstan–Uzbekistan	Long-distance transport of containers is a growing market segment where railways can have a competitive advantage. On some routes, competitiveness can be increased by improving the quality and timeliness of Black and Caspian Sea shipping services
	Project cargo, out-of-gauge cargo	Electricity generation and mining equipment	Rail has advantages for moving extra-heavy, over-dimension cargo
	Dangerous goods	Poisonous, flammable corrosive cargo; fertilizers and chemicals using natural gas as feedstock	Rail has advantages for safety and security which are prime considerations

continued on next page

[13] The cost per ton-km of handling and storage is inversely related to trip distance. Depending on the extent of capacity bottlenecks within the railway network, longer distance operations with few stops are simpler to operate and can potentially achieve higher average speeds.

Table 3.1 continued

Competitiveness	Traffic type	Examples	Explanation of rail competitiveness
Rail is uncompetitive	Small to medium sized shipments requiring door-to-door service	Domestic supply of consumer goods, supply of consumer goods to and from nearby neighboring countries	Road is less costly, faster and simpler to organize and provides door-to-door service
			Road is especially price competitive for shorter trips (e.g. 100–300 km) and origins and destinations away from the railway line
			Road is more adaptable for problem-solving (e.g. addressing vehicle maintenance issues and border crossing problems)
	Perishables	Imports of fruit and vegetables from Uzbekistan	Road is faster, more reliable (including real time tracking and tracing), and better at handling problems such as mechanical failure of refrigerated units

km=. kilometer, KTZ = Kazakhstan Temir Zholy, PRC = People's Republic of China.

Source: TA consultants.

48. During the past two decades, KTZ's investments in missing east-west links, double-tracking and electrification (para. 8) have created more direct routes for traffic and expanded traffic-carrying capacity. Liberalization of wagon supply arrangements has led to modernization and expansion of the wagon fleet, while KTZ has gradually improved train speeds (para. 11). The introduction of block train systems has also reduced journey times. For example, 15 years ago container transit traffic between Dostyk and Tashkent (900 km) took 15–17 days but this has now been reduced to 2½ days for block trains.[14]

C. Problems affecting rail competitiveness

49. Feedback was obtained on some of the main problems that currently limit the competitiveness of railway transport. These are discussed below.

50. **Ageing locomotive fleet**. Due to the large fleet and the modernization program initiated in 2008 (para. 8), the availability of locomotives has remained good even though the average age of the locomotive fleet is high. However, old locomotives have higher operating costs and might cause unexpected disruptions due to higher susceptibility to errors. Thus, ongoing efforts to renew and modernize the locomotive fleet needs to be continued.

51. **Wagon availability issues**. Taking into account both publicly- and privately-owned wagons, Kazakhstan now has access to a relatively large, modern domestic wagon fleet. However, customers say there are still periodic wagon availability problems. One issue concerns seasonal peaks in demand, for example when large volumes of wheat need to be transported around harvest time. Another issue is that most of Kazakhstan's neighbors and other countries such Azerbaijan and Georgia, have relatively aged wagon fleets and shortages of certain wagon types (e.g. container platform wagons). This sometimes leads to them to retain Kazakh wagons for further use instead of returning them to Kazakhstan as expected.

[14] Based on field interviews with freight forwarders.

52. **Tariffs**. KTZ's freight tariffs are still based on FSU practices and are mostly determined by the Agency for Regulation of Natural Monopolies. The tariff structure is not related to costs and is inflexible. For example, when determining the traction component of the tariff an average tariff is used although traction costs for electrified and non-electrified sections differ significantly. As a result of the tariff structure, certain types of traffic, such as coal, being subsidized by others, such as oil products. This distorts how railway capacity is used and reduces the attractiveness of railway to important traffic segments such as containerized freight. Tariff reforms are needed to adjust tariffs to market prices based on supply and demand. Some initial studies, financed by the EBRD, have been examining the basis for possible tariff reform.

53. **Capacity bottlenecks expected to emerge on some routes**. Shipping companies do not currently cite problems of capacity bottlenecks on the network but, as traffic continues to grow, it is expected that some single-track sections on major routes will face bottlenecks in future. These can be avoided if KTZ identifies the future bottlenecks in advance and augments the capacity of the infrastructure before this becomes a problem.[15]

54. **Limitations of present Caspian Sea shipping services**. The performance of shipping services across the Caspian Sea is constrained by difficult weather conditions that cause frequent port closures, small vessel sizes that require more than one vessel per train load, shortages of ferry capacity, lack of scheduled services, and high shipping rates due to limited competition.[16] As a founding member of the TITR, KTZ is actively working to improve the performance of Caspian Sea shipping. This has included investing in the new rail-served Caspian Sea port of Kuryk that opened in 2017.

55. **Need for improved coordination of international railway freight corridors**. Four international railway freight corridors pass through Kazakhstan (para. 20). In each case the commercial offering to customers needs to be streamlined, the corridor needs to be promoted more systematically, and coordination among corridor members needs to be improved. Delays in customs clearance, and lack of digitalization of consignment documentation, also need to be addressed in order to reduce overall transit times (para. 48).

