RAILWAY SECTOR ASSESSMENT FOR MONGOLIA

MARCH 2021

CAREC
Central Asia Regional Economic Cooperation Program

RAILWAY SECTOR ASSESSMENT FOR MONGOLIA

MARCH 2021

CAREC
Central Asia Regional Economic Cooperation Program

CONTENTS

TABLES AND FIGURES

TABLES

FIGURES

ACKNOWLEDGMENTS

ABBREVIATIONS

ADB — Asian Development Bank
BRI — Belt and Road Initiative
BTEG — Bold Tumur Eruu Gol
CAREC — Central Asia Regional Economic Cooperation
CIS — Commonwealth of Independent States
CRC — China Railway Corporation
EEU — Eurasian Economic Union
FSU — former Soviet Union
IFRS — International Financial Reporting Standards
JSC — joint stock company
km — kilometer
kph — kilometers per hour
MC — Member Country
MRTD — Ministry of Road and Transport Development
MTZ — Mongolian Railway Joint Stock Company
PPP — public-private partnership
PRC — People's Republic of China
RZD — Russian Railways
TA — technical assistance
TEU — twenty-foot equivalent
TIR — Transports Internationaux Routiers
TSR — Trans-Siberian Railway
UIC — International Union of Railways
UBTZ — Ulaanbaatar Railway

CURRENCY EQUIVALENTS

(as of 8 June 2020)

Currency unit — Tugruk (MNT)
MNT1.00 = $0.000357
$1.00 = MNT2,802

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 2018a).[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 Mongolia, drawing upon the findings of a country visit during 23–29 September 2019.

B. Railway network and rolling stock

1. Existing railway

4. Mongolia is a lower-middle income country with a population of 3.23 million and a per capita gross national income of $3,270 in 2018 (ADB 2019). Located between the Russian Federation to the north and the People's Republic of China (PRC) to the south, it is landlocked. With a land area of 1,564,116 square kilometers, it is the most sparsely populated country in the world.[3] Over 40% of the population live in the capital city, Ulaanbaatar.

5. Mongolia's first railway was a 43 km (kilometer) narrow gauge (750 mm) link to transport coal from mines near Nalaikh to Ulaanbaatar. This came into operation in 1938. During World War 2, the former Soviet Union (FSU) built about 400 km of Russian

---

[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, Mongolia, Turkmenistan and Uzbekistan.

[2] The TA is cofinanced by the People's Republic of China 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).

[3] Mongolia has a population density of 2 persons per square kilometer..

broad gauge (1,520 mm) railway from Borzya on the Manchurian Branch of the FSU's Trans-Siberian Railway (TSR) to serve military bases in northeast Mongolia.[4]

6.   The country's main railway, known as the Ulaanbaatar Railway,[5] is a 1,110 km broad gauge line from Altanbulag on the northern border with Russian Federation, where it connects with the TSR, and Zamiin-Uud on the southern border with the PRC, where it connects with the PRC railway network. The railway is owned and operated by the Ulaanbaatar Railway Company (UBTZ), a joint stock company (JSC) established in 1949 by Mongolia and the FSU, each having a 50% shareholding. The Ulaanbaatar–Altanbulag section was completed in 1950 and the Ulaanbaatar–Zamiin-Uud section in 1955. Following the collapse of the FSU, the FSU shareholding was taken over by the Russian Federation represented by Russian Railways (RZD).

7.   In total, UBTZ operates 1,815 km of broad gauge railways, including spurs lines to Erdenet (the world's fourth largest copper mine); Bor-Ondor (fluorspar); Zuunbayan (oil);[6] and Shariin Gol (coal); and Baganuur (coal). A further spur is the 98 km link from Sukhbaatar to the Tumertei iron ore mine. This is owned and operated by a private mining company, Bold Tumur Eruu Gol (BTEG), which operates its own locomotives and freight wagons. When traffic on the spur reaches the Ulaanbaatar Railway it is transferred to UBTZ for onward transportation. UBTZ also owns and operates the 238 km Bayan Tumen Railway between Choibalsan and Ereentsav, near the northeast border with Russian Federation. This is the surviving part of the broad gauge military railway built by the FSU (para. 5). It includes a spur to Mardai that originally served uranium ore mines. Mongolia's existing railway network is shown in Figure 1.1.

Figure 1.1: Existing Railway Network
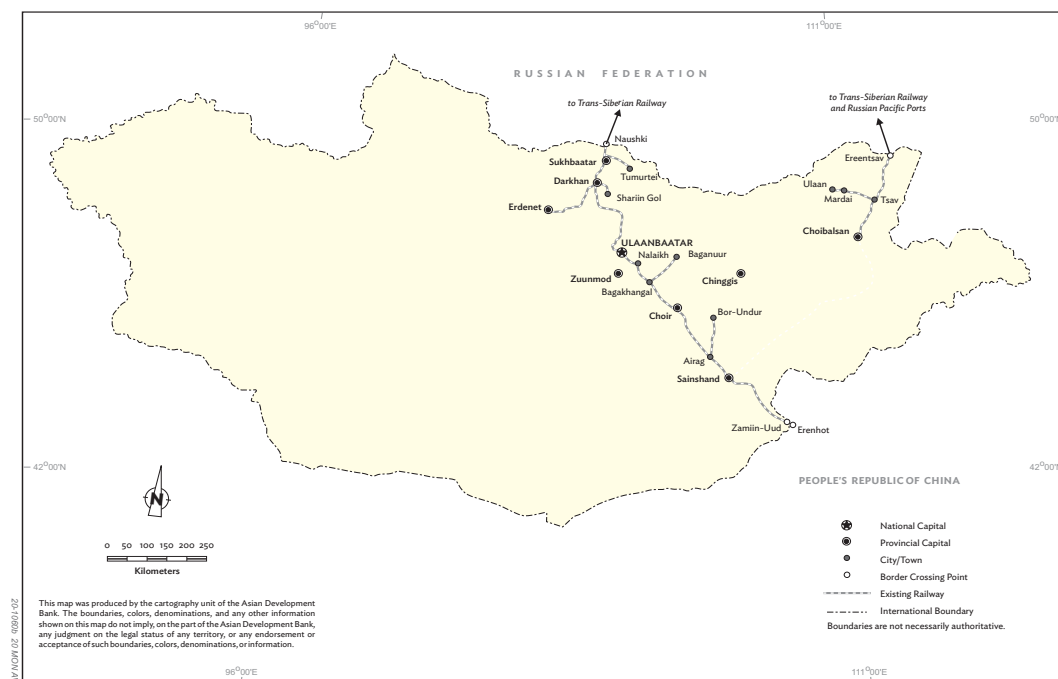
Source: Mongolia President's Office; TA consultants.

---

4   During World War 2, a narrow-gauge railway was also built from Choibalsan to Tamsagbulag, where there was an oilfield, but this was later demolished (Sanders 2017).

5   The Ulaanbaatar Railway is also referred to as the Trans-Mongolian Railway and the north–south corridor.

6   Oil production ceased in 1969.

8.   The Ulaanbaatar Railway is generally single-track with a maximum axle load of 23 tons. It has 44 passing loops and 75 stations. Signalling is semi-automated fixed block. The maximum train speed is 80 kilometers per hour (kph) for freight and 90 kph for passengers. UBTZ owns a rolling stock fleet of a 128 locomotives, 292 passenger cars, and more than 3,000 freight wagons. Maintenance and repair facilities for locomotives are located at Darkhan, Ulaanbaatar and Sainshand, for wagons at Ulaanbaatar and Zuunkharaa, for passenger coaches at Ulaanbaatar. These facilities are old and need to be upgraded and modernized.

9.   Due to lack of investment, the condition of UBTZ's track and rolling stock has deteriorated. Numerous curves and grades restrict train speed and capacity. There are capacity constraints, especially between Choir and Zamiin-Uud. Both the signalling and communications systems are outdated and need to be upgraded. Out of a total of 442 bridges, 191 have exceeded their economic life. The World Economic Forum has ranked the quality of UBTZ's

track infrastructure among the lowest for CAREC countries (World Economic Forum 2016). Much of the locomotive and wagon fleet has also aged beyond its intended economic life. About 60% of its wagons are at least 26 years old (Table 1.1). As a result, average train speeds have declined steadily from 45.8 kpm in 2015 to 41.6 kph in 2019.

10.   Due to traffic growth over the past decade (Chapter 2), annual freight traffic on the Ulaanbaatar Railway reached 25.8 million tons in 2018 which is close to the maximum capacity. With substantial growth in demand expected in future due to expansion of the mining industry, substantial investments are needed to augment railway capacity. However, while various capacity augmentation options have been discussed—including upgrading of signalling and communications, procurement of rolling stock, rerouting the railway to avoid congestion in Ulaanbaatar (Bogdhan bypass), double-tracking and electrification—the necessary investment financing has yet to be secured.

Table 1.1: Age of UBTZ Wagon Fleet

Wagon type	Age (years)			
	25 or less	26–30	31 or more	Total
Open top wagon	405	141	781	1,327
Open top wagon leased from Russian Federation	502	52	–	554
Box wagon	135	195	115	445
Flat wagon	2	26	115	143
Container wagons	118	26	4	148
Wagons modified for container transport	–	–	295	295
Container wagons leased from Russian Federation	110	9	–	119
Cistern wagon	70	18	–	88
Dump wagon	–	39	98	137
Hopper wagon	–	9	54	63
Total	1,342	515	1,462	3,319
Share of wagon fleet (%)	40	16	44	100

UBTZ = Ulaanbaatar Railway.
Source: MRTD and Railway Traffic Control Center.

11.   UBTZ has prepared a Comprehensive Plan for Technical Modernization and Development Until 2030. This envisages increasing throughput capacity to 54 million tons by 2030, at an estimated investment cost of $1.6 billion for infrastructure and $1.6 billion for rolling stock. Financing is to be raised in 3 stages, including an initial injection of $250 for urgent priority investments, an increase in the company's registered capital funded by equal contributions from each shareholder, and raising additional amounts from financial markets. Since the plan has yet to be implemented, and in the past the two shareholders have been unable to agree on investment financing in the past, prospects for implementation of the plan remain uncertain.

2. Plans for railway network expansion

12.   Mongolia's existing railways have been instrumental in opening up parts of the country for economic development. This is evident from the concentratation of population and economic activities along the Ulaanbaatar Railway corridor, which generates more than three-quarters of gross domestic product (GDP). Mongolia's three largest cities—Ulaanbaatar, Darkhan, Erdenet—are located on the corridor.

13.   In recent decades, Mongolia has experienced a boom in mining exploration across much of the country, and over the past deca de this led to a rapid expansion in mining exports. In 2019, Mongolia's mining production outputs included 55.8 million tons of coal (coking coal and thermal coal), 8.6 million tons of iron ore, and 1.6 million tons of copper (National Statistical Office 2020). Growth in mining production over the past decade is summarized in Figure 1.2.

14.   While some mines are located close to the existing railway, other mines and proposed mines are far from existing railways and have to transport export production by truck. This is costly and has adverse

Figure 1.2: Mining Production, 2010–2019 (million tons)
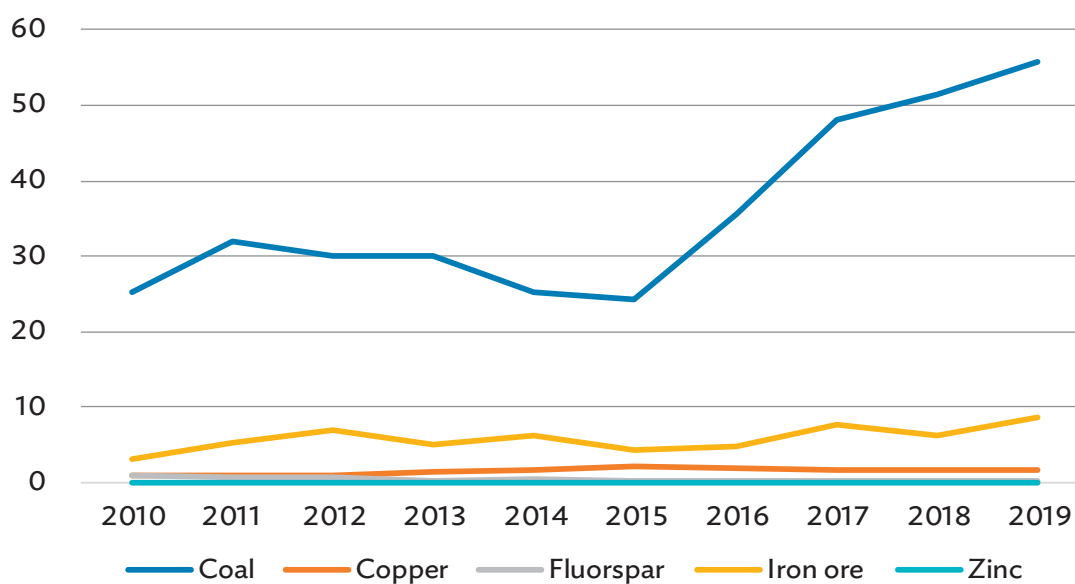
Source: National Statistical Office 2020.

environment impacts. Examples of major mines far from railways include the Khushuut mine in Khovd Province in western Mongolia, and the Tavan Tolgoi coal mine and Oyu Tolgoi copper and gold mine in Umnugovi Province in southern Mongolia.[7] The high cost of using trucks reduces mine profitability and makes some mining projects financially unviable.

15.   With a view to enabling further expansion of mining and other economic activities, Mongolia has, for some years, wished to develop new railways that would eventually form an integrated national network extending across much of the country. In the past, the government envisaged that UBTZ might play a leading role in advancing such plans but this has proved difficult as it would require major commitments from both of UBTZ's equal shareholders. The government therefore adjusted its approach. In 2008, it established a new 100% government-owned railway company, the Mongolian Railway Joint Stock Company (MTZ), to be responsible for construction and operation of new railway lines financed by the government and by foreign loans and grants.