56. **Underdeveloped logistics industry**. In addition to transport of goods, many customers also require a range of related logistics services. The Kazakhstan logistics industry remains underdeveloped in terms of range and quality of services offered. and general business practice, capabilities and consequently performance are still lagging behind in international comparison. According to the World Bank's logistics performance index, Kazakhstan ranks 71 among 162 nations with a score of 2.8 out of 5 (World Bank 2020).

[15] It is also important to plan for temporary bottlenecks that are required for carrying out major construction works by (i) analyzing their effect on traffic flows, (ii) developing options to minimize traffic disruption, and (iii) informing customers well in advance of commencement of works.

[16] The majority of Caspian Sea shipping services between Aktau or Kuryk and Baku are operated by the Azerbaijan Caspian Shipping Company (ASCO).

4 RAILWAY OPERATING AND FINANCIAL PERFORMANCE

A. Introduction

57. This chapter provides a short discussion of KTZ's commercial orientation and its operating and financial performance.

B. Commercial orientation

58. Due to the country's size and strategic location, the scale of its resource-based industries, the well-developed railway network and KTZ's competence in railway management and operation, railway transport attracts high levels of freight traffic in terms of both volumes and turnover. The market is large enough to support competition among multiple operators which could potentially contribute to further improvement in the competitiveness of railways and transfer some investment risks to the private sector.

59. For some years, it has been government policy to pursue liberalization of railway operations. Since 2015, MIID has issued about 30 licenses to private railway freight operators. However, so far only two of these—an oil company and a coal company—were permitted to introduce services. The introduction of these two companies represents a pilot project to learn from experience of involving pilot operators and further refine the regulatory environment, with a view to progressively developing into a competitive multi-carrier market. For the pilot project, private railway operations have been mainly confined to short line operations between the two companies' terminals and the KTZ main line using privately-owned traction. In addition, nine private operators are operating passenger services accounting for about 20% total passenger traffic (Karavaev 2019).

60. One of the main challenges for liberalization has been to establish a basis for fair competition among public and private operators, while ensuring that any changes introduced will not jeopardize KTZ's ability to service its large accumulated debt (para. 63). The existing legal and regulatory framework for railways does not fully delineate the responsibilities of public and private parties in the event of private ownership and operation of railway activities. Railway transport is also categorized as a natural monopoly and—except for transit traffic and supply of wagons and containers—tariffs are set by the Agency for Regulation of Natural Monopolies (the regulator) based on norms inherited from the FSU. Average tariff levels are now the lowest in the CIS (Karavaev 2019). Imbalances within the structure of infrastructure and traction charges have also led to a high degree of cross-subsidy, with passenger traffic cross-subsidized by freight, diesel traction subsidized by electric traction, and lower-value freight commodities such as coal cross-subsidized by higher-value commodities such as oil. In the absence of reform of tariff regulation and cross-subsidy, further liberalization of railway operations could lead to private operators concentrating on the most remunerative routes and commodities, leaving KTZ to operate the less remunerative segments on a loss-making basis which would make it difficult for KTZ to service its debt.

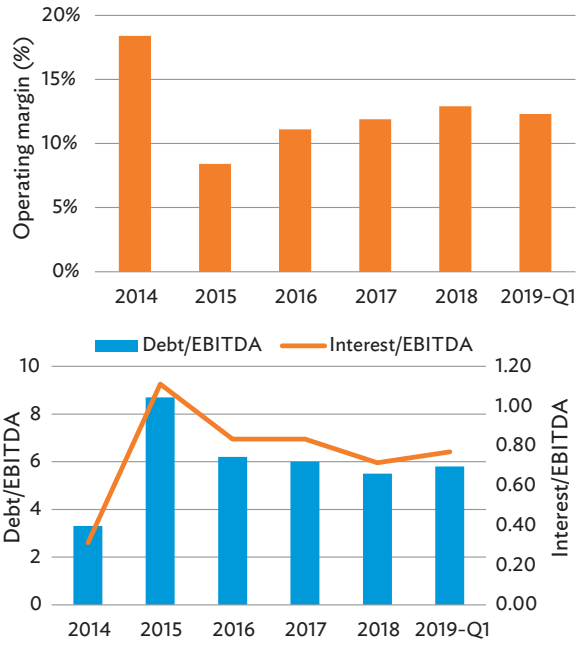
C. Financial performance

61. The consolidated annual financial statements of the KTZ Group are prepared in accordance with International Financial Reporting Standards and independently audited by a private accounting firm. As a result of rising traffic, the group's annual revenues have increased steadily in recent years, leading to rising gross profit. However, KTZ has accumulated a large debt that reached T1.382 trillion in 2018 (Table 4.1). This has resulted in high annual interest charges and declining profitability before tax, with a reported loss of T86 billion in 2018 (KTZ 2019b).

62. Much of KTZ's debt was incurred to finance its large investment program and social projects over the past decade. More than half is denominated in foreign currencies, even though most of KTZ's revenues are in local currency. Successive devaluations of the tenge, including a 100% devaluation against the dollar in 2015, led to sharp increases in the tenge value of the debt.

63. According to Moody's, a credit rating agency, KTZ maintained an operating margin of 8–12% during 2015–2018 which compared well with other leading railways. However, over this period KTZ's debt was 6–9 times its earnings before interest, tax, depreciation and amortization (EBITDA), which is at least twice generally accepted norms (Karavaev 2019). The proportion of EBITDA required for interest payments was generally around 70–80%, peaking at 111% in 2015. This is shown in Figure 4.1.

Figure 4.1: KTZ Operating Margins and Ratios of Debt and Interest to EBITDA (T million)



KTZ= Kazakhstan Temir Zholy, T = Tenge.
Source: Moody's Investor Service 2019.

Table 4.1: Profitability and Borrowings of KTZ Group (T million)

	2018	2017	2016
Revenue	1,044,174	913,113	823,112
Cost of sales	(818,448)	(721,330)	(658,853)
Gross profit	225,726	191,783	164,259
Other net costs	(296,988)	(173,504)	(122,838)
Profit (loss) before tax	(71,262)	18,279	41,421
Tax	(15,193)	(5,368)	(144)
Total profit (loss)	(86,455)	12,911	41,277
Total borrowings	1,382,277	1,264,720	1,239,679

KTZ= Kazakhstan Temir Zholy, T = Tenge.
Source: KTZ Annual Reports.

64. KTZ has been pursuing several actions to ease the debt problem. First, it has been working with the government and creditors to refinance debts on more favorable terms. Second, it has taken steps to address costs and improve liquidity, including hiving-off noncore activities (e.g. terminals, factories), cutting costs (e.g. obtaining more competitive diesel fuel supplies) and reducing accounts receivable. Third, it has been prioritizing expansion of more profitable market segments. It has identified transit traffic as a key growth priority and achieved a 38% year-in-year increase in container transit in the first seven months of 2019.

65. To address the problems of tariff imbalances, KTZ has advocated a legal and accounting separation of the passenger locomotive fleet from its other activities, with passenger tariffs to be adjusted to fully cover costs on a transparent basis, followed by introduction of market-based freight tariffs that reflect service provision costs (Karavaev 2019). A first step in this direction will be to introduce an enterprise resource planning system to accurately determine the cost of KTZ's various service provision activities. The introduction of a modern railways accounting system enabling accounting separation by main lines of business, together with an enterprise resource planning system, would also make it possible for the government to introduce a public service obligation (PSO) to compensate KTZ for any losses incurred on operating uneconomic passenger or freight services that government wishes KTZ to continue to operate.

D. Operational benchmarking

66. Drawing upon railway operational data obtained from the International Union of Railways (UIC),[17] aspects of the operational performance of KTZ have been benchmarked in relation to other CAREC railways (except Afghanistan)[18] and leading railways from other regions (Germany, India, Russian Federation and North America).[19] In most cases the data refers to operational activities in 2017. In other cases, it refers to the most recent year for which data is available.

67. In terms of size of railway network and number of employees, KTZ is the second largest railway in the CAREC region (the PRC's CRC is the largest). Its railway network and staffing are each more than double the size of the next largest CAREC railway (Pakistan Railways); and are similar in magnitude to the combined network length and staff strength of all the other CAREC railways taken together except for the PRC. This is shown in Figure 4.2.

68. Among the comparator countries, KTZ also has the second largest number of owned wagons and diesel locomotives (after the PRC). This is generally consistent with the large size of the railway network and the traffic level. The data on KTZ-owned wagons understates the size of Kazakhstan's total wagon fleet which now includes more private than KTZ-owned wagons. This is shown in Figure 4.3.

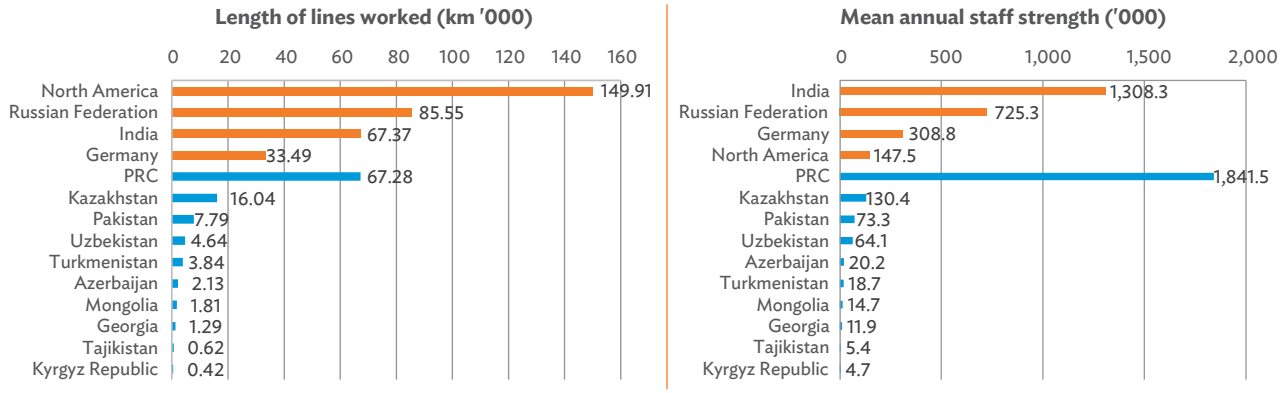
69. Similarly, KTZ has the second largest annual freight turnover among the comparator countries (after the PRC). This is nearly three times larger than the combined freight turnover of the other CAREC

[17] The UIC database consists of data self-reported by individual railway organizations.