16.   The government's overall directions for the development of railways were established by the State Policy on Railway Transportation, ratified by parliament in 2010. The policy aims to (i) develop the railway network in the national interest, (ii) build new lines to gain access to Pacific Ocean sea ports via Russian Federation and PRC, (iii) establish a unified national railway network, (iv) support development of downstream processing industries based on mineral deposits near the railway, including development of an industrial complex at Sainshand, (v) introduce sector reforms and improvements in management; and (vi) develop a competitive Eurasian transit route through Mongolia (Parliament of Mongolia 2010). In addition to government-owned railways to be developed by MTZ, the policy

Figure 1.3: Line of Coal Trucks Waiting to Cross into PRC at Gashuun Sukhait

PRC = People's Republic of China.
Source: Montsame 2020.

allows for the development of privately-financed railways and public-private partnerships (PPPs) that would revert to government ownership after a period of private use. It seems likely that in practice most investments will be privately-financed or PPPs since the government has limited capacity to undertake the massive investment involved, and some of the private mining companies have a strong interest to develop rail links and operate them efficiently—with a view to reducing their transport costs and thereby improving profitability.

17.   The national railway policy calls for construction of more than 5,600 km of new railways in three phases. This would include additional connections to serve cross-border mining exports and new transit routes between the TSR and the PRC. Phase 1 focuses on developing a new east–west line to connect the Tavan Tolgoi coal mine with the Ulaanbaatar Railway at Sainshand—where the government envisages development of mineral benefication and other downstream processing industries—and then continue eastwards to meet

---

7   The Khushuut coal mine has 460 million tons of reserves and exported 36.12 million tons to the PRC in 2018, including 27.7 million tons of coking coal (The Diplomat 2019). Tavan Tolgoi has among the largest reserves of coal in the world. This includes 5.5 billion tons of coking coal and 1.9 billion tons of thermal coal. In 2018, it produced 11.1 million tons (Jargal Defacto 2019).

the Bayan Tumen Railway at Choibalsan. Phase 2 covers development of three southward connections from the Phase 1 line to transport coal and mineral products to the PRC border. Phases 1 and 2 would together create a new transit route in eastern Mongolia from the Russian Federation border near Ereentsav to the PRC border at Bichigt. Phase 3 is to extend the railway network from Tavan Tolgoi to western Mongolia, potentially with two connections to the PRC border in the southwest and two connections to the Russian Federation border in the northwest. This would also create a transit route in western Mongolia connecting the TSR to the PRC.

18.   The national railway policy is closely related to the government's Transit Mongolia program. This program seeks to upgrade trade and transport facilitation arrangements to ensure that Mongolia's cross-border transport corridors will work efficiently to support trade, in particular mining exports

transported by railway, and also to expand Mongolia's role in transporting transit traffic between the PRC and Russian Federation. In addition to the existing Ulaanbaatar Railway, which is part of what is referred to as the Central Transit Corridor, it envisages that expansion of the railway network will create an Eastern Transit Corridor and a Western Transit Corridor (Government of Mongolia 2008). The two additional transit corridors would reduce transport distances both for import and export traffic to and from eastern and western Mongolia, and for some categories of transit traffic. They would also provide additional transport capacity to supplement the existing Central Transit Corridor. Mongolia's planned railway network and transit corridors are shown in Figure 1.4.

19.   The three phases of investment envisaged by the national railway policy are summarized in Table 1.2.

Figure 1.4: Planned Mongolia Railway Network and Transit Corridors
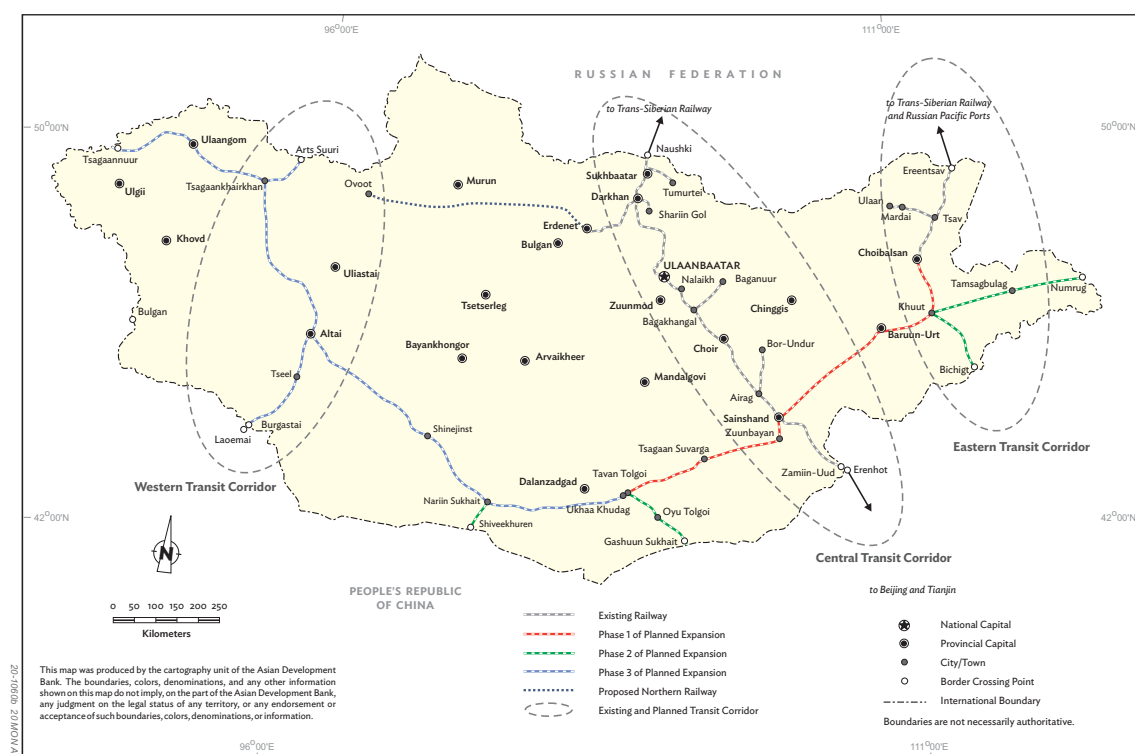
* Not part of the original railway network proposals included in the national railway policy.

Source: Mongolia President's Office; TA consultants.

Table 1.2: Phases of Investment Envisaged by the National Railway Policy

Phase	Railway section	Length (km)
Phase 1	Tavan Tolgoi–Tsagaan Suvarga–Zuunbayan	400
	Sainshand–Baruun-Urt	350
	Baruun-Urt–Khuut	290
	Khuut-Choibalsan	150
	Subtotal for Phase 1	**1,190**
Phase 2	Nariin Sukhait–Shiveekhuren	46
	Ukhaa Khudag–Gashuun Sukhait	267
	Khuut–Tamsagbulag–Numrug	380
	Khuut–Bichigt	200
	Subtotal for Phase 2	**893**
Phase 3	Western railway lines to be planned based on future exploitation of mineral deposits and regional development policy	3,600
All phases	**Total**	**5,683**

Source: Mongolia President's Office; Parliament of Mongolia 2010.

20. The national railway policy generally envisages that the proposed new railways would use broad gauge to be compatible with the existing railway and also with RZD. Since the PRC railway network is standard gauge (1,435 mm), cross-border railway links connecting with the PRC railway network would require transhipment facilities near the border, either in Mongolia or the PRC. The recently completed transhipment center in Zamiin-Uud is an example of such a facility (Figure 1.5). However, the government has also indicated a willingness to consider making exceptions, including the possibility that the proposed link from Tavan Tolgoi to the PRC border at Gashuun Suhait will be standard gauge.

Figure 1.5: Transshipment and Regional Logistics Center, Zamiin-Uud

Source: MTZ.

21.   A further 548 km link has been proposed from Erdenet to Ovoot to serve a large coking coal mine, with the possibility of extension to the Russian Federation border at Arts Suury. The project, known as the Northern Railway, is being developed by Aspire Mining Limited through a special purpose investment vehicle, Northern Railways. In 2019, Northern Railways signed an engineering, procurement and construction agreement with a PRC consortium established by China Gezhouba International Engineering Company and China Railway 20 Group Corporation. The contract is subject to a funding package for the project being agreed, and several other conditions being met (Railway Gazette 2019).

22.   Since it was established, MTZ has been coordinating studies and preparatory work for some of the new links proposed by the national railway policy. During 2012–2014, some earthworks and construction of tunnels and bridges was carried out for the 240 km link from Tavan Tolgoi to the PRC border at Gashuun Suhait, but earthworks were suspended in 2015 due to lack of financing (MTZ 2019). MTZ and Erdenes Tavan Tolgoi JSC, a state-owned company that holds mining licenses for the Tavan Tolgoi coal deposit, have formed the Tavan Tolgoi Railway Company to raise about $1 billion from international financial markets to complete the project (Montsame 2019a). Since the mine is already in operation, and the costs of transport by road are very high, the project is expected to be financially viable and to have prospects for attracting investment financing. In 2019, the Mongolian army began earthworks for the proposed 415 km broad gauge link from Tavan Tolgoi to Zuunbayan (Figure 1.6) where it would connect with the Ulaanbaatar Railway (MTZ 2019; Office of the President 2020).[8] It seems likely that MTZ will need to raise additional investment financing to complete the project.

Figure 1.6: Construction of Tavan Tolgoi–Zuunbayan Railway

Source: UB Post.

---

[8]   On 4 December 2019, agreement was reached for UBTZ and RZD to provide technical consulting on construction of the Tavan Tolgoi–Zuunbayan railway (Government of Mongolia 2019).

23. At present, most of the planned expansion of the railway network is subject to uncertainties about traffic, financial viability and invesment financing. In some cases, the mining projects to generate necessary traffic have yet to be established. Another concern is that projects that would depend on exporting coal may need to be reexamined taking into account adverse world market trends for coal including lower prices.

24. MTZ has also been carrying out several other projects, including (i) it has concluded a lease for the ADB-financed transshipment and logistics center at Zamiin-Uud to be operated by UBTZ; (ii) it is leading the government's initiative to establish a transport logistics centre to support Mongolia's exports and imports at the port of Tianjin, PRC; and (iii) it coordinated the development of Tumertei iron ore station through a private concession.

C. Institutional responsibilities for railways

25. The 2007 Railway Transportation Law established the legal framework for railway transport in Mongolia. The law allows for both public and private ownership of railways, and makes a distinction between infrastructure providers and railway service operators, requiring infrastructure providers to provide railway service operators with open access to infrastructure while allowing them to also operate railway services. The intention is to create conditions for open a competitive market for railway service provision in future.

26. The government regulates domestic railway tariffs based on the railway law and the Law on Unfair Competition. For many years, it has has kept the tariffs for goods considered to be of social importance well below the associated railway operating costs. Such social goods include coal for domestic use,

food, building materials and fares for international and domestic passengers. International railway tariffs must be set in conformity with Mongolia's international agreements, notably its bilateral agreements with Russian Federation and the PRC.

27. The Ministry of Road and Transport Development (MRTD) has overall responsibility railways policy and oversight. The Railway and Maritime Transport Policy Implementation and Coordination Department is responsible for railway policy and planning and for managing investment projects to develop the national railway system. The Strategic Policy, Planning and Coordination Department also has an input in the development and evaluation of railway policies and investment programs. The Minister of Roads and Transport is the government's representative on the board of UBTZ and the MTZ's chief executive officer reports directly to the minister.

28. UBTZ is a vertically integrated railway responsible for the operation of freight and passenger services, the management and maintenance of infrastructure and rolling stock, and the safety of its operations. Freight accounts for over 90% of UBTZ traffic. With about 15,800 staff, it is one of Mongolia's largest employers. Its organization structure is shown in Figure 1.7. It includes substantial non-core functions. The government expects UBTZ to operate on a self-financing basis without state subsidy. Since its revenue and expenses for freight and passenger services are combined, it does not have accurate information on the financial performance of each type of service.

29. UBTZ's ownership structure has been an imperfect arrangement. Having ownership shared by two countries—Mongolia and Russian Federation— has meant that corporate governance has been influenced not only by commercial considerations but also by the national interests. Equal shareholding has made it difficult to resolve differences when these arise between the shareholders.

Figure 1.7: Organization Chart of Ulaanbaatar Railway
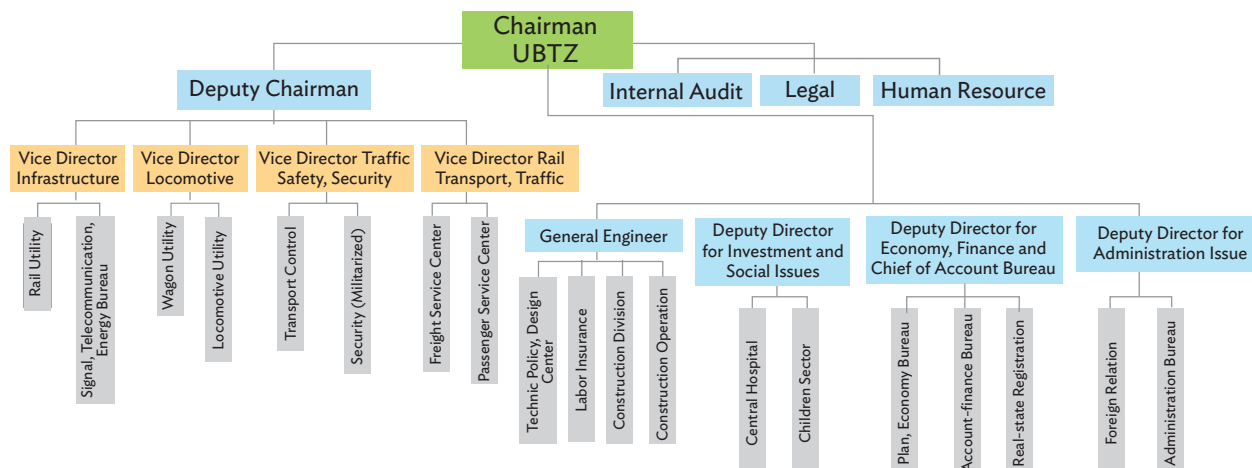
UBTZ = Ulaanbaatar Railway.
Source: UBTZ

30.   MTZ is a state-owned company established to develop a competitive railway market in Mongolia, and lead railway investments financed by the government and foreign loans and grants. It is overseen by a board of directors. Its four departments cover administration, finance, engineering and technical matters, and projects. It has more than 70 employees.

D. Routes relevant for cross-border freight and transit traffic

31.   The PRC and Russian Federation are Mongolia's principal trading partners, with much of the trade transported via the Ulaanbaatar Railway. As a landlocked country with considerable potential in mining, and plans for downstream processing and industrial development, Mongolia also attaches importance to gaining improved access to additional international markets which can also help it to obtain better prices for its exports. This objective underpins the national railway policy which, alongside seeking to improve immediate railway connections with the PRC

and Russian Federation, also envisages developing railway connections to Pacific Ocean ports including Tianjin in the PRC and the Russian Federation ports of Vladivostok, Vostochny and Vanomo. A further objective is to expand Mongolia's role as a land bridge for Eurasian traffic using the TSR including by potentially developing additional railway transit routes. Regional railway links and ports relevant for Mongolia, and competing transit routes connecting with Europe and Central Asia, are shown in Figure 1.8.