[18] The UIC database does not yet include data for Afghanistan so it is not included in the benchmarking analysis.

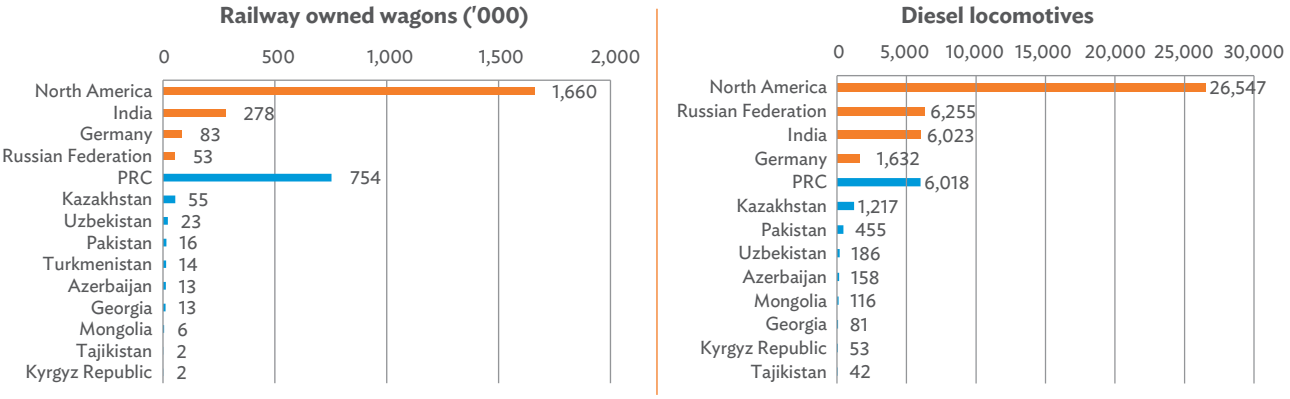
[19] In addition to the national railways of CAREC countries, the sample includes Indian Railways (India), Deutsche Bahn AG (Germany), Russian Railways and the Association of American Railroads (North America) which represents the major freight railways of Canada, Mexico and USA.

Figure 4.2: Comparison of Railway Length and Staff Size in Kazakhstan, other CAREC Member Countries and other Leading Railway Countries



CAREC = Central Asia Regional Economic Cooperation, km = kilometer, PRC = People's Republic of China.
Note: CAREC Member Countries shown in blue, compactors from other regions shown in red.
Source: UIC 2019.

Figure 4.3: Comparison of Railway Rolling Stock Fleet in Kazakhstan, other CAREC Member Countries and other Leading Railway Countries



CAREC = Central Asia Regional Economic Cooperation, PRC = People's Republic of China.
Note: CAREC Member Countries shown in blue, compactors from other regions shown in red.
Source: UIC 2019.

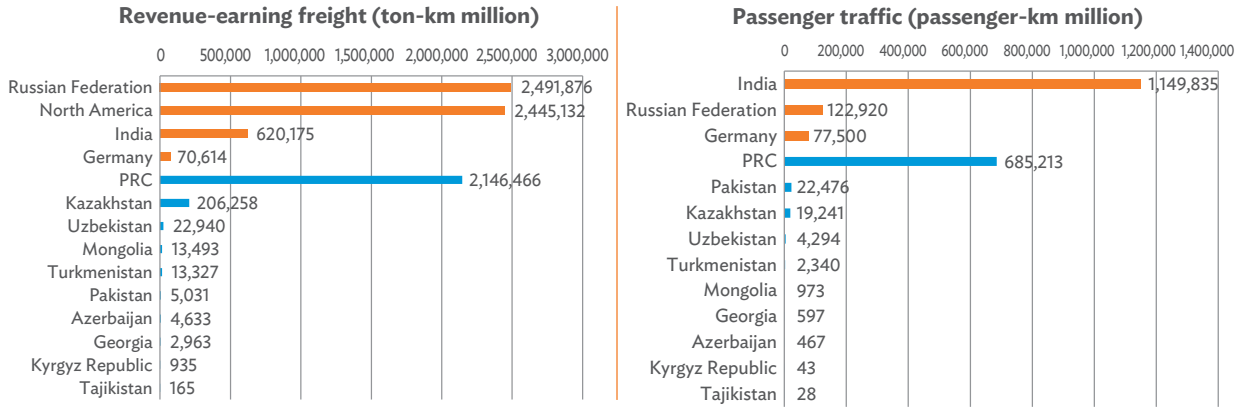
countries except for the PRC. In the case of passenger traffic, KTZ has the third largest passenger turnover (after the PRC and Pakistan). This is shown in Figure 4.4.

70. Track density measures the intensity of track utilization in terms of traffic turnover per km of rail. KTZ's track density is second highest among the comparator countries (the PRC is highest). Since much of the network is single-track, this provides an indication that KTZ's network will face capacity bottlenecks in future unless capacity is increased through such measures as increasing speeds, providing passing loops, and double-tracking. Staff productivity can be measured as the traffic turnover per staff member. KTZs staff productivity is the highest among the comparator countries, and several times higher than in most of the other CAREC MCs. This provides a positive indication

of KTZ's commitment to ensuring efficiency and competitiveness. This is shown in Figure 4.5.

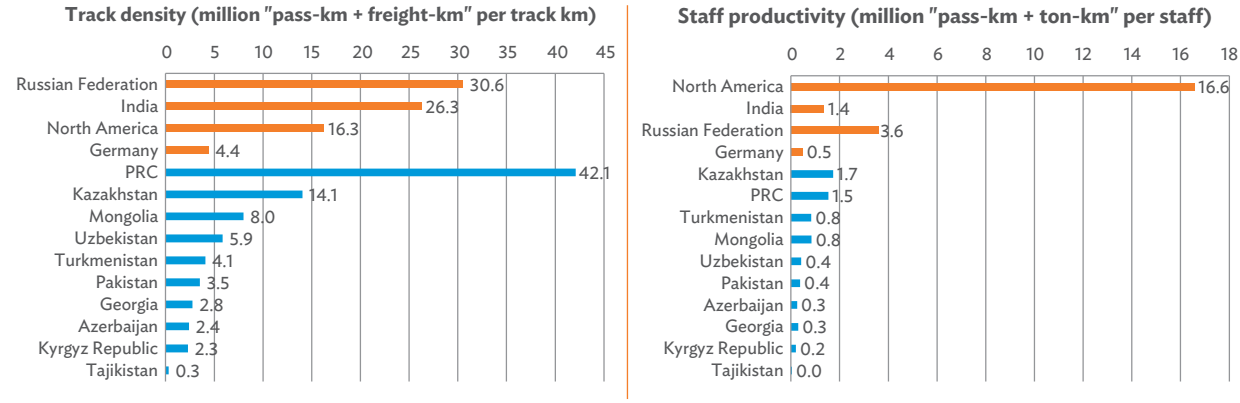
71. A further set of productivity measures concern rolling stock asset utilization. Locomotive productivity measures annual traffic turnover per locomotive. KTZ's locomotive productivity is the second highest among the CAREC MCs. This is mainly caused by the very long distances locomotives can be used for traction without change. Wagon productivity measures annual traffic turnover per owned wagon. KTZ's wagon productivity is the highest among the CAREC MCs, but this measure overstates productivity which would fall by more than half if privately owned wagons are also taken into consideration. This is shown in Figure 4.5. It may be noted that the higher levels of locomotive and wagon productivity in some CAREC is partly an indication of rolling stock shortages due to lack of investment to replace obsolete items inherited from the FSU.

Figure 4.4: Comparison of Annual Railway Freight and Passenger Traffic Levels in Kazakhstan, other CAREC Member Countries and other Leading Railway Countries



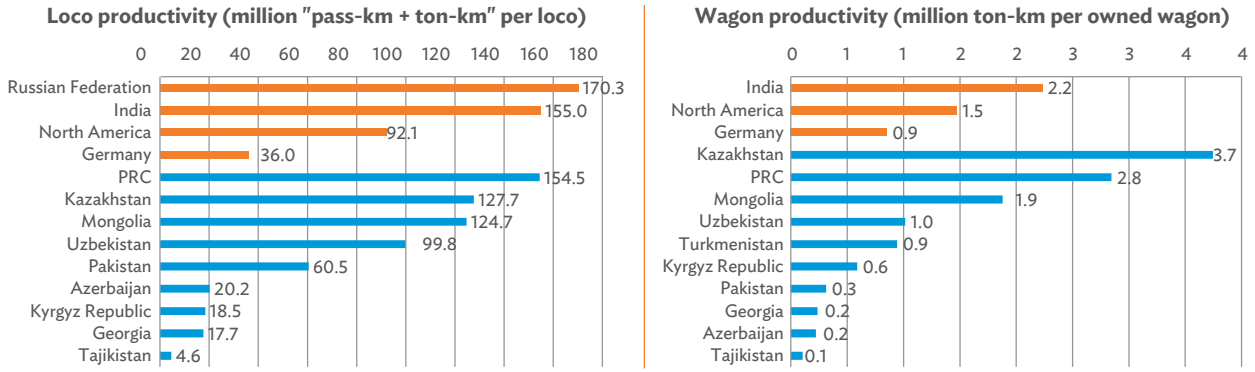
CAREC = Central Asia Regional Economic Cooperation, km = kilometer, PRC = People's Republic of China.
Note: CAREC Member Countries shown in blue, compactors from other regions shown in red.
Source: UIC 2019.