32.   The market for cross-border and transit traffic is subject to competition among modes and corridors. Market segments relevant for Mongolian railways are summarized below:

   (i)   **Between Mongolia and its immediate neighbors in the PRC and Russian Federation.** Currently, exports to the PRC of coal, copper ore, iron ore and other minerals account for more than 80% of the value of Mongolia's exports, while the PRC and Russian Federation together account for more than 60% of its imports, including a wide range of manufactured goods and industrial inputs from the PRC and petroleum

Figure 1.8: 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.

products and food products from Russian Federation (Observatory of Economic Complexity 2020). Much of this traffic is bulk commodities carried the Ulaanbaatar Railway. Following completion of the highway between Ulaanbaatar and Zamiin-Uud, railway faces increased competition from road transport, particularly for food, consumer products and higher value goods. Unless the capacity of the Ulaanbaatar Railway is quickly upgraded, more traffic, especially non-bulks, will divert to road transport (with increased risk of damage to the highway due to overloading). Since most of Mongolia's economy and population is located along the

corridor served by the Ulaanbaatar Railway, and the corridor is well-located in terms of proximity to the TSR and major centers in the PRC, it is likely to remain Mongolia's most important railway corridor. It is therefore essential for Mongolia to find solutions to the issue of how to finance investments to upgrade and modernize the corridor in line with traffic growth. In future Mongolia also expects to develop new mining projects far from this corridor that would require construction of new railway links to the PRC and Russian Federation (e.g. Tavan Tolgoi–Gashuun Suhait, Northern Railway). Some of these links might also serve non-mining traffic,

although this may not be feasible for links located far from centers of population, while dual use could lead to higher costs for mineral transport.

(ii) **Between Mongolia and Pacific Ocean ports**. At present most of Mongolia's mining outputs are sold to the PRC without need for ocean shipping. The PRC is the world's largest market for Mongolia's main mining products. As mining expands, Mongolia may need to access more distant markets—both to find buyers for additional production and to obtain higher prices. Currently, its main access to ports is via the Ulaanbaatar Railway and Chinese railway network to the PRC port of Tianjin. Capacity on this route will need to be augmented—particularly on the Ulaanbaatar Railway—if it is to carry increased mining exports. Mongolia's national railway policy also envisages developing new routes to ports, including via Bichigt to Dalian and other PRC ports, and via Ereetsav and the TSR to the Russian Federation ports of Vladivostok, Vostochny and Vanimo. A critical consideration for development of such routes is the value of the mining outputs to be transported. For lower value outputs, such as coal, the costs of transporting the outputs over very long distances could be prohibitive.[9] The distance issue is less critical for mines serving the PRC market that are located relatively close to the PRC border. For higher value outputs, such as processed metals, distance is less of problem but there could be issues for the feasibility of Mongolia building new railways links to reach the TSR via northeast Mongolia since transport volumes of processed minerals using such links are likely to be much lower that volumes of coal and mineral ores.

(iii) **Between East Asia and Northern Europe**. The majority of freight between East Asia and Northern Europe is transported by ocean shipping which is the least-cost transport mode. Freight transported by land includes higher-value, time-sensitive goods that require faster delivery; and goods from and to inland parts of the PRC located far from sea ports. Driven by the PRC's Belt and Road Initiative (BRI), this is mainly transported by railway.[10] The majority of such traffic uses the TSR via Russian Federation. The main competing corridor is the Trans-Caspian International Transport Route (TITR). The attractiveness of each corridor depends on the performance and competitiveness of all the railways and border crossings on route. Although the TSR is the longest distance Eurasian corridor, it has the advantage that border delays are minimized since most of the journey is within Russian Federation, and connections through Kazakhstan and Belarus remain within the common customs area of the Eurasian Economic Union (EEU).[11] To encourage use of this route, RZD and the change to China Railway Corporation (CRC) have been providing tariff discounts, and some PRC cities and provinces have been offering subsidies. The two routes that connect the PRC with the TSR are via Manzhouli in Inner Mongolia (PRC) and via Mongolia using the Ulaanbaatar Railway. The Mongolia route is 750–950 km shorter for most PRC origins and destinations outside of the PRC's northern eastern provinces. However, the Manzhouli route currently attracts most of the PRC traffic as border clearances and train speeds are

---

9   The Russian Federation is reported to be offering large discounts to Mongolian traffic.

10   Following the PRC's accession to the Transports Internationaux Routiers (TIR) Convention in 2018, Russian trucking companies are also interested to compete for transit traffic between the PRC and Eastern Europe.

11   The members of the EEU are Armenia, Belarus, Kazakhstan, Kyrgyz Republic and Russian Federation.

higher and the Mongolia route is experiencing capacity limitations. If the capacity of the Ulaanbaatar Railway is augmented and border clearances further streamlined, it could attract more transit traffic. Over the longer term, if Mongolia develops additional transit routes, such as between Ereentsav and Bichigt, these might also have potential to attract transit traffic depending on their competitiveness compared with the existing corridors.

(iv) **Between East and Central Asia**. This market segment is much smaller but is expected to grow in future as the economies of Central Asia develop. The majority of traffic follows the TITR through the PRC and Kazakhstan. However, particularly for origins and destinations in more northerly parts of Central Asia, some traffic has been routing via the TSR and connecting southwards to Central Asia via northern Kazakhstan. This traffic generally reaches the TSR via the Ulaanbaatar Railway.

E. Relevant CAREC corridors

33.   The CAREC Corridor relevant for railway development in Mongolia is CAREC Corridor 4 (Figure 1.9). Subcorridor 401 represents the Ulaanbaatar Railway, extending from the border with Russian Federation to the PRC border. Subcorridors 402 and 403 cover missing links that are part of the planned network envisaged by the national railway policy. Subcorridor 402 refers to about 1,400 km of proposed new links between the PRC border at Gashuun Sukait and Tavan Tolgoi, from Tavan Tolgoi to Sainshand, from Sainshand to Khuut via Baruun-Urt, and from Khuurt to Choibalsan where it connects with the existing railway to the border with Russian Federation at Ereentsav. Subcorridor 403 refers to the 200 km proposed link from Choibalsan via Khuut to the PRC border at Bichigt. Subcorridors 402 and 403 overlap between Choibalsan via Khuut.

Figure 1.9: CAREC Corridor 4: Russian Federation – East Asia

Source: CAREC Secretariat.

TRENDS IN RAILWAY TRAFFIC

A. Introduction

34. This chapter provides an overview of trends in railway traffic in Mongolia. Since the present TA is primarily intended to support the development of cross-border transport, the chapter focuses mainly on freight.

B. Background

35. Railway has been the leading mode of freight transport in Mongolia for many years, consistently accounting for the majority of freight turnover. Although road transport often had higher freight volumes, this was mainly for short distance freight while railway has dominated long distance freight. After the collapse of the FSU, freight volumes for both railway and road transport collapsed. Railway

began to slowly recover from the mid-1990s. Road transport began to recover from around 2002. While in many other Central Asian countries this period marked the beginning of a long term trend of railways losing freight market share to road transport, in Mongolia railway has remained the dominant mode.[12] Long term trends in freight transport are shown in Figure 2.1.

36. These long term trends reflect several factors. First, Mongolia's economy and population, and its main border crossings for imports and exports, are concentrated along the main railway corridor, which makes railway relatively convenient. Second, much of Mongolia's long distance freight consists of bulk commodities, such as coal and mineral ores, that are well-suited for railway. Third, although the paved road network increased from 1,243 km in 1990 to 9,781 km in 2019, the total network size

Figure 2.1: Long Term Trends in Freight Traffic by Railway and Road Transport, 1960–2019
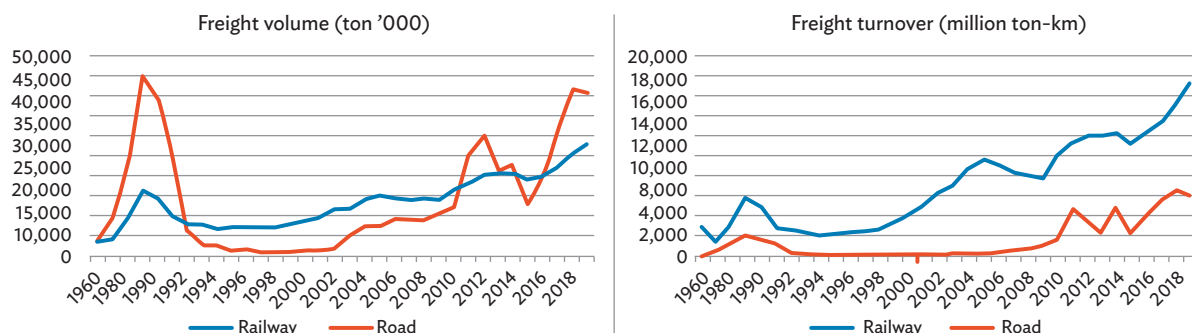
km = kilometer.
Source: National Statistical Office 2020.

---

[12] According the International Transport Forum (ITF), the railway share in total freight turnover in Mongolia was 59% in 2015, compared with 40% in Uzbekistan and 40% in Kyrgyz Republic (ITF 2019).

remains small compared with other countries and very small compared with Mongolia's large land area. Fourth, road maintenance has been weak, partly due to inadequate financing, so many of the existing roads are in poor condition (ADB 2018b). Fifth, the poor condition of the north-south highway has made it difficult for road transport to compete for long distance freight. Surfacing of the 427 km southern section from Choir to Zamiin-Uud was only completed in 2014 (ADB 2015). Due to lack of maintenance, the 311 km northern section from Ulaanbaatar to Altanbulag has been in poor condition although it is now being rehabilitated with ADB support (ADB 2018b). Once these works have been completed, a good quality highway will be in place from Altanbulag to Zamii-Uud for the first time,

which could lead to greater competition from road transport for some segments of the long distance freight market.[13]

37. Table 2.1 summarizes freight by mode during 2014–2019. Freight volumes for railway and road transport far exceed those of civil aviation. Each transport mode serves a particular market segment, as shown by the average haul distances for freight. In 2019, the average distances for railway, road transport and civil aviation were 618 km, 152 km and 2,413 km respectively—with railway serving long distance surface transport, road serving short-to-medium distance surface transport, and aviation serving a small niche for domestic and international transport of high value goods over long-distance distances.

Table 2.1: Freight Volume, Turnover and Haul Distance by Transport Mode, 2014–2019[a]

	2014	2015	2016	2017	2018	2019	Average annual growth (%)
Volume (ton'000)							
Rail	21,119	19,151	19,989	22,765	25,763	28,143	5.9
Road	23,514	13,044	20,406	31,213	42,034	40,849	11.7
Aviation	3	3	5	5	6	6	10.9
Total	44,636	32,197	40,400	53,983	67,803	68,998	9.1
Turnover (million ton-km)							
Rail	12,474	11,463	12,371	13,493	15,315	17,384	6.9
Road	4,936	2,374	4,236	5,661	6,641	6,204	4.7
Aviation	9	8	12	13	14	14	8.1
Total	17,420	13,844	16,619	19,168	21,970	23,602	6.3
Average distance (km)							
Rail	591	599	619	593	594	618	0.0
Road	210	182	208	181	158	152	(6.3)
Aviation	2,733	2,750	2,490	2,458	2,365	2,413	(2.5)

km = kilometer.

[a] Includes minor errors for rounding of decimals.

Source: National Statistical Office 2020.

---

[13] The number of registered trucks in Mongolia increased from 174,011 in 2014 to 227,525 in 2019 at an average annual rate of 5.5% (National Statistical Office 2020).

38.   Railway freight volume increased from 21.2 million tons in 2014 to 28.1 million tons in 2019, at an average annual growth rate of 5.9%; while railway turnover rose from 12.5 to 17.4 million ton-km at an average annual rate of 6.9%. Although road transport had a higher growth rate for freight volume, it had a lower growth rate for freight turnover.

39.   As most of Mongolia's trade is with the PRC and the Russian Federation, most of its cross-border rail and road transport is to and from these countries. It has little railway or road traffic to or from other CAREC MCs.

40.   In the case of passenger traffic, road transport is the leading surface mode, and civil aviation plays an important role for long distance passenger transport. As Figure 2.2 indicates, for the past 60 years the passenger volume of road transport has far exceeded that of railway and aviation. Apart from during the decade after the collapse of the FSU, road transport has generally had the highest passenger turnover, although civil aviation turnover has grown rapidly over the past decade. In contrast, railway passenger turnover grew more slowly and then declined over the past decade.

41.   During 2014–2019, railway passenger volume decreased at an average annual rate of

2.3% per annum while railway passenger turnover decreased at 1.4%. Road transport passenger volume declined by an average of 13.1% per annum although passenger turnover increased at an average annual rate of 0.9% (Table 2.2). Growth in road passenger turnover was quite volatile, reflecting volatility in Mongolia's GDP growth over the period. Civil aviation passenger transport was less affected by volatility and grew very rapidly, at an annual average rate of 18.9% for passenger volume and 20% for passenger turnover.

42.   As Table 2.2 shows, with an average trip distance of 17.4 km in 2019, road transport dominates the short distance movements that constitute the majority of passenger trips. With an average trip distance of 377 km, railway mainly serves middle distance passenger movements. With an average trip distance of more than 1,900 km, civil aviation mainly serves long distance passenger transport. A notable trend is that the average trip distance of road transport more than doubled during 2014–2019. This is why passenger turnover rose whereas passenger volume declined. When taken together with the decline in railway passenger transport, this would seem to indicate that road has been attracting some middle distance traffic away from railway. Similarly, some of the rapid growth of civil aviation passenger turnover may be from attracting long distance passengers away from railway.