Figure 4.5: Comparison of Railway Track and Staff Productivity in Kazakhstan, other CAREC Member Countries and other Leading Railway Countries



CAREC = Central Asia Regional Economic Cooperation, km = kilometer, PRC = People's Republic of China.
Note: CAREC Member Countries shown in blue, compactors from other regions shown in red.
Source: UIC 2019.

Figure 4.6: Comparison of Locomotive and Wagon Productivity in Kazakhstan, other CAREC Member Countries and other Leading Railway Countries



CAREC = Central Asia Regional Economic Cooperation, km = kilometer, PRC = People's Republic of China.

Notes: (1) CAREC Member Countries shown in blue, comparators from other regions shown in orange; (2) productivity calculations are less accurate for countries with higher use of leased locomotives or wagons, such as Kazakhstan.

Source: UIC 2019.

5 PROPOSALS FOR INVESTMENT, COMMERCIALIZATION AND REFORM

A. Introduction

72. Drawing on the previous chapters, this final chapter discusses opportunities for railway sector development in Kazakhstan. It concludes by identifying some promising opportunities to obtain prefeasibility study support, capacity development and knowledge-related assistance through the present CAREC Railway Sector Development TA.

B. Policy setting

73. The government attaches priority to the development of railways and strengthening of Kazakhstan's position as a regional transit hub. It has therefore been implementing liberalization reforms, investing in large railway construction and electrification projects (Chapters 1 and 2) and promoting Kazakh transit traffic routes and containerization. There is potential to further expand the role of the private sector to create strong competition within the railway sector that would improve sector efficiency and competitiveness. However, due to the need to avoid jeopardizing KTZ's ability to service its large debts, it may take some years to compete the reform process.

74. The reform process within the sector and KTZ has been ongoing for more than a decade. The introduction of licenses for traction was a significant step but, so far, this has been limited to a small pilot project allowing use of private traction for short hauls on branch lines. In order to remove this limitation and open traction to full market competition, further regulatory improvements are needed to (i) establish a clear framework of responsibilities for public and private railway operators (including their roles and responsibilities for serving less remunerative routes and commodities); (ii) reduce tariff distortions and cross-subsidies (para. 60), and (iii) establish fair rules for allocation of track capacity to public and private operators. The approach and time frame for making such changes also has to take into account the need for KTZ to be able to continue to service its outstanding debt. In December 2019, a legal framework was adopted to allow for legislative consolidation of the system of cross-subsidization of passenger operators by freight operators. According to MIID, the next step will be to introduce legislative changes to establish non-discriminatory tariff conditions for all carriers of goods, drawing on the findings of studies of possible approaches and models. A further step to be implemented in 2021 as part of the government's Nurly-Zhol infrastructure development program for 2020–2025, will be to obtain government approval for the concept of a new railway transport law clarifying the roles and responsibilities between market participants in a multi-carrier environment.

C. Proposals for support from CAREC Railway Sector Development TA

1. Prefeasibility studies

75. **Investment program for addressing capacity bottlenecks**. As railway traffic continues to grow, the government expects capacity bottlenecks to emerge on some of Kazakshshan's cross-border railway corridors, Caspian Sea port connections and land border connections. The proposed study would assist MIID and KTZ to identify the main expected capacity bottlenecks and prepare a phased program of short, medium and long term investments to alleviate bottlenecks on CAREC corridors within Kazakhstan to achieve targeted average speeds for freight trains. Such investments would include passing loops, electrification, doubletracking, signalling improvements and handling equipment improvements. The study would draw upon the CAREC transport model and, potentially, the proposed Kazakhstan transport model that is also being developed by MIID and ADB.

76. **Locomotive financing study.** KTZ's aging fleet of freight locomotives will become a capacity bottleneck unless large investments are made in replacement locomotives in the coming years. The study will identify the extent and type of locomotive investments needed, and formulate options for sequencing of these investments. It will also examine the associated financing needs and options for structured financing, including possible financing from development partners (e.g. ADB non-sovereign, local currency financing) and the private sector.

2. Knowledge products and events

77. **Long-term comprehensive program of regulatory improvements and investments to support the development of the railway sector in Kazakhstan**. MIID has requested support for preparation of this long-term program to examine existing market limitations in the railway sector, identify longer term aims for the development of an efficient, competitive transport sector, and propose a package of regulatory improvements and investments to achieve these aims over the short, medium and long term. The study would include examining changes in the balance of interests of the state, consumers and business, including the role of private cargo carriers, redistribution of functions and powers between the infrastructure operator and the national carrier, bringing some functions into a competitive environment, and creating an operator of passenger services.

78. **Review of regulations for railway enterprises in Kazakhstan.** An important concern of MIID is that Kazakhstan's existing laws and regulations do not adequately delineate the roles and responsibilties of public and private entities engaged in railways. This weakness needs to be addressed in order to mitigate the risks of further expanding role of the private sector in the sector. MIID has requested support for conducting a review of the large number of regulations and related documentation concerning the roles and responsibilities of railway entities and enterprises. Many are outdated and inadequate. The study would provide an in-depth analysis of regulatory legal documents relating to the work of railway enterprises and rolling stock requirements, and identify changes required in future.

79. **CAREC rail containerization study.** Kazakhstan recognizes that increased containerization would improve the competitiveness of long-distance railway traffic, including by simplifying gauge changes and intermodal transfers, providing improved security and traceability, and enabling use of container block trains. However, the rate of containerization in Central Asia remains low, especially east of the Caspian Sea where container turnaround times are high and lower demand in the westbound direction leads to large numbers of

empty containers. The adoption of export-oriented policies by Uzbekistan, the region's largest economy, is potentially an important milestone. In the last year, there was a 40% rise in container throughput at the largest container terminal in Tashkent. Some international container shipping companies are now allowing their containers to be used more widely in Central Asia in the expectation that the coming decade will see rapid growth in containerization. The proposed study would be conducted on behalf of CAREC MCs of the TITR Association to examine the causes of existing low container penetration, identify opportunities for increasing containerization (e.g. types of goods), and prepare a containerization strategy to be pursued in collaboration with shipping lines drawing upon international best practices (e.g. on promoting containerized services to customers, container terminal planning, container tracking methods, positioning systems for containers and wagon platforms, and refrigerated container management). The study would be used to initiate a joint dialogue between CAREC TITR railways and several international container shipping companies.

80. **Improving the competitiveness of the TITR**. Members of the TITR have made progress improving infrastructure and equipment for railways and ports. However, for shippers and freight forwarders, the overall competitiveness of the TITR depends on the quality and efficiency of the entire corridor from origin to destination. This requires the coordination of multiple countries and agencies along the corridor in order to harmonize service quality. Lessons from other regions suggest that coordination and harmonization can be improved by establishing a corridor management organization (CMO) or corridor management system. This can take responsibility for organizing more regular block trains; setting stable rates for through transportation from origin to destination; designing improvements in service quality, reliability and speed; promoting the corridor to users; monitoring corridor performance and competitiveness; and identifying and resolving performance issues. The proposed study would examine the performance and competitiveness of the TCIP compared with the requirements of customers, document best practices in rail corridor management, and identify corridor management actions needed to improve the performance and competitiveness of the TITR. These might cover such subjects as approaches to introducing a CMO, establishing an effective corridor marketing and sales function (e.g. a regional container logistics company/freight forwarder with agreed through-tariffs), adopting of common electronic documentation, and setting up a wagon supply company jointly owned by members of the TITR Association. Depending on interest within the TITR, advisory support could be provided to define targets for the level and quality of service on the TITR (especially to reduce transit time), prepare a draft agreement on introducing a CMO and other measures to improve TITR competitiveness, and provide technical support for dialogue on adopting the agreement.

81. **Accounting systems to enable railway commercialization**. Among the first steps needed for railways to be capable of operating on a commercial basis, is to adopt reliable accounting standards (e.g. International Financial Reporting Standards) and introduce a modern railway accounting system that separately reports, in real time, on the costs and profitability of each of the main lines of business. This is also an essential step if the government wishes railways to continue uneconomic services in return of payment of compensation for losses in the form of a PSO. It is also a necessary step for introduction of an enterprise resource planning system to accurately determine the cost of KTZ's various service provision activities. The proposed knowledge support would compile best practices on the introduction of railway accounting standards and systems, identify the main tasks for their introduction by interested CAREC railways, and prepare options for sequencing the transition from the existing accounting standards and systems to the new ones.

82. **Study of options to enhance transloading capacity at CAREC border crossings**. The rapid growth of PRC–Europe and PRC–Central Asia railway traffic is expected to lead to saturation of transloading capacity at Alashankou/Dostyk and other key CAREC borders connecting with the PRC, notably the PRC–Mongolia border at Erenhot/Zamiid Uud, and eventually at Khorgos/Altynkol. The proposed study will determine how much transloading capacity is remaining at these border crossings and assess the remaining time before bottlenecks develops at each gateway. It will examine options for enhancing transloading capacity, including infrastructure expansion, acquisition of material handling equipment, process management improvements, adoption of total quality management principles (e.g. Kaizen cycle for continuous improvement), changes in operations protocols (e.g. instead of the receiving country's railway performing the transloading, let the railway best equipped to handle transloading do the work) and introduction of new technology (especially information technology). This may include benchmarking against successful container handling operations at European and North American ports and multimodal terminals.

D. Main opportunities for support under CAREC Railway Sector Development TA

83. Based on the preceding chapters, the more promising opportunities for possible support under the present TA are summarized in Table 5.1.