Figure 2.2: Trends in Passenger Traffic by Mode, 1960–2019
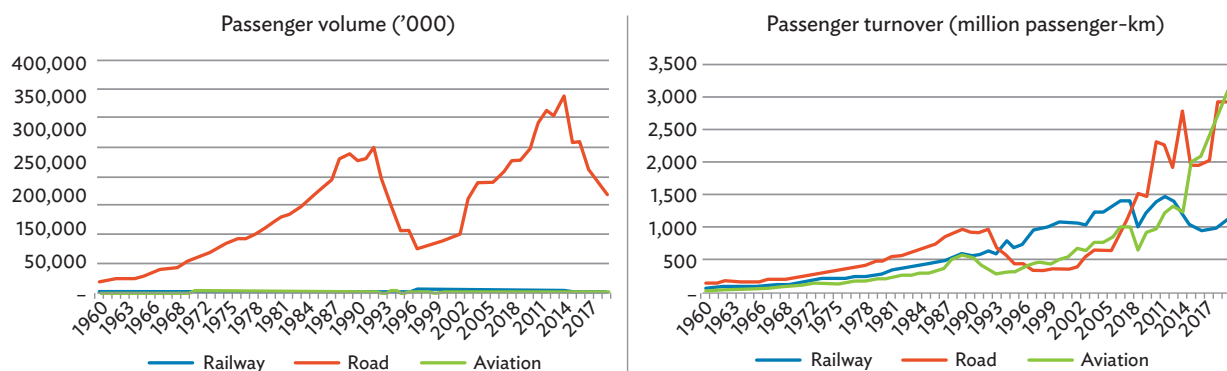
km = kilometer.
Source: National Statistical Office 2020.

Table 2.2: Passenger Volume, Turnover and Trip Distance by Mode, 2014–2019[a]

	2014	2015	2016	2017	2018	2019	Average annual growth (%)
Volume (million passengers)							
Rail	3.3	2.8	2.6	2.6	2.6	2.9	(2.3)
Road	340.1	256.5	260.7	212.2	193.0	168.4	(13.1)
Aviation	0.7	1.0	1.0	1.3	1.4	1.6	18.9
Total	344.1	260.3	264.4	216.1	197.0	173.0	(12.8)
Turnover (million passenger–km)							
Rail	1,194.5	996.7	955.5	973.2	993.7	1,111.5	(1.4)
Road	2,793.0	1,940.5	1,959.9	2,040.9	2,919.9	2,925.1	0.9
Aviation	1,247.1	1,993.5	2,072.4	2,420.2	2,684.2	3,109.4	20.0
Total	5,234.6	4,930.7	4,987.8	5,434.3	6,597.8	7,146.0	6.4
Average trip distance (km)							
Rail	361.3	356.7	361.2	370.0	386.3	377.0	0.9
Road	8.2	7.6	7.5	9.6	15.1	17.4	16.2
Aviation	1,828.0	2,085.5	2,025.8	1,933.1	1,887.0	1,917.5	1.0

km = kilometer.

[a] Includes minor errors for rounding of decimals.

Source: National Statistical Office 2020.

C. Railway freight traffic

43. Historically, domestic traffic and transit traffic between the Russian Federation and the PRC together accounted for the majority of Mongolia's railway freight volume and turnover. Over the past two decades, domestic traffic and transit traffic grew slowly with reversals in some years, while the development of the mining industry led to rapid expansion of exports to the PRC and the associated expansion of the economy led to increases in import traffic. By 2019, exports and transit traffic together accounted for 50% of railway freight volume and 73% of freight turnover. Trends in freight traffic since 2000 are shown in Figure 2.3.

Figure 2.3: Trends in Railway Freight Volume and Turnover, 2000–2019
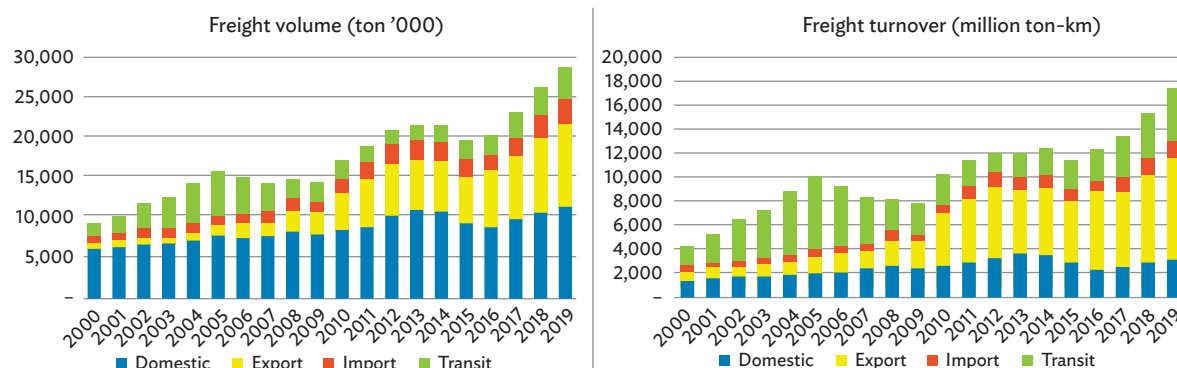
km = kilometer.

Source: National Statistical Office 2020.

44.   As Table 2.3 indicates, railway traffic has been growing very rapidly since 2015, setting new records for traffic level each year. During 2015–2019, freight volume increased at an average annual rate of 10.1% while freight volume increased at 11%. In 2019, total freight traffic reached 28.1 million tons equivalent to 17.4 billion ton-km. This is a relatively high traffic level to carry on the single-line UBTZ railway, particularly since the infrastructure, signalling and rolling stock are old and in need of renewal. Over the period, the volume of export traffic and transit traffic increased at average annual rates of 16% and 16.8% respectively, while the volume of import traffic and domestic traffic increased at 7.6% and 4.7% respectively. Since average haul distances are significantly higher for exports (822 km) and

transit traffic (1,110 km) than for imports (513 km) and domestic traffic (284 km), this is the reason the growth rate for overall freight turnover exceeded that of freight volume. Since freight revenues are generally proportionate to freight turnover, the rapid growth in freight turnover has led to rapid growth in UBTZ revenues.

1. Export freight

45.   The growth in railway exports reflects the large expansion in mining over the past decade, in particular coal and iron ore production. As shown in Table 2.4, annual exports of iron ore rose from 4.8 million tons in 2014 to 5.7 million tons in 2018, while coal exports rose from less than

Table 2.3: Domestic, Export, Import and Transit Railway Freight, 2015–2019[a]

	2015	2016	2017	2018	2019	Average annual growth (%)
Freight volume (ton '000)						
Domestic	9,231	8,538	9,485	10,327	11,091	4.7
Export	5,638	7,095	7,887	9,272	10,219	16.0
Import	2,188	1,994	2,303	2,798	2,938	7.6
Transit	2,094	2,362	3,091	3,366	3,896	16.8
Total	19,151	19,989	22,765	25,763	28,143	10.1
Freight turnover (million ton-km)						
Domestic	2,861	2,292	2,474	2,866	3,154	2.5
Export	5,252	6,524	6,418	7,307	8,398	12.5
Import	1,026	932	1,171	1,406	1,509	10.1
Transit	2,324	2,622	3,431	3,736	4,324	16.8
Total	11,463	12,371	13,493	15,315	17,384	11.0
Average haul (km)						
Domestic	310	269	261	278	284	(2.1)
Export	932	920	814	788	822	(3.1)
Import	469	468	509	502	513	2.3
Transit	1,110	1,110	1,110	1,110	1,110	0.0

km = kilometer.

[a] Includes minor errors for rounding of decimals.

Source: National Statistical Office 2020.

Table 2.4: Railway Export Freight Volume by Commodity, 2014–2018 (ton '000)

Commodity	2014	2015	2016	2017	2018
Coal	73.5	99.3	206.0	1,314.8	1,785.3
Oil	53.4	64.4	45.5	47.1	45.5
Lumber, wood products	40.6	34.6	37.5	43.7	47.0
Food products	1.4	4.9	5.0	14.1	11.3
Perishables	0.4	0.1	0.3	0.3	1.6
Agricultural goods (including grain)	46.5	67.5	59.6	146.1	178.6
Mining goods	5,788.5	5,213.4	6,610.4	6,150.9	7,011.8
Fluoride, fluoride concentrate	312.8	278.3	248.7	315.0	543.5
Copper, molybdenum concentrate	585.4	612.5	660.4	659.9	657.7
Iron ore	4,791.6	4,238.3	5,442.6	5,019.5	5,658.5
Zinc concentrate	98.7	84.3	126.3	118.1	124.2
Iron (scap metal etc.)	0.1	0.4	0.5	2.5	0.8
Heavy machinery, equipment	4.1	3.7	1.7	2.6	1.7
Other	182.6	149.7	128.9	164.9	188.7
Total	6,191.1	5,637.7	7,095.3	7,886.8	9,272.4

Source: UBTZ 2019.

0.1 million tons to 1.8 million tons. In 2018, coal and minerals accounted for 95% of railway exports, especally iron ore (61%), coal (19%), copper and molybdenum concentrate (7%), and fluoride and fluoride concentrate (6%). Apart from gold, which is seldom transported by railway, nearly all Mongolia's mining exports are sold to the PRC (Observatory for Economic Complexity 2018).

46.   Due to the limited coverage of the existing railway network, railways only carried about 20% of Mongolia's mining exports in 2018, while trucks carried 80% (Table 2.5). Coal exports to the PRC accounted for the majority of mining exports by truck. These are generally taken to the nearest railhead in the PRC where they are transferred to rail for onward transport by CRC. In future, if the proposed Tavan Tolgoi–Gashuun Suhait

Table 2.5: Railway Export Freight Volume and Market Share by Mode

	2014	2015	2016	2017	2018
Export volume (ton '000)					
Railway	6,191	5,637	7,095	7,887	9,272
Road	20,644	15,564	26,418	32,437	36,168
Total	26,835	21,201	33,513	40,324	45,440
Market share (%)					
Railway	23	27	21	20	20
Road	77	73	79	80	80

Source: Rail data from National Statistical Office 2020; road data from MRTD.

is completed (para. 22) and, similarly, if plans to upgrade and modernize the Ulaanbaatar Railway are realized, large quantities of coal and other high-volume mining exports will shift from road to rail.

2. Import freight

47.   With a total volume of 2.8 million tons in 2018, railway import freight is much smaller than export traffic, with much lower growth during 2014–2018. As Figure 2.6 indicates, railway imports are mainly comprised of bulk or semi-bulk commodities. In 2018, the main import commodities were oil

(43%), non-perishable food products (11%), grain (9%), heavy machinery and equipment (8%), iron (7%), chemicals (5%) and fertilizers (4%).

48.   Since most of the destinations for Mongolia's imports are concentrated along the existing Ulaanbaatar Railway corridor where most of the population is located, and import volumes of bulk commodities far exceed those of other import categories such as consumer goods, the majority of imports are transported by railway. In 2018, railway transported 75% of total import volume. This is shown in Table 2.7.

Table 2.6: Import Freight Volume by Commodity, 2014–2018 (ton '000)

Commodity	2014	2015	2016	2017	2018
Oil	1,045.3	966.5	909.4	1,062.4	1,197.6
Construction material	109.4	180.8	58.7	48.9	79.5
Cement	18.6	7.0	0.3	0.3	0.6
Wood and wood products	15.3	11.9	11.2	11.4	11.9
Food products	266.6	253.3	283.6	248.2	298.6
Flour, rice	22.8	25.4	43.3	22.1	33.9
Perishables	3.5	0.5	2.1	2.5	2.4
Agricultural goods	44.5	53.2	169.3	182.9	252.5
Grain	44.1	38.6	150.6	56.4	238.5
Leather, rough leather, wool	0.3	0.1	–	0.2	0.3
Chemicals	56.3	57.1	65.1	107.8	152.2
Fertilizer	35.4	46.9	63.9	79.3	102.7
Iron	272.3	182.7	89.0	125.8	182.3
Heavy machinery, equipment	161.9	133.4	121.5	163.7	212.4
Other	278.2	271.9	220.3	269.7	306.3
Total	2,288.7	2,188.2	1,994.0	2,302.7	2,798.4

Source: UBTZ 2019.

Table 2.7: Import Freight Volume and Market Share by Mode

	2014	2015	2016	2017	2018
Import volume (ton '000)					
Railway	2,289	2,188	1,994	2,303	2,798
Road	1,695	1,245	1,145	790	956
Total	3,984	3,433	3,139	3,093	3,754
Market share (%)					
Railway	57	64	64	74	75
Road	43	36	36	26	25

Source: Rail data from National Statistical Office 2020; road data from MRTD.

3. Domestic freight

49. As shown in Table 2.8, domestic freight volumes are high, accounting for 10.3 million tons in 2018, and have been growing moderately. Coal, which is mainly used for power generation and also for industrial and domestic use, accounted for 68% of domestic freight volume in 2018. The other major domestic freight commodites are building materials, and petroleum and products, which respectively accounted for 16% and 6% of domestic freight volume in 2018.

50. The share of railway in transporting domestic freight has been declining (Table 2.9). In 2018, railway carried only 20% of domestic freight volume while road transport carried 80%. This trend is linked to the completion of the main north-south highway connecting Ulaanbaatar with Zamiin–Uud and growth in the number of road transport operators. Road

Table 2.8: Domestic Freight Volume by Commodity, 2015–2018 (ton '000)

Commodity	2015	2016	2017	2018
Coal	6,362	6,488	6,862	7,037
Petroleum & petroleum products	79	188	552	596
Building materials	1,958	1,028	1,180	1,621
Wood, wood material	47	40	46	68
Perishable products	49	22	23	26
Agricultural products	74	13	107	66
Ferrous metals (scrap, rails, etc.)	150	79	117	183
Industrial machinery, equipment & tools	17	15	21	29
Other	497	666	576	700
Total	9,231	8,538	9,485	10,327

Source: UBTZ 2019; National Statistical Office 2020.

Table 2.9: Domestic Freight Volume and Market Share by Mode

	2014	2015	2016	2017	2018
Domestic volume (ton '000)					
Railway	10,573	9,231	8,538	9,485	10,327
Road	21,600	15,308	19,303	28,076	40,386
Total	32,173	24,539	27,841	37,561	50,713
Market share (%)					
Railway	33	38	31	25	20
Road	67	62	69	75	80

Source: Rail data from National Statistical Office 2020. road data from MRTD.

transport now carries the majority of domestic traffic in consumer goods, perishables and higher value goods, leaving railway to transport the remaining bulk commodities.

51.   Since the government has required UBTZ to keep its tariffs for coal and other social goods at well below cost recovery levels (para. 26), most domestic freight is operated at a loss. This has contributed to UBTZ's low profitability and lack of retained earnings that are needed to finance investments in renewal and upgrading of aged railway infrastructure and rolling stock.

4. Transit traffic

52.   Transit traffic is important for UBTZ revenue as it travels the entire length of the railway and includes higher-value segments, notably containerized traffic, that can bear higher tariff levels. UBTZ's transit traffic consists of trade flows between the PRC and both the Russian Federation and Europe via the TSR. As was shown in Figure 2.3, during 2008–2015 transit traffic had a declining trend but since 2015 it rebounded with average annual growth of 16.8% in both volume and turnover terms. Transit volume rose from 2.1 million tons in 2015 to 3.9 million tons in 2019.

53.   UBTZ's competitiveness for transit traffic has improved following opening of the Zamiin-Uud transhipment center in 2018, and implementation of

measures to streamline border clearance and railway transit times as part of the government's Transit Mongolia program. According to MRTD, total border clearance and transport time for transit traffic has been reduced by about one quarter. On average, it takes 28 hours for southbound traffic and 31 hours for northbound traffic to transit Mongolia.

5. Container traffic

54.   In 2018, UBTZ carried 83,084 twenty-foot equivalents (TEU). This consisted largely of import and transit containers. Only a small share of export traffic was containerized as it is mainly bulk and semi-bulk commodities. The large imbalance between import and export containerized cargo is costly for Mongolian importers as they have to pay for the return of empty containers to the seaport or designated container terminal where they were discharged. Since 2016, container traffic increased rapidly due to growth in transit traffic. This is to a large extent attributable to the PRC's efforts to expand long distance block train services through the BRI. Trends in railway container traffic are shown in Table 2.10.

55.   Since 2016, UTBZ has attracted a large increase in railway container transit traffic. As Table 2.11 shows, such traffic rose from only 4,202 TEU in 2015 to 55,705 TEU in 2018. While in the past there was as large imbalance in favor of northbound container traffic, this gap closed

Table 2.10: Railway Export, Import and Transit Container Traffic, 2014–2018 (TEU)

	2014	2015	2016	2017	2018	Total
Export	1,029	1,575	1,766	3,498	1,635	11,031
Import	37,449	30,354	28,110	32,031	37,711	330,104
Transit	310	2,291	6,813	23,416	43,738	117,848
Total	38,788	34,220	36,689	58,945	83,084	458,983

Source: UBTZ.

considerably in 2018. This has helped to further improve service efficiency and profitability as it reduces the need to transport empty containers and platform wagons.[14]

56.   Mongolia competes for container block train traffic with the PRC corridor to the TSR via Manzhouli, and with the TITR routes via Alashankou and Khorgos in Kazakhstsan. Factors influencing route choice include geography, historical relationships, price discounts and subsidies, and the PRC's interest to foster competition among the various transit corridors. Table 2.12 shows the number of container block trains using the competing routes in 2018. The Mongolia transit corridor attracted about 16% of PRC–northern Europe trains and 11% of PRC–Central Asia trains, while the two Kazakhstan gateways together attracted 53% of PRC–northern Europe trains and 89% of PRC–Central Asia trains, and Manzhouli attracted 31% of PRC–northern Europe trains but none of the PRC–Central Asia trains.

D. Traffic growth scenario

57.   Figure 2.4 summarizes the government's ambitious forecast for growth in railway freight traffic. By 2022 freight volume is forecast to reach nearly 50 million tons. This is expected to include both expansion of UBTZ freight traffic and introduction of new railways carrying mining products, notably the

Figure 2.4: Forecast Railway Freight Volume Forecast until 2022 (ton '000)
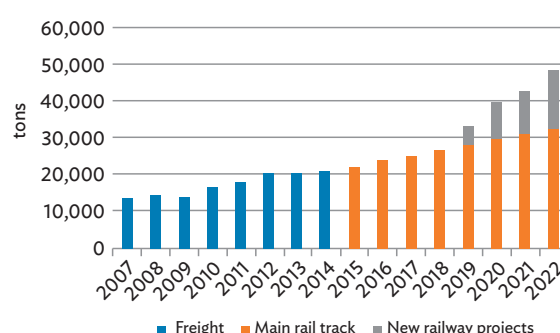
Source: MRTD 2016.

Table 2.11: Transit Rail Container Traffic Direction, 2014–2018 (TEU)

	2014	2015	2016	2017	2018
PRC to Russian Federation	496	262	8,376	29,960	30,611
Russian Federation to PRC	85	3,940	3,871	14,899	25,094
Total Containers	581	4,202	12,248	44,859	55,705

Source: MRTD.

Table 2.12: Number of Block Trains by Interchange Gateway, 2018

	Alashankou	Khorgos	Zamiin-Uud	Manzhouli	Total
PRC–Northern Europe	2,824	685	1,054	2,041	6,604[a]
PRC–Central Asia	1,378	1,627	368	0	3,373
Total	3,702	2,312	1,422	2,041	9,477

CCTA stated that its 2018 count of 6,604 PRC-Europe trains differs from the count of 6,363 trains compiled by NDRC due to use of different data sources.

Source: China Communications and Transportation Association.

---

14   No revenues are generated when empty containers and the wagons they are resting upon are returned to interline railways.

Tavan Tolgoi–Gashuun Sukhait Railway and the Tavan Tolgoi–Zuunbayan Railway which are scheduled for completion in 2021. Although work has commenced on both railways, their completion is likely to take longer than planned since necessary investment financing has yet to be raised. UBTZ's capacity to carry additional traffic will depend on whether it is able to raise financing and quickly implement its upgrading and modernization program. Nonetheless, while the trajectory for traffic growth could take several years longer than currently forecast, the scale of ongoing mining investment and growth in mining production suggest that Mongolia will see a major expansion in railway freight over the coming decade.

58.   UBTZ's expectations for traffic growth are equally ambitious. As shown in Table 2.13, UBTZ forecasts that its freight volume will be 25.1 million tons in 2020 and rise to 56.7 million tons in 2030, while passenger volume will be 2.8 million passengers in 2020 and rise to 3.5 million passengers in 2030. To achieve this forecast UBTZ will need to raise the large investment financing required for its upgrading and modernization plan. This will require a both shareholders to mobilize additional financing contributions and prospective lenders to be satisfied that UBTZ's business performance and plans are commercially sound. While there is no doubt that UBTZ has an opportunity to serve very high levels of freight traffic, it will need to overcome weaknesses in commercial orientation in order to be capable of achieving a satisfactory level of profitability. Its shareholders will need to establish and implement a level of commitment to finance major investments that has proved elusive until now.

Table 2.13: UBTZ Base Case Traffic Growth Scenario, 2020–2030

	2020	2025	2030
Freight volume (ton '000)	25.1	41.1	56.7
Freight turnover (million ton-km)	17.4	21.8	33.7
Passenger volume (million persons)	2.8	3.2	3.5
Passenger turnover (million passenger-km)	1.0	1.2	1.3

km=kilometer, UBTZ = Ulaanbaatar Railway.
Source: UBTZ.

MARKET COMPETITIVENESS

A. Introduction

59. Mongolia's freight market is relatively segmented. UBTZ carries most of the long-distance transport and some shorter distance transport along the existing north–south corridor. Road transport focuses mainly on consignments that are shorter distance or to origins or destinations outside of the railway corridor. The domestic road transport industry is mainly comprised of single truck operators that use old, used trucks imported from Republic of Korea, Japan, Russian Federation and the PRC. There is no consistency in the make, model, age, and condition of trucks used, so operating efficiency is low. The majority of Mongolian trucks do not meet modern emission and safety standards.

60. Over the last two decades, Mongolia has made large investments to improve road infrastructure, while there has been comparatively little investment in railways until very recently. The investments have reduced the operating costs of road transport and helped to improve speed and reliability. This has improved the competitiveness of road transport for short domestic hauls but UBTZ continues to have a competitive advantage for long

Figure 3.1: Mongolian Trucks Waiting for Cargo Near Erenhot Border Crossing

UBTZ = Ulaanbaatar Railway.
Source: TA consultants.

distance freight. This contrasts with the situation in other MCs where improvements the road network have led to intense competition with railways and erosion of railway's market share. It seems likely that, with further improvement of the road network and development of road transport industry, railways will eventually face more intense competition from road transport for most traffic types other than bulk commodities.

B. Market feedback

61.   Interviews were conducted with shippers/ receivers, freight intermediaries, trucking companies and trade associations to understand the freight market dynamics and users' perceptions of railway transport. The findings are summarized in Table 3.1.

Table 3.1: Market feedback on UBTZ Competitiveness for Different Traffic Types

Competitiveness	Traffic type	Examples	Explanation of Rail Competitiveness
Rail is competitive	Project cargo, out-of-gauge cargo	Electricity generation equipment, mining equipment	Rail has advantages for moving extra heavy, over-dimension cargo.
	Bulk cargo	Cement, lumber, grain	Rail is efficient for handling bulk cargo, which is often transported using specialized equipment to optimize loading and unloading. Particularly suitable for receivers with rail siding and facilities for loading/unloading.
	Coal and minerals	Outputs from mines in Mongolia to the PRC	Rail is efficient in handling coal and minerals, which are often transported in large blocks using specialized equipment to optimize material transfer.
	Crude oil and refined petroleum products	Oil and petroleum products from Russian Federation	Rail is the preferred mode for moving dangerous, volatile liquid cargo in tank wagons.
	Chemicals	Poisonous, flammable, corrosive cargo	Rail has advantages for safety and security which are prime considerations.
	Cross-border cargo	Import/export freight moving in wagons	UBTZ is a trusted party. Border management authorities are willing to cooperate in streamlining inspection.
	Non-time sensitive cargo	Construction materials to be accumulated prior to start of a project	Shipper/receiver benefits from free storage on wheels.

Table 3.1 *continued*

Competitiveness	Traffic type	Examples	Explanation of Rail Competitiveness
Rail is uncompetitive	Consumer products	Small-to-medium sized shipments to multiple receivers. Single party door-to-door responsibility is important	Road is generally less costly, faster and simpler to organize.
			Road is especially price competitive for shorter trips (e.g. 100–300 km) and for origins and destinations away from the railway line.
	Cargo origin and destination is far from rail stations	Many types of goods	After adding origin to station and station to destination trucking costs to the station to station rail linehaul cost, the total is higher than all truck end to end transport cost.
	Time sensitive cargo	Goods with a strict delivery deadline	If delivery date is missed, the transporter may be liable for costly damages.
	High value cargo	Electronics, designer fashions	Driver teams are better at protecting cargo from theft.
	Perishables (chilled or frozen)	Pharmaceuticals and vaccines, chicken, pork, beef, fish, various types of seafood	Road is faster, more reliable (including real time tracking and tracing). Reefer mechanical failure can be dealt with expediently. Rail is frequently short of reefer wagons, especially modern ones.

UBTZ = Ulaanbaatar Railway, km = kilometer.

Source: TA consultants.

62. Based on this market feedback, railway is most competitive for bulk or liquid cargo that is difficult to carry by truck, and has a clear niche for transport of dangerous cargo and project cargo. It has advantages for consignment safety and security, and inspections by customs and other border management agencies on railway traffic are often faster and simpler than for road transport.[15] This confirms that railway can be attractive for a substantial amount of traffic as long as adequate wagons, terminals, handling facilities and sidings are available.

63. Unlike in most other CAREC MCs, in Mongolia the concentration of population and economic activity along the railway corridor and the lack of good paved roads and well-qualified truck operators have limited the extent of competition from road transport. Road transport is competitive for short distance domestic movements within Mongolia.

C. Problems affecting rail competitiveness

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

65. **Road transport is fast, flexible and highly competitive**. Shippers can use trucks to serve a much larger range of origins and destinations. Empty movements are less of a problem for trucks, as road carriers respond quickly to seasonal and other changes in demand, are flexible about pricing, and can triangulate to achieve loaded, profitable round-trips.

---

[15] Border clearance procedures are sometimes changed at short notice. Recently Kazakhstan's Revenue Committee introduced time-consuming cargo examination procedures that can delay transit time by a week or more.

66.   Limited network coverage. UBTZ's current network coverage is largely confined to the immediate catchment area of the Ulaanbaatar Railway.

67.   Wagon shortages are a recurring problem. UBTZ's wagon fleet is old, and the mix of wagon types does not match market needs. There are seasonal shortages of wagons and shortages of specific wagon types, especially specialized wagon types. Long delays waiting for wagons is a regular occurrence at Zamiin-Uud.

68.   UBTZ has only limited control over price for long distance international traffic. UBTZ's tariff is just a component of overall door-to-door freight pricing. The other interline railways transport the cargo for a significantly larger part of the overall journey distance than UBTZ. As a result, UBTZ's price competitiveness is strongly influenced by the tariffs of other interline railways.

69.   UBTZ does not have an adequate sales and marketing function. Without a capable sales and marketing effort to canvas the market, UBTZ cannot adapt to market changes, identify trends, target high margin market segments, or develop new service products tailored to the evolving needs of shippers.

70.   UBTZ does not embrace modern marketing principles to compete effectively. UBTZ does not study its markets carefully to know which customer can bear a higher rate due to special competitive advantage compared with road transport. The higher returns that could be earned from such customers could provide UBTZ with additional resources to compete aggressively with road transport when needed. For each segment of the market, UBTZ should compile all the advantages of using rail versus truck and apply them in sales and marketing.

71.   UBTZ's ownership structure. The current ownership structure, with 50% owned by Mongolia and 50% by the Russian Federation, often leads to slow decision-making and there can be deadlock over important issues. This severely hampers UBTZ's responsiveness to market changes.

72.   Shippers, freight forwarders and road carriers expressed the view that it will be difficult for UBTZ to attract new sources of traffic until it implements far-reaching reforms in order to strengthen its commercial orientation.

4

RAILWAY OPERATING AND FINANCIAL PERFORMANCE

A. Introduction

73. This chapter provides a short discussion of the commercial orientation of Mongolia's rail system and its operating and financial performance. UBTZ's performance is also benchmarked against other CAREC railways and leading railways from other regions.

B. Commercial orientation

74. Since it was established, UBTZ has played a critical role in providing railway services in Mongolia. Having the legal form of a JSC, it has a measure of autonomy from the government that could potentially enable it to operate according to commercial principles. However, its structure and methods of management and operation were inherited from the Soviet era, based on following bureaucratic rules rather than focusing on meeting the needs of customers, operating profitably, producing a satisfactory return on investment, and regularly investing in renewal of aged assets and upgrading technology to ensure the long term future of the business and improve competitiveness. UBTZ's organization structure does not include separate teams or profit centers to drive each of its main lines of business. Its accounting system does not support separate monitoring of the performance of each of the main business lines. There is no activity cost tracking by customer to assists in optimizing freight rates. UBTZ's existing management information does

not seem to focus on the types of commercial metrics used by high performance railways (e.g. terminal dwell time, asset turn velocity, train speed and service reliability).

75. Three issues underpin UBTZ's lack of commercial orientation: ownership, monopoly and tariffs. As discussed in Chapter 1, UBTZ's shareholding structure has made it made it difficult to introduce changes the way it does business. Compared with other CAREC railways that were originally linked to the FSU and carry broadly comparable traffic levels—such as the Georgian Railway and Uzbekistan Railways—UBTZ has done less to reform, modernize and commercialize its business, and the shareholders have been unable to agree and implement plans to finance investments needed for renewal and upgrading of railway assets. This latter problem has continued for an extended period so many of the assets are in now in critical need of renewal. Another reason that UBTZ has been less response to the need to change is that it is a monopoly. Especially for transport of mining outputs, and other bulk and semi-bulk commodities, its customers often have no practical alternative to using railway, so UBTZ faces less market pressure to improve service performance and competitiveness. Third, UBTZ's tariffs are not adequately based on costs or market requirements, and the government's policy on railway tariffs requires it to charge low tariffs for coal, other social goods and passenger services (ADB 2014). A previous study reported that the domestic coal tariff covers only 60% of operating

costs while domestic passenger fares only cover 44% (Gotov 2014). Since domestic coal accounted for 27% of total freight volume in 2018,[16] and passenger services take up substanial railway capacity that could be used for freight, this policy makes it more difficult for UBTZ to generate the profits needed to finance asset renewal. In other countries, if the government requires the railway to operate in a commercial manner but also wishes to subsidize particular commodities and population groups, a public service obligation (PSO) is commonly used to reimburse the railway for the losses it incurs operating uneconomic government-directed services.

76.   The government recognizes that reforms will be needed if UBTZ is to be capable of attracting the investment financing needed for asset renewal and business expansion. UBTZ should operate according to commercial principles, and adopt new management principles with a view to improving its efficiency and profitability, and expanding its business.

C. Financial performance

77.   UBTZ only releases very limited information on its annual financial statements and in the past these have not followed International Financial Reporting Standards.

78.   A previous ADB study obtained information on UBTZ's annual revenue and expenditure for freight and passenger traffic during 2006–2010. As reproduced in Figure 4.1, the study found that freight revenue only exceeded operating costs by a small margin, producing an average annual profit of only MNT13.6 billion. Passenger revenues were considerably below operating costs, producing an average annual loss of MNT11.8 billion. The loss on passenger services largely offset the profits on freight services, leaving UBTZ with an overall average annual profit of only MNT1.8 billion. Even excluding 2008, when there was no profit from freight to offset passenger losses, UBTZ's overall average annual profit was only MNT6.6 billion. This is equivalent to about 3% of expenditure and too little to finance asset renewal and investment (ADB 2014).

Figure 4.1: UBTZ Annual Revenue and Expenditure, 2006–2010 (MNT billion)
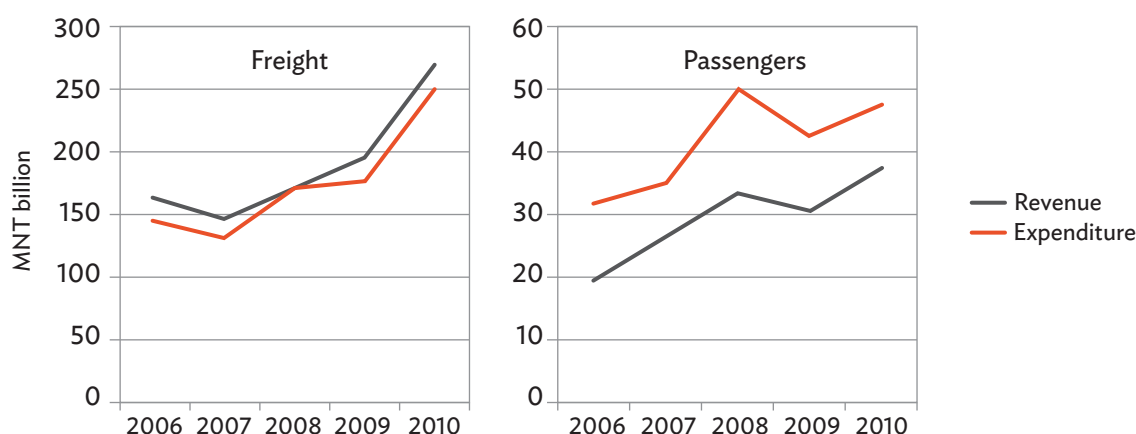
UBTZ = Ulaanbaatar Railway, MNT = Tugruk.
Source: ADB 2014.

---

[16]   This share was even higher in the past. For example, in 2015 it was 33%.

79.   UBTZ also operates various loss-making social services such as schools and hospitals and the associated costs are included within its transport costs. Such costs are partly offset by UBTZ being largely tax exempt (*ibid*).

80.   In recent years, growth in UBTZ's total revenues has been closely correlated with growth in freight turnover after adjusting for inflation. This is shown in Figure 4.2.

Figure 4.2: UBTZ Inflation-Adjusted Revenue and Freight Turnover, 2014–2019 (2014 = 100)
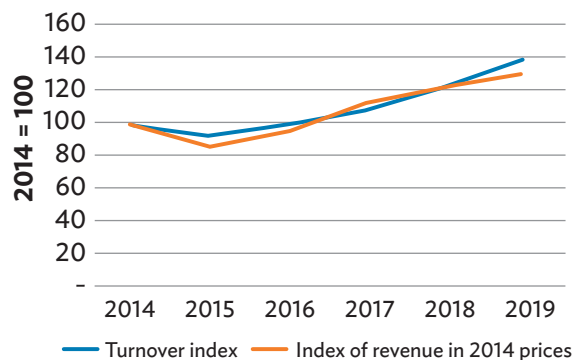
UBTZ = Ulaanbaatar Railway, MNT = Tugruk.

Source: National Statistical Office 2020; TA consultants.

81.   While UBTZ has not released data on its operating costs over the period, using its published balance sheet summaries (UBTZ 2020) a rough estimate of net profit after tax can be made based on reported changes in retained earnings. It seems that although nominal revenues rose by 66% during 2014–2018, driven by a 39% rise in freight turnover, increases in operating expenses absorbed nearly all the increase in revenue, resulting in an average annual net profit of only MNT2.3 billion. On average, this was only 0.7% of revenue and presumably only a marginally higher proportion of operating expenditure and therefore lower than during 2016–2010. This is shown in Table 4.1. These rough estimates underscore the finding of the previous study that UBTZ earns too little to finance asset renewal and investment. Since more recently UBTZ enjoyed rapid growth in freight turnover, its continued inability to generate higher profitability suggests that its tariff structure and approach to setting freight rates at customer level are inadequate, and that it lacks the capacity to control operating costs in order to achieve satisfactory returns.

82.   A thorough assessment of UBTZ's accounts is needed in order to establish a full appreciation of its financial performance and identify critical areas that need to be reformed in order to become financially sustainable.

Table 4.1: Selected Indicators of UBTZ Financial Performance 2014–2018 (MNT billion)

	2014	2015	2016	2017	2018	Average
Revenue, earnings and equity						
Transport revenue	427.9	387.9	436.8.	530.0	616.0	392.4
Year-on-year change in retained earnings[a]	1.7	3.8	(4.2)	17. 3	(7.0)[b]	2.3
Rough financial ratio estimate (%)						
Annual profit/revenue	0.4	1.0	(1.0)	3.3	(1.1)	0.7

UBTZ = Ulaanbaatar Railway, MNT = Tugruk.

[a]   Data is not available on UBTZ operating expenses and net profit as it does not disclose its profit and loss account. However, published summaries of the audited annual balance sheets include details of retained earnings, and normally the year-on-year change in retained earnings should equal the annual net profit after tax derived from the profit and loss account.

[b]   As reported by the Speaker to the Mongolian Parliament.

[c]   Assuming no change in shareholders equity in 2018.

Source: National Statistical Office 2020; UBTZ 2020; Montsame 2019b.

D. Operational benchmarking

83.   Drawing upon railway operational data obtained from the International Union of Railways (UIC),[17] aspects of the operational performance of UBTZ 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.

84.   In terms of size of railway network and number of employees, UBTZ is one of the smaller railways in the CAREC region and very small compared with leading railways in other regions, like Russian Federation, USA and India. This is shown in Figure 4.3.

85.   Among the comparator countries, the UIC data suggests that UBTZ has the third lowest number of owned wagons and fourth lowest number of diesel locomotives. This appears to be generally consistent with the small size of the railway. However, the present of 3,319 wagons only about half the fleet size self-reported to UIC for 2017 (Table 1.1). When the actual fleet size is considered, UBTZ's wagon fleet is much smaller than for other CAREC railways with comparable magnitudes of traffic such as Turkmenistan and Uzbekistan. Moreover, much of the rolling stock fleet is very old so the available fleet is even smaller. This comparison is shown in Figure 4.4.

86.   Apart from the PRC and Kazakhstan which have very high traffic turnover, UBTZ is one of next group of CAREC railways with relatively high freight turnover. Its level of passenger turnover is, however, relatively low. This is shown in Figure 4.5.

Figure 4.3: Comparison of Railway Length and Staff Size in Mongolia, other CAREC Member Countries and other Leading Railway Countries
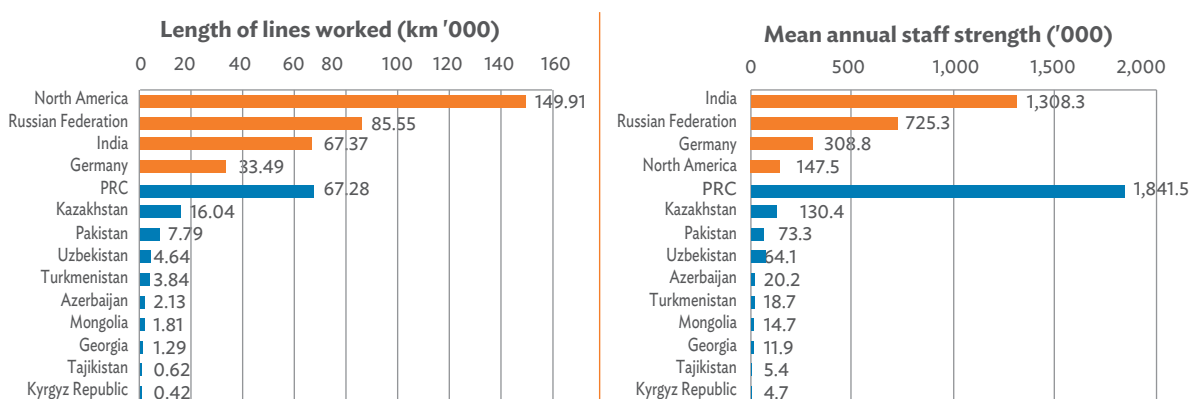
Length of lines worked (km '000)

Country	Value
North America	149.91
Russian Federation	85.55
India	67.37
Germany	33.49
PRC	67.28
Kazakhstan	16.04
Pakistan	7.79
Uzbekistan	4.64
Turkmenistan	3.84
Azerbaijan	2.13
Mongolia	1.81
Georgia	1.29
Tajikistan	0.62
Kyrgyz Republic	0.42

Mean annual staff strength ('000)

Country	Value
India	1,308.3
Russian Federation	725.3
Germany	308.8
North America	147.5
PRC	1,841.5
Kazakhstan	130.4
Pakistan	73.3
Uzbekistan	64.1
Azerbaijan	20.2
Turkmenistan	18.7
Mongolia	14.7
Georgia	11.9
Tajikistan	5.4
Kyrgyz Republic	4.7

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

---

[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 4.4: Comparison of Railway Rolling Stock Fleet in Mongolia, other CAREC Member Countries and other Leading Railway Countries

Railway owned wagons ('000)

Country	Value
North America	1,660
India	278
Germany	83
Russian Federation	53
PRC	754
Kazakhstan	55
Uzbekistan	23
Pakistan	16
Turkmenistan	14
Azerbaijan	13
Georgia	13
Mongolia	6
Tajikistan	2
Kyrgyz Republic	2

Diesel locomotives

Country	Value
North America	26,547
Russian Federation	6,255
India	6,023
Germany	1,632
PRC	6,018
Kazakhstan	1,217
Pakistan	455
Uzbekistan	186
Azerbaijan	158
Mongolia	116
Georgia	81
Kyrgyz Republic	53
Tajikistan	42

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

Note: CAREC Member Countries shown in blue, comparators from other regions shown in red.

Source: UIC 2019.

Figure 4.5: Comparison of Annual Railway Freight and Passenger Traffic Turnover in Mongolia, other CAREC Member Countries and other Leading Railway Countries

Revenue-earning freight (ton-km million)

Country	Value
Russian Federation	2,491,876
North America	2,445,132
India	620,175
Germany	70,614
PRC	2,146,466
Kazakhstan	206,258
Uzbekistan	22,940
Mongolia	13,493
Turkmenistan	13,327
Pakistan	5,031
Azerbaijan	4,633
Georgia	2,963
Kyrgyz Republic	935
Tajikistan	165

Passenger traffic (passenger-km million)

Country	Value
India	1,149,835
Russian Federation	122,920
Germany	77,500
PRC	685,213
Pakistan	22,476
Kazakhstan	19,241
Uzbekistan	4,294
Turkmenistan	2,340
Mongolia	973
Georgia	597
Azerbaijan	467
Kyrgyz Republic	43
Tajikistan	28

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

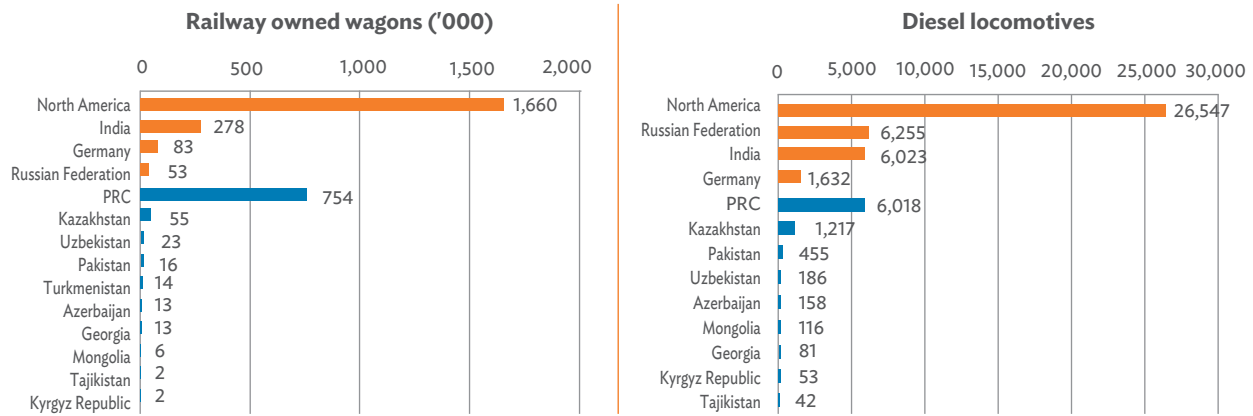Note: CAREC Member Countries shown in blue, comparators from other regions shown in red.

Source: UIC 2019.

87.   Track density measures the intensity of track utilization in terms of traffic volume per km of rail. UBTZ's track density compares well with other CAREC railways, just behind the PRC and Kazakhstan. Similarly, staff productivity can be measured as the volume of traffic per staff member. UBTZ's staff productivity ranks third among CAREC MCs, although productivity is much lower than comparators in leading railway countries. This is shown in Figure 4.6.

88.   A further set of productivity measures concern rolling stock asset utilization. Locomotive productivity measures annual traffic volume per locomotive. UBTZ's locomotive productivity is in relatively high compare of CAREC railways and

Figure 4.6: Comparison of Railway Track and Staff Productivity in Mongolia, other CAREC Member Countries and other Leading Railway Countries

Track density (million "pass-km + freight-km" per track km)

Country	Value
Russian Federation	30.6
India	26.3
North America	16.3
Germany	4.4
PRC	42.1
Kazakhstan	14.1
Mongolia	8.0
Uzbekistan	5.9
Turkmenistan	4.1
Pakistan	3.5
Georgia	2.8
Azerbaijan	2.4
Kyrgyz Republic	2.3
Tajikistan	0.3

Staff productivity (million "pass-km + ton-km" per staff)

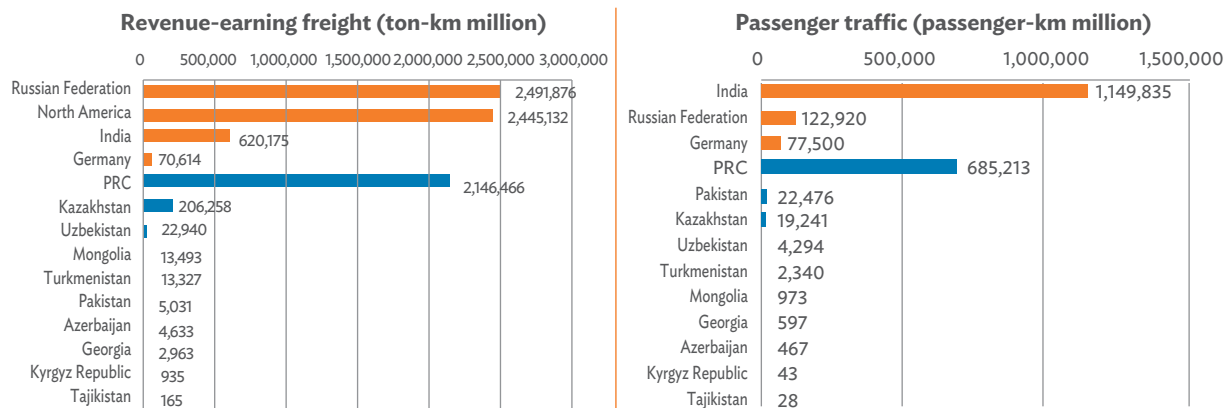| Country	Value
North America	16.6
India	1.4
Russian Federation	3.6
Germany	0.5
Kazakhstan	1.7
PRC	1.5
Turkmenistan	0.8
Mongolia	0.8
Uzbekistan	0.4
Pakistan	0.4
Azerbaijan	0.3
Georgia	0.3
Kyrgyz Republic	0.2
Tajikistan	0.0

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

Note: CAREC Member Countries shown in blue, comparators from other regions shown in red.
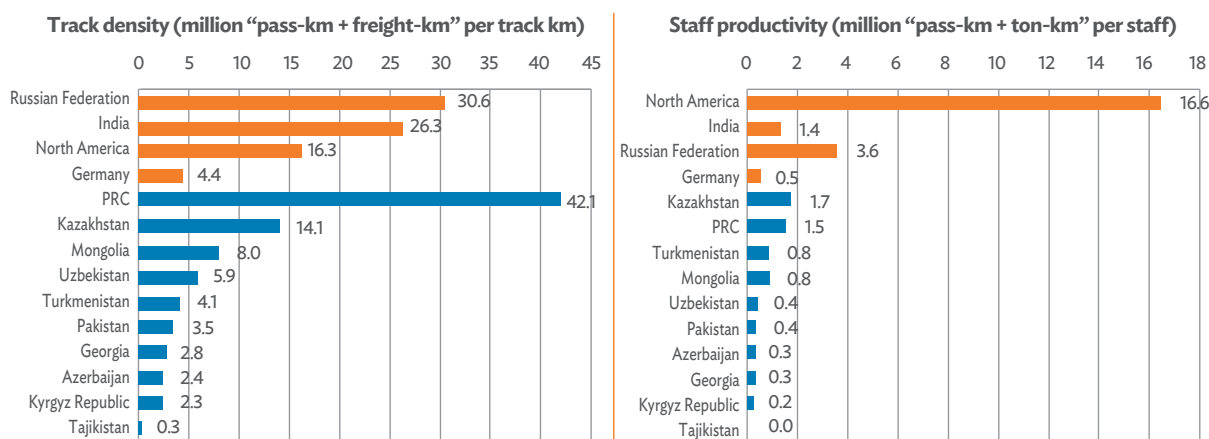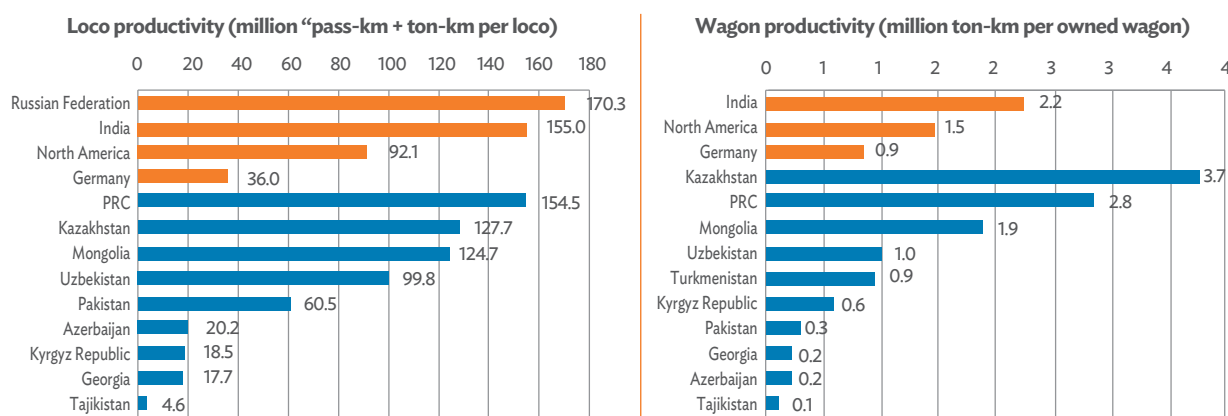
Source: UIC 2019.

other leading railway countries. Wagon productivity measures annual traffic volume per owned wagon. Based on the 2017 UIC data, UBTZ's wagon productivity is the third highest among the CAREC MCs. If UBTZ's current wagon fleet size is used (para. 82), its wagon productivity is close to that of Kazakhstan, the CAREC MC with highest wagon productivity. UBTZ's high wagon productivity underscores the need to invest in additional rolling stock as well as rolling stock renewal. This is shown in Figure 4.7.

Figure 4.7: Comparison of Locomotive and Wagon Productivity in Mongolia, other CAREC Member Countries and other Leading Railway Countries

Loco productivity (million "pass-km + ton-km per loco)

Country	Value
Russian Federation	170.3
India	155.0
North America	92.1
Germany	36.0
PRC	154.5
Kazakhstan	127.7
Mongolia	124.7
Uzbekistan	99.8
Pakistan	60.5
Azerbaijan	20.2
Kyrgyz Republic	18.5
Georgia	17.7
Tajikistan	4.6

Wagon productivity (million ton-km per owned wagon)

Country	Value
India	2.2
North America	1.5
Germany	0.9
Kazakhstan	3.7
PRC	2.8
Mongolia	1.9
Uzbekistan	1.0
Turkmenistan	0.9
Kyrgyz Republic	0.6
Pakistan	0.3
Georgia	0.2
Azerbaijan	0.2
Tajikistan	0.1

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 red; (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

89. Drawing on the previous chapters, this final chapter discusses opportunities for Mongolia to obtain prefeasibility study support, and capacity development and knowledge-related assistance, through the present CAREC Railway Sector Development TA.

B. Policy setting

90. Through the railway law, the government has established broad foundations for the railway sector to eventually transition from the present UBTZ monopoly to having multiple operators competing for traffic, each with guaranteed right of access to infrastructure throughout the railway network.

91. The national railway policy has established a broad framework to guide the expansion of the unified national railway network, with a view to railways playing a catalytic role in enabling growth of mining and wider economic development. The policy generally offers useful overall directions for the expected layout of the future network, with a view to ensuring new railway links will complement each other and contribute to overall network efficiency and connectivity. The policy also seeks to ensure technical compatibility (e.g. adoption of broad gauge) and, through MRTD's rail traffic control center, seeks to introduce arrangements for future operational coordination and control of trains.

92. One of the initial concerns about the policy was that some of the proposed new links might not be financially viable. This remains a consideration but may be less critical to the extent that the government lacks resources to finance more than a small part of the enormous investments needed and is therefore looking to the private sector, notably private mining companies, to arrange financing. The involvement of the mining companies will help to manage the risks of developing and operating new railways since mining profitability will depend on the railways being efficient, reliable and cost-effective. In practice, the phasing of investments within the planned new network will be determined by project bankability, and the elements of the future network will need to be refined periodically to accommodate feasible new project proposals and adjust or remove projects that are not feasible.

93. Another important limitation in the policy framework concerns coal traffic. While the proposed new railways will serve a variety of different mining products—including high volume minerals such as iron ore—it appears that the majority of traffic will be coal. One issue is that coal is a relatively low value commmodity so, depending on market prices and costs of production and transport, it becomes unprofitable if transported by railway over very long distances. Consequently, while short railway links such as Tavan Tolgoi–Gashuun Sukhait may be feasible, some of the other longer new routes envisaged may not be—if their traffic will be mainly coal. Another issue is that large scale investments

in coal and coal transport are at odds with global concerns to reduce the use of fossil fuels that cause climate change. While there will be a window of some years during which expansion of Mongolia's coal exports will be possible, it is likely that mining companies and financial institiutions will face growing pressure to withdraw from coal in favor of renewable technologies,[20] and the existing declining trend in coal prices may continue until production becomes unprofitable.

94.   A further issue of immediate concern is that, while the national railway policy seeks to develop new railways that would be independent of UBTZ, it does not provide clear directions to ensure that (i) investments in expansion of UBTZ's throughput capacity and renew and upgrading if its infrastructure and rolling stock will be financed and implemented; and (ii) reforms and commercialization measures will be introduced to improve UBTZ's performance and financial and operational sustainability. Since the Ulaanbaatar Railway is now approaching capacity saturation, and UBTZ has not addressed the issues that have made it unable to generate financing for asset renewal and modernization, new policy directions on UBTZ are urgently needed.

C. Commercialization and reform

95.   There is no single best practice model for commercialization and reform of railways. However, a useful starting point in the case of UBTZ may be to (i) reorganize its functions, management and accounting system in accordance with its main lines of business, (ii) prepare and implement a market-based strategy, including a business plan, a reformed

tariff structure, a PSO mechanism, and a program of investments to address critical bottlenecks, with a view to quickly expanding the railway business and improve its financial performance, and (iii) prepare a longer term investment masterplan of projects expected to be economically and financially feasible.

96.   Within this approach, key elements of commercialization would include setting up a sales and marketing function, developing an improved understanding of the cost of services offered, introducing a more flexible approach to pricing with a view to attracting more traffic and optimizing revenues, and working with interline railways and customs authorities to offer more reliable and competitive cross-border railway services. It would also be necessary to address overstaffing and staff skills development. Since UBTZ has little experience of implementing a major change and modernization program, it would require strong direction from the government and substantial technical assistance support from development partners.

D. Proposals for support from CAREC Railway Sector Development

1. Prefeasibility studies

97.   **Tavan Tolgoi–Zuunbayan–Sainshand–Baruun-Urt–Choibalsan Railway.** This proposed railway is part of the planned railway network and is designated as part of CAREC Subcorridor 402. It is expected to transport coal and other mineral exports to Russian Federation and the PRC, as well as imports and, potentially transit traffic, as well as facilitating domestic transport. It would expand

---

[20]   Some of Mongolia's international development partners, including multilateral development banks, have introduced climate change policies that make it difficult for them to finance projects whose main purpose is to enable increased consumption of coal and other fossil fuels.

Mongolia's access to sea ports by providing links via the TSR to the Russian Federation ports of Vladivostok, Nakhodka, Vostochny; and to the PRC ports of Tianjin, Caofeidian and Dalian. Mongolia expects that access to additional sea ports would help to diversify the export markets it can supply with mineral products. As discussed in Chapter 1, initial earth works are already underway on the 415 km Tavan Tolgoi–Zuunbayan section but it seems likely that additional investment financing will need to be raised in order to complete the project. An important task of the prefeasibility study would be to determine whether it would be profitable for mining companies to transport outputs by railway over such long distances, taking into account trends in the prices of mining outputs as well as transport distances and costs. A further task would be to assess the extent the project would depend on fossil fuel traffic, and examine the implications for both long term project sustainability and being able to raise necessary investment financing.

98.   Tavan Tolgoi–Gashuun Sukhait Railway. This project covers a 240 km section of CAREC Subcorridor 402 to the PRC border. It is expected to carry annual traffic of 30 million tons of coal, including coking coal and thermal coal, from the Tavan Tolgoi mine to the nearest railhead of PRC's Shenhua Railway. The government estimates the project will reduce the cost per ton of transporting coal from $32 to $8, and reduce journey time between the mine and the border to four hours. The project is expected to generate substantial export revenue for Mongolia, and reduce the damage and adverse environmental impacts currently being caused by use of trucks. As discussed in Chapter 1, initial earth works are already underway but about $1 billion of additional financing needs to be raised to complete the project. The proposed prefeasibility study would include assessment of the extent that the project would lead to generation of additional fossil fuel traffic, and examine the implications for both long term project sustainability and being able to raise necessary investment financing.

99.   Logistics centers associated with the Bogd Khan Railway. ADB has assisted the government in studying a proposed railway bypass, known as the Bogd Khan Railway, to move the alignment of the Ulaanbaatar Railway out of Ulaanbaatar where it is contributing to problems of urban road traffic congestion. Part of this proposal is to relocate existing private logistics facilities serving the railway to a new location outside Ulaanbaatar. The proposed prefeasibility study would examine the establishing of a large new logistics facility center outside Ulaanbaatar to be used by these companies. Until now, in spite of ADB support, it has been difficult for the government to arrive at consensus with the private sector on this proposal. Before undertaking the proposed prefeasibility study, it would be necessary to confirm that the government has obtained sufficient commitments from the private sector to ensure that further study support would have prospects of success.

2. Knowledge products and events

100.   Update "Transit Mongolia" program. Since this program was launched in 2008, it has made useful progress in assisting Mongolia to improve trade and transport facilitation on cross-border railway routes, with a view to streamlining transportation and border clearance, and reducing transport times and costs for export, import and transit traffic. As discussed in Chapter 1, the program also includes plans for creating two new transit corridors in the eastern and western parts of the country. In the 12 years since the program was launched, Mongolia's transit situation has changed considerably. The national railway policy was introduced, mining activities have expanded, plans for new mines and rail links have gathered momentum, the new Zamiin-Uud transshipment facility has come into operation, border clearance procedures have been streamlined and transit traffic has risen sharply. The proposed study would conduct a short evaluation of the program to date and assess future the main

issues that need to be addressed in future. Drawing upon consultations with relevant government representatives, and with mining companies, transport and logistics firms, and other private sector organizations, as well as with representatives of principal trading partners and sources of transit traffic, the study would identify the need to refine the objective, scope and implementation arrangements of the program, and prepare an updated program for government approval.

101.   Support for implementation of tariff reform. A previous ADB study of railway infrastructure tariffs in Mongolia identified weaknesses in the existing structure of UBTZ railway tariffs, as well as shortcomings in government policy on railway tariffs that have limited UBTZ's ability to generate sufficient profits to finance asset renewal, and recommended a basis for separating the elements of the tariff covering infrastructure and train operations in order to enable open access by multiple railway operators in future (ADB 2014). The proposed advisory support would assist the government to update the earlier study, and prepare and initiate an implementation plan for tariff reforms and introduction of a PSO for uneconomic services.

102.   Accounting standards and systems to enable railway commercialization. Among the first steps needed to be capable of operating on a commercial basis, is to adopt International Accounting Standards and 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. The proposed knowledge support would compile best practices on the introduction of such railway accounting standards and systems, identify the main tasks for their introduction by UBTZ, MTZ and other interested CAREC railway organizations, and prepare options for sequencing the transition from the existing accounting standards and systems to the new ones.

103.   Best practices in establishing and operating a railway sales and marketing function. A critical obstacle to commercialization of CAREC railways is that many of the railways lack a competent sales and marketing function (in some cases there is no separate unit or department for sales and marketing). The proposed knowledge product would prepare a paper documenting best practices in the setting up and operation of a railway sales and marketing function, conduct management training workshops to increase awareness among CAREC railways, and work with UBTZ, MTZ and other interested railways to prepare proposals for establishing a new or improved sales and marketing function.

104.   Rail network simulation software. MRTD has requested support to acquire OpenTrack, a microscopic railway simulation software developed by OpenTrack Railway Technology Ltd of Switzerland. OpenTrack is used in the PRC, Korea, Japan, Taiwan, Thailand, Philippines, Malaysia, Indonesia, Indonesia and India. It facilitates the testing of railway infrastructure plans and operating schedules to optimize network and time table design. If other CAREC railways are interested in similar software, the proposed support would assist in identifying the best software vendor and provide advice on negotiation of a CAREC-wide license.

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

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

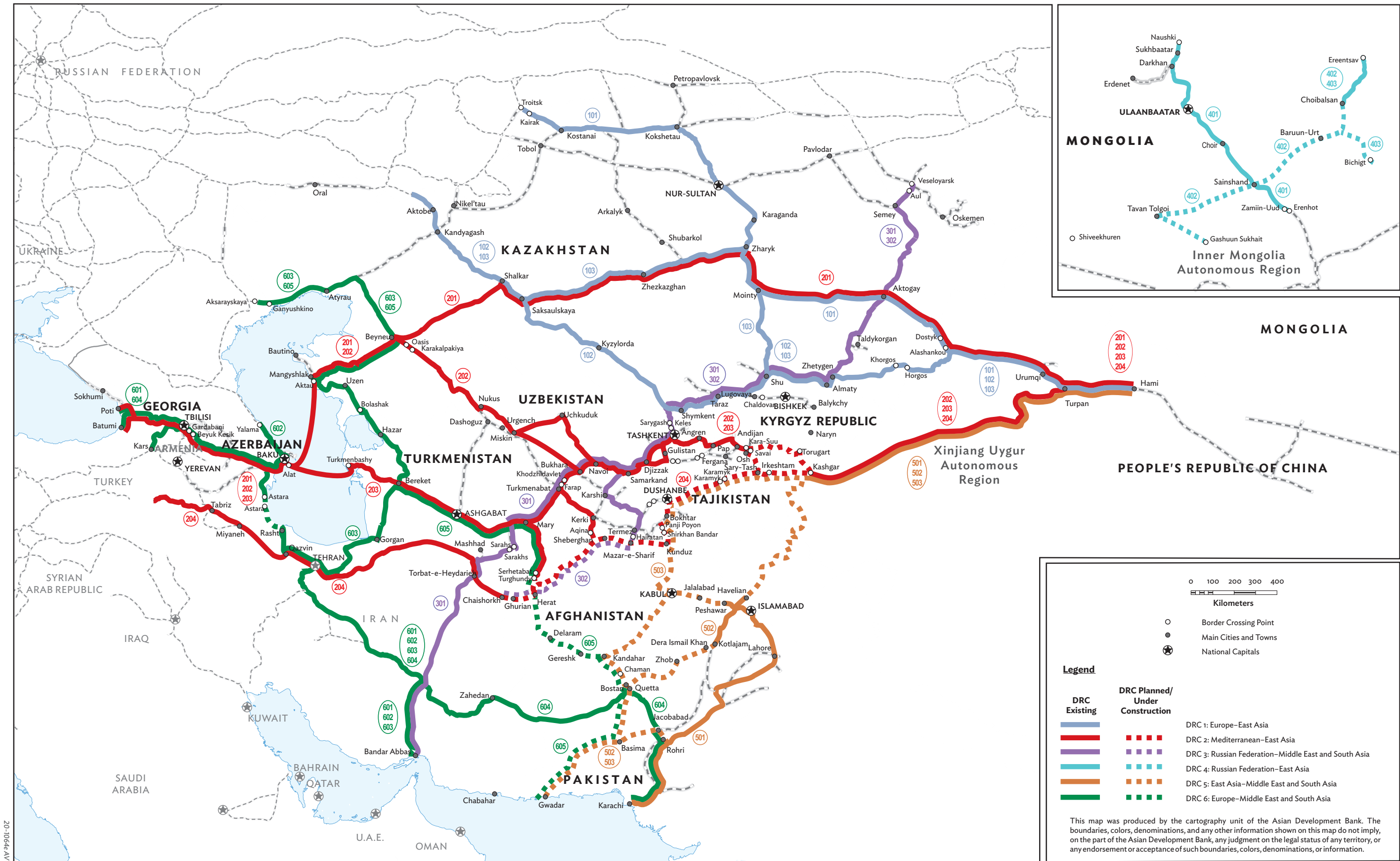**Table 5.1: Promising Opportunities for Mongolia to Obtain Support under CAREC Railway Sector Development TA**

Type of support	Subject
Prefeasibility study	Tavan Tolgoi–Zuunbayan–Sainshand–Baruun-Urt–Choibalsan Railway
	Tavan Tolgoi–Gashuun Sukhait Railway
	Logistics centers associated with the Bogd Khan Railway
Knowledge products and events	Update "Transit Mongolia" program
	Update "Transit Mongolia" program
	Support for implementation of tariff reform
	Accounting standards and systems to enable railway commercialization
	Best practices in establishing and operating a railway sales and marketing function
	Rail network simulation software

CAREC = Central Asia Regional Economic Cooperation.

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

Source: TA consultants.

DRC = designated rail corridors.

Source: CAREC Secretariat.

Legend

DRC Existing / **DRC Planned/Under Construction**

DRC 1: Europe–East Asia
DRC 2: Mediterranean–East Asia
DRC 3: Russian Federation–Middle East and South Asia
DRC 4: Russian Federation–East Asia
DRC 5: East Asia–Middle East and South Asia
DRC 6: Europe–Middle East and South Asia

This map was produced by the cartography unit of the Asian Development Bank. The boundaries, colors, denominations, and any other information shown on this map do not imply, on the part of the Asian Development Bank, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries, colors, denominations, or information.

Border Crossing Point
Main Cities and Towns
National Capitals

REFERENCES

Asian Development Bank (ADB). 2014. *Rail Infrastructure Tariffs: Enabling Private Sector Development in Mongolia's Railway Sector.* ADB: Manila.

———. 2017. *Unlocking the Potential of Railways: A Railway Strategy for CAREC, 2017–2030*. ADB: Manila.

———. 2018a. *Railway Sector Development in Central Asia Regional Economic Cooperation Countries.* Technical Assistance Report. ADB: Manila.

———. 2018b. *Report and Recommendation of the President to the Board of Directors for Proposed Loan and Administration of Technical Assistance Grant to Mongolia: Regional Road Development and Maintenance Project.* ADB: Manila.

———. 2018c. *Breaking Barriers: Leveraging Mongolia's Transport and Logistics Sector*. ADB: Manila.

———. 2019. *Basic Statistics, 2019.* ADB: Manila.

Chinese Academy of International Trade and Economic Cooperation. 2019. *China Railway Express to Europe Trade Routes.* PRC Ministry of Commerce.

Derudder, B., Liu X. and Kunaka, C. 2018. *Connectivity Along Overland Corridors of the Belt and Road Initiative*. World Bank: MTI Global Practice Discussion Paper No. 6. World Bank: Washington DC.

Eurasian Development Bank. 2018. *Silk Road transport corridors: Assessment of Trans-EAEU Freight Traffic Growth Potential*. Report 49, Eurasian Development Bank: Saint Petersburg.

Gansukh, U., Xu, M and Ali S.A. 2018, *Analysis of the Current Situation of Mongolian Railway and Its Future Development*. International Business Research, Vol. 11, No. 5 2018. ISSN 1913-9004 E-ISSN 1913–9012. Canadian Center of Science and Education.

Gotov, D. 2014. *Railway Sector Assessment*. Manuscript.

Government of Mongolia. 2008. *Approval of Transit Mongolia Program*. Resolution No. 183. Ulaanbaatar.

———. 2019. *Within the Framework of Prime Minister U.Khurelsukh's visit, Relations and Cooperation Documents were Signed*. 4 December 2019. https://zasag.mn/news/view/24078

International Bank for Economic Co-operation. 2020. *IBEC and UBTZ Discuss Financial Support for the Development of Transport Infrastructure in Mongolia*. Press Center, 4 February 2020. http://en.ibec.int/pressroom/news/news/Novosti-angl/IBEC-finances-the-development-of-Mongolian_3000/

International Transport Forum (ITF). 2019. *Enhancing Connectivity and Freight in Central Asia*, International Transport Forum Policy Papers, No. 71. OECD Publishing: Paris.

International Union of Railways (UIC). 2019. UIC Statistics. https://uic.org/support-activities/statistics/.

Jargal Defacto. 2019. *Tavan Tolgoi in Toronto*. 30 March 2019. https://jargaldefacto.com/article/tavan-tolgoi-in-toronto

Ministry of Road and Transport Development. 2016. *Feasibility Study of Rail Traffic Control Center*.

Mongolian Railway Joint Stock Company (MTZ). 2019. *MTZ New Railway Project*. Slide Presentation.

Montsame. 2019a, *Construction of Railway from Tavantolgoi Deposits and Gashuusukhait Port to Resume.* 26 August 2019. https://montsame.mn/en/read/198764

———. 2019b, Speaker G.Zandanshatar prioritizes occupational safety in railway field. 2 May 2019. https://www.montsame.mn/en/read/188175

———. 2020, *Coal exports resume at Gashuunsukhait Port.* 23 March 2020. https://www.montsame.mn/mn/read/219848

National Statistical Office. 2020. *General Statistical Database*. http://1212.mn/

Observatory for Economic Complexity. 2020. *Mongolia Country Profile*. https://oec.world/en/profile/country/mng/

Office of the President. 2020. *Tavantolgoi–Zuunbayan Railway Construction Works Continue.* https://president.mn/en/2019/10/10/tavantolgoi-zuunbayan-railway-construction-works-continue/

Parliament of Mongolia. 2010. *Resolution 32: Endorsement of State Policy on Railway Transportation.* Parliament of Mongolia: Ulaanbaatar.

Railway Gazette. 2019. *Mongolia's Northern Railways signs EPC agreement.* 3 May 2019. https://www.railwaygazette.com/asia/mongolias-northern-railways-signs-epc-agreement/48464.article

Sanders, A.J.K. 2017. *Historical Dictionary of Mongolia*. Rowman and Littlefield: London.

The Diplomat. 2019. *Mongolia's New Mining Boom.* 22 October 2019. https://thediplomat.com/2019/10/mongolias-new-mining-boom/

World Economic Forum. 2016. *The Global Competitiveness Index*.

Railway Sector Assessment for Mongolia

The report summarizes the findings of the railway sector assessment for Mongolia, based on a country visit conducted on 23–29 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.