Table 5.1: More Promising Opportunities for Kazakhstan for Possible Support under CAREC Railway Sector Development TA

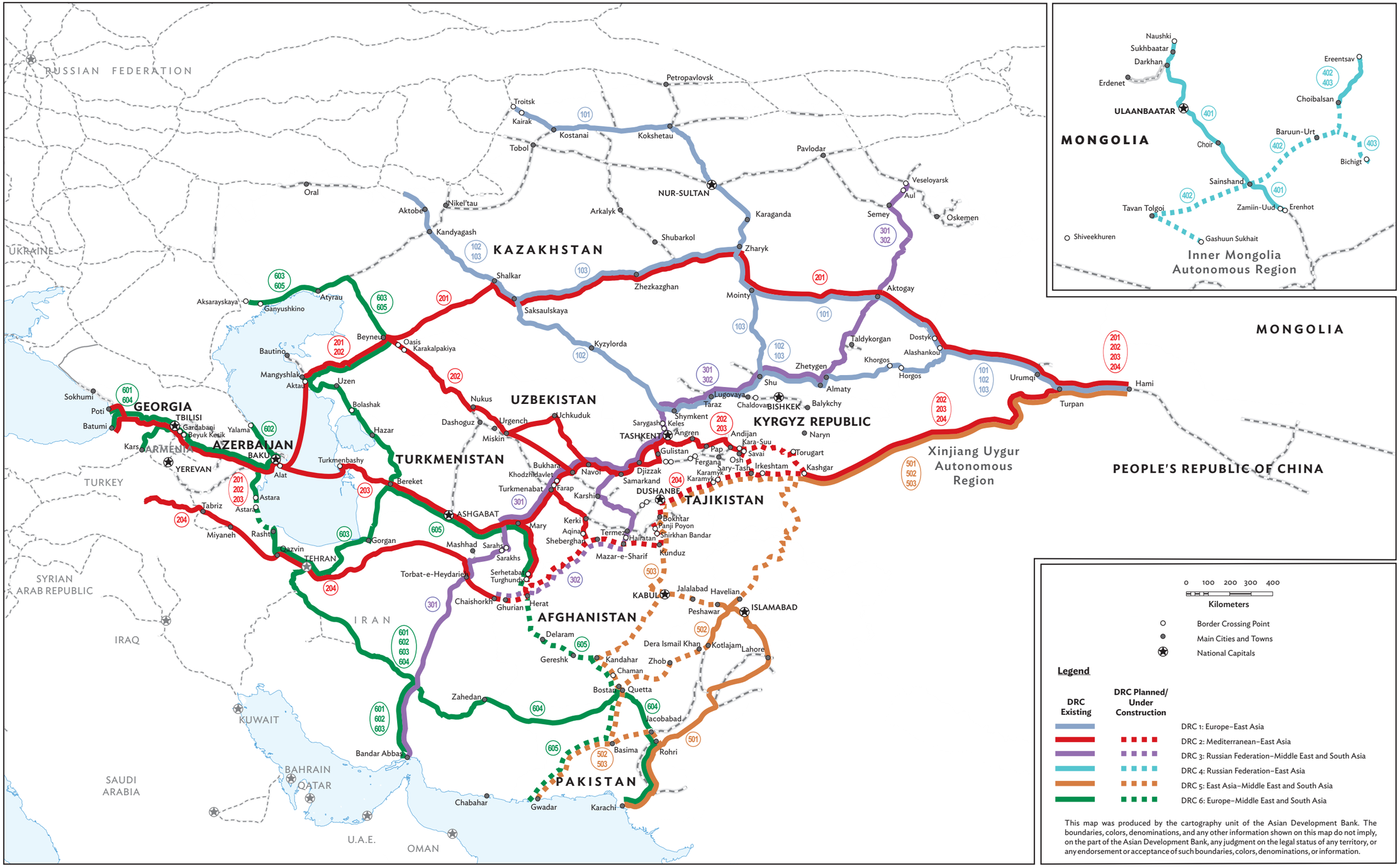
Type of support	Subject
Prefeasibility study	Investment program for addressing capacity bottlenecks
	Locomotive financing study
Knowledge products and events	Long-term comprehensive program of regulatory improvements and investments to support the development of the railway sector in Kazakhstan
	Review of railway regulations for railway enterprises in Kazakhstan
	CAREC rail containerization study
	Improving the competitiveness of the TITR
	Accounting systems to enable railway commercialization
	Study of options to enhance transloading capacity at CAREC border crossings

CAREC = Central Asia Regional Economic Cooperation, TITR = Trans- Caspian International Transport Route.

Note: Selection of prefeasibility studies, capacity development support and knowledge products and events is based on established submission templates and selection criteria, and overseen by the Railway Working Group.

Source: TA consultants.

APPENDIX | CAREC DESIGNATED RAIL CORRIDORS



DRC = designated rail corridors.

Source: CAREC Secretariat.

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Railway Sector Assessment for Republic of Kazakhstan

The report summarizes the findings of the railway sector assessment for Republic of Kazakhstan, based on a country visit conducted on 16 to 21 September 2019. The purpose of this assessment is to examine the setting, characteristics, performance and prospects of railways, and identify promising investment opportunities, commercialization and reform actions that could be considered for support through the ADB technical assistance for Railway Sector Development in CAREC countries.

About the Central Asia Regional Economic Cooperation Program

The Central Asia Regional Economic Cooperation (CAREC) Program is a partnership of 11 member countries and development partners working together to promote development through cooperation, leading to accelerated economic growth and poverty reduction. It is guided by the overarching vision of "Good Neighbors, Good Partners, and Good Prospects." CAREC countries include: Afghanistan, Azerbaijan, the People's Republic of China, Georgia, Kazakhstan, the Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan.