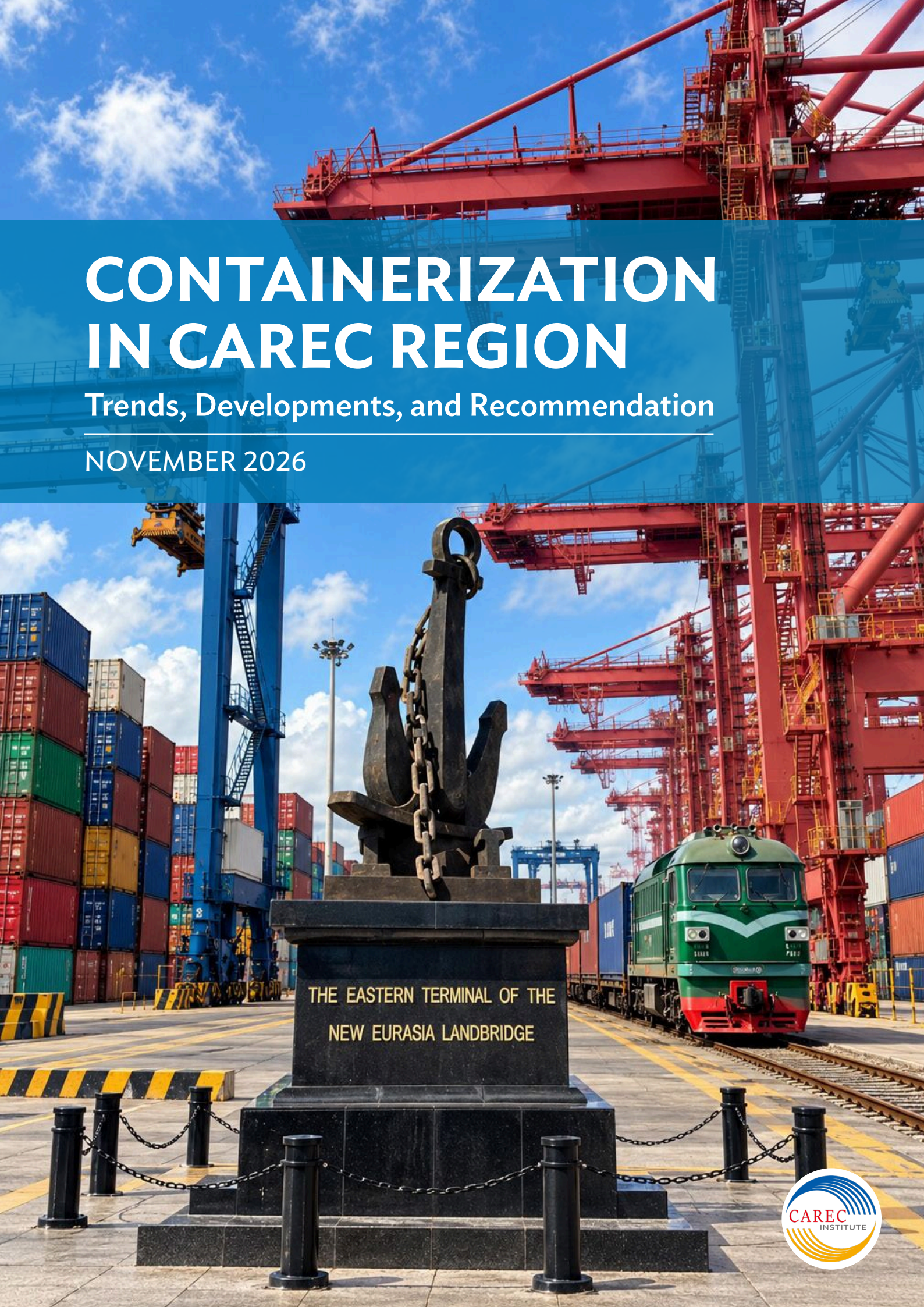
CONTAINERIZATION IN CAREC REGION

Trends, Developments, and Recommendation

NOVEMBER 2026



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Acknowledgments

Containerization in the CAREC Region: Trends, Developments, and Recommendations is a study that examines containerization trends, infrastructure and operational constraints, trade and transit potential, and opportunities to strengthen containerized freight movement across the CAREC region.

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Abbreviations

ADB	–	Asian Development Bank
ADY	–	Azerbaijan Demir Yolu (Azerbaijan Railways Company)
ASCO	–	Azerbaijan Caspian Shipping Company
BCP	–	border crossing point
BISTP	–	Baku International Sea Trade Port
BTK	–	Baku–Tbilisi–Kars
CAGR	–	compound annual growth rate
CAREC	–	Central Asia Regional Economic Cooperation
CIS	–	Commonwealth of Independent States
COVID-19	–	coronavirus disease
CPMM	–	Corridor Performance Measurement and Monitoring
CPPI	–	Container Port Performance Index
CRE	–	China Railway Express
ERA	–	Eurasian Rail Alliance
ERAI	–	Eurasian Rail Alliance Index
ETR	–	Eurasian Transport Route
FBR	–	Federal Board of Revenue (Pakistan)
FEU	–	Forty Equivalent Unit or 40-foot container
GIRCA	–	Georgian International Road Carriers Association
GPA	–	Gwadar Port Authority
GR	–	Georgian Rail
GR	–	Georgian Railways
IMAR	–	Inner Mongolia Autonomous Region
IRU	–	International Road Transport Union
KGTL	–	Karachi Gateway Terminals Limited
KICT	–	Karachi International Container Terminal
km	–	kilometer
KMTF	–	KazMorTransFlot (Kazakhstan National Sea Carrier)
KPT	–	Karachi Port Trust
KTZ	–	Kazakhstan Temir Zholy
MCGA	–	Mongolia Customs General Administration
PICT	–	Pakistan International Container Terminal
PQA	–	Port of Qasim Authority
PRC	–	People's Republic of China
PSA	–	Port of Singapore Authority
PSW	–	Pakistan Single Window
QICT	–	Qasim International Container Terminal

RoRo	–	Roll On/Roll Off
SAPT	–	South Asia Pakistan Terminal
SWD	–	speed with delay
SWOD	–	speed without delay
TCT	–	Tianjin Port Container Terminal
TEU	–	Twenty Equivalent Unit or 20-foot container
TITR	–	Trans-Caspian International Transport Route
TMTM	–	Russian acronym for TITR
UBTZ	–	Ulaanbaatar Railway
UNESCAP	–	United Nations Economic and Social Commission for Asia and the Pacific
XUAR	–	Xinjiang Uygur Autonomous Region

In this report, "$" and "US $" refer to US dollars.

Executive Summary

TA6694 Reg: Containerization in CAREC region: Trends, Developments & Recommendation is a technical assistance commissioned by ADB and CAREC Institute. This study intends to examine the current situation on container shipments in CAREC region, identifying the constraints that limit the growth of container traffic. The study will also assess the potential of containerization and determine its relevance in terms of trade and transit. These findings support the subsequent recommendations to address the barriers and bottlenecks, so that containerization can spur further economic and trade growth in CAREC members. Three field missions were organized to Azerbaijan, Georgia, Kazakhstan, Mongolia, Pakistan and the People's Republic of China (PRC). A total of 50 meetings with the public and private stakeholders were held.

This study's projections show strong but corridor-specific growth in container trade and throughput across the CAREC region. Across all corridors, higher growth outcomes rely heavily on resolving infrastructure bottlenecks, improving transshipment efficiency and maintaining a stable geopolitical and policy environment.

- For CAREC Corridor 2, container volumes are expected to increase from 56,500 TEUs in 2024 to about 272,800 TEUs by 2030, with a possible range between 100,000 and 643,000 TEUs.
- For CAREC Corridor 4, traffic at Zamiin-Uud is projected to rise from 398,438 TEUs in 2023 to more than 1 million TEUs by 2030 under a 17 percent CAGR, and up to 3.7 million TEUs if PRC transit volumes grow at 50 percent annually.
- For the South Asia–Central Asia route, the base case anticipates a decline to around 53,000 TEUs by 2030, with a wider range of 40,992 to 167,015 TEUs depending on whether growth remains negative or becomes positive.
- For the PRC–Central Asia–Europe corridor, throughput is estimated to reach roughly 530,000 TEUs by 2030 based on historical growth patterns, with potential outcomes spanning approximately 202,266 to 674,256 TEUs.

CAREC Corridor 2

The findings confirmed that containerization in CAREC members have different maturity levels, notably those that have ports tend to adopt a higher level of container freight traffic, notably Pakistan, PRC and Georgia, all three having double digit of containerization level (i.e. the percentage of containers transported on road and rail across land territories). Conversely, landlocked countries tend to have a lower containerization level, as evident in the Central Asian Republics. Despite the attraction of CAREC Corridor 2 since 2022, the proportion of containers freight traffic through Azerbaijan and Kazakhstan is still relatively low, driven by transit traffic between East Asia and Europe. There were 20,500 TEUs that moved through CAREC Corridor 2, and the number jumped to 50,500 TEUs in the first 11 months of 2024. Notwithstanding, the number of transit containers is expected to increase substantially as PRC raises the number of container block trains in the coming years. This would benefit Kazakhstan, Azerbaijan and Georgia, countries along CAREC Corridor 2. Even Uzbekistan saw the value of containerization and started to encourage the exports in containers, particularly for faraway destinations such as Brazil. Kyrgyz Republic

and Tajikistan showed low levels of containerization, as limited by the lack of a complete railway network and the need to access Aktau, Kuryk or Turkmenbashi ports to cross the Caspian Sea. At present, container traffic was driven by Chinese exports in containers. Turkmenistan is an interesting case. Tuekmenbashi is a port with a container capacity of 400,000 TEUs per year, larger than Baku, Aktau and Kuryk combined. If the country improves its customs, immigration and transit regime, this could encourage more container flows to the country.

CAREC Corridor 4

CAREC Corridor 4 also saw significant volume of container traffic. The number of TEUs on rail have risen 2.5 times from 159,245 TEUs in 2018 to 404,273 TEUs in 2023. Transit remained an important driver for container traffic. While import containers continue to be sizeable, the number of export and domestic containers has increased faster. In 2023, while half of the container movements were transit, and import contributed to 19% of the volume, the rate of increase of containers freight traffic for export and domestic was rapid, accounting for 16% of the total volume each.

The number of container freight movements on road along this corridor was less significant but demonstrated strong growth too. The total number of containers reached 10,093 TEUs in 2023, but more than doubled to reach 24,271 TEUs in the first 11 months in 2024. Most containers passed through Zamiin-Uud and a very tiny number moved through Altanbulag.

Unfortunately, CAREC Corridor 4 faces a grim situation at present. As on 19 August 2024, there were 5,100 containers bound for Mongolia waiting in Tianjin seaport. It took 90 to 120 days for the containers to arrive in Ulaanbaatar. Detailed analysis on the capacity along this corridor identified the bottleneck to be at Zamiin-Uud, where the processing capacity is 7 trains per day in both directions.[1] Ulaanbaatar, the key destination for the containers, also have structural constraints. There are 14 different stations to receive the container, each with the capacity to only handle 1 to 2 trains per day due to outdated cranes and equipment. There has been some talks on relocating all these container stations to a new dry port built to international standards. However, the policymakers have not been able to clarify this, thus dissuading the private station operators to finalize investment decisions.

South Asia–Central Asia Corridor

The corridors that connect South Asia and Central Asia resembles CAREC Corridor 5 and 6. Road transport is the only option because the rail infrastructure for freight is underdeveloped in this region. There is frequent and high volume of container movements from Karachi to Kabul or Kandahar. This is because Pakistan Customs mandated that such movements (also called the Afghan Transit Trade) must be transported in containers due to security reasons, and to reduce the chances of smuggling or pilferage in transit. Besides transit traffic, this corridor is also interesting for Pakistan to export to Central Asia. There are production centers in Islamabad, Rawalpindi, Faisalabad etc. in the northern parts of Pakistan. In 2023, Pakistan experimented in using containers to move a variety of consumer and industrial merchandize to enter Afghanistan and access to different destinations in Central Asia.

In 2023–24, there were 85,705 TEUs of containers totaling 1.4 million tons that moved along this corridor. The volume reached 126,297 TEUs in 2019–20 before declining to 101,405 TEUs in 2021–22. There was a strong increase of 52.2% reaching 154,387 TEUs in 2022–23. Such volatile pattern was caused by the border closures between Afghanistan and Pakistan, due to security concerns. For example, Chaman-Spin Buldak BCP was closed for extended period in 2024. As the Afghan Transit Trade (containers to and from Afghanistan) constituted a dominant size in the container flows, such BCP closures have an outsized impact on the container throughput along this corridor.

1 Mongolia, like many CAREC members, uses the 1,520 mm broad rail gauge, while PRC adopts the standard 1,435 mm rail gauge. This means the train from one country to the other has to stop at the border and perform a change of gauge operations. The rail wagons are not interoperable.

To diversify such concentration risk and to promote the regional connectivity between South Asia and Central Asia, Pakistan has four bilateral transit trade agreements. Besides Afghanistan, agreements with Iran, Uzbekistan and Tajikistan were concluded. A transit trade agreement was recently signed with Azerbaijan on 11 July 2024. Pakistan is currently in discussions with Kazakhstan and Turkmenistan to reach bilateral transit trade agreements with these countries. These efforts would likely boost the container freight traffic along between Karachi Port and Port Qasim with Central Asia.

However, there are some important issues to be addressed. The port dwell time for the containers in Karachi can take more than 10 days. This is very long considering that a shipment merely takes 2 to 3 days to complete a journey from Karachi or Qasim to the Torkham BCP. Investigation revealed that the need to obtain Bank Guarantee for Afghan Transit Trade tend to be a lengthy process. This is compounded by the mandatory 100% x-ray scanning of all the containers under the Afghan Transit Trade, and a high level of those placed under red channel that lead to full physical inspection. There is also a need to improve the last mile connectivity between the ports and the train stations. In addition, the access roads leading to Karachi Port, particularly South Asia Pakistan Terminal, are limited and the drivers are likely to wait for extended period during peak traffic hours.

PRC–Central Asia–Europe Corridor

The foreign trade between PRC and Europe has a significant volume at $941 billion in 2021, $951 billion in 2022 and $882 billion in 2023. At the same time, PRC's trade volume with Central Asian countries has continued to rise. In 2023, the trade volume between PRC and the five Central Asian countries (Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan) has reached $ 89.4 billion, a year-on-year increase of 27%. While the trade volume continues to grow, the trade structure between PRC and Central Asian countries has become more diversified and balanced.

The container freight traffic through PRC–Central Asia–Europe increased from 1.6 million (2022) TEUs to 1.9 million TEUs (2023), up 17.8%. For the period January to August 2024, a total of 1.8 million TEUs of containers were handled at the six border crossing points between PRC and selected CAREC members. Westbound containers totaled 1,065,000 TEUs with the remaining 760,000 TEUs being eastbound containers.

Alashankou had the largest share of containers handled with 571,000 TEUs or 31.3% of total container traffic processed in the first eight months of 2024. The proportion of containers handled for the PRC–Europe trade dominated border crossings with a share of 88.4% or 505,000 TEUs. The PRC to Europe container block trains moved along this route, and entered the Russian Federation, bypassing CAREC Corridor 2. Shipments that moved through Dostyk follow the CAREC Corridor 1a.

Khorgos handled 538,000 TEUs with a market share of 29.5% in the same period. Unlike Alashankou, containers for the China–Asia trade dominate the traffic with a market share of 58.7% or 315,000 TEUs. For the container express trains that moved along CAREC Corridor 2, they tend to favor going through Khorgos as the rail connection to Aktau and Kuryk ports are better. Shipments that moved through Dostyk followed the CAREC Corridor 1b and then Corridor 2 for Caspian crossing.

In 2023, a total of 17,523 China–Europe block trains were operated, sending 1.9 million TEUs, a year-on-year increase of 6% and 18%. The return journey is basically balanced with 9,343 outbound trains and 8,180 return trains. More than 5,000 trains have run between PRC and Central Asia.

Issues and Recommendations

Container freight traffic is increasingly playing an important role in trade, transport and transit in CAREC region. However, the issues and impediments vary depending on the route and the countries. Therefore, a generic solution to develop containerization will not work. For CAREC Corridor 2, the limitations in the

vessel capacity at the Caspian Sea is a major constraint that restricts the operational throughout of CAREC Corridor 2 between 70,000 TEUs to 80,000 TEUs. It is necessary to modernize the Aktau port by installing more suitable equipment and complete dredging. The creation of a container hub with a capacity to handle 100,000 TEUs in Aktau is a very positive step, but this study has also revealed limitations in the location of the container hub.

CAREC Corridor 4 is currently hampered by the very long waiting time for containers to be released from Tianjin. Adding more trains in PRC to move the containers from Tianjin would only worsen the problem, because the bottlenecks at Zamiin-Uud and Ulaanbaatar to process the containers have to be solved. In particular, the Zamiin-Uud's capacity to process only 7 trains per day (and only 4 to 5 trains in the direction to Ulaanbaatar and the remaining to Erenhot) is a major constraint. The non-functioning of the yard crane, the lack of an effective information systems in Zamiin-Uud, and the uncertainty surrounding the new dry port's location in Ulaanbaatar are critical issues. It is strongly recommended that ADB work with the policymakers to resolve these issues.

South Asia and Central Asia Corridor is a promising route, as the current transit are already using containerized freight. In the short term, the multimodal connectivity in Karachi, the surrounding road infrastructure and the long port dwell time need to be addressed. A rail link between Karachi Port to the Pipri Marshaling Yard would be a major improvement to facilitate water-rail connection. In the long term, massive investment to develop the rail network in Pakistan is needed to move containers on freight. Although the rail sector only accounted for 8% of the freight tonnage moved in Pakistan, this rail sector is strategic to offer a cost-effective solution to move cargoes between South Asia and Central Asia.

A final thought here is striking a balance between international transit and regional trade in the container movements in CAREC region. Undoubtedly, international transit in the form of PRC and Europe, using container block train, is the main engine driving the container traffic across CAREC members now. Yet the potential in trade and economic development will not be fully realized if the CAREC members only depend on international transit. Local industries and production should be encouraged and developed, with cross-border trade taking place among CAREC members, as well as trade with key economies in proximity to CAREC region, such as Türkiye, the Middle East and possibly Southeast Asia. The over-reliance on international transit has the risk that such trade can switch back to maritime, where the ocean freight rate will always be more competitive under normal circumstances. Thus, multimodal transport and logistics, such as container movements across CAREC Corridor 2 or other CAREC corridors, will have to perform more competitively in terms of timeliness and reliability. Having local and regional production and cross-border trade will add to the volume of containerized freight movements and diversify the over-reliance on international transit, while enabling CAREC members to explore and penetrate new markets.

Introduction

1

1.1 Project Background

1. TA6694 Reg: Containerization in CAREC region: Trends, Developments & Recommendation is a technical assistance commissioned by ADB and CAREC Institute. This study intends to examine the current situation on container shipments in CAREC region, identifying the constraints that limit the growth of container traffic. The study will also assess the potential of containerization and determine its relevance in terms of trade and transit. These findings support the subsequent recommendations to address the barriers and bottlenecks, so that containerization can spur further economic and trade growth in CAREC members.

2. The project started on 15 July 2024. An initiation meeting was held on 22 July 2024, presented by the consulting team to the project supervisors from ADB and CAREC Institute. This is followed by the submission of the inception report on 31 July 2024. Three field missions were organized to Azerbaijan, Georgia, Kazakhstan, Mongolia, Pakistan and People Republic of China (PRC). A total of 50 meetings with the public and private stakeholders were held.

3. The first field mission (16–26 August 2024) focused on CAREC Corridor 2 and covered 3 countries (Georgia, Azerbaijan and Kazakhstan) and 5 cities (in the order of Batumi, Tbilisi, Baku, Aktau and Astana). A total of 19 meetings were held in 8 working days. High level meetings were conducted, notably with Maksat Kaliakparov, Vice Minister from the Ministry of Transportation from the Republic of Kazakhstan, as well as Fariz Alibeyli, Secretary of the Transit Council from the Republic of Azerbaijan and Aleksandra Suladze, Deputy Head of the Transport and Logistics Development Policy Department from the Republic of Georgia. All the public sector stakeholders expressed strong commitment to the development of CAREC Corridor 2. Meetings were also held with the seaport authorities. The consultants met with Alefirenko Pavel, Head of Transport and Logistics from Batumi Port Authority, Eugene Seah, COO of Port of Baku, Abay Turikpenbayev, Chairperson of Aktau Port and Serik Ahmatov, General Director of Kuryk Port.

4. The second field mission (11–25 September 2024) focused on Mongolia along CAREC Corridor 4b, as well as freight flows between Mongolia and PRC and PRC across Central Asia. The trip covered 2 countries (Mongolia and PRC) and 4 cities (in the order of Ulaanbaatar, Zamiin-Uud, Lianyungang and Tianjin). A total of 19 meetings were held in 9 working days. In Mongolia, high level meetings were conducted, notably with Batbaatar Bayangerel, Advisor to the Prime Minister, Davaasuren Bataa, Director of the Customs Control and Clearance, Batzorig Tuvshin, Chief Engineer of the Mongolian Railways, Batbold Aruinbold, Deputy Chairperson of Ulaanbaatar Railway and Gantumur Baldorj, Chairman of the Zamiin-Uud Freight Transshipment Center. In PRC, high level meetings were conducted, notably with Yin Zhenwei, Chief Economist from Lianyungang Port Holdings, Galvin Jiang, Head of the LYG-PSA Container Terminal, Chen Yunzhong, Union President of the Sinotrans Landbridge Transportation Company, Wang Huan, General Manager of the Tianjin Dongjioang International Train Operation Management Company and Deng Changzhi, Deputy Manager of the Tianjin Port Group.

5. The third field mission (30 September–4 October 2024) focused on Pakistan and Central Asia. The trip covered 2 cities (in the order of Islamabad and Karachi). A total of 13 meetings were held in 5 working days. high level meetings were conducted, notably with B.A. Nasir, Additional Secretary from Ministry of

Communications, Abdul Malik, Secretary from Pakistan Railways, Mian Aftab Ali Shah, Chief Finance and Accounts Officer from Ministry of Maritime Affairs, Wajid Ali, Director General of Transit Trade from Federal Board of Revenue, Rear Admiral Rizwan Ahmad, General Manager (Operations) of Karachi Port Trust and Rear Admiral Shahid Ahmed, Director (Operations) of Port Qasim Authority. The team also met with National Logistics Company and had valuable insights from Mr. Shoaib Ahmad Khan, General Manager of Project Logistics and Mr. Sumair Malik, Logistics Operations Manager. The list of organizations and representatives met in all the three field trips is given in Appendix 1.

1.2 Objectives of This Study

6. This study aims to achieve four objectives, namely

(i) Assess the current status of the transport and logistics sector, in particular the level of containerization in cross-border trade.
(ii) Identify the barriers and bottlenecks that impede adoption of containerization, which can be attributed to issues in regulation, operation or market economics.
(iii) Analyse the time and cost performance of containerized shipment, viz-a-viz other methods of transportation, to determine the situations where containerization makes economic sense.
(iv) Recommend possible policy and incentive measures for CAREC members to promote and adopt containerization.

1.3 Structure of This Report

7. The rest of the report is organized as follows. Chapter 2 describes the current situation of containerization in the CAREC region. The chapter maps the key trade flows across the CAREC region, elaborating on the trade routes through three regional blocs, namely Central Asia and the Caucasus, North and East Asia as well as South Asia. The level and issues of containerization in each of the CAREC members are then reported[2].

8. Chapter 3 describes the container trade and projected estimates of containerization growth till 2030. The methodology and the pertinent aspects of the projection model are described.

9. Chapter 4 to 7 focuses on the container flows, issues and recommendations for each corridor, namely Trans-Caspian International Route, PRC and Mongolia, South Asia and Central Asia, as well as China-Central Asia/China-Kazakhstan-Russia-Europe.

10. Chapter 8 to 15 examines the seaports in this study, since these nodes are important interfaces between different modes of transport and where the use of containers is advantageous. The ports covered in this study includes nine ports namely Baku (Azerbaijan), Batumi and Poti (Georgia), Aktau and Kuryk (Kazakhstan), Karachi and Port Qasim (Pakistan), Tianjin and Lianyungang (PRC).

11. Chapter 16 is the final chapter and offers some thoughts on future research and intervention by ADB and CAREC Institute. At the end of this report, the appendices contain the relevant technical note and detailed data that are used in the analysis.

1.4 Scoping the Corridors

12. Since this study focuses on CAREC region and container traffic, it is important to scope the corridors. The scope of this study covers four clusters (1) CAREC Corridor 2, (2) CAREC Corridor 4, (3) South Asia and Central Asia and (4) East Asia and Central Asia and Europe.

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2 CAREC has 11 members. Afghanistan is one of the members but this study shall not analyze the country individually due to the absence of data. However, issues relating to this country will be discussed in one of the corridors namely South Asia and Central Asia, because transit shipments are taking place across Afghanistan when goods from Pakistan move to Central Asia.

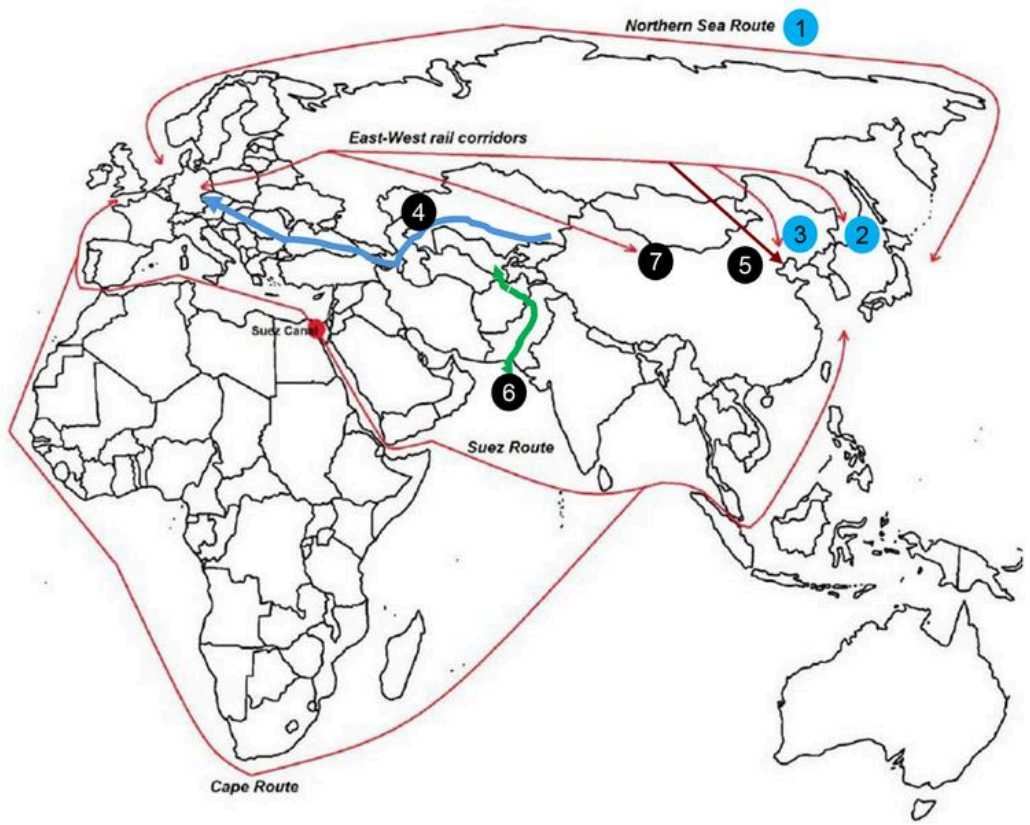
13. To move goods between East Asia and Europe, shippers can choose to ship using the northern sea route (via Bering Sea), or the various options under the east-west rail corridors, also popularly known as the Trans-Siberian (Transsib) rail service since large sections of this corridors move across the Siberian region. Goods move from the northeastern regions in PRC and then connect with the Transsib to Russian destinations or Europe. The Transsib is expected to handle 1.656 million TEUs in 2024, and the growth will reach 4 million TEUs in 2027[3]. However this will not be analyzed since the corridor does not pass through any CAREC members.

14. There are four clusters of corridors of interest in this study.

- CAREC Corridor 2 is of primary interest in this study. The corridor has the benefit of the shortest route that connects PRC and Europe. It is faster than the sea route through the Suez Canal, and free from the disruptions in the Red Sea Crisis that increased shipping cost and time significantly since the beginning of 2024. This corridor contains five important seaports that will be examined, namely Aktau, Kuryk, Alat, Poti and Batumi. The TITR is labelled as Corridor 4 in the map.

- CAREC Corridor 4 is also another prime interest in this study, since there are substantial number of 20 ft and 40 ft containers moving between Tianjin and Ulaanbaatar. This connects to Transsib and can access Europe. This study will examine Tianjin, as well as Zamiin-Uud BCP since this international BCP in Mongolia is the only location equipped to handle container traffic. This route is also known as "Trans-Mongolia" route, labelled as Corridor 5 in the map.

Figure 1: International and Regional Transport Corridors



Source: Consultants, using the map adapted from UNECE, https://unece.org/sites/default/files/2023-10/Roadmap_digitlzt-supplychain-Xchange.pdf.

3 The current and projection is given by the Russian Railways, https://eng.rzd.ru/en/9631/page/78314?id=203620.

- South Asia and Central Asia corridor is the third focus. These two regions are located in close proximity, but the inter-regional trade is limited by physical barriers, unharmonized border-crossing procedures and the need to transit through Afghanistan. Nonetheless, there are positive developments in this corridor and transit shipments are mandated to be transported in containers, a requirement by the Pakistan's Federal Board of Revenue. The seaports Karachi and Qasim will be examined. This corridor is labelled as Corridor 6 in the map.

- The fourth corridor is to look at East Asia to Central Asia to Europe. The container block trains, a key proponent on the use of containers, originate from PRC and traverse through Kazakhstan but mostly does not cross the Caspian Sea. The trains move to the northwestern region of Kazakhstan and enter the Russian Federation to Western Europe without the need to cross any seas. This overland route is the most common for such PRC to Europe train. There are also shipments from PRC to Central Asia, sometimes in containers, to destinations such as Almaty and Tashkent.

1.5 Why Containerization?

15. Containerization implies the carriage or shipment of freight cargo enclosed in standardized containers without any handling of the freight itself when changing modes. Containerization assumes the use of multimodal transport, which emphasizes the need of physical and non-physical interoperability between modes, nodes and supporting procedural and information systems. Efficient containerization along CAREC corridors would therefore entail no handling of goods at intermediate points practically meaning that the containers shipped are all full container loads (FCL). Alternatively, superior containerization along CAREC corridors would require large dry ports and intermediate hubs to be used for less-than container load (LCL), (un)stuffing and (de)consolidation.

16. Why is containerization important to CAREC members? With the exception of Pakistan and PRC, as well as the littoral states at the Caspian Sea, CAREC members are landlocked and do not have access to seaports. Transportation capacity relies heavily on rail and road infrastructure, systems and rules. Containerization is a relatively new means of transport to most of the landlocked CAREC members. Given that the capacity to send containers on land is limited compared to a vessel on sea where the largest container ship can now transport 24,000 TEUs, it is initially difficult to fathom the rationale of promoting the use of containers in CAREC.

17. A strong argument for containerization is to leverage on recent external events that compel shippers, that traditionally rely on maritime but now search for viable alternatives on land for cross-border shipments in the Eurasian continent. The origins (e.g. East Asia) are used to packing and sending merchandize in containers, and the destinations (e.g. Europe) are used to receiving the merchandize in containers. Opening the containers and sending them through other non-sea transport modes will incur additional time and cost. As such, the capacity of the CAREC members to store, handle and move containerized freight determines the propensity to capture such international transit business if shippers divert cargoes from the traditional maritime route to move them on land. When the inland seaports are congested, the usefulness of container becomes even more apparent. With the right facility and equipment, transferring containers between the berth and the ship is faster than the same process for dry bulk commodities.

18. Based on the data collected in this field mission, it is also apparent that containerization offers two compelling value propositions. When a container ship or a bulk carrier arrives at a port in Caspian Sea or the Black Sea, the latter requires a higher handling fee and a longer time for cargo transfer. This is because moving a container within the port or between the berth and a ship is easier compared to handling dry bulk cargo. It is estimated that the bulk shipment costs two times more and three times longer to handle compared to a container shipment. Thus, it is more economical to ship via containers where ports are concerned. However, this advantage is negated when transporting a shipment across vast distances on land. This is particularly so when large volumes of cargo are involved. A train with a capacity of 70 tons per wagon can hold 2.8 times more tonnage compared to a 40 ft container with a payload of 25 tons. Thus the use of containers requires a careful

evaluation on the origin-destination, the route taken, the type and weight of cargo, the capacity of the ports, the availability of inland facilities and equipment, as well as policies and regulations in each country. These topics shall be analyzed in the subsequent chapters. The next chapter examines important regional trends and report updates on each country's use of containerization.

Trends and Developments

2

2.1 Reconfiguration in Supply Chains from 2020–2024

19. The recent years beginning 2020 ushered a tumultuous period that reshaped global supply chains. In 2020, the global economy experienced a sharp contraction due to the coronavirus pandemic, which disrupted production, trade, and demand worldwide. Global GDP fell by 3.5% in 2020 according to the International Monetary Fund (IMF)[4]. The contraction was driven by widespread lockdowns, travel restrictions, and reduced consumer and business activity. Global trade in goods and services also saw a significant decline. According to the World Trade Organization (WTO), global merchandise trade volumes fell by 5.3% in 2020[5].

20. Just when the world was gradually recovering from the effects of the pandemic, the Russian invasion of Ukraine on February 24, 2022 shocked the world. The invasion disrupted supply chains, particularly in energy, food, and raw materials, as the Russian Federation and Ukraine are key global suppliers of energy products, wheat, fertilizers and other raw commodities. This led to sharp increases in energy prices, inflation, and global food insecurity. The war also led to sanctions on the Russian Federation and major shifts in trade patterns, with many countries seeking alternative suppliers and alternative delivery routes. This war has not ended, with heavy fighting in the eastern and southern regions of Ukraine, and the conflict continuing to strain global markets, particularly energy and agricultural commodities. The war has also deepened the energy crisis in Europe, highlighting the need for diversification in energy supply and global trade networks. Ukraine, whose economy heavily relies on exports of agricultural products, metals, and machinery, saw its trade volumes plummet due to the blockade of its ports and infrastructure damage, resulting in an estimated 50-60% decline in exports during the early months of the war. Russia, facing international sanctions and trade restrictions, also experienced sharp declines in exports, particularly in energy and metals, to the EU and other Western markets. Thus, the Russian Federation re-oriented domestic focus while redirected some trade towards PRC, India, and other non-Western nations. The Russian Federation's production is increasingly reconfigured toward meeting domestic demand and fostering self-reliance. This reduces key exports to Central Asia and the Caucasus, with the supply of machinery from the Russian Federation to the region declining by a third from 16% to 11% in 2022, for instance[6].

21. The Russian invasion of Ukraine also led to unintended consequences affecting CAREC members. A notable impact was the sharp rise in energy prices. Pakistan, like many other countries, faced soaring costs for oil, gas, and coal as the war disrupted global supply chains. Since Pakistan imports a significant portion of its energy needs, particularly from the Russian Federation, the conflict exacerbated inflation and increased the fiscal burden on the government, which was already grappling with high levels of debt and a fragile economy. Additionally, Pakistan faced food security challenges due to disruptions in grain exports from Ukraine and Russia, two of the world's largest exporters of wheat. Ukraine's agricultural sector, heavily affected by the war, saw a sharp drop in wheat exports, which directly impacted countries

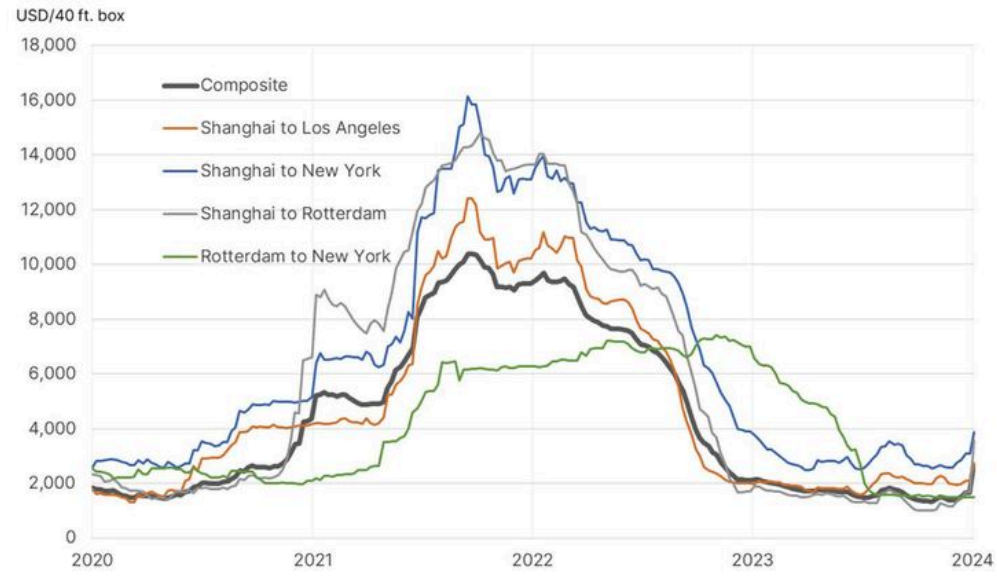
4 IMF, World Economic Outlook, https://www.imf.org/en/Publications/WEO/Issues/2021/01/26/2021-world-economic-outlook-update.
5 WTO, World Trade and Economic Growth, https://www.wto.org/english/res_e/statis_e/wts2021_e/wts2021chapter03_e.pdf.
6 ADB, Unlocking Transport Connectivity in the Central Asia and the Caucasus, https://www.adb.org/sites/default/files/publication/1009086/unlocking-transport-connectivity-caucasus-and-central-asia.pdf.

like Pakistan that depend on imports for their food supply. As a result, wheat prices soared, further inflating food costs in Pakistan and contributing to a cost-of-living crisis for millions of people, especially in rural areas.

22. More recently, the Red Sea Crisis of 2023–2024, triggered by escalating geopolitical tensions and maritime security concerns in the Middle East, had significant repercussions for global GDP and trade. The crisis began with a series of disruptions to shipping routes through the Bab el-Mandeb Strait, a crucial chokepoint linking the Red Sea to the Gulf of Aden and the Arabian Sea. The tensions involved local conflicts, piracy, and attacks on commercial vessels, particularly near Yemen and Saudi Arabia, as well as heightened regional instability. As a result, global trade routes were severely impacted, with major shipping companies rerouting vessels to avoid the affected areas, leading to increased transit times, higher freight costs, and delays in supply chains. The crisis exacerbated the already strained global logistics networks, particularly for goods passing between Europe, Asia, and Africa, as the Red Sea is one of the busiest corridors for oil and container traffic. Approximately 15% of global trade is estimated to pass through the Red Sea annually, with the majority of this traffic concentrated on key commodities such as oil, liquefied natural gas (LNG), and containerized goods[7]. Additionally, the Red Sea is an important passage for goods traveling between Europe, Asia, and Africa. These disruptions contributed to a slowdown in trade and rising costs for goods, particularly oil, which saw price volatility due to reduced transport capacity. The rerouting of vessels through longer alternative routes, such as around the Cape of Good Hope, further inflated transportation costs, which ultimately placed additional downward pressure on global GDP, particularly in developing economies dependent on low-cost imports and efficient shipping networks. For example, a shipment from Rotterdam to Singapore now became 40% longer in terms of distance, increasing the duration by an additional 10 days.

23. All the above events reshaped the global supply chains, and increased time and cost to shipping from origin to destination. The impacts could be visualized by observing the average cost of shipping a 40 ft container from different origin-destination pairs. At the start of 2020, the average cost was $1,500 from Shanghai to Rotterdam. This increased steadily to 2021 and peaked at around $16,000 in end 2021. After a short respite,

Figure 2: Change in Container Freight Cost (40 ft) from 2020 to 2024



Source: Drewry, World Container Index, https://www.drewry.co.uk/supply-chain-advisors/supply-chain-expertise/world-container-index-assessed-by-drewry.

7 UNCTAD, Red Sea, Black Sea and Panama Canal: UNCTAD raises alarm on global trade disruptions, https://unctad.org/news/red-sea-black-sea-and-panama-canal-unctad-raises-alarm-global-trade-disruptions.

the Ukraine War created a surge in the sea freight, although the effects seemed to be short-lasting. The cost of container freight dipped steadily in 2023, but the tail started to surge as the Red Sea crisis disrupted normal shipping route.

24. In 2024, the cost of shipping a container from PRC to Europe reached $8,000 per 40-foot container. This amount was similar to the cost of sending it on train across CAREC Corridor 2 (this shall be discussed in the next section). Time and cost are two indicators and typically it is not possible to have ideal performance in both metrics (one can either pay more for a faster shipping time or spend more time traveling enjoying the savings). When alternative corridor such as the TITR offers a competitive cost and a possibly shorter shipping time of 30 days from PRC to Europe, compared to 60–85 days at sea, shippers became interested. Nonetheless, shippers did not jump immediately to this route in 2024, because they still remembered the unpleasant experience in 2022 when the TITR first garnered worldwide attention. As containers flooded to the TITR, the capacity of this corridor creaked under the surge in volume, resulting in 60 days of transport time. In the section, the different options connecting the Eurasian continent (including the TITR) will be analyzed.

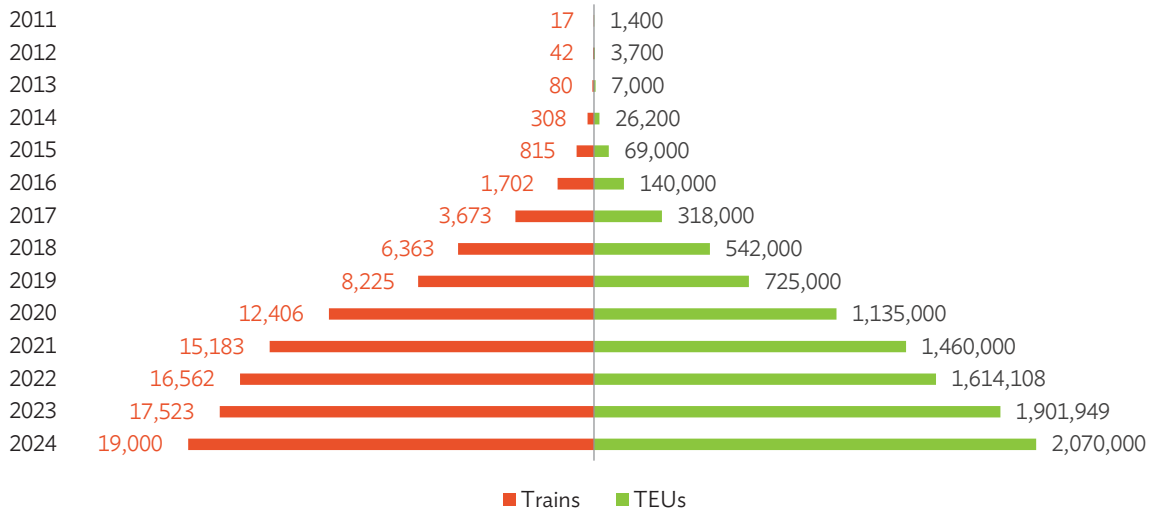
2.2 Container Block Trains

25. A container block train positions sea containers onto flat wagons and form a train to move the containers. This method of transport targets businesses that need to transport higher unit value goods (e.g. manufactured goods rather than raw commodities) over a long distance, where a premium in freight rate is acceptable if the service can shorten delivery time. Effectively, this is useful for freight that needs to reach destination faster and intends to avoid an all-air freight that would be prohibitively expensive. Between road and rail, a truck shipment across the Eurasian continent would be rather expensive and possibly subject to border delays. On the other hand, rail transport would be advantageous as distance increases, and freight on rail are less subject to border delays.

26. The first container block train commenced operation in 2011, albeit on a very small scale. The train service originated at Chongqing in PRC, and passed through Kazakhstan, the Russian Federation, Belarus, Poland before reaching the final destinations in Duisburg, Germany. The journey spanned approximately 12,000 km and took 20 days to complete, but as years passed by, this service reduced shipment time to 12 days.

27. Since 2011, the number of trains and TEUs have grown exponentially. The number of trains increased from 17 in 2011 to 17,523 in 2023, achieving a CAGR of 78%. The number of TEUs rose from 14 to 1.9 million

Figure 3: PRC to Europe Container Express Trains



Source: Consultant, compiled from China Railway Express, https://www.crexpress.cn/en/#/allTraffic.

in the same period, achieving a CAGR of 82%. The growth rate from the beginning to 2018 was particularly rapid, doubling every year. The growth rate has slowed in recent years, but even the global coronavirus pandemic did not cause a negative growth. The Ukraine War and the Red Sea crisis were in fact catalyst for global attention on the value of such container block train.

28. The container block train is an important driver for the use of containers, and transit across CAREC members. This is particularly significant if the service maintains or accelerates its growth rate. This topic shall be revisited in subsequent chapters as the service runs through CAREC Corridor 2, CAREC Corridor 4 and East Asia–Central Asia–Europe. In the next section, the trends and developments pertaining to container freight traffic shall be discussed at the national level.

2.3 Azerbaijan

29. The estimated containerization level of Azerbaijan is 3.67%[8]. In 2023, road transported 134.2 million tons of goods, and rail transported 18.2 million tons. Thus, a total of 152.4 million were transported by road and rail in 2023. Containers on road and rail handled 5.6 million tons.

30. The Caspian Sea remains a key trade conduit for Azerbaijan. The Port of Baku is strategically located on the western flank of the Caspian Sea, where it is a converging point for cargoes to and from the ports at Aktau, Kuryk and Turkmenbashi. The Port of Baku facilitates cargo handling, serving both local and transit shipments. The Port of Baku has an annual capacity of about 15 million tons of cargo and about 100,000 TEUs, with development project aims to increase capacity to 25 million tons and 1 million TEUs by 2025. Approximately $1.2 billion has been allocated for the port's development. There are two smaller ports in Azerbaijan, namely Hovsan which has 30 000 TEUs annual capacity, and Zira which is also in the outskirts of Baku is being built by private enterprises with a capacity of 100 000 TEU capacity for container terminal.

31. In September 2024, Azerbaijan led the formation of Eurasian Transport Route (ETR), with the establishment of the ETR International Association with a secretariat office in Baku. The founding members include the national railway administrations from Azerbaijan, Türkiye, Uzbekistan, Kyrgyz Republic, Tajikistan, PRC and Austria. Its mandate is to improve the efficiency and attractiveness of CAREC Corridor 2. Interestingly, this ETR is formed despite the established TITR Association, and both Georgia and Kazakhstan, founding members of the TITR Association, are missing in the ETR. It is unclear at this stage if there are overlapping objectives or work between the TITR and ETR.

32. Containers are mainly used to transport the following categories, namely consumer goods, machinery and equipment, food, chemicals and construction materials. Consumer goods is the top-ranking category by value and number of containers. Broadly speaking, the value per TEU is $10,000 per TEU across the categories based on Table 1.

Table 1: Azerbaijan's Containerized Trade by Merchandize in 2023

Categories	Products	Value, USD	Containers, TEUs
Consumer Goods	Electronics, textiles, household goods	1.5 billion	150,000
Machinery and Equipment	Industrial and agricultural machinery, automotive parts	1.2 billion	100,000
Food	Fresh fruits, vegetables, processed foods, nuts	800 million	80,000
Chemicals and Plastics	packaging materials, fertilizers	600 million	50,000
Construction Materials	Cement, metals, glass products	400 million	40,000

Source: State Statistical Committee, https://www.stat.gov.az/source/transport.

8 The estimation of the containerization level of each country is elaborated in Chapter 3, under section 3.2 "Estimation of Containerization Level".

33. In 2023, the estimated value of the containerized trade was $4.5 billion for imports and $3.2 billion in exports. There were 400,000 TEUs involved in imports, and 300,000 TEUs for exports. Analysis showed that Türkiye, the Russian Federation and PRC are important origins and destinations.

Table 2: Azerbaijan's Containerized Trade by Trade Partners in 2023

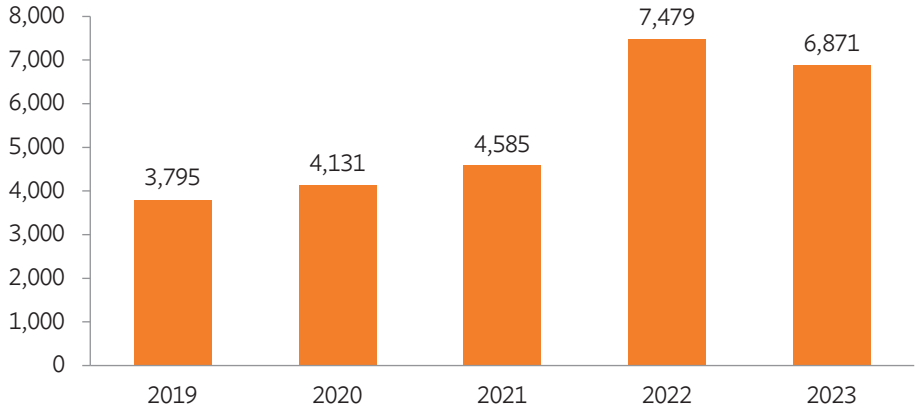
Direction of Trade	Country	Percentage	Commodities
Import	Türkiye	20%	Consumer goods, electronics, machinery
	Russian Federation	15%	Agricultural goods, machinery, construction materials
	PRC	12%	Electronics, textiles, machinery
	Germany	10%	Automotive parts, industrial equipment
	Iran	7%	Plastics, chemicals
Export	Türkiye	18%	Fruits, nuts, petrochemicals
	Russian Federation	14%	Fruits, vegetables, processed
	Georgia	8%	Agricultural products, refined
	Ukraine	6%	Agriculture, chemicals

Source: State Statistical Committee, https://www.stat.gov.az/source/transport.

34. In 2023, laden containers (containers that are loaded with merchandize) accounted for 65% of import movements and 75% of export movements. The use of 20-ft containers was dominant at 70%, since they are used to transport smaller loads and a diversified range of items. The remaining 30% used 40-ft container for merchandize that have higher volumetric weight, such as machineries and chemicals.

35. Transit movements drove the growth of containerized freight traffic. From 2019 to 2023, the number of transit containers expanded from 3.8 million TEUs to 6.9 million TEUs, growing at 16% CAGR. From 2022 to 2023, this number dropped 8.13%.

Figure 4: Transit Container Across Azerbaijan, 2019 to 2023



Source: State Statistical Committee, https://www.stat.gov.az/source/transport.

36. A notable advantage of Azerbaijan is its ship building and repair capability. Baku Shipyard is the largest facility that can service the Caspian Sea. This has resulted in cooperation with other CAREC members on commercial activities that can increase the use of TITR. For instance, Uzbekistan and Azerbaijan planned a $150 million joint venture to produce ferries for the Trans-Caspian Route. Both countries are considering the creation of joint storage facilities[9].

9 Railway Supply, https://www.railway.supply/en/uzbekistan-i-azerbajdzhan-150-mln-na-sovmestnoe-proizvodstvo-paromov-dlya-transkaspijskogo-marshruta/.

2.4 Georgia

37. The estimated containerization level of Georgia is 13.15%. In 2023, road transported 15.3 million tons of goods, and rail transported 13.6 million tons. Thus, a total of 28.9 million were transported by road and rail in 2023. Containers on road and rail handled 3.8 million tons.

38. Georgia has two key ports at the Black Sea, Poti and Batumi. A third one is being built, called Anaklia. The Poti seaport is classified as a medium-sized port according to the Container Port Performance Index (CPPI). It is the largest commercial, multipurpose port in Georgia, with a present capacity of 9–10 million tons and a design capacity of 15–19 million tons. It is handling 80% of Georgian Black Sea coast trade, serving the Caucasus and Central Asia, which exhibits container volumes with overall impressive growth. The port is ice-free, operational 24 hours a day, seven days a week and over 12 months a year. It is also a major transshipment point for CAREC Corridor 2, also known as the Trans-Caspian International Transport Route (TITR) or Trans-Caspian Corridor (TCC). Container shipping lines such as MAERSK, MSC, CMA CGM, EMC, ZIM, HAPAG LLOYD, and others have become well-established in Poti Port. APM Terminals Poti handles container operations while Pace Terminal handles dry bulk cargo.

39. The Port of Batumi is considered a small port according to the CPPI. The port specializes in petroleum, crude oil, and petroleum products; however, it also handles shipments of metals, grains, cement, fertilizers, corn, wood, construction equipment, and sugar. The port contains five specialized terminals and 11 berths plus one dockless loading point. The total capacity of the port is 15 million tons annually. The competitive advantage of the port of Batumi is greater depth, which does not require constant dredging that is required for Poti. The maximum depth is 12m. Batumi International Container Terminal (BICT) handles container operations while Batumi Sea Port handles dry bulk cargo.

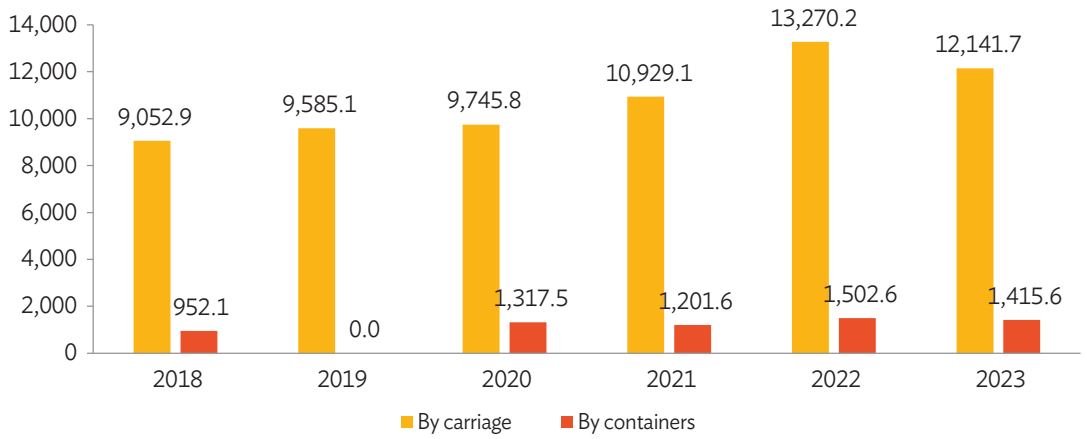
40. The Government of Georgia has prioritized Anaklia (a deep-water port north of Poti) to be a strategic initiative. The first phase of the port will be designed explicitly for container cargo and is expected to have an initial demand of 600,000 TEUs. By 2040, the projected demand is expected to increase to 1.6 million TEUs. It's important to note that the project will be carried out by a joint venture established by the state and a private partner, with the state holding a 51% share[10].

41. In Georgia, rail transported freight mostly in wagons. The level of containers used in rail transport fluctuated between 10% to 13% over the years. In 2022, there has been a noticeable increase in railway container shipments, when it grew by 20% due to the shift of a significant amount of cargo to CAREC Corridor 2. However, in 2023, it decreased by 5.7% due to port congestion in Georgia. The unsynchronized handling of containers caused a critical situation at the Poti seaports in 2022, impacting operations and leading to traffic halts, ultimately resulting in some cargo departing CAREC Corridor 2.

42. The main issue with the railway infrastructure is the limited speed of traffic caused by the mountainous terrain in central Georgia. Currently, it takes 15-30 hours for a freight train to travel between Poti and Gardabani, with the average speed of a freight train being 40 km/h. An additional challenge is the current wagon-locomotive pool of the Georgian Railways, some of which are outdated in terms of technical parameters and condition and need to be updated or modernized. After the reconstruction of the railway line in the 64 km mountainous Gorge region, in some sections, the speed of the freight train can go up to 120 km/h, and from 50km/h to 80km/h at the crossing area. Six new tunnels have been completed, and better wagons have been deployed.

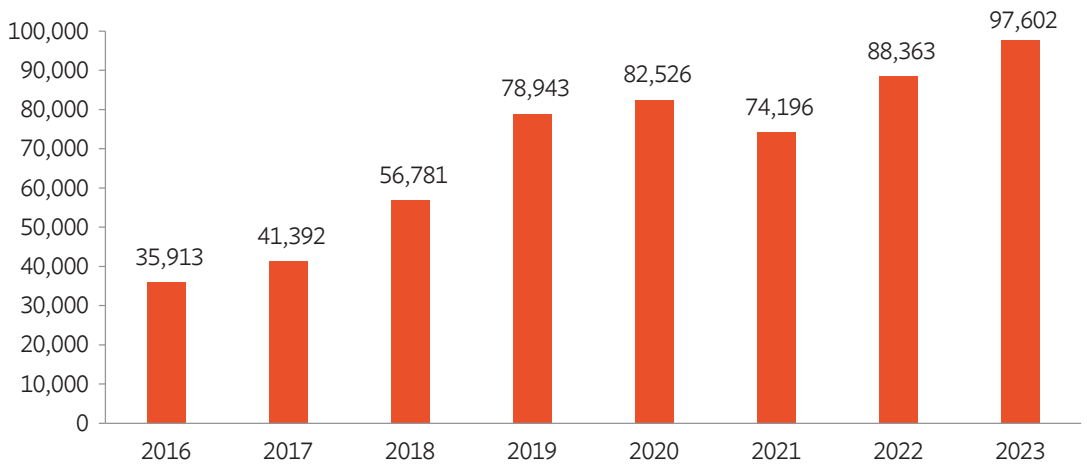
10 During the meeting in August 2024, the Ministry of Economy and Sustainable Development of Georgia declined to confirm the stakeholders in Anaklia. However, the public media has identified a consortium of majority state-owned China Communication and Construction Company (CCCC) Ltd., one of the largest construction companies in the world, and its subsidiary China Harbor, has been given the project for the construction of Georgia's first deep-water port in Anaklia on the Black Sea. It was the sole bidder. China Road and Bridge Corporation and Qingdao Port International will serve as subcontractors for the port's construction. (Source: Ports Europe, https://www.portseurope.com/georgias-anaklia-port-given-to-china/).

Figure 5: Freight Tonnage Transported by Rail in Georgia (thousand tons)



Source: Georgian Railway, Annual Report 2023, https://cdn2.grmedia.com.ge/app/uploads/sites/5/2024/09/Annual-Report-_-2023.pdf.

Figure 6: TEUs transported by Railways in Georgia, 2016–2023 (TEUs)



Source: Georgian Railway, Annual Report, https://cdn2.grmedia.com.ge/app/uploads/sites/5/2024/09/Annual-Report-_-2023.pdf.

43. To attract more cargo traffic to Georgia, it is essential to ensure the smooth operation of ferry lines and container/feeder shipments on the Black Sea. Developing direct ferry and container/feeder services from Georgian ports to various Black Sea ports will significantly boost the country's transport corridor development. A technical and economic study has already been done to develop ferry and container traffic between ports in Georgia, Romania, Bulgaria, Ukraine, and Türkiye[11]. The European Commission funds it and includes market research, route proposals, financial analysis, marketing strategy, and planning.

44. In June 2023, PTC Holding, a transport and logistics investment group from Kazakhstan, announced a joint venture with Georgian partners to build a new multimodal facility "Poti Trans Terminal". After the completion of the first phase of construction, it is expected that the initial capacity will be 80,000 TEU per year.

11 EBRD, Preparation of Launch of a Regular Ferry Transportation Across the Black Sea,

2.5 Kazakhstan

45. The estimated containerization level of Kazakhstan is 2.62%[12]. In 2023, road transported 299.9 million tons of goods, and rail transported 414.9 million tons. Thus, a total of 714.8 million were transported by road and rail in 2023. Containers on road and rail handled 18.7 million tons.

46. Aktau and Kuryk are two major seaports located on the western coast of Kazakhstan, along the Caspian Sea. These ports play a vital role in the country's economy, serving as gateways for trade with neighboring countries and beyond. In 2024, the Comprehensive Plan for the Development of Maritime Infrastructure for 2024-2029 was adopted. According to this plan, the throughput capacity of seaports will be increased to 32 million per year by 2029, including 200,000 TEUs per year.

47. Currently, Port of Aktau is the bigger port and has a capacity of 11.8 million tons per year. The port has 11 berths, an oil loading terminal with a capacity of 7.5 million tons, grain terminal of 2 million tons, with the possibility of simultaneous storage of up to 82.5 thousand tons of grain; dry cargo terminal for handling general, packaged and oversized cargo of 3.5 million tons, a universal terminal of 2 million tons; and an areas of open storage of 79,700 m^2 and covered transit warehouse of 2,000 m^2. The operational container handling capacity is officially stated to be 100,000 TEUs but is more likely to be 70,000 TEUs based on conversations with the ground staff.

48. A container hub is planned at the Port of Aktau. The cost of this project is estimated at 44 billion tenge and is planned to be put into operation in 2025. On 20 September 2024, within the framework of the 8th International Exhibition 'Silk Road' in Xi'an (China), KTZ Express JSC, Lianyungang Port LLC and NC Aktau Sea Trade Port JSC signed documents of the joint venture for the implementation of the project 'Construction of container hub in the port of Aktau'.

49. The Port of Kuryk has a capacity of 6 million tons of cargo per year. It has 4 berths capable of receiving automobile and railway ferries. In addition to ro-ro services, it can handle cargo with grain, fertilizers, oil and other chemical products. By the end of 2024, it is planned to complete dredging operations in the waters of the port of Kuryk.

50. In Kazakhstan, the volume of containerized cargo transportation across all modes of transport has increased from 12.4 million tons in 2021 to 18.7 million tons in 2023, representing a growth of 46%. In 2021–2023, transit dominated container transportation and accounted for 62% of the tonnage, while exports and imports accounted for 21% and 15%, respectively. Domestic container transportation grew significantly from 173,000 tons in 2021 to 486,000 tons in 2023, indicating the rapid development of the domestic container cargo market.

51. "ZIKSTO" (in Petropavlovsk city) is the only enterprise in Kazakhstan that manufactures 80-foot platforms for container cargo transportation. The new containers are supplied to KTZ Express JSC. The Ministry of Industry of Kazakhstan is considering the possibility of creating production of containers for grain transport on the basis of local wagon factories, such as 'ZIKSTO', 'Kazakhstan Wagon Building Company', 'Semipalatinsk Machine Building Plant' and 'Atyrau Wagon Building Company'. However, business representatives are concerned that due to low containerization in the country, the launch of container production in Kazakhstan may further increase the cost of transporting cargo in containers.

52. In Kazakhstan, KTZ Express has introduced a new service of containerization of automobiles, offering a reliable and safe transportation solution in October 2024. This method protects vehicles from external factors and reduces the risk of damage during transportation. This is offered at the Khorgos Gateway dry port.

12 The Ministry of Transport estimated the containerization level as 6.1%, using freight turnover where the units is in km-ton. Thus, this is different from the estimation of 2.62% in this study which uses freight tonnage only, where the unit is in tons.

Figure 7: A Double Stack Train Used by KTZ Express at Khorgos Gateway



Source: Railfreight.com, https://www.railfreight.com/technology/2024/10/17/kazakhstan-tests-double-stack-container-load.

53. KTZ Express has piloted its first experimental shipment using double-deck container loading at the Khorgos Gateway dry port. The trial covered the route from Altynkol at the Chinese border to Zhetygen (near Almaty) and back. This double-deck loading technique allows more cargo to be transported in a single trip, aiming to improve transportation efficiency by increasing throughput and mobility. This approach seeks to reduce logistics costs and shorten delivery times. Although it is a common practice in North America, Australia, as well as the Middle East, this is currently not implemented in CAREC members. Such technology requires stronger railway tracks that can bear the additional load. In addition, the presence of tunnels and bridges can impose height limitations. Given that a standard ocean container is 2.4 m high, two containers will be 4.8 m high. Together with the railcar, a clearance height of more than 6 m is required. This technology is very suitable for Kazakhstan and Mongolia, due to the large geographical area, relatively straight rail track and high volume of rail freight traffic.

54. There are a few key players involved in the containerization sector.

- **Ministry of Transport of the Republic of Kazakhstan (Ministry).** The main activities of Ministry are to develop transport policy, regulate the activities of transport companies, issue licenses and permits.

- **JSC "National Company "Kazakhstan Temir Zholy" (KTZ)** Kazakhstan Temir Zholy (Kazakh Railways) is a state-owned railway company that plays a crucial role in Kazakhstan's transportation sector. As one of the largest railway networks in Central Asia, KTZ connects Kazakhstan to neighboring countries and serves as a vital link in the Eurasian trade corridor.

- **JSC "KTZ Express" (KTZE)** provides services of cargo transportation, including the container transportation. The container fleet of KTZE is over 4,000 units, and its own fleet of fitting platforms is about 2,000 units.

- **JSC Kedentransservice (KDTS)** provides logistic terminals service, operates with more than 5,000 fitting platforms, provide transshipment of goods service at the Dostyk and Altynkol border stations, and carries out container transportation on various routes. The company's 16 terminals are located in all regions and major cities of Kazakhstan.

55. KazLogistics, a union of transport workers in Kazakhstan, opined that the following export commodities could be containerized.

- Grains
- Base Metals and nonferrous ores
- Fertilizers
- Processed foods such as flour and vegetable oil
- Bitumen and Tar

56. It should be noted that Kazakhstan lacks clear rules and a balanced tariff policy for containerized freight transport. Recently Ministry of Transport prepared the Comprehensive Plan for Cargo Containerization and Container Transportation in the Republic of Kazakhstan. This Comprehensive Plan outlines a strategic framework for the development of cargo containerization and container transportation in Kazakhstan from 2025 to 2029. The plan identifies several key challenges hindering the development of containerization in Kazakhstan:

- **Limited infrastructure:** The number of railway stations equipped to handle container cargo is insufficient, and the existing infrastructure often lacks the capacity to support efficient container operations.

- **High costs:** The cost of container transportation in Kazakhstan is generally higher than that of traditional wagonload shipments, making it less competitive for many types of cargo.

- **Unequal access:** Market participants face unequal access to container transportation services, which can lead to higher costs and reduced efficiency. Lack of transparency and prioritization when agreeing on shipment plans and platform allocation for certain market players creates an uncompetitive environment.

- **Slow transportation times:** Infrastructure constraints and procedural inefficiencies contribute to longer transportation times, affecting the overall competitiveness of containerized cargo.

2.6 Kyrgyz Republic

57. The estimated containerization level of Kyrgyz Republic is 7.1%[13]. Like Tajikistan, Kyrgyz Republic has a mountainous terrain and the rail section are part of the rail network left during the Soviet times, thus road transport is the dominant mode of transport for land traffic.

58. The number of container block trains from PRC to Kyrgyz Republic in 2020 was 86. Most of the rail freight traffic of the Kyrgyz Railway consists of imports and exports. The main export and import goods are coal and petroleum products. The level of containerization in rail transport is very low. The share of rail containers in 2017 was 7.1%. A pilot container train project along the Iran–Turkmenistan–Uzbekistan–Kyrgyz Republic route was launched. This corridor, passing through the Iranian port of Bandar Abbas, will increase the supply of goods from PRC, India and Southeast Asia, providing a link with the countries of the Middle East.

59. Kyrgyz Republic is becoming an important part of a new transport route that will connect three other countries: Afghanistan, PRC and Uzbekistan. This will be a new trade corridor that will pass through the south of the Kyrgyz Republic, but in the future, it may become more than just a transit section. The route begins in the city of Kashgar (PRC), a terminus in the Chinese rail network. At Kashgar, containers will be transferred to heavy transport vehicles to deliver to the Irkeshtam, an international border between the Kyrgyz Republic and PRC. Then cargo will be transported along roads to the city of Osh (the 'southern

13 This estimation was based on a previous ADB report, "The Situation of Railways in CAREC Countries and Opportunities for Investment, Commercialization and Reform". The value was taken from Table 4.14 on Page 55. The estimation was based in 2017. https://www.carecprogram.org/uploads/Situation-of-Railways-in-CAREC_8th_2022-9-19_WEB.pdf#page=85&zoom=100,0,0.

capital' of Kyrgyz Republic), connected by an existing branch to the railway network of Uzbekistan. In the future, Kyrgyz Republic aspires to develop from a transit country into an important hub that will process large volumes of cargo moving to Uzbekistan and Afghanistan, and back to PRC. The projected volume of cargo transported to Afghanistan through this corridor alone could amount to more than 4,000 containers per year.

60. In June 2023, PRC, Kyrgyz Republic and Uzbekistan tested the operation of a new multimodal transport corridor. The test train of 30 containers with commercial cargo departed from Lanzhou station in the northeastern province of Gansu. The train traveled to the city of Kashgar along an existing railway line. Then the goods were transferred to heavy vehicles to be further delivered to the Irkeshtam border crossing point at the Kyrgyz border. Then the vehicles traveled along roads to the city of Osh and to the final destination in Tashkent (Uzbekistan). Since the launch of the route in 2019, about 30,000 containers have been transported. The long-term goal is to increase container transportation volumes to 30 thousand containers per year.

61. In August 2023, a Memorandum of Cooperation to develop a new intermodal transport route (China–Kyrgyz Republic–Uzbekistan–Afghanistan) and combine efforts to create a new international intermodal train that will connect 4 countries was signed in the city of Lanzhou (PRC). Then in June 2024, a test container train was launched with its final destination in Mazar-i-Sharif, Afghanistan. The Chinese containers were first transported by truck to a station in southern Kyrgyz Republic. From there, the cargo was transferred to Uzbek fitting platforms, specialized wagons designed for carrying large containers with fastening units. The train then passed through Uzbekistan territory, reaching Hairatan in Afghanistan, where the cargo was further delivered by truck to its final destination. This project, which involves transporting containers from PRC through Kyrgyz Republic and Uzbekistan to Afghanistan, has reduced delivery time from 14 to 9 days, significantly improving logistics efficiency.

62. In addition to traditional and proven multimodal transport corridors, the Kyrgyz Republic is considering new alternative route The "Caspian Corridor" through which cargo from PRC, as well as from Kyrgyz Republic, can flow to Russia and Azerbaijan and further to Europe. For the transportation of goods on the territory of Uzbekistan and Turkmenistan can be used heavy duty vehicles. This corridor is intended to be an alternative for Kyrgyz Republic, which claims to have problems transporting its goods through Kazakhstan especially horticultural cargo.

63. A key development is a trilateral railway corridor along China–Kyrgyz Republic–Uzbekistan. In 2023, the office for coordinating the accelerated construction of the China–Kyrgyz Republic–Uzbekistan international railway transport corridor was opened, In May 2024, the feasibility study of the project was completed. On 6 June 2024, a cooperation agreement on the joint promotion of the China–Kyrgyz Republic–Uzbekistan railway project was signed. The construction of new railway project started in December 2024. This 454 km railway will include a 268.4 km section on the territory of Kyrgyz Republic and a 165 km section on the territory of China. The gauge change operation (change of gauge from 1,435 to 1,520 mm) will take place directly in Kyrgyz Republic at the Makmal station. This infrastructure project aims to provide Central Asian countries (mainly Uzbekistan and Kyrgyz Republic) with direct access to PRC, to develop trade and transport potential between the countries of the region and to become a full-fledged transport hub between Europe and Asia. Due to the difficult mountainous terrain, the construction of the railway will require large investments (construction of tunnels, change of gauge, implementation of engineering solutions).

64. Kyrgyz Republic does not have any official national strategy for containerization yet. The procedure and conditions for the carriage of containers by road are set out in the Law of the Kyrgyz Republic on Road Transport of 19 July 2013 No. 154, and customs procedures, in accordance with the Law of the Kyrgyz Republic on Customs Regulation of 24 April 2019. In recent years, Kyrgyz Republic has been working on enhancing its transport corridors, which involves the development of both railway and road container transport, as well as the creation of logistics centers. For example, several initiatives to establish container train routes through the country, as well as the transportation of containers to other countries in the region, demonstrate the growing

trend toward containerization. In particular, Kyrgyz Republic aims to attract and increase transit flows from PRC to Central Asia, Afghanistan, and to increase exports to Russia.

65. There are 12 transport and logistics centers operating in the country. The main activity of these centers with a capacity of up to 4,200 tons is storage and processing of agricultural products. The plans include the construction of 23 more new logistics centers. At the same time, five free economic zones "Bishkek", "Karakol", "Naryn", "Maimak", "Leilek" have the potential to create international or regional TLCs inside their zones.

2.7 Mongolia

66. The estimated containerization level of Mongolia is 6.01%. In 2023, road transported 69.9 million tons of goods, and rail transported 32.4 million tons. Thus, a total of 102.3 million tons were transported by road and rail in 2023. Containers on road and rail handled 6.15 million tons.

67. Mongolia is a landlocked country sandwiched between the Russian Federation and the PRC, with over three million and half population. Mongolia has a vast land, and it has a weakness of not having seaport. Thus Mongolia relies on the two neighbor countries to access Russian seaports (more than 3,000 km) and Tianjin port in PRC (1,700 km) in order benefit from the maritime transport. Mongolia's economy hugely relies on mining exports; however, the recent Government policies promote diversification of its economy by paying serious attention to meat exports, local industrialization, and other export products.

68. PRC opened to Mongolia its few south seaports such as Jinzhou, Dalian, Yingkou, Tianjin, Tsaofedan) via two States' bilateral transit agreement, called "Intergovernmental agreement on the access to and from the sea and transit transportation through Chinese territory by Mongolia", which was concluded in 1991 and amended in 2014. In practice, Mongolian business operators use Tianjin port predominantly due to the strong ties between Mongolian and Chinese freight forwarders; other seaports are rarely used by Mongolian entities. Unfortunately, trade along this route experienced severe issues during and after the pandemic years due to huge container congestion in Tianjin as well as strict quarantine measures by the Chinese government.

69. In recent years, the trade volume between Mongolia and PRC has grown rapidly, with the growth rate of trade volume in 2022 and 2023 being 33.57% and 36.1%, respectively, which has increased the freight volume of the China–Mongolia–Russia transport corridor and has higher requirements for the improvement of infrastructure and transloading of the whole corridor. As on 19 August 2024, there were 5,100 containers bound for Mongolia waiting in Tianjin seaport[14]. Mongolian public and private sector are concerned about the impact of this congestion, leading to higher transport cost and driving inflation, as well as creating uncertainties in the supply chain.

70. Container freight traffic is instrumental to Mongolia's foreign trade. As a landlocked country, Mongolia relies in Chinese seaports for access to international maritime trade lanes. Since the country has limited industrial capacity, many consumer and capital goods are imported (mainly from PRC, South Korea and Japan), and the imported goods travelled along CAREC Corridor 4b from Tianjin to Ulaanbaatar. These freight are transported in containers.

71. Railway is the key transport mode that connects Tianjin to Ulaanbaatar (approximately 1,700 km by distance) and change of rail gauge happens at Zamiin-Uud. Ulaanbaatar Railways (UBTZ), a 50-50 joint venture between Mongolia and the Russian Federation, has total control over the rail operation along the section from Zamiin-Uud and Ulaanbaatar. UBTZ has transshipment facility at Zamiin-Uud and manages the transfer of containers from the Chinese 1,435 mm gauge to the Mongolian 1,520 mm gauge. The container freight then continues to Ulaanbaatar where it will terminate in one of the seven container facilities in the capital city for customs clearance and unstuffing.

14 Source: Bloomberg, https://bloombergtv.mn/news/h131o1.

72. Ministry of Roads and Transport of Mongolia is in charge of implementing the policy related to road, railway, civil aviation and maritime transport. Comparing road, railway, and aviation sector, the maritime field is less developed in Mongolia. However, Mongolia enjoys its right under United Nations Convention on the law of the sea, 1982 (UNCLOS). By acceding to this convention, Mongolia uses its rights to register ships under its own flag, more importantly, Mongolia got its right to free transit via Chinese territory without tariff and customs duties, and the Transit state shall have all measures to avoid delays or other difficulties of a technical nature in traffic in transit.

73. The movements of containerized freight in Mongolia communicated important trends. Overall, the number of TEUs on rail have risen 2.5 times from 159,245 TEUs in 2018 to 404,273 TEUs in 2023. Transit remained an important driver for container traffic. While import containers continue to be sizeable, the number of export and domestic containers has increased faster. In 2023, a total of 404,273 containers moved through Mongolia, and half were transit containers. Imports constituted 19% of the total container movements, while exports and domestic accounted for 16% each.

Table 3: Container Freight on Rail in Mongolia, 2018 to 2023 (units in number of TEUs)

Direction	2018	2019	2020	2021	2022	2023
Import	65,323	71,614	64,081	75,463	104,769	76,754
Export	1,915	1,514	5,297	9,693	46,721	64,975
Transit	85,233	63,701	105,732	152,449	196,859	197,765
Domestic	6,774	1,430	5,205	9,148	46,496	64,779
Total	159,245	138,259	180,315	246,753	394,845	404,273

Source: UBTZ, Mongolia Customs General Administration (MCGA).

Table 4: Percentage Based on Traffic Direction for Container Freight on Rail in Mongolia, 2018 to 2023 (units in %)

Direction	2018	2019	2020	2021	2022	2023
Import	41.0%	51.8%	35.5%	30.6%	26.5%	19.0%
Export	1.2%	1.1%	2.9%	3.9%	11.8%	16.1%
Transit	53.5%	46.1%	58.6%	61.8%	49.9%	48.9%
Domestic	4.3%	1.0%	2.9%	3.7%	11.8%	16.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: UBTZ, Mongolia Customs General Administration (MCGA).

74. It must be highlighted that the above trend might suggest the imports were becoming less important in the container freight traffic. This is incorrect. The percentage of import containers dwindled from the peak of 51% in 2019 to 19% in 2023 was due to the constraint in the movement of inbound containers from Tianjin to Ulaanbaatar. If the constraints are removed, the number of TEUs (and thus the percentage contribution) for import should rise significantly. The number of export and domestic containers undoubtedly increased remarkably in this period, but the percentage contribution would have been smaller if the number of import containers did not suffer due to the constraints. The exact cause of the constraint shall be analyzed and examined in Chapter 5 "Mongolia and PRC" corridor.

75. Further analysis showed that containerization is significant for the Mongolia–PRC trade, but less significant for Mongolia–Russia trade. In both import and export, the number of containers in the direction with PRC was far higher than those with Russia for the entire period. In fact, there were only 196 TEUs carrying Mongolian exports to the Russian Federation in 2023. On the other hand, there were 67,738 laden TEUs from PRC to Mongolia, and 64,779 TEUs in the opposite direction (all laden). These suggest that Mongolia is finding means to stuff items in the empty containers before returning them to PRC. Another observation is the rapid rise of transit containers from PRC to Mongolia to Russian, which grew from 42,458 TEUs

in 2018 to 197,569 TEUs in 2023, a 4.6 times increase in six years. This suggests there are sizeable traffic along this corridor. This is also a reflection that UBTZ places higher priority for transit containers to the Russian Federation when performing the gauge of change operation at Zamiin-Uud, enabling more transit containers to be sent northwards compared to import containers. However, the potential of using Mongolia as a transit requires policymakers to address the constraints, particularly the backlog of containers in Tianjin.

Table 5: Container Freight in Mongolia on Rail, 2018 to 2023 (units in number of TEUs)

Direction	Partner	2018	2019	2020	2021	2022	2023
Import from	Russia	5,818	6,110	7,061	11,751	11,506	9,016
	PRC	59,505	65,504	57,020	63,712	93,263	67,738
Export to	Russia	270	84	92	545	225	196
	PRC	1,645	1,430	5,205	9,148	46,496	64,779
Transit from	Russia	42,775	84	92	545	225	196
	PRC	42,458	63,617	105,640	151,904	196,634	197,569

Source: UBTZ, Mongolia Customs General Administration (MCGA)

76. Container freight traffic on road are insignificant compared to rail. The number of containers reached 10,093 TEUs in 2023, but more than doubled to reach 24,271 TEUs in the first 11 months in 2024. Most containers passed through Zamiin-Uud and a very tiny number moved through Altanbulag. Rail was the popular choice for container movements but the number moved on road surged in 2022 due to the congestion in Tianjin port, when PRC imposed a strict zero tolerance policy on the coronavirus pandemic, compelling Mongolian shippers to use road so that the containers can arrive in Ulaanbaatar earlier. After this policy was relaxed in 2023, the number of containers on road decreased as the logjam in Tianjin slowly cleared and containers moved on rail. However, this number shot up again in 2024, reflecting the congestion at Tianjin again and Mongolian shippers resorting to road transport as the waiting time for rail becomes too long.

Table 6: Container Freight in Mongolia on Road, 2021 to 2024 (units in number of TEUs)

BCP	2021	2022	2023	2024[a]
Altanbulag	82	146	128	157
Zamiin-Uud	2,244	21,887	9,965	24,114
Total	2,326	22,033	10,093	24,271

[a] First 11 months of 2024 only.

Source: Mongolia Customs General Administration (MCGA).

77. In summary, Mongolia is facing significant constraints to effectively move containers. Most importing goods are transported via Zamiin-Uud port rather than other ports such as Altanbulag, Bulgan, thus Zamiin-Uud becomes a chokepoint. Currently there is no special agency that handles regulation of containerization. UBTZ is the only government organization in handling and regulating importing containers to Ulaanbaatar or to transit. These issues would be re-examined in Chapter 5.

2.8 Pakistan

78. The estimated containerization level of Pakistan is 57.21%. In 2023, road transported 869.91 million tons of goods, and rail transported 7.85 million tons. Thus, a total of 877.76 million were transported by road and rail in 2023. Containers on road and rail handled 502.15 million tons.

79. Pakistan has three major seaports in operation on the coast of Arabian Sea. Two ports handle the majority of cargo, namely Karachi Port and Port Qasim both are located in Karachi, capital city of Sindh

Province. The third port is Gwadar located on the Makran Coastal region of Balochistan Province. Karachi Port, Port Qasim and Gwadar are the deep- general-purpose ports serving both bulk and containerized cargo.

80. Transport sector in Pakistan has been developing for the last many decades, albeit its performance has been below par, with high economic losses due to congestion and worn-out road/rail infrastructure, misdirected priorities and an imbalance between supply and demand for transport services. In addition, the above system's deficiencies have jeopardized performance over the entire intricate network which is mainly instrumental to promote sustainable economic growth. Apart from deteriorating infrastructure due to inadequate investment and lack of maintenance, the transport sector is operational but suffering from a very low modal share of railways compared with roads and expensive and inept ports.

81. Road transport dominates the movement of cargo in Pakistan. The vast majority of the companies involved in the logistics and road freight sector are owner-operator companies. In general, logistics chains and supply system with absence of multimodal transports system and properly trained owner-drivers, lack of insurance for drivers/cargo and the obsolete vehicles that are not compatible to international standards, are incapable of meeting the performance demands of a modern supply chain.

82. From the perspective of cargo safety and security, a sealed container offers the highest level of protection from damages, pilferage or smuggling, since the contents are enclosed inside a container. It is significantly harder to tamper with the contents, compared to goods transported in a conventional truck. This is especially true in South Asia where many delivery vehicles have many openings and compromise overall security. In Pakistan, the indigenous trucks are open type with small capacity and under-powered and are not in conformity with universal standards of containerized traffic handled by the ports. Pakistan Customs view containerized shipment as more secure for transit shipments. As such, Pakistan Customs mandated that goods are be transported in sealed containers only for TIR operations and Afghan Transit Trade[15]. This regulation mandates the use of containers and increase the projected container levels when CAREC regional trade with South Asia increases. Prior to this it is important to replace the old models of vehicles with large capacity international standards, trucks, including prime movers of two to three axles.

83. Although rail transport used to play a minor role in the freight transport sector, the growth in this sector has been rapid. Pakistan Railway and NLC experimented with container train shuttle service between Karachi and Lahore in 2018. Such service grew and now Pakistan Railway estimated that rail accounted for approximately 8% of the total freight moved in Pakistan. This is strategic because the greater use of containers on rail will lower the cost of transport and reduces the heavy reliance on road transport.

84. There are four railway main lines in Pakistan, abbreviated as ML1, ML2, ML3 and ML4. The ML1 is the main transport route used by Pakistan Railways to move containers. A double-track railway line runs from Pipri Marshalling Yard (near Karachi) to Lahore. The remaining parts of ML1 are single-track. Key cargo centers served by the ML1 include Karachi City, Mughalpura, Kot Radha Kishan, Prem Nagar, Jia Bagga and Faisalabad. For the case of South Asia Port Terminal (SAPT), it was revealed that the railway line is capable of handling 12 trains a day. However, it is only doing 1 train service a week due to the limited number of locomotives. The ML1 has a design capacity of 34 trains a day in one direction[16]. The route is currently doing 22 trains a day for passenger services and 10 freight trains. Of the 10 freight trains, only 2 are dedicated container services with the majority used to transport coal. The payload for a container block train is 2,400 tons. As such, a block train service can transport up to 40 FEU containers. The assumption is the payload of a TEU container being at 30 tons.

85. The ideal would be to have 4 container trains a day. In this regard, there are plans to upgrade the capacity of the ML1 to 120 trains over a period of 9 years. The first 5 years aims to raise the capacity for

15 This is stated in the Statutory Regulatory Order 2046(I)/2022 on an amendment to the Customs Rules (2001). https://download1.fbr.gov.pk/SROs/202211171411504791SRO2046-2022.pdf.

16 Source: Interview held with Pakistan Ministry of Railways on 30 September 2024.

the Karachi–Multan stretch while the remaining 4 years will be used to upgrade the capacity from Multan to Islamabad. The cost of upgrading works is estimated at US$6.7 billion[17]. The project is supposed to come under the China–Pakistan Economic Corridor (CPEC) initiative. However, PRC raised concerns about the high cost of the project. It is understood that PRC is willing to finance US$1.1 billion for the first phase of the project from Karachi to Hyderabad, while Pakistan authorities are trying to secure funding for the US$3.3 billion Karachi–Multan section. Pakistan has also requested for a loan from PRC to cover 85% of the project cost. Additional funding will be required to upgrade the stretch of railway from Multan to Peshawar.

86. The ML2 is located on the western side of the Indus River. It connects Karachi via Kotri Junction (in Hyderabad) to Dera Ismail Khan and Attock City. Attock City is located some 80 kilometers from Peshawar and about 50 kilometers from Islamabad and its adjoining city of Rawalpindi. The line is currently underutilized with only about 4–5 trains running a day. This is because the major cities of Pakistan are located on the eastern bank of the Indus River. The ML2 also offers the shortest route from Karachi to Peshawar. However, the ML2 will also require rehabilitation which means the need for funding.

87. The ML3 is also not in good operating condition even though it offers an alternative to reach Central Asia via the Chaman Border Crossing Point. The ML3 is also the only all-land route to reach Türkiye and the Caucasus by going through Iran. Nonetheless, there is a difference in gauge between Pakistan and Iran which will require containers to be transloaded at the border. A feasibility study has been completed to rehabilitate the Quetta–Taftan section of ML3. The project is estimated to cost US$597 million. A related project which involves exploring the feasibility of developing railway connectivity to connect Riqo Dik to Gwadar Port, and eventually to Azerbaijan and Russia. It takes about 17 days to drive from Karachi to Russia. The same journey by train could be faster, taking 2 days to go from Karachi to the border, and 4–5 days to reach Russia from Iran and the Caucasus[18]. Known as the MinLink Express (MLE), the project which aims to improve the rail connectivity for Gwadar Port is under assessment. The estimated cost of construction is put at US$2.0 billion[19].

88. The Pakistan Ministry of Railways has proposed the ML4 which connects Gwadar to Quetta, Jacobabad and Kotla Jam, via the cities of Panjgur and Basima. Site surveys are completed and the cost of building the ML4 is estimated at about US$20–US$30 million per kilometer. The cost of constructing a railway line for freight trains is about US$10 million per kilometer. It will cost more if the railway line is to be used by passenger trains as they will travel at higher speeds.

89. There is a dedicated freight corridor planned to connect the Port of Karachi with Pipri Marshalling Yard. The proposed 50-kilometer project would be backed by DP World with support from Pakistan Railways and Port Qasim Authority[20]. The agreement also involves more than US$3.3 billion worth of investment in railway capacity and economic zones. As a whole, improvements required for the railway network in Pakistan include remolding of yards to provide more loading points, provision of sufficient locomotives, and mechanization of loading and unloading operations[21].

90. Looking at the wider region, there are plans to develop railway connectivity from Pakistan to Uzbekistan. This involves constructing a stretch of 192 kilometers of railway from Kohat (about 50 kilometers south of Peshawar) that connects through Thal to Kharlachi which is located at the border with Afghanistan[22]. Feasibility study for this project has been completed. The project is estimated to cost US$642 million. The railway will be connected to Uzbekistan through Afghanistan. The company Ulanish

17 Source: Simmons, M. (2024). "Pakistan-China ML-1 project delay". International Railway Journal, July 8. Available online at: https://www.railjournal.com/infrastructure/pakistan-china-ml-1-project-delay/.
18 Source: Interview held with Pakistan Ministry of Railways on 30 September 2024.
19 Source: Interview held with Pakistan Ministry of Railways on 30 September 2024.
20 Source: Railway Gazette International (2024). "Dubai backs Karachi dedicated freight corridor plan". February 6. Available online at: https://www.railwaygazette.com/freight/dubai-backs-karachi-dedicated-freight-corridor-plan/65844.article.
21 Source: Interview held with Pakistan Ministry of Railways on 30 September 2024.
22 Source: Interview held with Pakistan Ministry of Planning, Development and Special Initiatives on 1 October 2024.

from the UAE will finance the feasibility study for the Afghanistan side. However, developing a railway line that uses the Chaman Border Crossing Point may be more suitable as the terrain is generally flat[23]. The Torkham route may be more challenging due to difficult terrain. Another uncertainty is the rail gauge. While Pakistan uses the 1,696 mm gauge and Uzbekistan uses the 1,520 mm gauge, Afghanistan does not have a domestic rail network. It is unlikely Afghanistan will use the 1,696 mm gauge since Pakistan is the only CAREC member that uses such standard, so change of gauge operation is likely to be needed. If this railway corridor is functional, it can be a game changer. This is because countries in Central Asia can then ship exports to overseas destinations. For example, Uzbekistan can direct fertilizers exports to Brazil via this corridor instead of the longer trip through Turkmenbashi and Poti.

91. On the digital front, Pakistan has launched Pakistan Single Window (PSW), which is an integrated digital platform that allows parties involved in trade to lodge standardized information and documents with a single-entry point to fulfill all import, export, and transit-related regulatory requirements. It aims at reducing the time and cost of doing business by digitalizing Pakistan's cross-border trade and eliminating paper-based manual processes. The digital initiative was launched to the World Trade Organization's (WTO) Agreement on Trade Facilitation, as part of the commitment to meet the requirement in the use of a national single window. Pilot test showed that PSW was able to reduce processing time from 11 days to 2 days. Shippers and freight forwarders can submit declarations for import, export and transit anytime and anywhere, removing the need to visit government agencies.

92. The PSW is now integrated with 29 banks in Pakistan, simplifying the procedure of handling remittances and payment receipts. Further functionalities can be added, such as digitalizing trade finance. In addition, PSW is working with the Ministry of Maritime Affairs to develop a Port Community System to serve the maritime sector.

2.9 People Republic of China (PRC)

93. The estimated containerization level of PRC is 15.81%. In 2023, rail transported 5,005 million tons. Containers on rail handled 791 million tons.

94. In 2023, the container throughput handled at ports in China reached 310 million TEUs, increasing 4.9% compared to the previous year. Among these, 271.9 million TEUs were handled by coastal ports and 38.39 million TEUs were handled by inland waterway ports, respectively increasing by 4.3% and 9.2% compared to 2022. Chinese ports also dominated in terms of container throughput, occupying six spots on the list of top ten container ports in the world. Within the country, Shanghai remains the biggest container port driven by the Yangshan Terminal. Two seaports that are the focus in this study, Tianjin and Lianyungang, showed respectable year on year growth, registering 5.5% and 10.2% from 2022 to 2023. Tianjin handled 22 million TEUs (rank 6th) while Lianyungang handled 6 million TEUs (rank 11th) in 2023.

95. In the past 20 years, under the national policy of encouraging the development of container intermodal transport, China Railways has actively promoted the development of railway containers. It continuously developed the railway container market, established logistics centers, and optimized the layout of the container station network, built the brand of China Railway Express (CRE), strengthened cooperation with shipping, highways and ports. In particular, railway container traffic has grown rapidly, with an average annual growth rate of 18%.

96. For container traffic across the Eurasian continent, PRC has three main corridors. The first is "Western Corridor" that connects PRC to Kazakhstan to Europe by rail, crossing the BCPs at Alashankou–Dostyk or Khorgos–Altynkol. The route covers PRC, Kazakhstan, the Russian Federation, Belarus, Poland and Germany, spanning more than 12,000 km across six countries. This is the dominant route. Inside Kazakhstan, the route splits into three directions in the north, middle and south. The second corridor

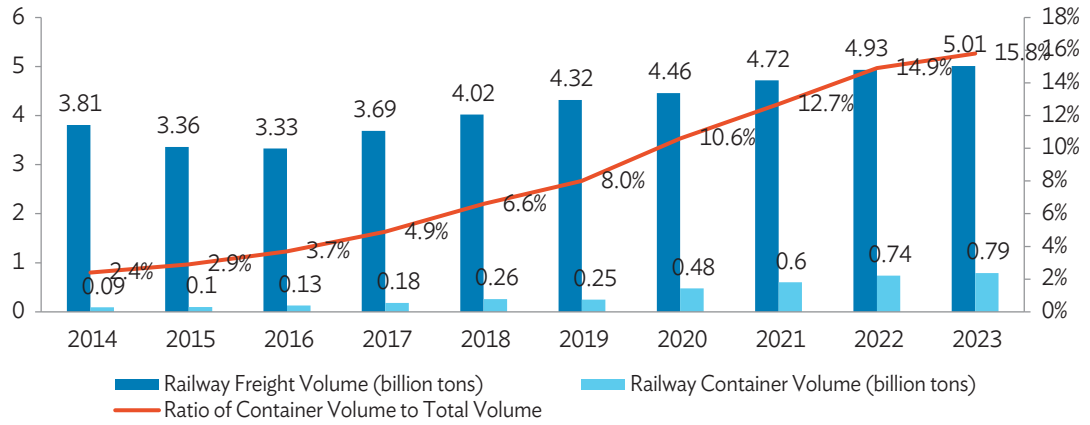
23 Source: Interview held with Pakistan National Logistics Corporation on 1 October 2024.

Table 7: Container Throughput of Main Ports in PRC, 2023

Rank	Port	TEUs, millions	Y-o-Y % Change
1	Shanghai Port	49.16	3.9
2	Ningbo-Zhoushan Port	35.3	5.8
3	Shenzhen Port	29.88	–0.5
4	Qingdao Port	28.77	12.1
5	Guangzhou Port	25.11	2.0
6	Tianjin Port	22.19	5.5
7	Xiamen Port	12.55	1.0
8	Suzhou Port	9.33	2.8
9	Beibuwan Port	8.02	14.3
10	Rizhao Port	6.26	7.9
11	Lianyungang Port	6.14	10.2
12	Yingkou Port	5.33	6.7
13	Dalian Port	5.03	12.8

Source: Ministry of Transport, PRC.

Figure 8: Freight Tonnage Transported by Railway in PRC, 2014 to 2023



Source: Compiled from China Railway Administration.

connects inland cities in PRC to the Erenhot-Zamiin-Uud railway port, enters Mongolia, and via Russia, Belarus, and Poland (through Brest/Malaszewicz railway port), to Germany. The third route facilitates shipments that move through Manzhouli–Zabaikal via the Russian Federation and Belarus to Poland (Brest/Malaszewicz railway port) and Germany.

97. In January 2004, the State Council approved the Mid- and Long-Term Railway Network Planning (2003–2020), which planned the construction of the main hubs and railway container centers. At present, there are 3,500 railway's container handling stations in the country, including the newly built railway container centers in Shanghai, Kunming, Chongqing, Chengdu, Zhengzhou, Dalian, Qingdao, Wuhan, Xi'an, Harbin, Tianjin, Urumqi, Ningbo, Guangzhou, with other railway freight stations, basically forming a railway container network covering the whole country. These container railway centers are the main nodes to handle container block train, which plays an important role in the operation of China–Europe (Central Asia) Express.

Table 8: Major Railway Container Center for China–Europe Container Block Trains

Cities	Capacity
Xi'an	Xi'an Railway Container Center is located at International Port Park, Xi'an Municipality. It has 4 freight loading and unloading lines, and an annual container handling capacity of 500,000 TEUs. There are two new loading and unloading lines under construction. In 2023, the volume of international containers handled of Xi'an Railway Container Center ranked first among the railway's container centers.
Chongqing	Chongqing Railway Container Center is located at Tuanjiecun in Chongqing Municipality. It has 4 cargo handling lines, with an annual container volume of 500,000 TEUs, There is a customs supervision area. At present, it mainly handles the China–Europe train from Chongqing to Duisburg, Germany.
Chengdu	Chengdu Railway Container Center is located at Chengxiang town, Qingbaijiang District in Chengdu Municipality. It has 4 freight loading and unloading lines and has a handling capacity of 500,000 TEUs per year. There is a customs supervision area.
Zhengzhou	Zhengzhou Railway Container Center is located at Putian, Zhengzhou Municipality. It has 4 freight loading and unloading lines, and an annual container handling capacity of 500,000 TEUs. At present, it mainly handles the China-Europe train from Zhengzhou to Hamburg, Germany.
Tianjin	Tianjin Railway Container Center is located at Haitie Dadao, Binghai District, Tianjin Municipality. It has 2 freight loading and unloading lines. Now another two loading and unloading lines are under construction. It works closely with Tianjin Port to run rail-waterway intermodal trains and the China-Europe(Central Asian) block trains between Tianjin, Mongolia, Russia and European Countries.

Source: Consultant, compiled from various sources.

2.10 Tajikistan

98. Containerization level for the country is estimated to be 0.2%. In 2023, total freight tonnage in Tajikistan was 120.6 million tons (road 114.1 million tons and rail 6.5 million tons). Freight transported in containers was 0.25 million tons (road 0.04 million tons and rail 0.21 million tons), representing 0.03% and 3.2% containerization level by transport modes.

99. Tajikistan is divided into northern and southern regions due to its varied topography and the challenges in connectivity by railway and road. The new international transit highway, Dushanbe–Khujand–Chanak, runs through the country from north to south, improving connectivity. In Sughd Province, located in northern Tajikistan, the presence of a separate railway line and well-developed infrastructure significantly enhances integration with neighboring regions. This province is just 142 km from Tashkent City and Province, fostering close economic, social, and cultural relations. Almost 30% of the country's population lives in Sugd province, which produces two-thirds of the country's GDP. The southern regions of Dushanbe City, Kurgan-Tyube, and Nizhniy Pyandz, situated on the western side of the country, are connected by roads and a dedicated railway. There is a transportation infrastructure that links Tajikistan to Uzbekistan, which further connects to Kazakhstan or Turkmenistan. However, there is currently no railway connection with Afghanistan.

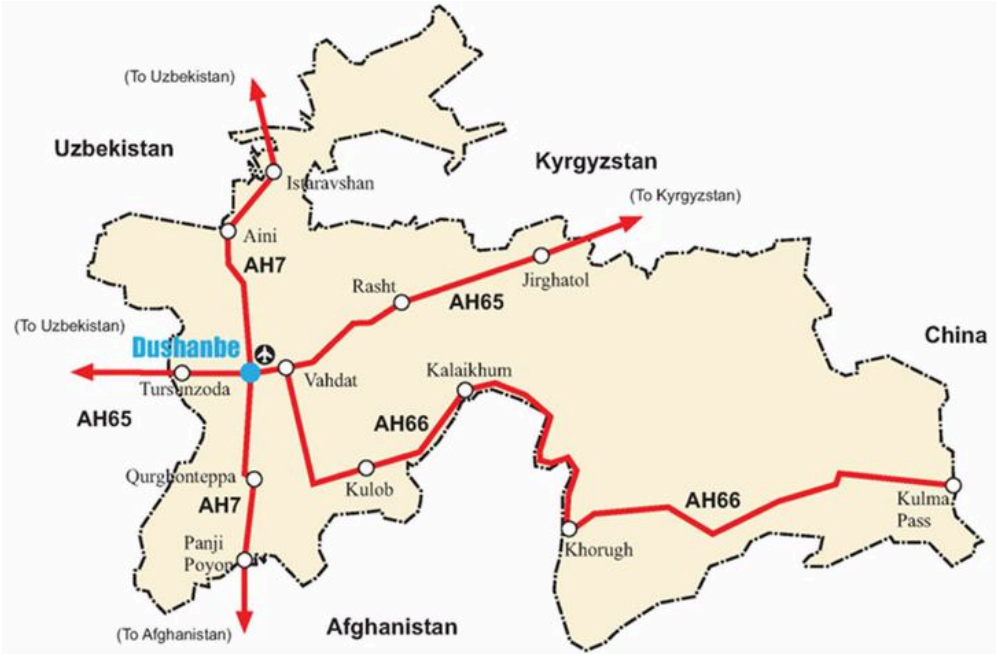
100. As such, this country is heavily reliant on road transport since the railway network is dispersed (three lines run in the east–west direction and are not integrated but rather connects to neighbor countries). The reliance on road transport is similar to Pakistan, but Tajikistan does not have any ports and therefore the use of containerization is very low.

101. Tajikistan's current traffic pattern is imbalanced, with substantially more traffic coming into the country than going out. Tajikistan's import-export imbalance partly causes this. Many trucks and wagons leave Tajikistan empty. Export trade flow is mainly oriented toward Türkiye, Europe, and Kazakhstan, while imports flow from the PRC, the Russian Federation, and Kazakhstan. Such asymmetrical trade flows make it difficult to organize round trips, raising transportation costs.

102. Traffic between Tajikistan and the PRC is essential, with the PRC as Tajikistan's primary import source and a potential key export destination. As well as the main use case for containerized freight. Most imports consist of consumer goods and manufactured products. Merchandise trade from PRC to Tajikistan and in general to CAREC countries is mainly carried by rail as having advantages in transit time efficiency and cost over that provided by sea.

103. International highways are the backbone of Tajikistan's international network, which includes four of the six Central Asia Regional Economic Cooperation (CAREC) corridors (2, 3b, 5, and 6c) and three Asian Highways (7, 65, and 66) network traversing the country. AH 7 stretches from north to south and passes Dushanbe–Khujand–Chanak (336 km) toward Tashkent City. This is the main route in Sughd province that supports both freight and passenger traffic, with the highway having been reconstructed and reopened in 2012, improving access to northern Tajikistan. The freight traffic mainly runs through Tajikistan's international road network; this route has been important in Central Asia for many centuries due to its location along one of the trade routes of the ancient Silk Road.

Figure 9: Asian Highway Routes of Tajikistan



Source: Association of International Automobile Transport Operators of Tajikistan (ABBAT).

104. In Tajikistan, large imbalances between inbound and outbound container traffic posed a challenge to increasing container volume. Containers entered Tajikistan due to imports from PRC, but mostly returned empty. There is no revenue generated for Tajikistan Railway when moving empty containers and wagons to the interline railway, making it costly for the railway company. From 2014 to 2018, the freight tonnage carried by containers decreased 38% from 61,900 tons to 38,100 tons. Load of laden outbound containers decreased 74% from 2,300 tons to 600 tons.

105. According to the Tajik there have also been large imbalances between inbound and outbound container traffic. This necessitates the return of large numbers of empty containers and wagons to the interline railway, which increases Tajik Railway cost of container transport substantially.

106. Notwithstanding, there are some signs of interest on the adoption of containers in Tajikistan. Tajikistan intends to launch container transportation to Europe via Turkmenistan. On 10 May 2023 in Dushanbe, the Presidents of Tajikistan and Turkmenistan signed two documents of cooperation relating to the transport sector. Both countries will organize expert studies on the feasibility of container transportation in two directions,

- Turkmenistan to Uzbekistan to Tajikistan to PRC
- Tajikistan to Uzbekistan to Turkmenistan to Europe, through Port of Turkmenbashi

The first route could be challenging because the border point between Tajikistan and PRC is located at the Kulma Pass, a region with high altitude and difficult to pass in winter. The mountain road prohibits the movement of a 40 ft container due to the turning radius when navigating these narrow passes. For Caspian crossing, Tajik operators have the option of using the ports in Aktau or Kuryk in Kazakhstan, or Turkmenbashi in Turkmenistan. Since Tajikistan does not have a land border with either littoral state, the shipment must pass through Uzbekistan. Turkmenbashi is more advantageous as the distance between Dushanbe to this port is 1,900 km and takes about 24 hours on road. Aktau is further, about 2,100 km distance apart from Dushanbe, and requires 33 hours of driving. In addition, Turkmenbashi is also located closer to Baku, which means the sailing time is shorter. Overall, this shows that Tajikistan is considering the use of containers, especially for access to international markets.

2.11 Turkmenistan

107. The estimated containerization level of Turkmenistan is 0.38%. In 2023, road transported 498.8 million tons of goods, and rail transported 24.6 million tons. Thus, a total of 523.4 million tons were transported by road and rail in 2023. Containers on road and rail handled 2.0 million tons.

108. Turkmenistan joined the Central Asia Regional Economic Cooperation (CAREC) program in 2010, supporting its vision for an interconnected region. The country is involved in regional projects related to transport, trade, and energy security. CAREC Corridors 2, 3, and 6 connect Turkmenistan to networks extending west to Turkey and Europe, east to China, north to Kazakhstan and Russia, and south to Pakistan's ports of Karachi and Gwadar. By 2023, over $2.21 billion has been invested in infrastructure projects in Turkmenistan. International organizations are helping Turkmenistan enhance transport networks along key trade corridors to improve supply chain efficiency. ADB is modernizing the railway network on the Turkmenabat–Mary–Dushak–Ashgabat–Turkmenbashi corridor, including electrification to boost the railway capacity. ADB also supports the maritime sector by providing technical assistance for the maritime corridor and exploring block train and ferry services between Uzbekistan and Turkmenbashi.

109. Turkmenistan is not a member of the Trans-Caspian International Route (TITR). As a result, its capacity is not considered in the policy formulation and strategies developed by the TITR Association. This is unfortunate, especially considering the significant capacity of the Turkmenbashi Port (the annual capacity is 400,000 TEUs, far larger than the existing capacity of Aktau, Kuryk and Baku combined). If Turkmenistan were to join as a member, it could benefit the Central Asian region by promoting the development and implementation of coordinated policies, regulations, and incentives aimed at attracting traffic to the Caspian Sea in the long term.

110. Turkmenbashi International Sea Port is strategically positioned at key cargo routes between Europe and Asia, serving as a crucial "sea gateway" for Central Asia. Being closer to Baku, Turkmenbashi has advantages over Aktau in terms of time and cost. However, Turkish and Georgian operators prefer to transit through Aktau. This preference is largely due to Turkmenistan's stricter immigration, customs, and transit regulations, which businesses find more challenging to navigate. Additionally, at the beginning of the coronavirus pandemic, Turkmenistan closed all its borders with neighboring countries.

111. Currently Turkmenistan aims to maximize the potential of the Turkmenbashi International Seaport and the Balkan Shipbuilding and Repair Plant. The agency "Turkmen Marine and River Ways" reported a 108.9% increase in service volume in the first half of 2024. Turkmenistan is modernizing its marine transport infrastructure, leading to greater cargo and passenger transport and improved environmental protection in the Caspian Sea. Partnerships have been formed with organizations like the International Maritime Organization (IMO) and the European Bank for Reconstruction and Development (EBRD). Cooperation with classification societies, such as the Russian Maritime Register of Shipping and Bureau Veritas, ensures compliance with international safety standards. Turkmenistan is also expanding its shipping fleet to enhance international trade and diversify transport routes, adding new tankers and merchant vessels in recent years.

112. The Baku Shipbuilding and Ship Repair Plant is entering a new era in domestic shipbuilding. This year, it has repaired a foreign naval vessel and a local ship, while also constructing two dry cargo ships. Enhancing the capabilities of Turkmenbashi Seaport will improve the transport of bulky cargo to the Caspian region and facilitate transit to other Central Asian countries.

Table 9: Comparison of the Ports (Baku, Kuryk, Aktau, and Turkmenbashi)

Country	Port	Capacity, million tons/year	Throughput, million tons/year	Container capacity, TEUs/year	Container throughput, TEUs/year, 2023
Kazakhstan	Aktau	11.8	4.5	70,000	22,782
	Kuryk	6	2.1	30,000	4,438
Turkmenistan	Turkmenbashi	17	8.3	400,000	19,000
Azerbaijan	Baku	15	7.3	100,000	44,272

Source: Consultants, compiled from field missions and different websites.

Table 10: Comparison of the Routes (Baku to Aktau vs Baku to Turkmenbashi)

Comparisons	Baku to Aktau	Baku to Turkmenbashi
Distance	276 nautical miles (511 km)	190 nautical miles (352 km)
Sailing time	24 hours	20 hours
Fare (one way)[a]	$1,200	$1,000
Fare (two-way)	$1,800	$1,600

[a] Actual fares can vary due to discounts. For example, if a shipper purchases a two-way ticket in advance, the price is $1,600, but if the ticket is purchased on the spot, the spot price is $1,716. The numbers were obtained from interviews with shippers.

113. A major upgrade of Turkmenistan's main port, Turkmenbashi, was completed in 2018. The new port is fully-rail-served and includes a container terminal, a general cargo terminal, a bulk cargo terminal, a polypropylene terminal serving nearby polypropylene production facilities, a passenger and vehicle terminal, and a shipbuilding and repair yard. The existing terminal for railway wagon ferries was also upgraded. The new port has an annual throughput capacity of 17 million tons of cargo, 3 million tons of bulk cargo, 4 million tons of general cargo, 75,000 trucks, and 300,000 passengers.

114. The ferry passenger terminal offers high-quality services for passengers, trucks, and vehicles traveling between Caspian Sea seaports. Spanning 230,000 square meters, it serves up to 300,000 passengers and 75,000 vehicles annually. The terminal features a technical inspection center, a disinfection building, a railway control building, and a truck stop. It also includes a 256-meter berth for trains on one side and vehicles on the other.

115. The container terminal spans an area of 249,000 square meters and manages the handling of 400,000 containers annually. It features a total berth length of 480 meters, enabling the terminal to accommodate up to three vessels simultaneously, with a combined carrying capacity of up to 5,000 tons.

116. The terminal is equipped with two ship cranes, each capable of lifting 70 tons and handling 30 containers per hour. In addition, there are two railway cranes with a lifting capacity of 48 tons each and six-wheeled cranes, each with a lifting capacity of 45 tons. The terminal also has various vehicles designed for moving and stacking containers, with lifting capacities of 25, 45, and 50 tons. Additionally, there are covered warehouses with a total area of 9,984 square meters and a sorting warehouse of 3,060 square meters.

117. The bulk cargo terminal has an annual capacity of 3 million tons of cargo. It is equipped to handle and store a variety of bulk cargoes, including iron ore, cement, coal, cereals, sugar, salt, and more. The terminal features a berth that is 440 meters long and can simultaneously accommodate three vessels, each with a carrying capacity of up to 5,000 tons.

Figure 10: Container Terminal in Port of Turkmenbashi



Source: Turkmenportal, https://turkmenportal.com/en/blog/71536/turkmenistanda-deniz-ulaglary-arkaly-konteyner-dashamak-takmynan-4-esse-yokarlandy.

118. For operations, the terminal is equipped with three railway cranes, each capable of lifting 42 tons, as well as two belt conveyors that can manage 650 tons of bulk cargo per hour. Additionally, there are five-wheel loaders, each with a capacity of 20 tons, and one mobile crane with a capacity of 20 tons.

119. The terminal also includes 14 silos for grain storage with a total capacity of 35,000 cubic meters and eight cement silos with a combined capacity of 6,000 cubic meters. Furthermore, it features an open warehouse covering an area of 37,000 square meters, along with covered warehouses that have a total area of 8,512 square meters.

120. The general cargo terminal covers 261,000 square meters and can handle 4,000,000 tons of cargo annually. It is designed for loading and unloading steel, iron, wood, vehicles, and heavy loads. With a berthing length of 625 meters, the terminal accommodates up to four vessels at once, with a total capacity of 5,000 tons. It features six railway cranes (20 tons each), one wheeled mobile crane (84 tons), two 330-ton cranes, and a 1,500-ton transporter for oversized cargo. Forklifts with lifting capacities from 3 to 60 tons are also available. The facility includes a 75,000-square-meter open warehouse and 26,394 square meters of covered warehouse space.

121. The Azerbaijan Shipping Company (ASCO) owns 51 vessels and has an estimated annual transport capacity of 3,100 Twenty-Foot Equivalent Units (TEU) in one direction and 6,200 TEU in both directions.

122. Turkmenistan has reduced the fees for obtaining transit cargo permits for multimodal transportation. The state enterprise "Turkmenulaggozegchilik" has set the international waybill (SMR) registration fee at 100 manat and the same amount for permits allowing truck owners to transport goods from third countries to Turkmenistan. Discounts apply to cargo arriving by sea or rail. Previously, fees for foreign vehicles unloading transit cargo at Turkmenistan's railway stations or freight yards were lowered from $250 to $100. These changes aim to enhance the use of railway terminals and freight yards in Turkmenistan, facilitating smoother cargo transfers and streamlining the permit process for road transport to third countries.

123. The country has not made any efforts on paperless trade as yet. Turkmenistan has started using TIR-EPD to digitalize the process of international transit and enhance transit security through risk management. The country has acceded to e-CMR but needs to take steps towards implementation.

124. The country is not yet a member of the Trade Facilitation Agreement (TFA) but is preparing to join, having achieved acceding status in 2022. Visa requirements for drivers and specific import regulations hinder trade. Easing these measures could reduce transaction costs and integrate the country into regional trade corridors. It is crucial to enhance the national framework for better border agency cooperation and to support One-Stop Border Posts (OSBPs). Additionally, Sanitary and Phytosanitary (SPS) regulations should be strengthened to meet international standards.

2.12 Uzbekistan

125. The estimated containerization level of Uzbekistan is 9.07%. In 2023, rail transported 48.5 million tons of goods. Containers on rail handled 4.4 million ton.

126. In 2023, the number of containers transported in Uzbekistan reached 383,351 TEUs. Import accounted for 64%. Export contributed only 31%. Transit was a tiny part of the container traffic, with less than 5%. A positive sign is that all the movements showed positive growth in 2023 compared to the previous year, except exports. In terms of tonnage, imports accounted for 72.8% of all the container rail freight transported.

Table 11: Number of TEUs Transported on Rail for Uzbekistan, 2022 to 2024

Direction	2022	2023	2024[a]
Import	195,761	245,330	165,299
Export	132,121	119,212	73,719
Transit	13,519	18,809	22,114
Total	341,401	383,351	261,132

[a] First ten months of 2024.
Source: Uzbekistan Temir Yo'llari (UTY).

Table 12: Freight Tons in Containers Transported on Rail for Uzbekistan, 2022 to 2024

Direction	2022	2023	2024[a]
Import	2,487,770	3,223,123	2,329,047
Export	969,017	944,709	620,111
Transit	172,964	258,455	294,942
Total	3,629,751	4,426,287	3,244,100

[a] First ten months of 2024.
Source: Uzbekistan Temir Yo'llari (UTY).

127. In Uzbekistan, containerized cargo is mainly components for the production of cars and trucks, buses, internal combustion engines, agricultural machinery and mechanisms, products of the electronic, electrical, chemical, petrochemical, printing, culinary, pharmaceutical, light, textile industries, for packaging products, building materials, ingredients and other materials.

128. According to the results of 2023, the volume of cargo transportation on high-speed container trains increased. Thus, 201 trips were made on regional routes (101 in 2022). In total, 7,500 containers with 177,200 tons of cargo were transported along the railway network of Uzbekistan. In 2023, three new container transportation routes were introduced: Tashkent–Jizzakh, Tashkent–Samarkand and Tashkent–Bukhara.

129. At the meeting of the Ministry of Transport of Uzbekistan and the European Commission for International Cooperation within the framework of the Coordination Platform of the Trans-Caspian International Transport Corridor in June 2024, the Kyzylorda–Uchkuduk railway project was identified as a priority for promoting regional integration and trade relations. The implementation of this project will create a new crossing point on the border between Kazakhstan and Uzbekistan.

130. In August 2024, TemirYulKargo JSC successfully organized a new multimodal route for container transportation from the Indian ports of Mundra, Nhava Sheva and Chennai to Uzbekistan. The cargo was delivered by sea from India to the Iranian port of Bandar Abbas, and then by rail to Sergeli station through Serakhs BCP (Turkmenistan). The first freight train, consisting of twenty 20' containers, covered 2,673 km in 20 days. In the future, it is planned to reduce the delivery time to 15 days.

131. In August 2024, a container train from the Kazakhstan–China terminal at the port of Xi'an travelled 4,486 km to Tashkent railway station in a record 5 days. This accelerated cargo delivery service is organized within the framework of the agreements reached by the presidents of Kazakhstan and Uzbekistan in Khiva in April this year on the organization of cargo transport on the China-Kazakhstan-Uzbekistan route and the development of the Trans-Afghan direction.

132. In August 2024, the first freight train from China to Uzbekistan arrived on the new Jinhua–Nazarbek route, consisting of 50 containers with industrial equipment and consolidated cargo. The train covered a distance of 6,250 kilometers in 12 days, passing through the Altynkol station in Kazakhstan. For further transportation of goods to other regions of Uzbekistan, it is planned to use express container trains running between the stations "Nazarbek" and "Urgench". For these purposes, special platforms belonging to the Uzbek Railways will be used.

133. A very recent development was the use of containers to export urea to Brazil. In December 2024, a train of 54 forty-foot containers carrying 28 tons of urea each departed First Dry Port Terminal and arrived in Turkmenbashi, after which the containers were transferred to a vessel and sailed to Brazil. The shipment took 20 days from Tashkent to Turkmenbashi to Poti and estimated another 35–45 days sailing from Poti to Paranaguá port in Brazil. The total lead time is expected to take 60–70 days.

134. In terms of policy, "The Uzbekistan-2030 Strategy" sets out programs for the development of freight and passenger transportation by rail. Following these programs, the level of railway electrification will increase to 65%, the purchasing and building 1,000 passenger cars, 5,000 freight cars, as well as purchasing 6 high-speed trains in South Korea and about 30 electric trains for passenger transportation. The electrification project of the Bukhara–Urgench–Khiva railway line is planned to be completed by the end of 2024.

135. The main plans and indicators for the development of containerization in the country are set out in the "Strategy for the Development of the Transport System of the Republic of Uzbekistan until 2035"[24]. Thus, the share of container transportation in the total volume of freight transportation by rail should reach 6.2% by 2025 and 8.4% by 2035, and by road transport –0.1% in 2025 and 0.15% by 2035. According to the strategy, the speed of container delivery by rail should reach 110 km/day by 2025 and 150 km/day by 2035. The volume of transit cargo transportation in rail containers should increase from 7,800 TEUs in 2018 to 8,400 TEUs in 2025 and 8,800 TEUs by 2035.

136. The main problems for the development of containerization in Uzbekistan are the lack of containers and platforms for their transport, lack of specialized terminals and logistics sites for handling containerized cargo, lack of a clear program for the development of containerization. Thus, this contributed to the low level of transit containers as analyzed at the beginning of this section.

24 https://regulation.gov.uz/uz/d/3867.

Container Trade and Traffic Analysis and Projections

3

3.1. Estimation of Containerization Level

137. Adoption of container is generally low in CAREC members.[25] Pakistan, PRC and Georgia have comparatively higher containerization level, due to the presence of seaports and the maritime connectivity to other international ports. The remaining CAREC members, all landlocked states, have levels estimated to be less than 10%.

Table 13: Estimated Containerization Level (Land) in CAREC Members, 2023

Countries	Road and Rail Container Freight Tonnage, million tons	Gross Freight Tonnage, million tons	Containerization Level %
Azerbaijan	5.6	152.4	3.67%
Georgia	2.8	28.9	13.15%
Kazakhstan	18.7	714.8	2.62%
Kyrgyz Republic	N/A	50.6	7.1%
Mongolia	6.2	102.2	6.01%
Pakistan	N/A	877.7	57.21%
PRC	N/A	3,910.0	18.72%
Tajikistan	N/A	120.6	0.2%
Turkmenistan	N/A	523.5	0.38%
Uzbekistan	N/A	48.5	9.07%

* N/A is indicated where the data is not available .

Source: State Statistical Committee, https://www.stat.gov.az/source/transport.

138. Another useful indicator for port is the container terminals utilization. This measures the level of activity for the container terminal that handles container operations. Each container port has an annual design capacity that specifies the maximum number of TEUs the port can handle in one year. In general, the port container utilization in 2023 was only 50%. This implies that most ports studied have the potential to serve more containers. Notably, Poti, Tianjin and Lianyungang handled more containers than their design capacity. This was achieved through using automation and more effective planning to increase the number of container moves per hour and making space for storing containers. Kuryk showed the lowest utilization level due to ongoing construction works at this relatively new port.

25 Refer to Appendix 2 for the details on the methodology used to estimate the containerization level for each country.

Table 14: Estimated Container Terminals Utilization at Ports, 2023

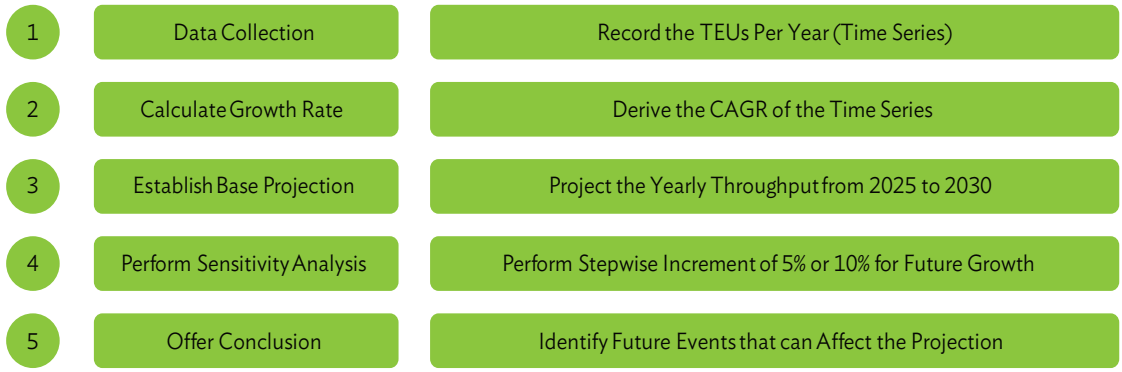
Country	Ports	ContainerTerminals Capacity, TEUs/year	Actual Containers Handled, TEUs	Utilization, %
Azerbaijan	Baku	100,000	44,272	44.27%
Georgia	Batumi	230,000	109,000	47.39%
	Poti	550,000	584,978	106.36%
Kazakhstan	Aktau	70,000	22,782	32.55%
	Kuryk	30,000	4,438	14.79%
Pakistan	Karachi	4,650,000	2,277,000	48.97%
	Qasim	2,025,000	1,058,000	52.25%
PRC	Lianyungang	4,900,000	6,100,000	124.49%
	Tianjin	16,300,000	22,200,000	136.20%

Source: Consultants, compiled from various sources.

3.2 Methodology and Approach in Forecasting of Container Trade and Throughput

General Approach

Figure 11: Steps in Estimating the Projection of the Container Throughput



139. The projection model uses five steps to estimate the future container throughput. The first step begins by collecting the number of TEUs that pass through the four corridors. The scope of this study defines the four corridors as (i) CAREC Corridor 2, (ii) CAREC Corridor 4, (iii) South Asia–Central Asia, and (iv) East Asia–Central Asia–Europe.

- Step 1. Official and public data are used. If data are non-public, then request is made to the relevant authority in the country (generally referring to the national customs authority) for the data.

- Step 2. Examine the past historical data and calculates the compound annual growth rate (CAGR) for the period of the data collected.

- Step 3. The CAGR is then used as the growth rate to project the yearly container throughput from 2025 to 2030. This forms the base projection.

- Step 4. To simulate various scenarios, the size of the CAGR and the time series pattern is studied. Three conditions are considered, (i) the momentum of the time series especially in the most recent years, (ii) the size of the CAGR and (iii) ongoing or future events that can stimulate or

affect the growth rate. In the scenario where all three conditions are considered favorable, a future CAGR in the range of 10% to 50% (with increments of 10%) are used to forecast future container throughput. However, if the time series showed volatile pattern, or the CAGR is small or even negative, then a more tempered range of –10% to +10% is used (with an increment of 5%). Step 4 will then produce a range of future container throughput in TEUs that should cover the pattern of the throughput in 2030.

- Step 5. This concludes the projection and offers some insights, observations and commentaries on the factors that can affect the projection. Since there are important external events that can reshape trade flows and there are many infrastructure developments in CAREC region, the actual throughput can vary from the projected numbers.

Methodology

140. Since each corridor has different characteristics and trade flows, the methodology and the considerations for each corridor is specified below. Section 3.3 then proceeds to complete the five steps for each corridor.

(i) **CAREC Corridor 2.** The number of TEUs that travelled through the TITR is public information published by the TITR Association. The current data offers the annual container throughput from 2017 to 2024 (both years inclusive). This shall form the basis of the projection beginning with year 2025 and ends in year 2030. Different growth rates are calculated and used to project the future throughput, producing a range of values that will form the low and high end of the estimates.

(ii) **CAREC Corridor 4.** The container traffic travels along CAREC Corridor 4b. There are other BCPs between PRC and Mongolia, but containers are transported on rail and go through Erenhot–Zamiin-Uud. The other BCP pairs handle mostly road freight carrying commodities such as coal and copper ores, items that are unsuitable for containerization. Thus, the focus will be the container traffic along 4b. Official statistics are obtained from UBTZ, the railway company that performs the change of gauge operation at Zamiin-Uud. The data are split between import, export and transit, allowing further analysis in the direction of trade. The data are available from the year 2018 to 2023. This shall form the basis of the projection beginning with year 2024 and ends in year 2030.

(iii) **South Asia–Central Asia.** There are substantial container flows from Karachi Port and Port Qasim to the north, mainly carried by road transport. The actual number of TEUs that are moved by trucks to Central is still small, and the reverse backhaul is virtually non-existential. On another note, this study has identified that there is a small but rapidly growing volume of containers carried on rail. Pakistan Railway has projected the potential container throughput which will be discussed but not exactly included in the projection since there is currently no rail link from Pakistan to Central Asia, although work has started for the trilateral rail project between Pakistan, Afghanistan and Uzbekistan. The data sources come from the non-public data from Karachi Port and Port Qasim for number of containers handled, National Logistics Company (NLC) for road traffic, and Pakistan Railway for rail traffic.

(iv) **East Asia–Central Asia–Europe.** The container block trains that move between PRC and Europe traverse through Russian territory, a very small number goes though CAREC Corridor 2. Our projection model will examine the container throughput from Eurasian Rail Alliance (ERA).

3.3. CAREC Corridor 2

141. The container throughput from 2017 to 2024 showed fluctuating pattern on an annual basis. The number of TEUs rose from 9,000 TEUs in 2017 to 56,500 TEUs in 2024, growing at a CAGR of 30% over the period. Year-on-year (Y-o-Y) increase reached 176% in 2024. There were positive Y-o-Y increases in most of the years except 2020 (due to COVID-19) and 2023 (when ocean freight rates normalized, drawing container traffic back to the maritime route).

142. Using the CAGR of 30%, the future container turnover is projected to the year 2030. This is illustrated in the figure where the green columns show the estimated growth.

- This study estimated that the capacity of CAREC Corridor 2 to range between 70,000 TEUs to 80,000 TEUs per year, mainly constraint by the limited container ships operating between Alat and Aktau/Kuryk. This means that the increased container will hit the capacity limit in 2025–2026.

- From 2025 to 2030, the container throughput will expand approximately 5 times from the 56,500-level achieved in 2024, assuming that the CAGR continues at 30% and that the bottlenecks are resolved. This is the base case scenario.

- Sensitivity analysis is performed using CAGR ranging from 10% to 50%, with increments of 10%. This estimation shows that the container throughput will double from the current level to 100,000 TEUs in 2030 (assuming 10% CAGR) or hit 643,000 TEUs in 2030 (assuming 50% CAGR).

Figure 12: Container Throughput Through CAREC Corridor 2 (Base Case)

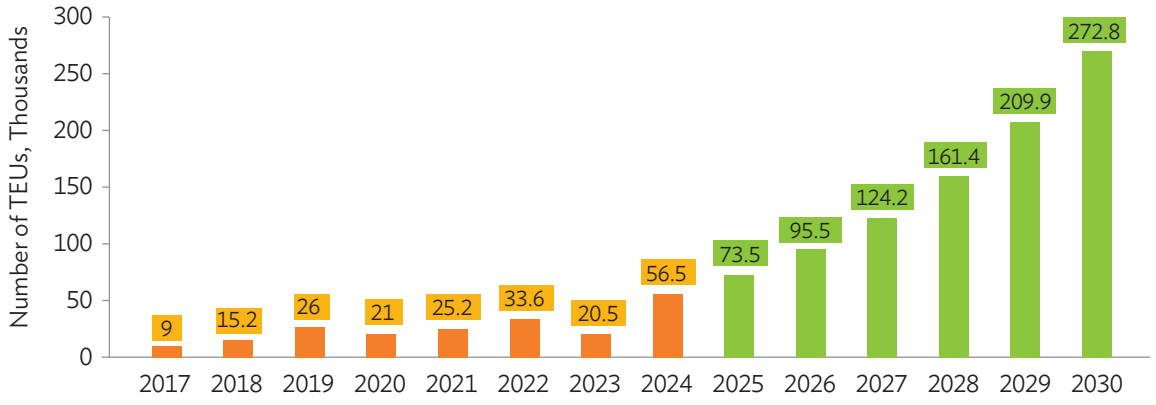
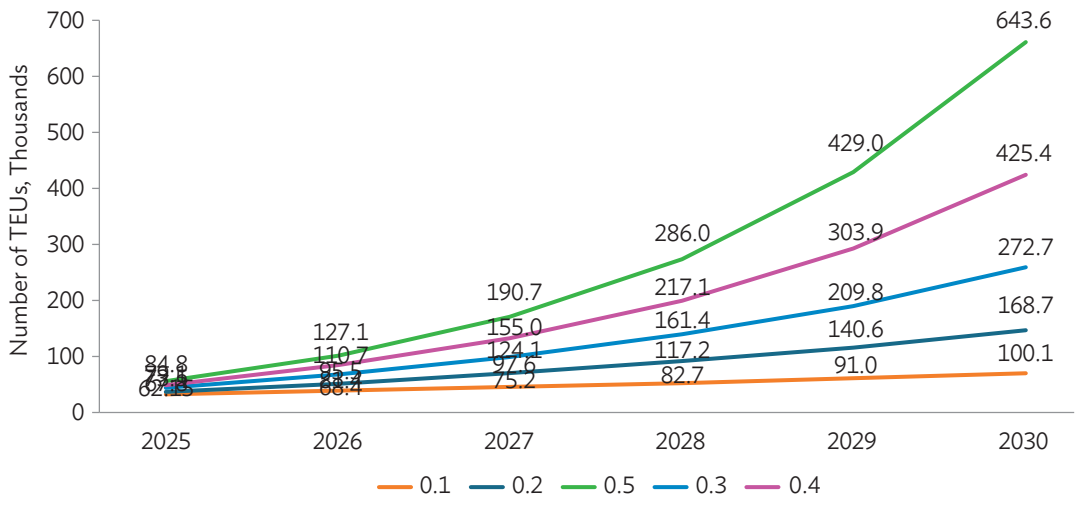


Figure 13: Projected Container Throughput Through CAREC Corridor 2 (Scenario Analysis)



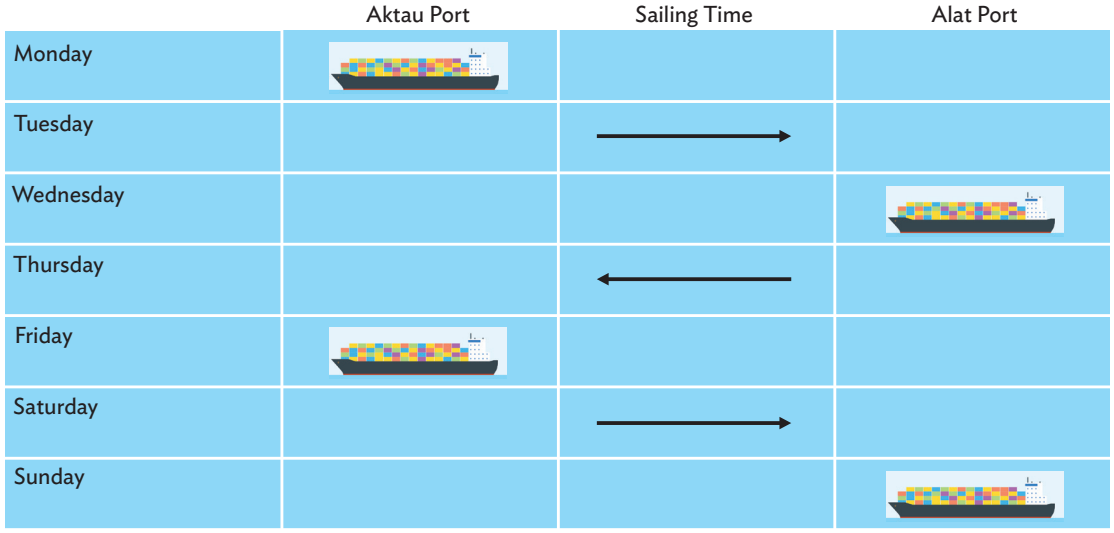
143. Noatum Maritime, part of Abu Dhabi based AD Ports Group, has signed an agreement with KazMorTransFlot (Kazakhstan National Shipping Company) to increase vessel capacity in the Caspian Sea. They plan to build two container vessels, each with over 500 TEU capacity, designed for improved turnaround times, increased capacity, and better operational efficiency with advanced cargo handling systems.[26] Based on interviews with Aktau Port Chairperson Abay Turikpenbayev, it is understood that the seaport is looking at container ship with 536 TEUs. So this number is used to estimate the increased vessel capacity in Caspian.

144. To estimate the increased container carriage capacity, the following factors are pertinent, namely (1) number of new ships, (2) container capacity per new ship, (3) number of trips per ship per week, (4) how much uptime per ship. The number of new ships is two and the capacity per new ship is 536 TEUs. To estimate the number of trips per ship, the unit time chosen is weekly. It is known that the sailing time between Aktau or Kuryk and Alat is 22 to 24 hours, and that the vessel stays approximately one day at each port for anchorage, cargo loading and discharge operations. Thus, choosing week as the time unit is suitable.

145. From the estimation below, it could be seen that a new ship makes three trips per week. To estimate the uptime, it is assumed that each container ship has an uptime of 90%. The downtime of 10% is used for maintenance. Since a year has 52 weeks, 90% uptime is 46 weeks. Thus, the increased container capacity introduced by the two new container ships is estimated to be 147,936 TEUs, close to 150,000 TEUs per year.

146. The current capacity of Caspian Sea is 70,000 TEUs per year. Adding the new capacity will raise the projected capacity to 217,936 TEUs per year. This will enable the Caspian ports to handle the projected throughput even if the CAGR grows at 40% or more till 2028, and assuming the ports are upgraded to deal with the additional containers. However, more container ships will be required for 2029 and beyond.

Figure 14: Estimating the Increased Number of Trips for Transporting Containers Across Caspian



26 Source: AD Ports Group, https://www.adportsgroup.com/en/news-and-media/2025/01/16/ad-ports-group-expands-cooperation-with-kazakh-partners.

Table 15: Estimating the Increased Vessel Capacity for Transporting Containers across Caspian Sea

Number of Additional Container Ships	2
Capacity per ship, TEUs	536
Trips per ship per week	3
Number of operational weeks per year	46
Additional capacity per year	147,936

147. To conclude on this projection, the following thoughts and reservations are highlighted.

(1) Bilateral relations between the PRC and the Russian Federation could be subject to change, even deterioration. Order 1374 was issued by the Russian policymakers in mid-October 2024, requiring full physical examination of all container block trains from the PRC to Europe inside Russian territory. The order was based on suspicion of the container carrying dual use merchandize that could be deployed for military use and rerouted by European companies to Ukraine and support the war effort there against the Russians.[27] Since Trump commenced his presidency, US and the Russian Federation have also been in discussions. If bilateral relations worsen between the PRC and the Russian Federation, the Chinese companies will either deploy more containers to maritime route, or across CAREC Corridor 2. The PRC already announced the plan to send 1,000 container block trains across CAREC Corridor 2 in 2025.[28] This is beneficial to CAREC Corridor 2, and in particular the Kazakhstan–Azerbaijan route as the Chinese experimented with this direction and never ran their container trains using Turkmenistan. This could support the 40% or 50% CAGR as the PRC increases the number of container block trains to the Caspian and avoids the Transsib or the Northern Corridor route, notwithstanding the lower cost.

(2) Another variable is the container flows through Turkmenistan. The country handled 10,799 TEUs in 2023, an increase of 356 TEUs compared to 2022.[29] Although Turkmenbashi port has a capacity of 400,000 TEUs, only 3,271 TEUs passed through the port in January to October 2023.[30] Demand through the port is driven by Uzbekistan's cargoes, as evident on the export of fertilizers to Brazil. There are container flows in the north–south direction through the country between Iran and the Russian Federation too. So although the container flow is relatively small, Turkmenistan has the potential to increase container freight transport. However, the contribution to CAREC Corridor 2 is likely to be small in numbers.

(3) The third variable is the potential container movement from west to east (Black Sea to Central Asia). This is now non-existent as shipping lines terminate the containers at Poti or Batumi. Trucks and trains are deployed to move the contents to Central Asia. If the shipping lines agree to send containers to the final destination, this could boost the projected throughput. However, there are no basis or any numbers to create a reasonable projection at present. If the shipping lines do provide full transport from Black Sea to Caspian Sea, the model can be updated but further research is required to estimate the potential traffic in the west to east direction.

27 Source: Railfreight, https://www.railfreight.com/beltandroad/2025/02/20/problems-with-container-transit-through-russia-random-blockades-or-issue-resolved.

28 Source: ADY Express, https://adyexpress.az/mediaen/news/the-first-export-shipment-to-china-by-rail-a-new-chapter-in-azerbaijans-international-trade.

29 Container data on Turkmenistan and Turkmenbashi are not publicly available. Source: Caspian News, https://caspiannews.com/news-detail/turkmenistan-increases-international-rail-cargo-shipments-2024-1-23-39.

30 Source: Daryo, https://daryo.uz/en/2023/11/16/caspian-port-of-turkmenbashi-boosts-international-cargo-traffic.

3.4. CAREC Corridor 4

148. The container throughput through Zamiin-Uud is an estimator for the container movements along PRC–Mongolia (CAREC Corridor 4b), because this is the main trade route and the only passageway for container movements, primarily transported on rail. Road transport is not popular for container freight movements because of the higher freight cost. The container throughput increased 2.22 times in the period 2018 to 2023 using official data, rising from 152,471 TEUs to 339,494 TEUs. The CAGR was 17%.

Table 16: Annual Container Throughput at Zamiin-Uud, 2018 to 2023 (Units in TEUs)

Trade	2018	2019	2020	2021	2022	2023	Y-o-Y %[a]	CAGR %
Import from	*65,323*	*71,614*	*64,081*	*75,463*	*104,769*	*76,754*	*–27%*	*3%*
PRC	59,505	65,504	57,020	63,712	93,263	67,738	–27%	3%
Russia	5,818	6,110	7,061	11,751	11,506	9,016	–22%	9%
Export to	*1,915*	*1,514*	*5,297*	*9,693*	*46,721*	*64,975*	*39%*	*102%*
PRC	1,645	1,430	5,205	9,148	46,496	64,779	39%	108%
Russia	270	84	92	545	225	196	–13%	–6%
Transit	*85,233*	*63,701*	*105,732*	*152,449*	*196,859*	*197,765*	*0%*	*18%*
PRC	42,458	63,617	105,640	151,904	196,634	197,569	0%	36%
Russia	42,775	84	92	545	225	196	–13%	–66%
Total	**152,471**	**136,829**	**175,110**	**237,605**	**348,349**	**339,494**	**–3%**	**17%**

Note: The statistics provided by UBTZ and MCGA are proprietary data obtained through consultative meetings in September when the consulting team visited Ulaanbaatar and Zamiin-Uud.

[a] Y-o-Y refers to the yearly change in percentage terms from 2022 to 2023.

Source: UBTZ and Mongolia Customs General Administration (MCGA).

149. Transit remained an important driver for container traffic. While import containers continue to be sizeable, the number of export and domestic containers has increased faster. In 2023, a total of 404,273 containers moved through Mongolia, and half were transit containers. Imports constituted 19% of the total container movements, while exports and domestic accounted for 16% each.

150. It must be highlighted that the above trend might suggest the imports were becoming less important in the container freight traffic. This is incorrect. The percentage of import containers dwindled from the peak of 51% in 2019 to 19% in 2023 was due to the constraint in the movement of inbound containers from Tianjin to Ulaanbaatar. If the constraints are removed, the number of TEUs (and thus the percentage contribution) for import should rise significantly. The number of export and domestic containers undoubtedly increased remarkably in this period, but the percentage contribution would have been smaller if the number of import containers did not suffer due to the constraints. The exact cause of the constraint shall be analyzed and examined in Chapter 4 under Section 4.2.

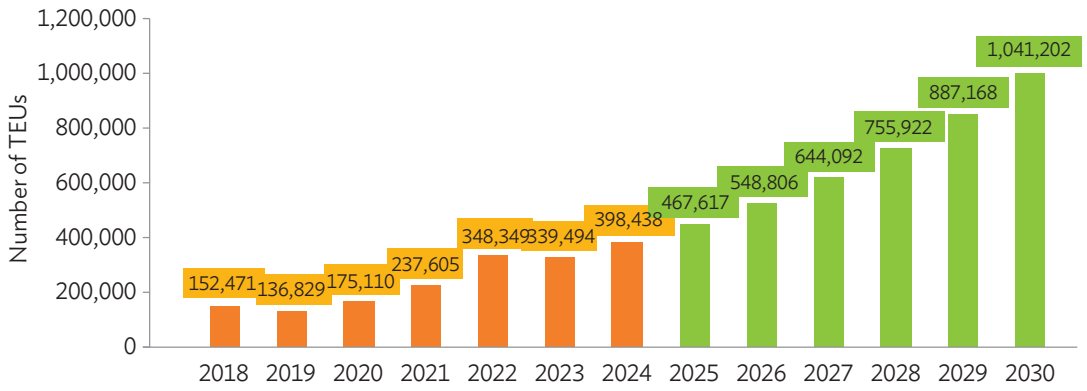
151. Further analysis showed that containerization is significant for the Mongolia–PRC trade, but less significant for Mongolia–Russia trade. In both import and export, the number of containers in the direction with PRC was far higher than those with Russia for the entire period. In fact, there were only 196 TEUs carrying Mongolian exports to the Russian Federation in 2023. On the other hand, there were 67,738 laden TEUs from the PRC to Mongolia, and 64,779 TEUs in the opposite direction (all laden). These suggest that Mongolia is finding means to stuff items in the empty containers before returning them to the PRC. Another observation is the rapid rise of transit containers from the PRC to Mongolia to Russian, which grew from 42,458 TEUs in 2018 to 197,569 TEUs in 2023, a 4.6 times increase in six years. This suggests there are sizeable traffic along this corridor. This is also a reflection that UBTZ places higher priority for transit containers to the Russian Federation when performing the gauge of change operation at Zamiin-Uud, enabling more transit containers to be sent northwards compared to import containers. However, the potential of using Mongolia as a transit requires policymakers to address the constraints, particularly the backlog of containers in Tianjin.

152. Using the CAGR of 17%, the future container turnover is projected to the year 2030. This is illustrated in the figure where the green columns show the estimated growth.

- From 2025 to 2030, the container throughput will expand approximately 2.61 times from the 398,438-level achieved in 2023, assuming that the CAGR continues at 17%. This is the base case scenario.

- By end 2030, the projected container throughput could reach more than 1 million TEUs.

Figure 15: Projecting the Container Traffic Through CAREC Corridor 4



153. The projection model could be refined further. They key is to determine the possible growth rates. This could be done by (1) referring to the growth rate of the bilateral trade and (2) conducting a sensitivity analysis. For the bilateral trade, the CAGRs between the two trade partners for the period 2018 to 2023 are tabulated below, decomposed by the direction of trade.

Table 17: Bilateral Trade Between Mongolia with PRC and the Russian Federation, 2018 to 2023
(Units in million USD)

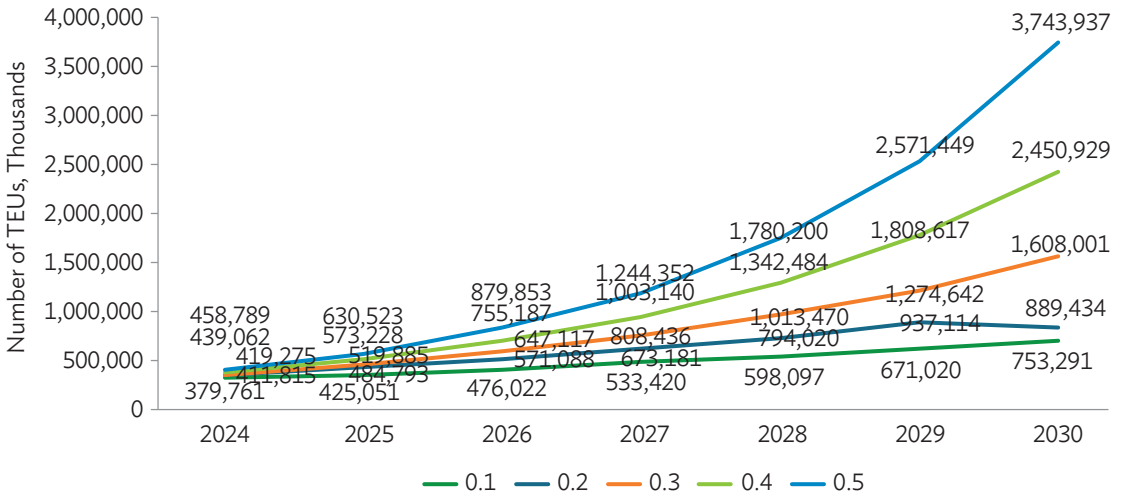
Direction	Countries	2018	2019	2020	2021	2022	2023	CAGR
Import from	PRC	1,969	2,037	1,893	2,491	3,043	3,750	14%
	Russia	1,710	1,730	1,400	1,961	2,653	2,386	7%
Export to	PRC	6,506	6,773	5,490	7,638	10,587	13,845	16%
	Russia	86	68	57	113	112	111	5%

Source: ITC TradeMap.

154. The next step is to simulate the transit container traffic, which accounted for about half of all container movements. Transit containers from PRC constituted the dominant size. An increment of 10% as CAGR is used to project the transit container growth. The transit containers from the Russian Federation were held constant at 196, which was the level seen in 2023. This is rather negligible compared to the transit containers from PRC.

155. Thus, using the CAGR for import and export trade as the CAGR for the container movements, and performing a range of 10% to 50% CAGR for transit container movements from PRC. It is projected that by 2030, the low end of the container freight traffic to be 753,291 TEUs, and the high end to be 3,743,937 TEUs.

Figure 16: Projected Container Throughput Through CAREC Corridor 4 (Scenario Analysis)



156. The low end of the projection would be an outcome of status quo, with the PRC directing more containers to the maritime route (due to lowered sea freight rates) or through the Russian territory. Regional crisis, elevated sea freight rates, or surge in regional trade between the PRC and Europe would provide tailwind for the upper end of the projection. A major issue is the congestion along CAREC Corridor 4b, where the shipment time for a container to leave Tianjin and arrives at Ulaanbaatar can take 3 months. This would hold back the container throughput. Conversely if the bottlenecks are addressed, then it is likely to see the projection reaching 1 to 2 million TEUs by 2030.

3.5. South Asia–Central Asia

157. There are two routes for freight movements between South Asia and Central Asia. The first is Pakistan–Afghanistan–Central Asia route by road transport. This is the only practical solution and the direction of traffic is mainly containerized freight being transported on trucks, leaving Karachi Port, Port Qasim or Gwadar Port to Torkham or Chaman, and then moving towards to Afghanistan and entering Central Asia. The Afghan Transit Trade (ATT) is the main driver of this route. The number of containers bound for Uzbekistan is small but increasing, followed by Tajikistan. Reverse flows are virtually negligible. The second route is between the PRC and Pakistan, crossing Sost and Khunjerab BCP. In theory, this route can facilitate access to Kazakhstan and Kyrgyz Republic, but in practice, this route mainly serves bilateral trade and no transit trade. Thus, in the projection model, only the Pakistan–Afghanistan–Central Asia route would be considered.

Table 18: Transit Containers Across Pakistan to Afghanistan and Central Asia

Year	2018–2019	2019–2020	2020–2021	2021–2022	2022–2023	2023–2024
TEUs	120,946	126,297	116,792	101,405	154,387	85,705

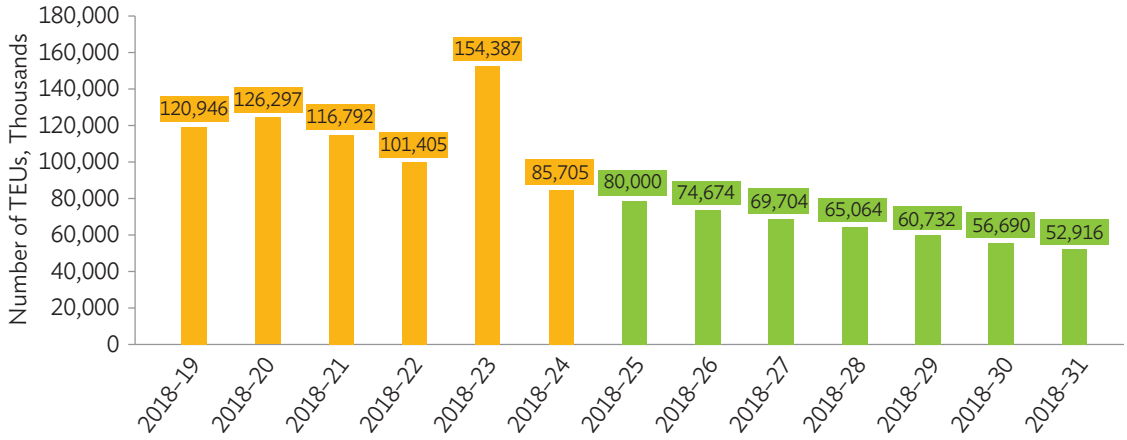
Source: Pakistan Customs.

158. The number of transit containers across Pakistan fluctuated. In 2018–2019, there were 120,946 TEUs that passed through Pakistan for transit, which dipped following the Taliban's regime that started in August 2021, peaked in 2022–2023, and then declined in 2023–2024. This pattern could be attributed to Pakistan's internal policy on transit, as well as competition from Iran. Pakistan imposed restrictions on transit trade, demanding that all goods are transported in containers, and at times prohibited specific merchandize. The prohibition was due to concerns of smuggling, where traders declared certain items as transit but smuggled them en-route for sale in Pakistani market, avoiding the import duties. This explained the drop in the number

of containers in the period 2022–2023 to 2023–2024. In addition, BCPs could be closed due to security reasons, which happened in February to March 2017 due to volatile relations between the two countries, or more recently in Chaman due to the unrest in that region in 2024. Another reason was the competition for the Afghan Transit Trade from Iran. Afghan traders could also use Bandar Abbas port and the land route in Iran to import merchandize and enters Afghanistan through the Islam Qala BCP. Whenever there are issues with border-crossing or Transit in Pakistan, Afghan traders would divert cargoes to Iran.

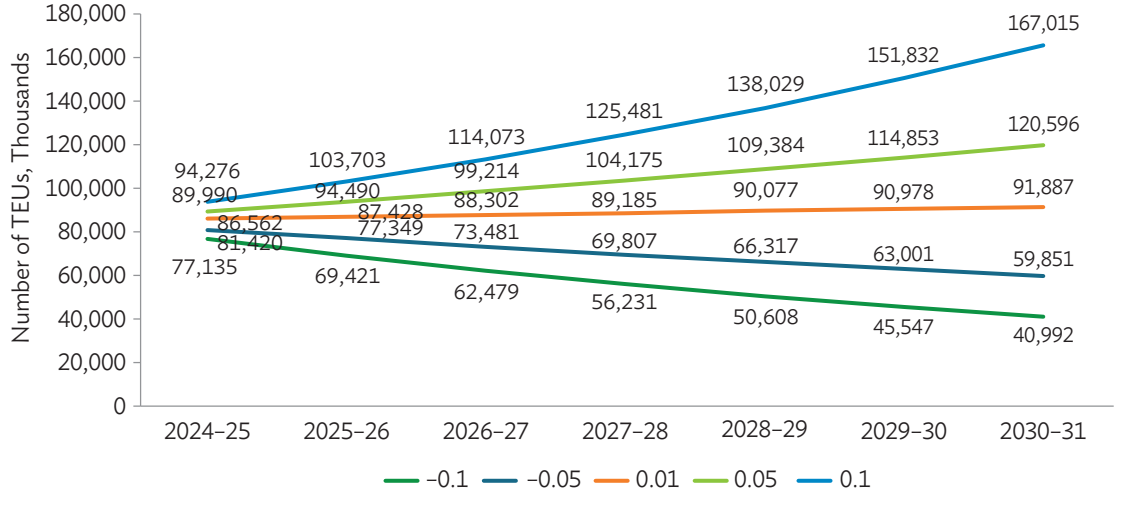
159. In the study period, the number of TEUs actually declined 7% (CAGR). Using this CAGR, the number of TEUs would drop to approximately 53,000 in the period 2030–2031.

Figure 17: Projecting the Container Traffic for South Asia–Central Asia



160. As the time series is limited and the container throughput fluctuated, a sensitivity analysis is added to the model for a range of CAGR from −10% to +10%, using an increment of 5%. Instead of a 0% CAGR, a 1% CAGR is used to model the no growth scenario. Using this approach, the projected TEUs are shown in the figure below. The projected TEUs reached 167,015 TEUs if the CAGR expanded at 10%, while a negative scenario showed it dipping to 40,992 TEUs if a negative CAGR of 10% is applied.

Figure 18: Projected Container Throughput Through South Asia–Central Asia



Containers on Rail

161. The above projection model considers only road transport. All transit movements are done in containers and on road transport, because there is no rail infrastructure in Afghanistan to support a rail route for transit movements. However, there are domestic rail movements, mainly along the section from Karachi to Lahore, where containers are moved on trains operated by Pakistan Railway.

Table 19: Containers Moved on Rail in Pakistan

Year	2021–2022	2022–2023	2023–2024	2024–2025	2025–2026	2026–2027	2027–2028
TEUs	53,034	42,423	61,993	74,391	89,269	107,122	129,546

Source: Pakistan Railway.

162. Pakistan Railway recorded 53,034 TEUs moved in 2021–2022, and the most recent data ended in 2023–2024 where 61,993 TEUs were moved in Pakistan. These were mainly containers travelling from the seaports in the south to the industrial cities in the north. Pakistan Railway also projected the TEUs into the future. Based on the data, the CAGR was 8% for the period 2021 to 2024, and the projected numbers showed that a CAGR of 20% was used for the years after 2024 to 2028.

163. The Trans Afghan Railway project, a trilateral cooperation between Pakistan, Afghanistan and Uzbekistan can reshape supply chain, offering a cost-effective mode of transport to move containers between South Asia and Central Asia. This project is slated to be completed in 2027 and target to move 21 million of goods annually. If so, the number of containers could add substantially to the projection. However, railway projects are often subject to delays and cost overruns, as well as financial difficulties. The projection model currently omits the contribution from railway. This situation will not change in the next few years. When the rail project is operational, it will be possible to assess the contribution from rail to the container traffic and remodel the projection.

3.6. Container Block Train

164. In 2024, the PRC dispatched 19,000 trains and 2.07 million TEUs to the Russian Federation, Asian countries (including Central Asia) and Europe. Of these, 380,600 TEUs were in the direction of the PRC–Europe–PRC.

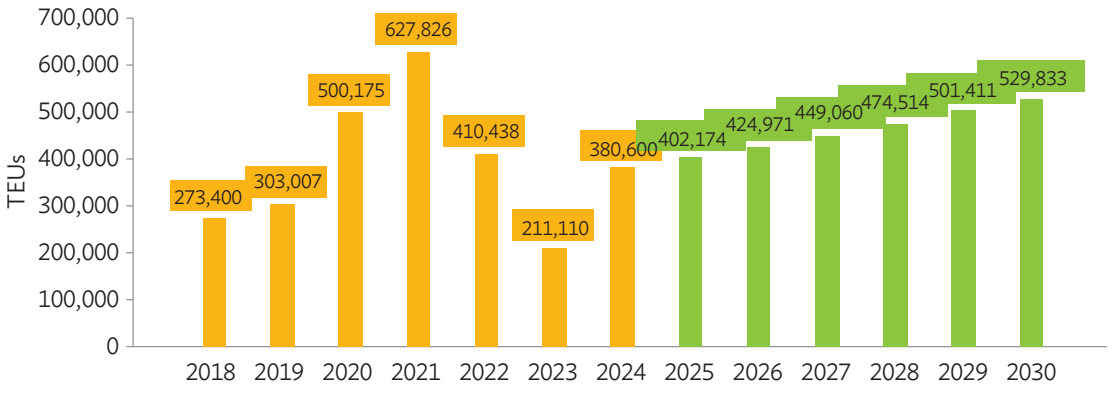
165. The transit container movements, performed by the container block trains, showed fluctuating pattern in the period 2018 to 2024. In fact, there was strong growth including the COVID-19 years, reaching a peak at 637,826 TEUs in 2021. The outbreak of the Ukraine War led to a 35% drop in 2022 and a 49% decline in 2023, hitting a recent low of 211,110 TEUs. This was due to the interruption of the transit through the Russian Federation as sanctions were imposed in 2022, compelling shippers to find alternative routes to access Europe. In 2024, the level rebounded 80% to 380,600 TEUs as the list of exempt items became clearer for more merchandize to be permitted for transit across the Russian Federation.

166. The container throughput pattern from 2018 to 2024 showed some interesting insights.

- East to west traffic continues to dominate. The east to west direction (from the PRC to Europe) increased 130.8% to 330,704 TEUs but the west to east direction (from Europe to the PRC) dropped 26.7%, to 49,730 TEUs.

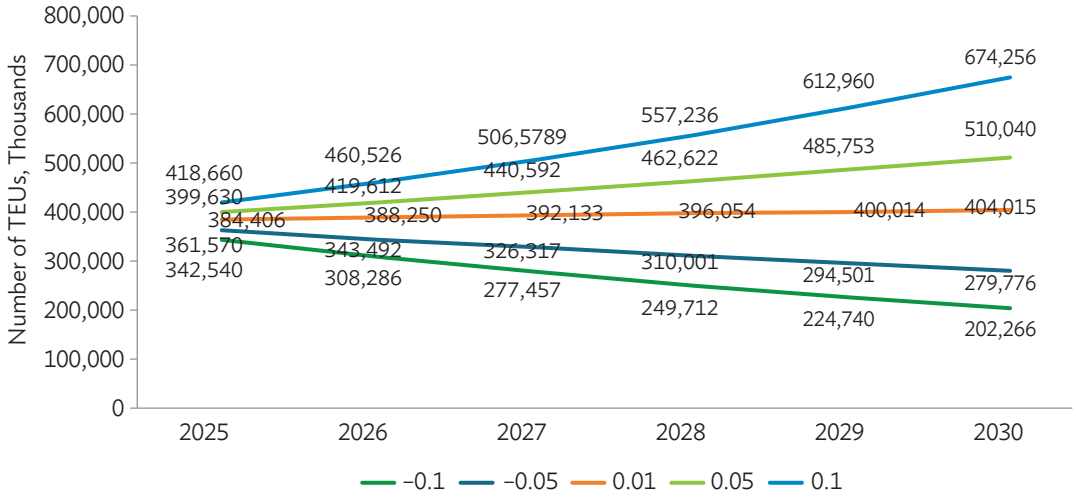
- This is mirrored in the bilateral trade between the PRC and EU. The PRC's exports to EU in 29024 amounted to $ 516.5 billion, rose 3% Y-o-Y. The PRC import from the EU decreased 4.4% Y-o-Y to $269.4 billion.

Figure 19: Transit Container Movements in PRC–Europe



Source: Eurasian Rail Alliance.

Figure 20: Projected Container Throughput for PRC–Europe



- Poland is the gateway for the container movements, with 292,950 TEUs entering the country in 2024. This represented 89% of the overall flow and an increase of 149% Y-o-Y. Germany received 23,790 TEUs followed by Belgium (7,900 TEUs) and Hungary (4,046 TEUs).

167. The past throughput produced a CAGR of 5.67% from the period 2018 to 2024. Using this rate of growth, the projected container throughput will increase to 529,833 TEUs by 2030. As the time series is limited and the container throughput fluctuated, a sensitivity analysis is added to the model for a range of CAGR from –10% to +10%, using an increment of 5%. Instead of a 0% CAGR, a 1% CAGR is used to model the no growth scenario. Using this approach, the projected TEUs are shown in the figure below. The projected TEUs reached 674,256 TEUs if the CAGR expanded at 10%, while a negative scenario showed it dipping to 202,266 TEUs if a negative CAGR of 10% is applied.

3.7. Comparisons with Previous Forecasts

168. **For CAREC Corridor 2**, there were numerous research in the past by international development partners and financial institutions that estimate the future container volume. They made different assumptions and had different timelines. Some of the notable studies are summarized below.

- An early study by the International Railway Union (UIC) forecasted the volume of transit containers over the Eurasian rail network to reach 636,000 TEUs by 2027 on a base-case scenario. The 2027 forecast volumes compare to 437,000 TEUs for the worst-case scenario and 742,000 TEUs for the best-case scenario, reflecting cargo growth rates (CAGR) of 10.8% and 16.3%, respectively. By 2030, the number of TEUs is projected to reach 810,000 TEUs (UIC, 2017).[31]

- A 2022 study by the European Bank for Reconstruction and Development (EBRD) estimated that containers transiting through CAREC Corridor 2 and Kazakhstan to reach 1.4 million TEU by 2040; further split into 270,000 TEUs via the Northern Kazakh branch, 865,000 TEUs via the central Kazakh branch, and 254,000s TEUs via the Southern route through Kyrgyz Republic, Uzbekistan, and Turkmenistan (EBRD, 2023).[32]

- In a subsequent study by the World Bank, freight traffic along the TITR is projected to triple by 2030 to 11.4 million tons under an unconstrained and optimistic scenario, of which 4 million tons as projected demand for container transport (WB, 2023).[33]

- Most recently, the Eurasian Development Bank (EDB) has released a study projecting freight traffic on the three main corridors running through Central Asia to reach 95 million tons by 2030, of which 1.7 million TEUs projected for 2030. In particular, the TITR is projected to handle 300,000 TEUs by 2030 (EDB, 2024).[34]

169. The projection under this study forecasts the number of TEUs to rise from 56,500 TEUs in 2024 to a base-case forecast of around 209,000 TEUs by 2030, assuming a 30% CAGR. In an optimistic scenario, this could reach 643,000 TEUs under a 50% CAGR.

170. When compared to other studies:

- **UIC (2017)** projected 810,000 TEUs for the Eurasian network by 2030 (not specifically CAREC Corridor 2), which is broadly consistent with this study's high-end projection.

- **EBRD (2022)** forecasts 865,000 TEUs transiting through CAREC Corridor 2 by 2040. This study's high end of 643,000 TEUs by 2030 may align reasonably with EBRD's longer-term forecast.

- **World Bank (2023)** projects 4 million tons in containerized demand through TITR by 2030 (approx. 266,000 TEUs, assuming 15 tons per TEU). This estimate is similar to this study's mid-case scenario.

- **EDB (2024)** estimates 1.7 million TEUs across Central Asian corridors by 2030, of which 300,000 TEUs would transit through TITR. In this study, the range of 30% to 40% CAGR growth would be similar to the result of this study.

171. In general, the projections in this study resonates with the forecasts by the other past studies, and those numbers point to the scenarios where the higher growth (30% to 50% CAGR) are observed. The consultants would like to highlight caution as such scenarios depend heavily on addressing the vessel fleet capacity limitations as well as the ports' processing capacity. Otherwise, there will be long congestion of trucks and goods at the ports.

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31 International Union of Railway, *Eurasian Rail Corridors: What opportunities for Freight Stakeholders?*, https://uic.org/IMG/pdf/corridors_exe_sum2017_web.pdf.

32 European Bank for Reconstruction and Development, *Sustainable transport connections between Europe and Central Asia*, https://www.ebrd.com/documents/comms-and-bis/sustainable-transport-connections-between-europe-and-central-asia-pdf.pdf.

33 World Bank, *Middle Trade and Transport Corridor, Policies and Investments to Triple Freight Volumes and Halve Travel Time by 2030*, https://thedocs.worldbank.org/en/doc/6248f697aed4be0f770d319dcaa4ca52-0080062023/original/Middle-Trade-and-Transport-Corridor-World-Bank-FINAL.pdf.

34 Eurasian Development Bank, *The Eurasian Transport Network*, https://eabr.org/upload/iblock/e13/1_EDB_ETN_Report_Eng.pdf.

172. For CAREC Corridor 4, this study projects the container throughput via Zamiin-Uud is forecasted to increase from 398,438 TEUs in 2023 to over 1 million TEUs by 2030, based on a baseline CAGR of 17%. In a high-case scenario, assuming transit containers from PRC grow at 50% CAGR, throughput may reach up to 3.7 million TEUs by 2030.

173. No specific international study provides a standalone projection for CAREC Corridor 4. The EDB report includes Mongolia within the broader Northern Eurasian Corridor but does not disaggregate TEUs for this route. Past studies from ADB and CAREC emphasize infrastructure constraints but lack TEU-specific forecasts.

174. This study offers a more detailed and data-grounded forecast than other sources. The base case is reasonable and well-supported by trade and throughput trends. The high scenario may be optimistic and highly dependent on resolving key infrastructure bottlenecks in Zamiin-Uud and Ulaanbaatar. This is only achievable if the transshipment centers in Zamiin-Uud can increase their efficiency via investing in improving the layout, the cranes and the information systems to complete the change of gauge operation quickly. At Ulaanbaatar, the current setup is not efficient as there are too many terminals for the loading and unloading operation, thus having no economies of scale. Consolidating and centralizing such operations to a new site with good accessibility, space for future expansion and most importantly, deploying new cranes and information systems to handle the logistics operations will help to realize higher container throughput along the PRC–Mongolia route.

175. For the **South Asia–Central Asia** route, this study has a base case that projects a decline to 53,000 TEUs by 2030, based on a –7% CAGR observed in recent years. A scenario analysis using CAGR between –10% and +10% yields a potential range of 40,992 to 167,015 TEUs by 2030.

176. There are no direct projections available from other studies. ADB and World Bank highlight infrastructure gaps and geopolitical barriers but anticipate potential growth if connectivity projects (e.g., Trans-Afghan railway) are realized. The consultants expressed careful optimism and opined that railway projects are typically complex and could take significantly longer time and higher cost to complete. In the next few years, road will continue to drive the container traffic along this route. If the Trans-Afghan railway could be completed, especially with the completion of ML-2, then there could be a sizeable increase in the container movements along this route. It is observed that Pakistan Railways forecasts a 20% CAGR in domestic container rail movement, not yet reflected in international transit volumes as the Trans-Afghan railway is not functional yet.

177. This study produces the projection realistically captures current volatility and policy-related constraints. High-end growth scenario is achievable only with full implementation of bilateral transit agreements and new infrastructure.

178. For PRC–Central Asia–Europe, this study uses a historical CAGR of 5.67%, container block train throughput and estimated the growth to approximately 530,000 TEUs by 2030. Scenario analysis suggests a range between 202,266 and 674,256 TEUs by 2030 under varying CAGR assumptions.

179. UIC (2017) forecasts 810,000 TEUs by 2030 along the Eurasian network. EDB projects 1.7 million TEUs across all Central Asia corridors by 2030. World Bank anticipates 4 million tons of containerized demand through TITR (approximately 266,000 TEUs).

180. The projection of this study is conservative yet plausible, accounting for disruptions in Northern Corridor routes and potential diversions to CAREC Corridor 2. It is aligned with the low end and high end of the other studies. More aggressive growth hinges on easing geopolitical tensions and scaling up CAREC Corridor 2 infrastructure.

Table 20: Summary of Forecast Comparison

Corridors	This Study (2030 Base Case)	Range (Low–High)	Other Studies
CAREC Corridor 2	272,800 TEUs	100,000–643,000 TEUs	WB: 266k; EBRD: 865k by 2040; EDB: 300k
CAREC Corridor 4	1,041,202 TEUs	753,291–3,743,937 TEUs	Nonspecific; EDB/ADB general
South Asia–Central Asia	52,916 TEUs	40,992–167,015 TEUs	No TEU benchmarks; WB/ADB anticipate low growth
East Asia–Central Asia–Europe	529,833 TEUs	202,266–674,256 TEUs	UIC: 810k; EDB: 1.7M (all corridors)

Source: Consultant's projections, and compiled comparisons from similar studies.

181. In summary, the above table summarizes the base projection of container traffic in each corridor and forecasts the low and high end of the projected TEUs by the year 2030. There are similar studies done for CAREC Corridor 2 and the East Asia–Central Asia–Europe, and the results of this study is somewhat aligned with the forecasts made by other researchers. For CAREC Corridor 4 and the South-Asia corridors, there is a lack of studies done in these routes although it is acknowledged that the two corridors require sizeable infrastructure investment and policy reforms to achieve the high-end targets.

CAREC Corridor 2

4

4.1. Route and Key Nodes

182. In the Eurasian continent, the vibrant economies in East Asia and the established economies in Europe have important economic and trade interactions. Interestingly, East Asia and Europe are located in different flanks of the Eurasian continent, thus transporting goods need to travel huge distance. There are three primary corridors, broadly in the directions in the north, middle and south (the maritime route). This study also makes a distinction between the term "CAREC Corridor 2" and "Trans-Caspian International Route" (TITR). CAREC Corridor 2 refers to the routes Kazakhstan–Azerbaijan–Georgia and Turkmenistan–Azerbaijan–Georgia, while the TITR refers only to the former. Turkmenistan is not a member in the TITR Association and thus are not included in TITR, but the country offers transit potential, and Turkmenbashi seaport container-handling capacity (400,000 TEUs) is four times as large as that in Alat and Aktau each, so it cannot be ignored.

183. The Northern Corridor connects East Asia to Europe and runs across the PRC, the Russian Federation and some European nations. The shipments move from the northeastern region of the PRC and passes Manzhouli, runs on the Trans-Siberian Railway (Transsib) and then enters Europe. Another line passes through Mongolia and connects with the Transsib line.

184. CAREC Corridor 2 connects the PRC with Central Asia and the Caucasus, before entering Europe. There are two inland seas, namely Caspian Sea and the Black Sea, thus necessitating the use of multimodal transport. There are two main methods to cross the Caspian Sea. One is the Trans-Caspian International Transport Route (TITR), which travels through PRC, Kazakhstan, Azerbaijan and Georgia. Shipments pass through either Aktau or Kuryk, can call at Alat, before proceeding to Poti or Batumi. The other route travels though Turkmenistan, and sailing is done through Turkmenbashi. In either route, the shipments converge at Alat. At the Black Sea, the shipments can either board a vessel and cross the Black Sea to enter Europe at Varna, Burgas or Constanta, or continue on land using either road or rail transport. Trucks cross the Sarpi BCP at the border between Georgia and Türkiye. The modernization works at the Turkish section of the railways were complete at the end of 2023, and so the Baku–Tbilisi–Kars rail (BTK) line is in service, offering a rail connection across CAREC Corridor 2.[35]

185. The ocean maritime route is the most popular option and handles the largest volume of freight and has been the lowest cost option until recent times. Transporting containers from PRC to Europe by sea typically follows a major maritime route through the South China Sea, the Straits of Malacca, the Indian Ocean, Suez Canal, the Mediterranean Sea. Key seaports in China, such as Shanghai, Ningbo-Zhoushan, and Shenzhen, serve as the main departure points, while major European ports like Rotterdam, Hamburg, and Antwerp are common destinations. Due to the ongoing geopolitical instability in the Red Sea and the blockage risk posed by the Suez Canal, vessels are increasingly rerouting around the Cape of Good Hope. This detour significantly extends the voyage, adding approximately 10–15 days to the journey compared to the direct route through the Suez Canal. A typical voyage from PRC to Europe, traveling via the Cape of Good Hope, can take anywhere

35 There is also a potential route that is called the Southern Corridor, that travels through PRC–Central Asia–Afghanistan–Turkmenistan–Iran–Türkiye–Europe. This is mainly a road corridor but is complicated due to geopolitical reasons.

Table 21: Key Nodes in CAREC Corridor 2

Nodes	Country	Nature	Significance
Port of Aktau and Port of Kuryk	Kazakhstan	Seaports	Seaports in Caspian to serve Trans-Caspian International Transport Corridor and heavily used by Georgian and Turkish transport operators.
Port of Turkmenbashi	Turkmenistan	Seaport	Seaport in Caspian to serve Turkmenistan, Afghanistan and Uzbekistan transport operators. Turkmenbashi has the largest container handling capacity at present compared to seaports in Azerbaijan and Kazakhstan.
Port of Baku	Azerbaijan	Seaport	Seaport in Caspian to serve freight traffic with Kazakhstan and Turkmenistan.
Tsiteli Khidi–Qırmızı Körpü	Azerbaijan and Georgia	Border-crossing point (Road only)	This border point is the main BCP for transit traffic for road transport between Central Asia and the Caucasus.
Gardabani–Böyük Kəsik	Azerbaijan and Georgia	Border-crossing point (Rail only)	This border point is the main BCP for transit traffic for rail transport between Central Asia and the Caucasus.
Port of Poti and Port of Batumi	Georgia	Seaports	Main seaports in the Black Sea by a CAREC member. The seaports receive inbound freight in container where they are unstuffed and dispatched on trucks or trains in non-container form to the final destination in Central Asia. Also handled incoming traffic from Central Asia to Europe on trucks or trains. Container block trains from PRC pass through Poti and move onto a vessel for crossing the Black Sea to Europe.

Source: Consultants.

Table 22: Comparisons of the Global Transport Corridors

Factors	Northern Corridor	CAREC Corridor 2	Maritime Route
Capacity	1.5 million TEUs	70,000 TEUs	No clear limit Capacity is added when fleet size expands
Cost	Moderately expensive	Most expensive	Least expensive
Time	Very short	Short (30 days)	Longest 30–45 days
Advantages	Fastest and moderately inexpensive. Passes through less countries on land in transit.	Faster than the ocean maritime route and less expensive. Does not pass through countries under sanction.	No capacity constraints, lowest cost option.
Disadvantages	Sanctions risks and political considerations. Risks related to Transsib security	Most expensive and the need to perform multimodal transport, subject to delays at seaports and railways.	Red Sea crisis poses significant risk to sailors and vessels travelling through Suze Canal and Red Sea.

from 40 to 80 days depending on weather and port conditions. The cost of such shipments was more than $5,000 per TEU (twenty-foot equivalent unit) in early part of 2024 but have since subsided to $3,000 to $4,000. Still, this freight rate is elevated compared to pre-COVID19 times when the cost was only $1,500 per TEU and took 30–45 days.

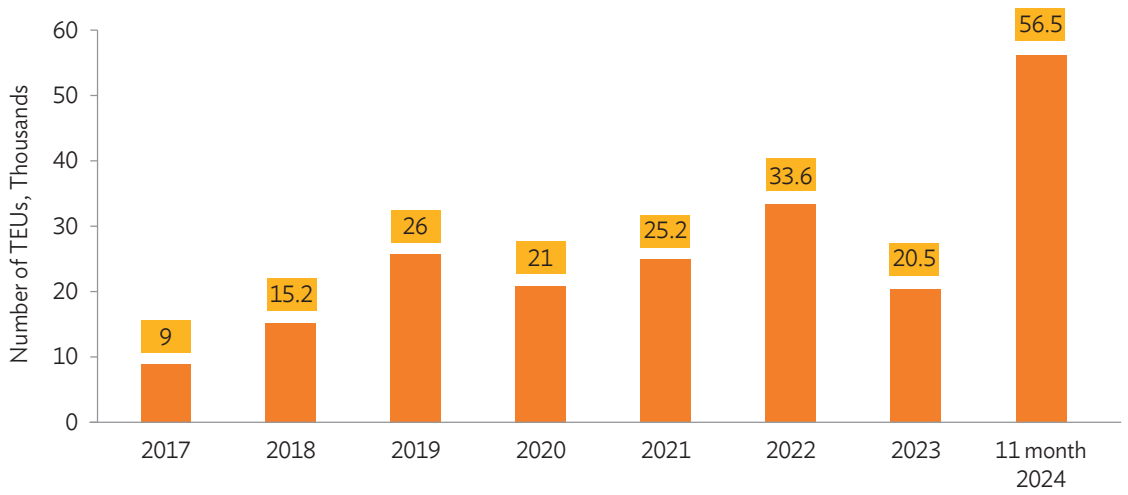
4.2. Container Flows and Throughput

186. CAREC Corridor 2 served about 20,000 TEUs before the Ukraine War. However in 2022, the number surged to more than 33,000 TEUs as shippers diverted some containers to this route. The number dropped in 2023 as the experience of 2022 was not favorable as sea freight rates dropped. Yet the number rose rapidly in 2024 as the number of container block train from PRC to Europe increased. In the first ten months of 2024, the total TEUs shipped through CAREC Corridor 2 reached 46,300, more than double the number achieved in 2023.

187. The number of container block train from the PRC to CAREC Corridor 2 is increasing rapidly along CAREC Corridor 2. At the beginning of 2024, there were only 1 to 2 trains per month, and this increased to 10 per month in mid-year. In July 2024, the number of block trains leapt to 40. The maximum handling capacity is 50 block trains per months, with each block train carrying 50–55 FEUs (100–110 TEUs). Using 100 TEUs per train, 50 trains per month implies a throughput of 5,000 TEUs per month, or 60,000 TEUs per year.

188. This estimate reaches near to the capacity of CAREC Corridor 2. At the Caspian Sea, the vessel carriage capacity is estimated to be 70,000 to 80,000 TEUs per year. The rail handling capacity of the container on rail across the Caucasus will also be stretched. Currently there are approximately 1.050 wagons or rail platforms in circulation in the Caucasus, with 650 in Azerbaijan and 400 in Georgia. If the throughput is 50 container block trains a month, each train requires 50–55 wagons or rail platforms, so the total wagons or rail platforms required will be 2,500 in a month. With 1,050 assets in place, the turnover (number of assets multiplied by the number of times used in a fixed time period) has to reach 2,500/1,050 = 2.4 times to support the increased number of container block trains.

Figure 21: Number of Containers Transported Through CAREC Corridor 2



Source: TITR association. https://middlecorridor.com/en/.

189. PRC intends to send 100 container block trains per month in future. This will stress the design capacity of CAREC Corridor 2. While the seaports have expansion plan to handle the influx of containers, the vessels and the rail capacity of CAREC Corridor 2 would be overwhelmed if the container block trains expand its frequency beyond 50 per months. In addition, low water levels in the Caspian Sea during the winter season may result in lower handling containers capacity.

190. The estimation of containerization level uses the freight tons transported by containers using road and rail, divided by the total freight tons transported on road and rail, and expressed in percentage terms. The freight tons exclude inland waterways and sea transport, so as to estimate the container movements on land only.

191. Georgia has the highest level of containerization at 13.15%, followed by Azerbaijan at 3.67% and then Kazakhstan at 2.62%. Kazakhstan estimated the containerization level as 6.1%, using freight turnover (with the unit in tons-km). This estimation is higher than using freight tons because the distance travelled across Kazakhstan comprise of shipments that move through longer distances. However for cross-comparisons with other CAREC members, the use of freight tons is used here as most of the other members are smaller in

Table 23: Estimating the Containerization Levels by Countries, 2023

Countries	Total Freight, Million Tons	Total Freight Transported by Containers, Million Tons	Containerization Levels, %
Azebaijan	152.4	5.6	3.67%
Georgia	27.2	3.8	13.15%
Kazakhstan	714.8	18.7	2.62%

Source: Consultants, various statistics agencies in Azerbaijan, Georgia, and Kazakhstan.

size. Either way, both indicators do show that containerization level is very low in Kazakhstan. The container business is growing at the fastest pace compared to other modes of transport, but this comes from a small base and driven by the container block trains.

4.3. Time and Cost Performance

192. CAREC Corridor 2 has made significant progress to shorten the transport time. During the summer time of year 2022, transit time for cargo from China through Altynkol in Kazakhstan used to take 12 days to cross the country and another 23–28 days to travel through Azerbaijan and Georgia. The whole journey would take 38–53 days to complete. By the summer of year 2023, transit time has been reduced to 6 days in Kazakhstan

Box 1: Container Block Train from Xi'an to Hamburg

Beijing Trans Eurasia International Logistics is a company with offices in PRC and Europe, that focuses on providing transport solutions for shippers in Asia through land. The company experimented with container block trains in Q3 2024, which departed from Xi'an on 16 August 2024 and took 16 days to reach Poti.[a] Including the journey to reach the Romanian port of Constanta would put transport duration at 16–21 days. Apart from the reduction in transit time by some 20–39 days, another notable improvement is the significant reduction in the variability of the transport duration which fell from 15 days in the summer of 2022 to 4 days in the summer of 2024.

[a] Interview held with Trans Eurasia International Logistics on 5 September 2024.

Figure 22: Time Reduction of the Containers Shipments on Rail from 2022 to 2024



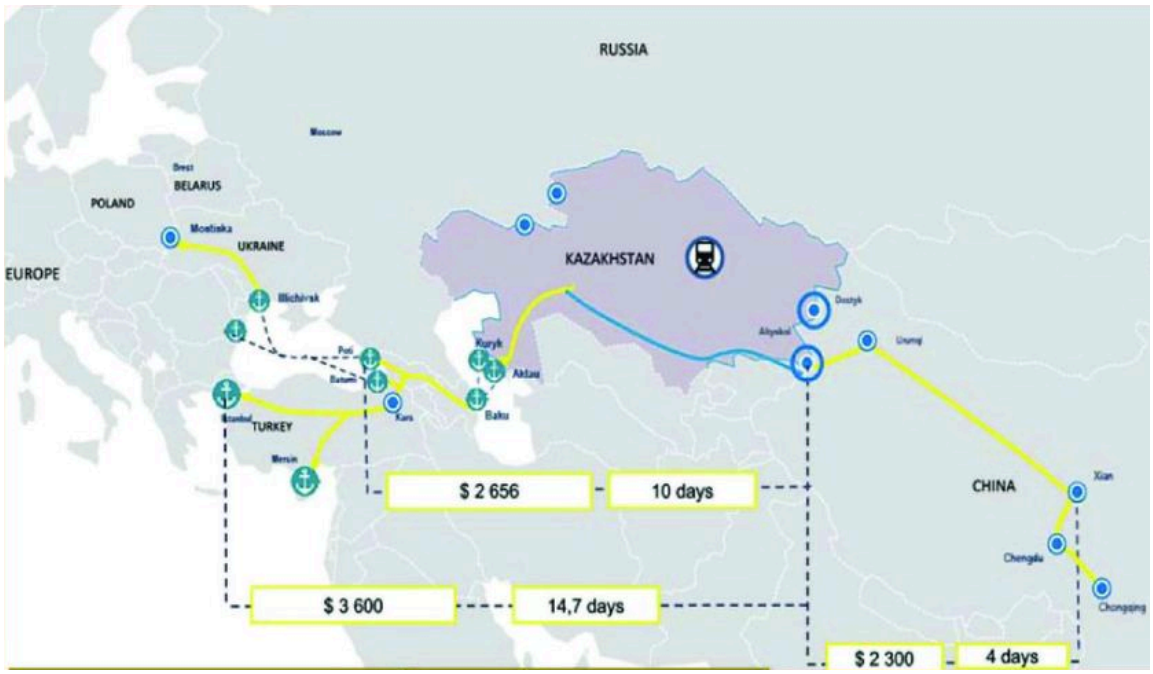
Note: The image was taken from Slide 7 in the presentation deck titled *"Subregional Capacity Building Workshop on Supporting the policies on green and resilient transport infrastructure: Connectivity along the TransCaspian/Eurasian Middle Transport Corridor"*, presented in Ankara on 13 December 2023.

Source: Ministry of Transport and Communications, Republic of Kazakhstan.

and 10–14 days in Azerbaijan and Georgia. Completing the same journey was reduced to 19–23 days. The summer of 2024 saw transit time reduced further to 5 days in Kazakhstan and 4–5 days in Azerbaijan and Georgia. Total journey time was estimated to take 14–18 days.

193. An indication of the time and cost shipping containers on rail through CAREC Corridor 2 can be obtained from KTZ Express. The section inside the PRC (where the origins are Xi'an, Chongqing or Chengdu) will take 4 days to travel to Altynkol and cost $2,300. From Altynkol to Poti, the journey takes 10 days and cost $2,656 (the values are similar if the destination port is Batumi). From Altynkol to Istanbul, the trip is expected to take 14 days and cost $3,600. From the values, it could be deduced that a trip from Chinese origin to Poti is about 14 days, close to the 16 days achieved by Beijing Trans Eurasia. The difference is due to the custom controls and waiting time at the BCPs and seaports. In terms of cost, there is a sizeable difference between the rail freight cost quoted here (about $5,000) as it covers only the rail freight charges. There are other costs to account for such as the vessel across the Caspian Sea, and border-crossing fees.

Figure 23: Cost and Time of Shipping a 40 ft Container via Different Routes



Source: KTZ Express.

194. To further analyze the cost and time performance, it is necessary to obtain more samples and calculate the mean values of the cost and time. During the field trips, several estimates were given, often anecdotal by nature. Estimates given by the seaports are also not completely accurate because the actual movement is done by the freight forwarder or the transport operator. To produce a more reliable estimate, a larger sample size is required, collected from the actual service providers that move the goods between different origins–destinations pairs (O–D). ADB and CAREC Institute has a monitoring tool "Corridor Performance Measurement and Monitoring" (CPMM). This is a large repository of information containing the time and cost estimates including those that cross CAREC Corridor 2. Most importantly, the data are updated, including shipments in 2024. As such, the cost and time estimates are analyzed using CPMM data. The following sections explain the estimates and the conclusions.

195. There are 8 subgroups, defined by the direction of movement, the use of container and the mode of transport.

- Subgroups 1 to 4 are bi-directional movements between Poti and cities in Central Asia, crossing Kuryk seaport. There are few samples of non-container shipments which reflect the actual situation, as shipping lines do not dispatch containers inland. Those container shipments are shipper owned containers (SOC). The dominant flow in this CAREC Corridor 2 is the movement of goods from Poti to different destinations such as Almaty and Tashkent.

- Subgroups 5 and 6 are movements between Türkiye (an important trade partner with many CAREC members) and Central Asia. These shipments do not cross the Caspian Sea. Instead, the shipments move over land in the territories of Kazakhstan, the Russian Federation, Georgia and Türkiye. These subgroups do not transport containers and are included in the analysis to compare against the shipments that cross the Caspian Sea.

- Subgroups 7 and 8 are the container block train from Xi'an to Hamburg, and the TIR shipments on road from PRC to European cities. Note that for the container block train samples, they did not sail across CAREC Corridor 2 but travelled to the Russian Federation from the northwestern region in Kazakhstan.

Table 24: General Time and Cost Indicators of CAREC Corridor 2

Sub Group	Route	O-D	Sample Size	Container?	Mode	Distance km	Payload tons	Total Time days	Total Cost USD
1	Georgia–CA	Poti/Batumi/Tbilisi–Kuryk–CA cities	7	40-foot	Road	3,881.29	18.99	18.72	7,916
2	CA–Georgia	CA cities–Kuryk–Poti	1	40-foot	Road	2,876.00	23.00	8.56	4,284
3	Georgia–CA	Poti/Batumi/Tbilisi–Kuryk–CA cities	79	No	Road	3,918.72	12.27	18.33	8,149
4	CA–Georgia	CA cities–Kuryk–Poti	3	No	Road	3,038.00	13.80	13.56	5,060
5	Türkiye–CA	Turkish cities–CA cities	10	No	Road	4,602.00	17.60	12.63	5,823
6	CA–Türkiye	CA cities–Turkish cities	17	No	Road	4,151.33	21.73	12.42	3,272
7	PRC–Europe	Xi'an–Hamburg	45	40-foot	Rail	10,225.37	14.03	12.33	11,723
8	PRC–Europe	PRC cities–Europe cities	6	No	Road	10,093.00	17.40	7.14	47,188

Source: ADB-CAREC Institute, CPMM 2024.

196. Based on the descriptive statistics, the following observations are made.

- Shipments that move overland were faster and less costly compared to those that crossed the Caspian Sea on vessels. Although the distance was longer, the overland shipments did not spend time at Kuryk seaport waiting for vessels (a primary cause of delay for TITR) and did not need to pay for the vessel fare. This observation was attained by comparing subgroup 1 and 3 vs subgroup 5, and subgroup 2 and 4 vs subgroup 6.

- For those crossing the Caspian Sea, the eastbound shipments (from Poti to Central Asia) had higher time and cost compared to westbound shipments (from Central Asia to Poti). This observation was attained by comparing subgroup 1 vs subgroup 3, and subgroup 2 vs subgroup 4.

- For shipments from PRC to Europe, sending a 40-foot container was 4 times cheaper compared to a truck shipment, for similar distance (slightly more than 10,000 km). However the container block train took 12 days while the truck shipment took 7 days, a savings of 5 days if road transport was used.

- While CPMM data did not collect container block train that crossed the Caspian Sea and Black Sea, there were pilot trains during the duration of this study that allowed comparisons. As mentioned in

earlier chapter, the Xi'an to Hamburg pilot train that crossed Aktau took 30 days and cost $8,000. Thus, when comparing the conventional container block train with the new pilot block train that crossed the two inland seas, the former enjoyed a faster outcome (12 days vs 30 days), but at a higher price ($11, 723 vs $8,000). However, the cost comparison may require further examination because the service provider that ran the new pilot train deployed own vessels at Black Sea. The cost of chartering or renting the space on a vessel to ferry across the Black Sea might not reflect its true market cost. What is evident is that the conventional container block train did move more rapidly compared to the new pilot train. The need to cross both inland seas added significantly to the total shipment time for the new pilot train.

197. Further time analysis is conducted to examine the percentage of time spent travelling against stoppage time which is considered non-value-added time. Based on the statistics derived, the following observations are made.

- Shipments that crossed the Caspian Sea spent a higher percentage of the time waiting or being stopped, ranging from 68% to 80% of the total time. This occurred at the Port of Kuryk or Baku, when the drivers had to wait for vessels. This is true in spite of using containers or not. (Subgroups 1 to 4)

- In contrast, shipments that moved overland spent more time moving (67% to 71%) and less on waiting or border-crossing (28% to 32%).

- The speed indicators revealed an interesting insight. The SWOD of shipments crossing the Caspian Sea appeared to be significantly higher (above 40 km/h) compared to those overland shipments (21 to 29 km/h). This hinted that the road section for the latter was not as conducive for road transport. This refers to the section of the road from the northwestern region of Kazakhstan (e.g. Aktobe and Mangystau regions), the section in the Russian Federation, and the western flank of Georgia that connects to Sarpi BCP. Despite the lower SWOD, the shorter time spent waiting and stoppages allowed the overland shipments to complete delivery faster, as evident from the higher SWD. (Subgroups 1 to 4 vs Subgroups 5 and 6)

- The Xi'an to Hamburg train and road shipments displayed a very high speed (close to 90 km/h) and relatively high SWD due to the short time spent at stoppages. (Subgroups 7 and 8)

Table 25: Specific Time Indicators of CAREC Corridor 2

Sub Group	Route	O-D	Total days	Travel	Travel %	Stop	Stop %	SWOD	SWD
1	Georgia–CA	Poti/Batumi/Tbilisi–Kuryk–CA cities	18.72	3.72	19.89%	15.00	80.11%	43.05	9.22
2	CA–Georgia	CA cities–Kuryk–Poti	8.56	1.86	21.77%	6.70	78.23%	64.27	13.99
3	Georgia–CA	Poti/Batumi/Tbilisi–Kuryk–CA cities	18.33	3.75	20.48%	14.57	79.52%	43.37	9.55
4	CA–Georgia	CA cities–Kuryk–Poti	13.56	4.28	31.55%	9.28	68.45%	29.59	10.06
5	Türkiye–CA	Turkish cities–CA cities	12.63	9.03	71.50%	3.60	28.50%	21.47	15.55
6	CA–Türkiye	CA cities–Turkish cities	12.42	8.34	67.14%	4.08	32.86%	20.95	14.29
7	PRC–Europe	Xi'an–Hamburg	12.33	4.78	Rail	7.55	61.22%	89.07	35
8	PRC–Europe	PRC cities–Europe cities	7.14	4.78	Road	2.36	33.08%	88.35	59

Source: ADB-CAREC Institute, CPMM 2024.

198. Further cost analysis is conducted to examine the percentage of time spent travelling against stoppage time which is considered as non-value-added time. Based on the statistics derived, the following observations are made.

- Overland shipments were more cost-effective than those that crossed the Caspian Sea. This is true in spite of container was used or not. (Subgroups 1 to 4 vs Subgroups 5 and 6)

- Container shipments performed better in the route from Poti to Central Asian destinations in all the unit cost metrics (by km, ton or ton-km). (Subgroup 1 vs 3). Similarly, container shipments performed better for the reverse direction, although the sample size was tiny and needed further studies. (Subgroup 2 vs 4).

- The appeal of the container block train was the low unit cost. The cost per ton-km was $0.08, which was superior to the road options. The disadvantage was the comparatively higher unit cost per ton, as a 40-foot container would carry less payload compared to the load compartment of a heavy transport vehicle, but this is negated but the much longer distance conducted by the container block train. For deliveries between the PRC and Europe, the use of container block train trumps over other means of transport in terms of cost. At this point, ocean maritime freight rates are most competitive, but if the container block train continues to lower cost and increase its shipment time and reliability, the cost premium would be worthy.

Table 26: Specific Cost Indicators of CAREC Corridor 2

Sub Group	Route	O-D	Total USD	Rate	Rate %	Stop	Stop %	$/km	$/ton	$/ton-km
1	Georgia–CA	Poti/Batumi/Tbilisi–Kuryk–CA cities	7,916	6,957	87.88%	959.14	12.12%	1.79	416.96	0.11
2	CA–Georgia	CA cities–Kuryk–Poti	4,284	3,700	86.37%	584.00	13.63%	1.29	186.26	0.06
3	Georgia–CA	Poti/Batumi/Tbilisi–Kuryk–CA cities	8,149	7,171	88.00%	978.19	12.00%	1.83	664.37	0.17
4	CA–Georgia	CA cities–Kuryk–Poti	5,060	4,400	86.96%	660.00	13.04%	1.45	366.67	0.12
5	Türkiye–CA	Turkish cities–CA cities	5,823	5,320	91.36%	503.10	8.64%	1.27	330.86	0.07
6	CA–Türkiye	CA cities–Turkish cities	3,272	2,607	79.66%	665.47	20.34%	0.79	150.56	0.04
7	PRC–Europe	Xi'an–Hamburg	11,723	10,364	Rail	1,359.47	11.60%	1.15	835.60	0.08
8	PRC–Europe	PRC cities–Europe cities	47,188	43,329	Road	3,859.24	8.18%	4.68	2711.96	0.27

Source: ADB-CAREC Institute, CPMM 2024.

4.4. Commodities

199. The commodities that could drive the use of containers need to be analyzed separately based on the direction of trade. For eastbound trade, the merchandize are generally transported in 40 ft containers and move from Europe to Central Asia. The products include fast moving consumer goods such as household appliances, electronic devices and automobile parts. Another category is frozen meat such as frozen chicken from Brazil and the US using refrigerated containers.

200. In the westbound direction from Central Asia to Europe, the main products include raw materials or semi-processed goods. Container shipments are generally sent in 20 ft containers. To increase the use of containers, some dry cargo could be considered. They are corns, fertilizers and metals.

Corn



Kazakhstan exported 176,509 tons of corn in 2023 and 2024 is expected to reach 180,000 tons. By 2029, grains export is expected to reach 400,000 tons. This makes it one of the more sizeable dry cargo that can be sent in containers, particularly in the direction of Iran which imports corn and barley from Kazakhstan.

Fertilizers



Under the chemical category, Kazakhstan is a net importer of nitrogen-based fertilizers and an exporter of potassium-based fertilizers, with a small amount of phosphate types. Aktau handled 20,886 tons of chemicals in 2023, and this amount is expected to reach close to 90,000 tons by the end of 2024, making it one of the fastest growing segment in dry cargo.

Metals



As a mineral rich country, Kazakhstan is a net exporter of minerals. Aktau handled 148,507 tons in 2023, but the expected volume in full year of 2024 is expected to drop to slightly more than 51,000 tons.

Box 2: Transporting Fertilizers in Containers?

Fertilizers are commonly shipped in bulk on wagons in Central Asia. However, it can also be packed into big bags made from woven polypropylene or polythene in units of 50 kg. If the products need to be shipped over long distances by sea, using containers can be economical and faster. It is particularly advantageous to ship containers through ports, because it is easier to handle a container compared to dry bulk cargo. For instance, the port tariffs and the time performance between handing a container and a dry cargo (using a bulk carrier) showed that the latter needs three times longer handling time and twice as expensive in terms of handling tariffs.[a] The disadvantage comes when dry bulk cargo move on land, in which the larger payload in a wagon favors bulk carrier.

An interesting observation is that the use of containers to send fertilizers in the CAREC region appears to be gaining popularity. In May 2023, Belarus dispatched a train with 60 containers with a payload of 1,500 tons of fertilizers to PRC. The train travelled more than 7,000 km and took 14 days. In December 2024, Uzbekistan shipped 54 40 ft containers each with a payload of 28 tons of urea to Turkmenbashi and Poti and sailed to the final destination at Brazil. The shipment took 20 days from Tashkent to Poti.

It is also noteworthy to highlight that there are two fertilizers terminal located in the ports along TITR, one at Baku and one at Batumi, with a third one being considered at Aktau.

Fertilizers Terminal at Port of Baku

With an area of 34,000 m^2 and an annual capacity to process 3 million tons per year, this fertilizers terminals has five storage facilities with a total capacity of 60,000 tons. This terminal is a joint venture between Baku International Sea Trade Port and Albayrak Group.

Fertilizers Terminal at Port of Batumi

Established in 2019, this terminal operator is Wondernet Express LLP., backed by Trammo Inc., and Abu Dhabi Investment Authority. The terminal is designed for the reception, storage, and transfer of mineral fertilizers, particularly carbamide, and targets the regional market for fertilizers. It facilitates cargo connections from Central Asian countries to Western markets via Georgia. The capacity is 1.5 million tons per year, and a storage capacity of 60,000 tons.

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Box 2 *continued*

Fertilizers Terminal at Port of Aktau (planned)

Wondernet Express Investment Group, whose subsidiary already operates a fertilizers terminal in Port of Batumi, plans to build a new fertilizer terminal in the Port of Aktau. A trilateral memorandum of cooperation has already been signed among Wondernet Express Investment Group, Kazazot (a local and major producer of fertilizers), Aktau Sea Port and for the implementation of the project.

"We have been working for several years to serve the cargo that flows through the "CAREC Corridor 2" from Central Asia to different countries of the world through the Black Sea ports. We saw the potential and decided to build a fertilizer terminal in the "Aktau Port" with our Kazakh partners. In the future, we will consider taking cargo from other countries of Central Asia as well." announced Mamuka Murjikneli, CEO of Wondernet Express Investment Group.

To further substantiate the rising volume of fertilizers, KazAzot began exporting products through CAREC Corridor 2 for the first time in history, in February 2024. The company supplies ammonium nitrate to various destinations.

[a] These estimations are derived from selected ports in the Middle Corridor but the detailed decomposition of the tariffs and time performance remain confidential.

4.5 Key Issues

Table 27: List of Issues on Containerization in CAREC Corridor 2

No	Issues	Countries	Remarks
1	Underdeveloped infrastructure to handle container operations	Kazakhstan	The Ministry of Transport and Communications estimated that only 47 out of 445 railway freight stations (10.6%) in Kazakhstan can handle containers.[a] Containers require different cranes and storage methods from those utilized for dry bulk operations.
2	No container through-shipping from Poti to Central Asian destinations	Georgia	Shipping lines such as Maersk and MSC call at Poti but the containers terminate at the seaport. Goods are transloaded onto trucks or trains for onwards journey to Central Asia. The shipping lines are concerned about using carrier owned containers to the final destinations due to the long return time, empty return backhaul and congestion at the ports in Caspian Sea. The unloading and loading takes an additional 12 to 24 hours.
3	Border-crossing delays at Qırmızı Körpü and Tsiteli Khidi (BCPs)	Azerbaijan, Georgia	The Qırmızı Körpü BCP in Azerbaijan and Tsiteli Khidi in Georgia can handle 400 freight vehicles in one direction, but the current average demand is more than 1,200 trucks. This creates congestion and at least 1.5 hours of waiting at the BCP. The throughput rate is also different because there are only 5 steps to complete border-crossing at the Georgian side but 12 steps at the Azerbaijan side. On average, it takes only 4 minutes to process a shipment at Georgia side, but 25 minutes at the Azerbaijan side (waiting time is excluded).[b]
4	The rules for private sector investing in container transport infrastructure is complicated and reduces investors' interest.	Kazakhstan	Such rules are governed by the "Rules for Opening And Closing Railway Stations, Sidings for Performing All or Individual Operations". The private sector opines that the rules for opening a container terminal is not clear nor transparent. Also, the decision process stretches across two levels, the central government and the local executive bodies. This complicates the process, introduces redundancy in the process adding to additional approval time and possible corruption.

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Table 27 *continued*

No	Issues	Countries	Remarks
5	Cost of transporting empty container is unreasonably high.	Kazakhstan	Container shipment may necessitate the return of containers. This problem is compounded by the long distance in Kazakhstan, leading to the high cost of returning an empty container, and this discourage the wider use of containers. An empty container weights 2.3 tons (20 ft) and 3.9 tons (40 ft). Unlike Europe where a discount of 45% to 50% applies to the movement of empty containers, this is not practiced in Kazakhstan.
6	Cost of a container movement is uncompetitive versus using wagons.	Kazakhstan	Shippers widely perceive that container shipments are uncompetitive. This is because of (1) c 40 ft container payload is typically up to 25 tons, but a wagon can hold up to 70 tons, (2) A wagon at destination station can easily find another shipment but a container shipment may have to return empty. As such, shipping a 40 ft container was estimated to be 40% more expensive than a similar shipment using a wagon. In addition, the railway deregulation in Kazakhstan did not spur container growth as there was no fair nor favorable policy towards container shipments, despite the fact that a container shipment causes less wear and tear on rail infrastructure due to its lower total weight compared to a wagon shipment, In addition, NC KTZ JSC has the right to independently set tariffs. The Committee for the Regulation of Natural Monopolies (CREM) is not competent to regulate the tariff setting to encourage containerization.
7	Burdensome technical inspection of containers at rail stations.	Kazakhstan	It is common to have ad-hoc inspection of containers by inspectors at the rail stations. This led to the shippers paying for special crane required to lift the containers. The inspectors do not possess the appropriate qualifications. Moreover, according to review by Ministry of Transport and Communications, most of the inspections do not lead to any evidence of violations.
8	Limited facilities for the repair of containers.	Kazakhstan	When containers are damaged, the container must be sent to repair bases. There are not many facilities that can service containers, typically located at the stations of Arys, Turkestan and Tyurata. The repaired containers are treated as empty containers and will be transported back to the stations that destination stations, leading to additional time and cost.
9	Temporary restrictions on laden and empty containers to and from neighbor countries causes supply chain uncertainties.	Kazakhstan	Kazakhstan imposes bans of the movement of laden and empty containers, particularly to and from the PRC, due to infrastructure limitations. For example, a temporary ban on the grain exports using containers on rail through Dostyk was imposed by Kazakhstan.[c] This happened twice in 2024 and extended to the end of 2024. This resulted in a large accumulation of containers at rail stations and sometimes the containers were abandoned by the shippers or consignees.
10	Lack of a unified electronic communication system to facilitate seamless electronic data interchange.	Azerbaijan, Georgia and Kazakhstan	The presence of many service providers in TITR shipments create complication when relaying data across the supply chain. Problems happen whenever there are omissions of data or change in the products en-route. This resulted in delays when an authority detects a discrepancy between physical goods and documents, resulting in clearance delays.
11	Lack of a communication system between the ports of Aktau, Kuryk and Baku.	Azerbaijan and Kazakhstan	Currently information exchange between ports such as Kuryk and Baku is done in rudimentary form (HTML format). Even though this form of communication carries essential information, it lacks details and because it is not officially recognized by the ports, information is verified manually by staff at both ports which adds extra time in operation. Since 2022 several attempts were made to distinguish between transit and imports containers, however this has failed. For example, during the loading of the containers in the Kuryk port, lower-level containers on ships should be Azerbaijani imports and upper-level container should be containers designated to Poti. This will allow Alat port to offload transit

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Table 27 *continued*

No	Issues	Countries	Remarks
			containers directly on to railway platforms, which will speed up the process. This has been partially achieved in 2024 due to increase in the block trains; however this requires an effective planning and communication system for the ports to utilize.
12	Lack of rail platforms to carry containers across the Caucasus.	Azerbaijan and Georgia	To increase container turnover through the Caucasus, the number of container platforms has to increase. Currently the number of platforms used for container transportation is approximately 800 which is used jointly by Azerbaijan Railway and Georgian Railway. However, these platforms are sometimes used for other cargoes such as transportation of wood from the Russian Federation to Azerbaijan or Iran. Since each platform carries one 40 ft container, 800 platforms can carry 800 such containers at any point in time. A block train can carry 55 such containers, so the Caucasus can handle 14 such block trains at any point in time.
13	Limited vessels in the Caspian Sea leading to long waiting time at ports.	Azerbaijan, Georgia and Kazakhstan	There are five vessels deployed to serve the container trade between Aktau and Alat.[d] Three of the vessels can transport up to 350 TEUs each. However, due to weather conditions and weight restrictions, they can only transport a maximum capacity of 290 TEUs. The two other vessels are bulk cargo ships which can transport 120–150 TEUs in one trip. The maximum capacity can reach 190 TEUs with modifications made to the ship. Assuming three vessels of 290–350 TEUs capacity and two vessels of 120–190 TEUs capacity, this means that the range of container vessel capacity in the Caspian Sea is 1,100 TEUs to 1,430 TEUs at any point in time. It has to be noted that last four ships that were completed in Baku Shipyard were oil tankers and Ro-Ro ships, which highlights that economic development is more directed towards trucking and bulk cargo rather that containers individually.
14	Receding sea levels in the Caspian Sea threatens the long-term prospect of TITR.	Azerbaijan, Georgia and Kazakhstan	The Caspian basin is suffering from receding sea levels. In early 2010 the draft of the Port of Baku was around 7–9 meters however since 2020 it has reduced to as low as 5 meters during the drought seasons.
15	Limitations in human resources (e.g. customs officers) lead to longer processing time for documentation.	Azerbaijan	Since the opening of the Alat Port in 2018, the amount of cargo has increased several folds, however the number of customs officers has not increased proportionately, which has affected the time for documentation. It is also necessary for the driver or freight forwarder to bring the shipping documents from one building to another, leading to longer processing time for documentation.
16	The use of lower capacity or inappropriate cranes lead to longer berth operations time to handle containers.	Azerbaijan and Kazakhstan	Currently there is only two 32-ton cranes in the Port of Baku which are not designed for containers and during the windy time they cannot operate properly. According to seaport which has already designed new container terminal will have Panamax Cranes. The budget for a new container terminal with 500,000 units is estimated to be between 300–500 million USD. This project is looking for investors from government or from private enterprises. At Port of Aktau, a suspension system primarily used for bulk cargo transfer is also used for container movements, which is not optimal. This leads to lower productivity as longer time is required for container operations.
17	The cost of shipment includes the cost of a container, inflating the overall transport cost.	Azerbaijan and Georgia	Shippers in Azerbaijan and Georgia who procure goods from China often need to pay for the cost of a container. This inflates the overall shipping cost as the Chinese manufacturers do not want to pay for the empty return. It is also challenging to find return cargo from Azerbaijan and Georgia to China. An empty used 20 ft container cost $500 ten years ago, but the cost has risen to $2,500 at present.

continued on next page

Table 27 *continued*

No	Issues	Countries	Remarks
18	Capacity constraints in the Black Sea leads to uncertainty in transport lead time.	Azerbaijan, Georgia and Kazakhstan	The vessel schedule to Poti to Batumi is unscheduled and to access Europe, the shipment either move to the ports in Bulgaria (Varna and Burgas) and Romania (Constanta). However, the rail capacity here is limited, and shipments need to wait in ports for some days. The other way is to sail through the Bosphorus Strait, which can take 2 to 3 days as it is a chokepoint for vessels to enter or leave the Black Sea.
19	Shortage of containers in CAREC Corridor 2.	Azerbaijan, Georgia and Kazakhstan	A common feedback from the stakeholders was the shortage of containers. This is mainly attributed to the (1) imbalanced trade flows and (2) nature of products. In CAREC Corridor 2, 85% of the container movement is westbound (from PRC to Europe) and only 15% is eastbound (from Europe to PRC). Also, container movements are estimated to be using 40 ft containers along CAREC Corridor 2.
20	Height clearance for containers on road transport needs to be raised to 4.3m.	Azerbaijan	Azerbaijan, Georgia and Kazakhstan state the official height limit for vehicle and goods is 4 m high. However, Georgia and Kazakhstan have special provisions to accommodate containerized transport to 4.3 m. The height limit of 4 m is acceptable for standard ocean container as a container height is 2.591 m. When put on a semi-trailer (1.4 m) height, the total height is 3.991 m, less than the 4 m height limit. The issue is a high cube container is 2.896 m high, which will reach 4.296 m. Thus, the height limit in Azerbaijan needs to be revised.

[a] This estimate is stated in the "Comprehensive Plan On the Development of Containerization of Cargo and Container Transportation in the Republic of Kazakhstan for 2025–2029", a concept paper by the Ministry of Transport and Communications of the Republic of Kazakhstan.

[b] This information is shared by drivers interviewed by Georgian International Road Carriers Association (GIRCA) during this study.

[c] Daryo, https://daryo.uz/en/2024/10/17/kazakhstan-imposes-extended-ban-on-container-trains-to-china-amidst-border-congestion-crisis.

[d] The number of container ships that are deployed in the Caspian Sea is not a fixed number. While there are dedicated container ships, the national operators ASCO and KMTF can reconfigure dry bulk carriers to container ships if there are many containers waiting. This was done in mid-2022 to relieve the logjam of container ships and six container ships in total were deployed. However, shippers always mentioned about the long queue and waiting time at the ports in Caspian, so the limited vessels remain a perennial constraint.

4.6. Recommendations

Table 28: List of Recommendations for CAREC Corridor 2

No	Action	Benefits	Importance	Urgency	Time-frame
Infrastructure and Equipment					
1	Increase the fleet of vessels for container shipments (estimated cost of $50 million)	Reduce time	*****	*****	Immediate
2	Construct and operate a container terminal at Aktau	Expand capacity	*****	****	Medium term
3	Operate at least two 32 tons crane for container operations at Aktau	Reduce time	****	****	Medium term
4	Dredging at the Aktau seaport (estimated $44 million)	Expand capacity	*****	*****	Immediate
5	Explore the feasibility of setting up a container production facility in the region	Expand capacity	***	**	Medium term
6	Develop a closed loop circulation for containers	Reduce time	***	**	Medium term

continued on next page

Table 28 *continued*

No	Action	Benefits	Importance	Urgency	Time-frame
Policies and Regulations					
7	Review the rail tariffs for movements of laden and empty containers to achieve a balance between operational and financial viability.	Reduce cost	*****	*****	Short term
8	Explore the viability of creating a new container transport company.	Increase competitiveness	****	**	Short term
9	Simplify or remove the need for container inspection at rail stations.	Reduce time	*****	****	Short term
10	Simplify the rules for investment of container facility and ensure its transparency to attract private investors.	Improve transparency	****	****	Short term
11	Increase the height limit of containerized shipments on road transport to 4.3 m for Azerbaijan.	Ensure compliance	***	**	Medium term
Digitalization					
12	Procure a terminal operating system for Kuryk.	Improve process efficiency	*****	*****	Short term
13	Implement an Electronic Data Interchange (EDI) between the seaports.	Improve process efficiency	*****	****	Medium term
14	Implement a transport information portal to connect all stakeholders using the TITR.	Improve transparency	****	****	Medium term

201. CAREC Corridor 2 is constraint by the bottlenecks at Caspian, and this is limited by the port and vessel capacity of Aktau and Kuryk. At this point, port utilization is well below the design capacity, but there are not enough container vessels to ferry the containers across the Caspian Sea. To address this, additional container vessels are required for deployment. KMTF is working on a design for a new container ship with a capacity of 530 TEUs. The vessel is estimated to be $25 million apiece. Assume two vessels are procured at a cost of $50 million to replace the two smaller container ships, the total capacity will rise to 530 x 2 + 350 x 3 = 2,110 TEUs. The existing container ship capacity was estimated to be 1,100 TEUs to 1,430 TEUs. The new capacity would be double the current capacity (from the low end) or at least 50% (from the high end).

202. It is well known that Aktau is planning a new container hub with a design capacity of 100,000 TEUs. However, this container hub is not located adjacent to the sea. This would render the container hub into a container yard only, compromising on the full potential of the container hub.[36] A container hub should have access to the waterfront, integrated with a properly designed container berth and container yard. A properly built container berth will then support the use of a heavier quay crane to replace the multipurpose crane that is more suitable for dry cargo handling.

203. Unlike Kuryk which is a newer port, Aktau operated much earlier and needs to deal with the lower sea level. Capital and maintenance dredging is required. This is estimated to cost $44 million.

204. The topic of setting up a container production facility was debated in Azerbaijan, Georgia and Kazakhstan. The benefits of this initiative are (1) to ensure a supply of containers to reduce waiting time, (2) support the container business including servicing and repair, (3) migrate to a higher value-added industry by using competencies in metals fabrication and production. The counter arguments include (1) containerization levels are still relatively low and widespread adoption has not happened, (2) the

36 The container hub and its location is further elaborated in the Chapter for Port of Aktau.

manufacturing cost may be relatively high, compared to the containers made in PRC, (3) Transport and logistics infrastructure are not designed for container handling and new supply may result in a greater number of empty or abandoned containers at the rail stations. It is more imperative to make container transport more competitive and expand the infrastructure to handle containers more efficiently. Any ideas of producing containers locally is deemed prematurely.[37]

Table 29: Cost of Procuring a Container from PRC

Container Type		Cost, USD
20 ft	New	1,600–1,900
	Used	550–650
40 ft	New	3,900–4,200
	Used	1,300–1,400

Note: Container prices are indicative and depends on the condition, minimal order quantity and time of purchase. The price does not include shipping cost. Actual prices may vary.
Source: Alibaba.

205. In general, the prices of the new and used containers are very competitive in the PRC. Used container costs about one-third of the price of a new container. The decision of setting up a new container facility is a strategic decision, and it is proposed that the policymakers commission a separate study focused on the demand and supply of the container business before committing to the capital expenditure. Presently, both Azerbaijan and Kazakhstan expressed interest in this initiative. A strategic advantage of such a production facility is to shorten the delivery time and manage the delivery cost of procuring containers. Even if the manufacture is done in PRC (usually at the coastal regions or the production hubs in the Yangtze Delta or the Pearl Delta regions where the production cost is very competitive, these regions are far from Central Asia and Caucasus. The need to transport 4,000 to 5,000 km implies that the delivery cost is likely to be greater than the purchase price of the container itself.

206. If the decision to develop a local container production facility cannot be justified or if the lack of funds and manufacturing expertise deter such initiative, another option is to look at optimizing the current situation of container movements and increase their availability without adding new supply. One way to do this is to design a closed loop so that containers are not deployed to a destination outside of this system. In the discipline of supply chain management, such ideas are focused in the maritime sector, but less in landlocked regions, so a study in this direction will be particularly useful for the CAREC region.[38] This is best implemented with the shipping lines calling at Poti or Batumi to offer a package service of containers service in the direction of Poti to Baku to Aktau or Kuryk to Central Asian destinations and back. Maersk has admitted there is pent-up demand for this service from Poti to Central Asia. However, the demand in the return direction is not certain. An intervention by policymakers could be direct or indirect subsidies for such container movements to lower the return of empty containers for a limited time, until the demand catches up to allow the bi-directional service to be commercially sustainable. Another action is to offer a container block train service around between Poti to Almaty, or Poti to Tashkent, for instance. The service running as a scheduled manner will provide consistency, to address the main issue of delivery time uncertainty that deters potential users of CAREC Corridor 2. ADB and CAREC Institute can support further study in this direction to design a closed loop system for containers' movements.

37 The reactions of stakeholders are different. The Ministry of Digital Development and Transport of the Republic of Azerbaijan is actively looking at the feasibility of this idea. The Ministry of Industry of the Republic of Kazakhstan is considering a container production facility for grain exports, leveraging on local production facilities. However, the Association of Kazakhstan Freight Rail Carriers opined the idea is premature, citing the reasons indicated in the report.

38 An interesting research titled "Approaches to empty container repositioning problems in the context of Eurasian intermodal transportation" is insightful and offers some perspectives on the repositioning of empty containers. Reference to https://www.sciencedirect.com/science/article/abs/pii/S0305048317306254.

207. It is understandable that the private sector demands more competitive pricing for containerized shipments. However, simply introducing discounts or lowering the price through tariff setting and cross-subsidies will compromise the long-term viability of the rail service. KTZ is under financial difficulties, and it would be unwise to stress the financials. However, it is still viable to explore the rail tariffs and commission a benchmark with the tariffs in overseas countries, especially Azerbaijan and Georgia. The benchmarking can also assess whether KTZ is efficient and productive.

208. To promote the container business, it may be interesting and useful to consider a separate container business as an entity. This will allow the new entity to focus on the container transport business and make decisions faster. This is not without precedent. Azerbaijan Container is a separate business under the Azerbaijan Railway Company.

Box 3: ADY Container

ADY Container LLC, a subsidiary of Azerbaijan Railways CJSC, was established by the decision of the Chairman of Azerbaijan Railways CJSC, Javid Gurbanov, on July 5, 2017. The company was established to improve the quality and safety of rail freight, centralized and efficient management of container traffic. Many container yards and railway container transportation in the Republic of Azerbaijan are managed by ADY Container LLC. ADY Container LLC provides intermodal services by rail, feeder ships and road transport and transports your cargo "door to door" managed through our single online portal. The company coordinates the activities of the parties – cargo owners and carriers – in order to speed up the process and reduce overall costs at all stages of transportation.

For container transport, ADY Containers help clients to decide on the route, organize the freight and deploy assets to move the containers. ADY Containers own containers and the rail platforms. It has 14 m and 25.5 m platform that can position 2 TEUs or 1 FEUs on the 14 m platform, or 4 TEUs or 2 FEUs on the 25.5 m platform. The company also provides ancillary services such as container repair and maintenance, as well as cargo insurance.

Source: ADY Containers, https://adycontainer.com.

209. Georgia allows the height clearance for containerized shipment to be 4.3 m. This is based on the Law of Georgia On Road Traffic Safety Number 2050, established 01.03. 2014. According to the Order of the Acting Minister of Investments and Infrastructure Development[39] of the Republic of Kazakhstan dated March 26, 2015 No. 342, the maximum permissible height for container shipment on road transport is also 4.3 m. To align with the height limit with the other two countries, the legislation in Azerbaijan can review the current legislation and accommodate the change to permit a height clearance of 4.3 m.

210. The Port of Kuryk is the only one that has not installed a terminal operating system (TOS). Without TOS, the port staff rely on manual planning and human data entry. A TOS is necessary for the port to function internally, as well as interacting with external systems to perform electronic data interchange. The second step is to implement an EDI between the ports of Aktau, Kuryk and Baku. The information between the three ports are not integrated. A messaging protocol using XML for instance, can be implemented at low cost so that shipping, vessel and cargo information can be relayed efficiently to the ports. This lessens the need for manual data re-entry, and also ensure the data are not entered incorrectly or omitted due to manual mistake. The final act is then to establish a portal that connect the ports with all the stakeholders (e.g. shippers, freight forwarders, vessel operators, railway companies and customs) across the three countries so that data can flow seamlessly. This will allow real-time transparency of shipment status to be displayed on the TITR website, allowing shippers to know the location of the shipment. Currently, this information is simply not available as there are multiple players in the supply chain.

39 In Kazakhstan,. the Ministry of Investments and Infrastructure Development used to direct transport decisions. In 2015, this order was issued. However, a new Ministry was decreed in September 2023, called the Ministry of Transport and Communications. Subsequently, all transport directives are passed to this new ministry.

CAREC Corridor 4

5

5.1 Route and Key Nodes

211. The transport corridor between the PRC and Mongolia plays a crucial role in facilitating trade and economic activities between the two countries, as well as connecting Mongolia to the broader global market. For container freight, the movements occur betwee0n Tianjin and Ulaanbaatar, which is aligned to CAREC Corridor 4b. There are other routes such as CAREC Corridor 4a to the east, and 4c to the west. There are also active movements of coal ores at the Gashuun Sukhait border from the mines in Oyu Tolgoi and Tavan Tolgoi, but these are bulk commodities and do not use containers.

213. Tianjin is one of China's largest and most important seaports, located in the northern part of the country, approximately 130 kilometers southeast of Beijing. It serves as a critical gateway for goods destined for Mongolia, acting as the primary maritime hub for the landlocked country. Tianjin handles a variety of goods, including bulk commodities, manufactured goods, and high-value containerized cargo, much of which is bound for the Mongolian market. Tianjin's total cargo throughput has been consistently high, exceeding 600 million tons annually. Container throughput at Tianjin is also significant, with more than 18 million TEUs (Twenty-foot Equivalent Units) handled each year. While a portion of this cargo is bound for domestic Chinese markets, a significant volume is destined for transit to Mongolia, often through rail or truck transport.

213. The two primary land-based border crossing points between the PRC and Mongolia are Zamiin-Uud, located in southeastern Mongolia, and Erenhot, located in northern China. These border points facilitate the flow of goods between the two countries, including containers that are transported from Tianjin to Ulaanbaatar.

Table 30: Key Nodes in CAREC Corridor 4

Nodes	Country	Nature	Significance
Port of Tianjin	The PRC	Seaport	Most popular seaport in the PRC that serves as a gateway for freight to and from Mongolia. Other seaports such as Qingdao, Qinghuangdao and Caofeidian in the PRC are also seaports that can serve freight to Mongolia, but Tianjin has the largest container handling capacity.
Erenhot–Zamiin-Uud	The PRC and Mongolia	Border-crossing point (Road and Rail)	The only international BCP pair that serves bilateral and international transit traffic at the PRC–Mongolia border. Able to handle both road and rail traffic, whereas other Mongolian BCPs only handle road.
Ulaanbaatar	Mongolia	Final destination or transshipment point	The main origin and destination for imports and exports in Mongolia.
Sukhbaatar–Naushki	Mongolia–The Russian Federation	Border-crossing point (Rail only)	The only international BCP pair that serves bilateral and international transit traffic at the Mongolia–Russian Federation border on rail.
Altanbulag–Khiagt	Mongolia–The Russian Federation	Border-crossing point (Road only)	The main international BCP pair that serves bilateral and international transit traffic at the Mongolia–Russian Federation border on road.

Source: Consultants.

214. The transportation of goods from Tianjin to Ulaanbaatar typically involves multiple stages, including maritime transport, rail transit, and border crossings. A typical freight route begins with the loading of containers at Tianjin Seaport, followed by rail transport from Tianjin to Erenhot, and finally, a transfer to Mongolian rail and road transport to Ulaanbaatar. The distance between Tianjin to Ulaanbaatar is 1,692 km.

Table 31: Time and Cost of a Container Shipment from Tianjin to Ulaanbaatar

Time	Cost
• The rail journey from Tianjin to Erenhot typically takes around 2 to 3 days, covering a distance of approximately 1,300 km. • Border Clearance at Erenhot and Zamiin-Uud: Border crossing times can vary significantly, but on average, it takes between 2 to 4 days for containers to clear customs and be transferred to the Mongolian rail network. Delays at the border are a common issue due to change of rail gauge, customs processing and inspection bottlenecks. • Zamiin-Uud to Ulaanbaatar (Rail or Truck Transport): After clearing customs at Zamiin-Uud, containers are either transported by rail or truck to Ulaanbaatar. Rail transport typically takes around 1–2 days, while trucking may take longer depending on road conditions. • The shipment that moves from Zamiin-Uud to Ulaanbaatar, which can take 1 to 2 days. Customs clearance is then performed at the terminal station. • On average, the entire journey from Tianjin to Ulaanbaatar can take between 10 to 14 days, depending on the efficiency of border processes, the availability of transport, and the level of congestion at various points along the route.	• The cost of transporting goods from Tianjin to Ulaanbaatar varies based on several factors, including the type of cargo, mode of transport, and container size. The main cost components include: • Maritime Transport from Tianjin to Chinese Ports (such as Shanghai): This stage is relatively cost-effective, with standard shipping rates typically around $200–$300 per TEU for containerized cargo. • Rail Transport from Tianjin to Erenhot: Rail freight charges for this route range from $500 to $600 per TEU, depending on the cargo type and transit time. • Border Crossing Fees: Customs and clearance fees at both Erenhot and Zamiin-Uud are typically around $100–$200 per container, though these costs may fluctuate due to customs policies and political factors. • Transport from Zamiin-Uud to Ulaanbaatar: The cost of rail transport from Zamiin-Uud to Ulaanbaatar is generally around $200–$300 per TEU, while road transport can cost slightly more. • Overall, the total cost of transporting a TEU from Tianjin to Ulaanbaatar is estimated to range between $1,000 and $1,500, depending on the mode of transport, border fees, and other logistical factors.

5.2 Container Flows and Throughput

215. The container handling capacity of the PRC–Mongolia corridor depends on various sections. As of September 2024, there are 7,000 TEUs of containers stuck in the port[40]. This is a major issue because (1) cost of keeping the containers at the port is borne by freight forwarders, (2) the late deliveries can trigger service failures rendering the consignee liable for any losses, (3) the long delay can cause a bullwhip effect that ripple through the supply chain, resulting in panic buying that push up inventory costs. This is a major issue as Mongolian companies face long waiting time of three months of more for the import. Analysis of the capacities along the route, however, identifies that Tianjin port is not the root cause, rather the limited container handling capacity at Zamiin-Uud is the core constraint.

Table 32: Container Handling Capacity Along CAREC Corridor 4

No	Sections	Trains/Day	TEUs/Day
1	Tianjin to Erenhot	45 to 50	5,000 to 6,000
2	Erenhot (bi-direction)	20	2,200
3	Zamiin-Uud (bi-direction)	7	770
4	Zamiin-Uud to Ulaanbaatar	15	1,650

Source: Ulaanbaatar Railway Company and Tianjin Port Group.

40 Source: Interview held with Tianjin Port Group on 23 September 2024.

216. Traversing the distance of 865 kilometers from Tianjin to Erenhot is estimated to take about 2 days for a freight train service. However, congestion at the border can result in containers taking 10–14 days to make the journey. Congestion at the border with Mongolia can see containers waiting for a minimum time of one to two months. In fact, container-handling capacity at all the border crossing points are deemed to have reached maximum capacity with average waiting time at the other border crossing points ranging from 5–10 days. The lack of rail platforms and limited transloading capacity are common to these border crossing points as well.

217. The railway capacity between Tianjin and Erenhot being 45–50 services or 4,950–5,500 TEUs. When there is congestion at the border, the containers are compelled to stay in the Tianjin port. The port has the capacity to load the containers if China Railway deploy the rail platform. However this is not done, as sending more containers to Erenhot will simply congest the BCP due to the lower handling capacity of Zamiin-Uud.

218. Further analysis imply that transloading inefficiencies and lack of wagons are key issues which need to be addressed urgently. Railway capacity between Zamiin-Uud and Ulaanbaatar is estimated at 2,750 TEUs (i.e., 25 services with each train carrying 110 TEUs). According to Ulaanbaatar Railway Company (UBTZ), there are 15 train services per day operating in the direction from Zamiin-Uud to the Russian Federation and 10 services in the reverse direction.

219. The maximum transloading capacity at Zamiin-Uud is estimated at 7 services a day. Of the 7 services, 5 are in the direction to Ulaanbaatar, and the remaining 2 to Erenhot. By comparison, the transloading capacity at Erenhot is about 20 services per day. Transloading capacity at Zamiin-Uud is limited due to the lack of wagons from Mongolia and the Russian Federation. Furthermore, priority at Zamiin-Uud is given to block trains that go to the Russian Federation and Belarus rather than containers bound for Mongolia. To address the issue of long waiting time, Mongolia requires Russian wagons to be used to transport containers to Ulaanbaatar instead of having them wait at Zamiin-Uud. However, delivering containers to Ulaanbaatar city can be complicated as there are 14 terminals operated by different entities in the national capital region which can make operations complex. The ideal situation is to have these activities consolidated at a rail terminal on the outskirts of the city.

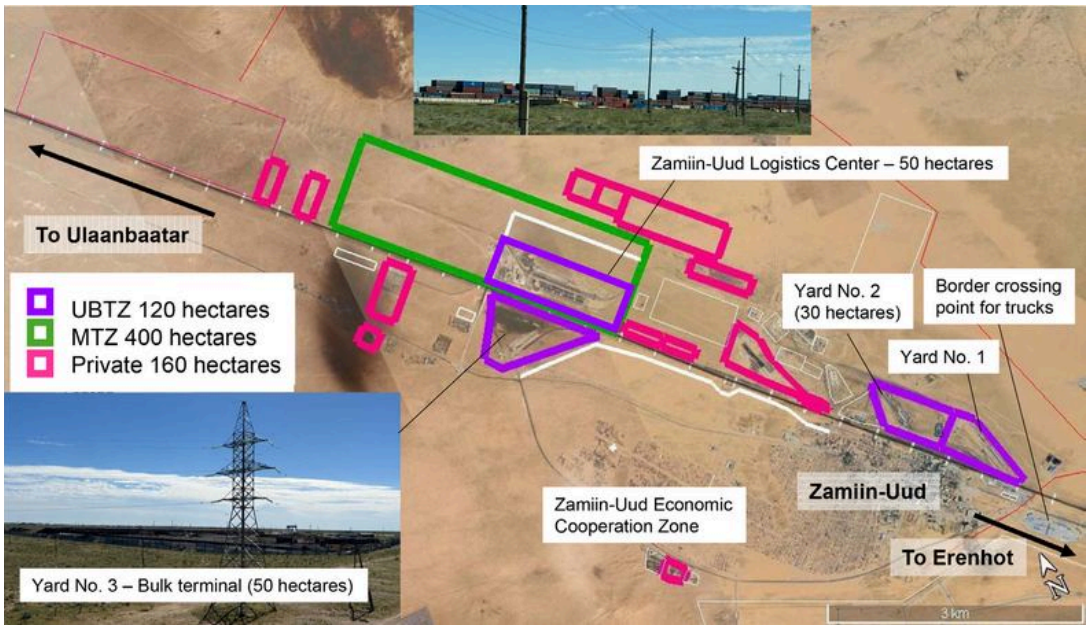
Zamiin-Uud

220. Further examination of the Zamiin-Uud BCP reveals further insights on the bottlenecks. Containers are processed mainly at four transshipment facilities in Zamiin-Uud, called Yard No. 1, Yard No.2, Yard No. 4 and the Zamiin-Uud Border Crossing Point for trucks[41]. Change of gauge operation in Zamiin-Uud is conducted mainly at either of the three facilities which are operated by UBTZ.

221. Yard No. 1 handles construction materials and the cargo is shipped mostly in TEU containers. The facility handles containers with daily loading and unloading capacity at 320 and 450 wagons respectively. Yard No. 2 occupies 30 hectares of land. Productivity of the facility is given as a loading capacity of 260 wagons and unloading capacity of 332 wagons per day. The largest of these facilities is the Zamiin-Uud Logistics Center which sits on 50 hectares of land (Yard No. 4). The facility has three wide gauge tracks (1,520 mm) and three standard gauge tracks (1,435 mm).The majority of containers handled at the facility are 40 ft containers. The facility is also equipped with container yards for storage and repair of containers, including handling of reefer containers. The daily handling capacity of the terminal is designed to load 466 wagons and unload 620 wagons. However, the logistics center is performing a daily loading rate of 600 wagons and unloading rate of 620 wagons. Hence, the facility is operating above its design capacity.

41 The term transshipment can mean different activity. To be precise, the operation at Zamiin-Uud is change of gauge operation. This is because the gauge standard in Mongolia is broad (1,520 mm) similar to many CAEC members were former soviet states, while the PRC adopts the standard gauge (1,435 mm).

Figure 24: Location of Key Transshipment Centers in Zamiin-Uud



Source: Consultants, using information including from Zamiin-Uud Governor's Office.

Table 33: The Four Transshipment Centers in Zamiin-Uud

Centers	Commodities	Capacity, wagons/day
Yard 1	Only heavy cargo (e.g. construction material)	Load 320 wagons Unload 450 wagons
Yard 2	All types of freights except heavy cargo.	Load 260 wagons Unload 332 wagons
Yard 3	To transship all types of cargoes (e.g. technology, and tools) except heavy cargo.	Bulk goods
Yard 4	Focus on international transit shipments.	Load 466 wagons Unload 620 wagons

Source: Consultant, compiled from the field mission in September 2024.

222. The range of dwell time for containers in Yard No. 2 and Yard No. 4 is about 5 to 6 days. There are deficiencies observed at the transshipment centers that result in this border-crossing delay. The process of gauge change is long due to equipment. At Yard No. 4.there are two yard cranes (50 tons capacity each) but they are not operational. UBTZ staff claimed that persistently strong winds affect the operation of the crane. In fact the downtime is 70% to 80 % in a year, especially during spring and autumn. The change of gauge operation fully relies on three mobile cranes at Yard No. 4.

223. UBTZ claimed that using mobile cranes is more efficient. The mobile crane can complete transfer of one container in 3 to 5 minutes, while the crane takes 12 minutes. The downtime for mobile crane is also lower, at 5% in a year. On surface, it seems using mobile crane is indeed more efficient. However, the root cause is suspected to be lack of maintenance of the yard crane, due to possibly difficulty to send spare parts to Zamiin-Uud, lack of an effective maintenance program or shortage of financing. In addition, using a mobile crane requires three persons per crane, one driver, one person to direct the driver and one person to record the container number and the location of the container manually. For three cranes, nine persons are needed. This implies that using mobile cranes can possibly incur high operational cost. In addition, Yard No. 4 has three pairs of rail tracks and a mobile crane will face difficulty to enter the middle track, which is easily accessible using a yard crane.

224. Another problem is the lack of a digital solution to manage the operation. A team of staff performs manual data entry and use Microsoft Excel to plan the container operation. For every gauge change operation, data staff has to update the container number and the new location whenever there is a transfer. A direct movement between a container from the standard gauge to the broad gauge is straightforward, but if there is not sufficient rail platforms, the containers will have to be removed from the Chinese rail platform to a bay (temporary holding area) near to the rail line and then moved again to the Mongolian rail platform when it is available. Such movements are manually tracked. This is not optimal and prone to error. A terminal operating system that can plan and track and record each movement will increase the productivity of the gauge change operation.

Figure 25: Zamiin-Uud Logistics Center (i.e., Yard No. 4)

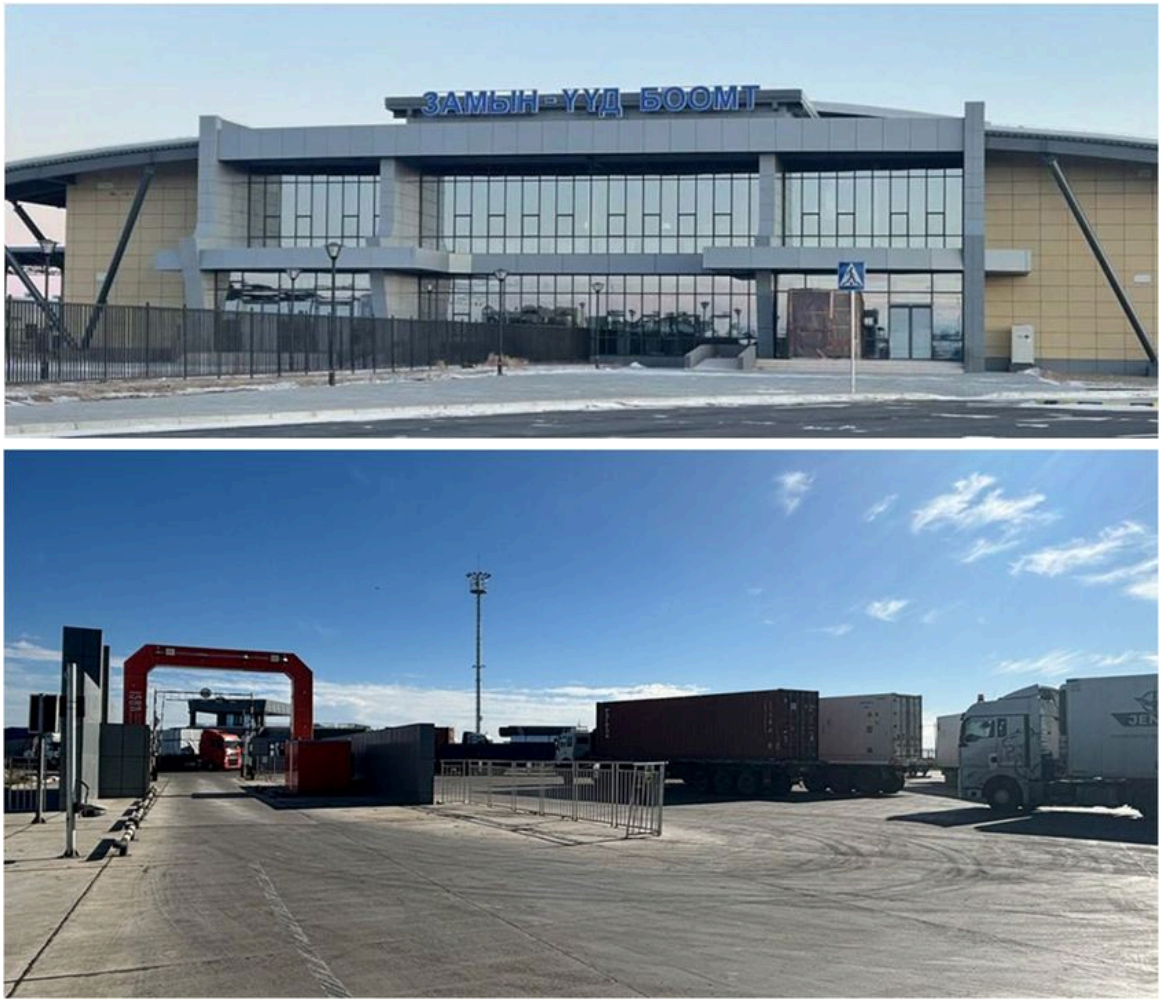


Note: The two yard cranes are idle, despite the calm weather condition. The mobile cranes are moving about to move the containers.
Source: Consultants.

225. UBTZ views modernization of equipment and digitalization of operations as priorities. For the modernization of equipment, the company is considering acquiring more Kalmar or Sany reach stackers. The reason is strong wind conditions may result in yard cranes being unable to function smoothly. Specifically, the rail mounted gantry cranes may not be operational for 70%–80% of the time. This is especially during Spring and autumn when wind conditions are strong. There is also the consideration for equipment productivity where a Kalmar reach stacker can move a container in 3.5 minutes whereas a yard crane requires 12 minutes. By comparison, the downtime for a Kalmar reach stacker is only about 5% of the time.

226. The border crossing point for trucks is also a significant contributor to the container trade at Zamiin-Uud. Known as Zamiin-Uud International Port, the facility is dedicated to truck traffic. The peak seasons are in summer while winter months can see truck traffic declining by as much as 50%. The facility can handle vehicle that come from different parts of China including Shanghai. There has also been a surge in trucks bound for Russia with the Ukraine Crisis[42].

Figure 26: Zamiin-Uud International Port



Source: Consultants, using information including from Khankhuu, J. (2024). "Regional logistics center to be established at the Zamiin-Uud Land Port". *Mongolia National News Agency*, June 3. Available online at: https://montsame.mn/en/read/345197.

227. Located to the south of Zamiin-Uud city is the 900-hectare Zamiin-Uud Free Economic Zone[43]. The FEZ aims to spur economic growth and development of Mongolia by attracting investments targeting at industrial, commercial and tourism-entertainment activities. The FEZ aims to develop export-oriented production and boost trade by increasing transit transport and logistics activities. However, there have been little activities to date. To move things forward, the governments of Mongolia and China decided to establish a China–Mongolia

42 An interview with a truck driver at the Zamiin-Uud International Port indicated he had driven for 5 days from Shanghai to Erenhot. After crossing the border at Zamiin-Uud, the driver will be bringing the cargo to Vladimir in Russia. The journey is expected to take about 20 days.

43 Source: Zamiin-Uud Free Zone (n.d.). *Introduction*. Available online at: https://zfz.gov.mn/en/.

Erenhot–Zamiin–Uud Economic Cooperation Zone[44]. The Chinese government has allocated a piece of land totaling 903 hectares on the border with Zamiin-Uud. The focus is on international trade, logistics, import and export processing, cross-border tourism, and related supporting services. The understanding is that both governments will develop cross-border facilities in the zone which allow customs inspections, quarantine and security checks. The intention is to have an integrated economic zone with borders removed. Mongolia is understood to have committed about the same amount of land for this project. This development could help to spur the growth of containerized trade and penetration of containerization in the region.

Ulaanbaatar

228. There are 14 container handling stations in Ulaanbaatar, built at different locations. In total, the combined loading capacity is 200 TEUs per day, and the unloading capacity is also 200 TEUs per day. Total storage capacity is 4,233 TEUs. There are 17 cranes. UBTZ owns 2 of the terminals and the remaining 12 are fully privately owned.

229. The number of stations located in different locations suboptimize the logistics process. This is because each station ruins its resources and assets such as the equipment and storage space. These are sometimes idle, reducing the utilization. The cranes used to position the containers are old and slow, many needs to be replaced. Moreover, a separate rail track runs into each station from the main network, dedicated only for the station. This creates redundancy of resources. If the stations are clustered into one or two transport and logistics park, this can create economies of scale and scope, allow crops-sharing of resources and assets, and raise the utilization and productivity levels. Some of the stations are located at highly congested sections inside the Ulaanbaatar city. The space can be released for higher-valued added activities. While the policymakers are working on a plan to relocate the container handling stations to an area east of Ulaanbaatar city, the exact details are not available. Thus, the private operators are reluctant to invest in modernizing the stations and cranes because these are fixed assets.

Table 34: List of Container Handling Stations in Ulaanbaatar

No	Operators	Equipment	Storage Capacity, FEUs	Customs Office
1	Mongo Trans LLC	32 tons x 1	250	Yes
2	Interdecision LLC	50 tons x 1	350	Yes
3	Ulaanbaatar Impex LLC	28 tons x 1	77	Yes
4	Tolgoi MCh LLC (owned by UBTZ)	32 tons x 1 2 tons x 1	56	Yes
5	Undarga International LLC	32 tons x 1	250	No
6	ABTEMA (owned by UBTZ)	50 tons x 1 32 tons x1	400	Yes
7	Material Impex LLC	50 tons x 1 32 tons x1	500	Yes
8	T I Logistics LLC	50 tons x 1 50 tons x1	400	Yes
9	Progress Trans LLC	30 tons x 1	500	Yes
10	Tuushin LLC	32 tons x 1	200	Yes
11	Mongol Express LLC	50 tons x 1	250	Yes
12	Erin Trans LLC	40 tons x 1	250	Yes
13	Amgalan Logistics LLC	40 tons x 1	500	Yes
14	Amgalan MCH	–	250	No

Source: Compiled from the field visit.

44 Source: State Council of the People's Republic of China (2024). "State Council approves China-Mongolia economic cooperation zone". *News*. Available online at: https://english.www.gov.cn/policies/latestreleases/202403/22/content_WS65fd852ac6d0868f4e8e5595.html.

5.3 Time and Cost Performance

230. There are 7 subgroups, defined by the direction of movement, the use of container and the mode of transport.

- Subgroups 1 to 2 are rail shipments between Tianjin and Ulaanbaatar, crossing the Erenhot and Zamiin-Uud BCPs, further split int 20-foot and 40-foot containers.
- Subgroups 3 and 4 are movements in the reverse direction, specifically from Ulaanbaatar to Tianjin.
- Subgroups 6 and 7 are similar to Subgroups 1 and 2 but they are road shipments, where the containers are retrieved from Tianjin and put on trucks operated by the Chinese companies. The shipments then go to Erenhot and unloaded to temporary storage facilities, waiting for the Mongolian drivers to come and collect them. The trucks then return to Zamiin-Uud, complete the border formalities and then return to Ulaanbaatar. Such road shipments were not very common in the past, particularly during COVID where borders are open to rail traffic only. However, this arises now due to the long waiting time for such containers to be transported to Ulaanbaatar by rail.
- Subgroup 7 is the movement of transit goods from the Russian Federation to the PRC, using conventional wagon on rail transport.

Table 35: General Time and Cost Indicators of the PRC–Mongolia Corridor

Sub Group	Route	O-D	Sample Size	Container	Mode	Distance km	Payload Tons	Total Time Days	Total Cost USD
1	PRC–Mongolia	Tianjin–Ulaanbaatar	35	20-foot	Rail	1,694.00	16.66	129.41	2,568
2	PRC–Mongolia	Tianjin–Ulaanbaatar	24	40-foot	Rail	1,694.00	15.30	140.80	3,151
3	Mongolia–PRC	Ulaanbaatar–Tianjin	28	20-foot	Rail	1,694.00	15.57	17.74	3,093
4	Mongolia–PRC	Ulaanbaatar–Tianjin	10	40-foot	Rail	1,694.00	13.72	15.32	4,115
5	PRC–Mongolia	Tianjin–Ulaanbaatar	3	20-foot	Road	1,567.00	16.33	5.42	3,916
6	PRC–Mongolia	Tianjin–Ulaanbaatar	5	40-foot	Road	1,567.00	10.60	5.18	3,933
7	Russia–PRC	Naushki–Erenhot	40	No	Rail	1,225.00	59.00	5.47	1,383

Source: ADB, CPMM.

231. Based on the descriptive statistics, the following observations are made.

- Containers appeared to suffer from a long delivery time, taking more than 4 months to complete the trip from Tianjin to Ulaanbaatar. This was due to the long dwell time in Tianjin seaport. This is considered the most significant problem. The standard lead time to move from Tianjin to Ulaanbaatar ranged between 10 days to 14 days in the past. (Subgroup 1 and 2)
- Container movements from Ulaanbaatar to Tianjin were much faster, taking 15 to 17 days only. (Subgroup 3 and 4)
- Road transport for Tianjin to Ulaanbaatar showed that the average time was only five days, but this came at a higher cost. Transporting a 20 ft container by road was 52% more expensive than rail, and a 40 ft container cost 25% more.
- Conventional rail shipment from Naushki to Erenhot averaged 59 tons and took 5.4 days to travel the 1,225 km of journey. It was cost effective and the shipment cost $1,383.

232. Further time analysis is conducted to examine the percentage of time spent travelling against stoppage time which is considered non-value-added time. Based on the statistics derived, the following observations are made.

- Shipments that crossed the Caspian Sea spent a higher percentage of the time waiting or being stopped, ranging from 68% to 80% of the total time. This occurred at the Port of Kuryk or Baku, when the drivers had to wait for vessels. This is true in spite of using containers or not. (Subgroups 1 to 4)

- In contrast, shipments that moved overland spent more time moving (67% to 71%) and less on waiting or border-crossing (28% to 32%).

- The speed indicators revealed an interesting insight. The SWOD of shipments crossing the Caspian Sea appeared to be significantly higher (above 40 km/h) compared to those overland shipments (21 to 29 km/h). This hinted that the road section for the latter was not as conducive for road transport. This refers to the section of the road from the northwestern region of Kazakhstan (e.g. Aktobe and Mangystau regions), the section in the Russian Federation, and the western flank of Georgia that connects to Sarpi BCP. Despite the lower SWOD, the shorter time spent waiting and stoppages allowed the overland shipments to complete delivery faster, as evident from the higher SWD. (Subgroups 1 to 4 vs Subgroups 5 and 6)

- The Xi'an to Hamburg train and road shipments displayed a very high speed (close to 90 km/h) and relatively high SWD due to the short time spent at stoppages. (Subgroups 7 and 8)

Table 36: Specific Time Indicators of the PRC–Mongolia Corridor

Sub Group	Route	O-D	Total Days	Travel, days	Travel %	Stop, days	Stop %	SWOD	SWD
1	PRC–Mongolia	Tianjin–Ulaanbaatar	129.41	46.60	36.01%	82.81	63.99%	1.56	0.57
2	PRC–Mongolia	Tianjin–Ulaanbaatar	140.80	49.84	35.40%	90.95	64.60%	1.44	0.52
3	Mongolia–PRC	Ulaanbaatar–Tianjin	17.74	10.88	61.35%	6.86	38.65%	6.67	4.15
4	Mongolia–PRC	Ulaanbaatar–Tianjin	15.32	10.86	70.87%	4.46	29.13%	6.51	4.66
5	PRC–Mongolia	Tianjin–Ulaanbaatar	5.42	2.18	40.26%	3.24	59.74%	29.95	12.06
6	PRC–Mongolia	Tianjin–Ulaanbaatar	5.18	2.06	39.83%	3.12	60.17%	31.71	12.65
7	Russia–PRC	Naushki–Erenhot	5.47	4.19	76.50%	1.29	23.50%	12.21	9.42

Source: ADB, CPMM.

233. Further cost analysis is conducted to examine the percentage of time spent travelling against stoppage time which is considered as non-value-added time. Based on the statistics derived, the following observations are made.

- Overland shipments were more cost-effective than those that crossed the Caspian Sea. This is true in spite of container was used or not. (Subgroups 1 to 4 vs Subgroups 5 and 6)

- Container shipments performed better in the route from Poti to Central Asian destinations in all the unit cost metrics (by km, ton or ton-km). (Subgroup 1 vs 3). Similarly, container shipments performed better for the reverse direction, although the sample size was tiny and needed further studies. (Subgroup 2 vs 4).

- The appeal of the container block train was the low unit cost. The cost per ton-km was $0.08, which was superior to the road options. The disadvantage was the comparatively higher unit cost per ton, as a 40-foot container would carry less payload compared to the load compartment of a heavy transport

vehicle, but this is negated but the much longer distance conducted by the container block train. For deliveries between the PRC and Europe, the use of container block train trumps over other means of transport in terms of cost. At this point, ocean maritime freight rates are most competitive, but if the container block train continues to lower cost and increase its shipment time and reliability, the cost premium would be worthy.

Table 37: Specific Cost Indicators of the PRC–Mongolia Corridor

Sub Group	Route	O-D	Total USD	Rate, USD	Rate %	Stop, USD	Stop %	$/km	$/ton	$/ton-km
1	PRC–Mongolia	Tianjin–Ulaanbaatar	2,568	2,536.00	98.76%	31.94	1.24%	1.52	154.16	0.09
2	PRC–Mongolia	Tianjin–Ulaanbaatar	3,151	3,092.50	98.16%	58.04	1.84%	1.86	189.14	0.12
3	Mongolia–PRC	Tianjin–Ulaanbaatar	3,093	2,762.61	89.33%	329.96	10.67%	1.83	198.61	0.12
4	Mongolia–PRC	Tianjin–Ulaanbaatar	4,115	3,693.00	89.73%	422.50	10.27%	2.43	299.96	0.18
5	PRC–Mongolia	Tianjin–Ulaanbaatar	3,916	3,453.33	88.18%	463.00	11.82%	2.50	239.78	0.15
6	PRC–Mongolia	Tianjin–Ulaanbaatar	3,933	3,466.00	88.14%	466.60	11.86%	2.51	371.00	0.24
7	Russia–PRC	Naushki–Erenhot	1,383	1,227.75	88.78%	155.09	11.22%	1.13	23.44	0.02

Source: ADB, CPMM.

5.4 Commodities

234. Export and import commodities are highly dissimilar along the Tianjin–Mongolia route. Mongolia imports a substantial volume in container forms, notably new and old automobiles from PRC, Japan and South Korea. Other imports include a wide array of consumer goods such as electronic appliances, agricultural produce, processed foods, apparels, shoes and furniture. Industrial products include machineries and equipment, telecommunication devices and spare parts. Export merchandize is narrow in range due to Mongolia's limited industrial base, so these items are typically denser and have lower unit value. They include copper and iron ores, coal and cashmere.

Table 38: List of Issues on Containerization in the CAREC Corridor 4

No	Issues	Countries	Remarks
1	Yard cranes at Zamiin-Uud Yard No. 4 not operational.	Mongolia	The yard crane system was a heavy capital investment. It is supposed to make the change of gauge operation more efficient. To leave it unused is to compromise on the operational efficiency, leading to limited throughput at Zamiin-Uud.
2	Cumbersome updates of tracking containers and manual data entries.	Mongolia	Currently, the tracking and monitoring of container movements in Zamiin-Uud is not productive, requiring three persons to perform manual recording and data entry.
3	Dispersed locations of 14 container handling stations in Ulaanbaatar resulting in low productivity and no economies of scale.	Mongolia	The stations occupy valuable urban area, have little physical space to expand and many are using outdated equipment with low productivity. Operators are also holding back investment and expansion plans due to the lack of clarity from the policymakers.
4	Incomplete Data Exchange between Mongolian and Chinese authorities on import and export declarations.	Mongolia and the PRC	MCGA and PRC Customs have a mechanism to exchange shipping data electronically. However, since March 2024, the Chinese customs stopped sending four data including (1) consignor names, (2) consignee names, (3) transport/ carrier company and (4) value of the cargo/container. The data are recorded on the physical copy of declaration.

continued on next page

Table 38 *continued*

No	Issues	Countries	Remarks
5	Unclear future for Zamiin-Uud Yard No. 4.	Mongolia	Mongolian Railway plans to take the ownership of the land where Yard No. 4 is situated, which is now run by UBTZ, when the lease is over. However, UBTZ does not appear to be aware of this plan and assumes the lease will be extended.
6	Under-development of Zamiin-Uud Special Economic Zone (SEZ).	Mongolia and PRC	The 900 hectares of the planned demarcated for the SEZ is relatively under-developed, with only small retail shops in operation there. The proper infrastructure is yet to be built.
7	Lack of containerization strategy to guide national priorities and investment.	Mongolia	Although Mongolia has a relatively high containerization level, there is no national strategy for container freight transportation (yet).
8	Shortage of locomotives and rail platforms in the section between Zamiin-Uud and Ulaanbaatar.	Mongolia	Shipments in Zamiin-Uud that have completed the customs formalities are at times waiting at the BCP due to the lack of locomotives and the rail platform to move the containers. Sometimes, the assets have to borrowed from the Russian Federation to relieve the shortage in Mongolia.
9	Absence of dry ports that are internationally recognized.	Mongolia	International shipping lines hesitate to dispatch containers to Mongolia, as the BCPs and inland customs depots are not internationally recognized. They do not have an international location code for use.
10	High demurrage fees imposed on containers due to duration in Tianjin Port.	PRC	Mongolian shippers and consignees bear the penalties of containers that stay beyond the free period in Tianjin, and as a consequence the inflate cost are directly or indirectly passed to the end consumers in Mongolia.
11	Near monopoly of one shipping line in PRC that dominates container movements between Tianjin and Ulaanbaatar.	PRC	COSCO, a Chinese shipping company, exercises monopolistic power over the container movements. Mongolian shippers and freight forwarders have no alternative.

5.5 Key Issues

Table 39: List of Recommendations for CAREC Corridor 4

No	Action	Benefits	Importance	Urgency	Time-frame
Infrastructure and Equipment					
1	Commission a review of the cranes in Zamiin-Uud and identify the future needs so as to design a procurement plan for acquiring new materials handling equipment.	Reduce time	*****	*****	Immediate
2	Convene railway line construction from Zamiin-Uud to Ulaanbaatar	Increase productivity Reduce cost and time	****	****	Medium term
Policies and Regulations					
3	Adopt the containerization strategy	Improve visibility	*****	*****	Long term
4	Develop the national plan and ratify the laws on dry ports in Mongolia.	Reduce cost Improve connectivity Improve customer service	*****	*****	Short term
5	Promote other seaports besides Tianjin to diversify sole reliance on the port	Increase connectivity	****	***	Medium term
Digitalization					
6	Modernize the customs information used by Mongolian customs.	Improve productivity	*****	*****	Short term
7	Implement container planning and information systems to automate the operations.	Improve productivity	*****	*****	Short term

5.6 Recommendations

235. The current Zamiin-Uud transshipment facility was based on the initial project (the establishment of Zamiin-Uud regional logistics center) financed by the Asian Development Bank, completed in 2019. This project initial feasibility and purpose was establishing as truck dry port, however, since its handed over in 2019, it transferred and leased to UBTZ. since 2019, UBTZ repaired it with its own financing and using it as a railway container terminal. Hence, the layout of Zamiin-Uud transshipment facility, including its regional logistics center needs to be re-considered. There are some other ongoing and new proposals requested to ADB at this terminal, the Government of Mongolia needs to analyze all these projects and proposals and need to make sure these are not overlapped with each other in order to prevent double financing on same issue and leaving out most important areas that need to be financed. The equipment could be old and outdated and need to be replaced.

236. The bottleneck in Mongolia is low capacity at Ulaanbaatar city. If Chinese railway offers more wagon plan, then Zamiin-Uud must dispatch these wagons to Ulaanbaatar city. According to Ministry of Roads and Transport and the freight forwarding company, Ulaanbaatar city cannot receive more than one block of train. UBTZ lacks wagon and platform wagon, and because of this, UBTZ uses transit wagons. Even though there is loading and unloading capacity at Zamiin-Uud port, further at Ulaanbaatar city, there is infrastructure unreadiness (for instance, gantry cranes are expiring, many technical breaks). In Ulaanbaatar city, cargoes are distributed to consignees via 14 terminals. All equipment of these 14 terminals are old and expiring and needs some upgrade and modernization. With the current capacity, Ulaanbaatar city terminals can only receive two wagons (for instance, consignors have to pay all taxes fees, if the cargoes come at unexpected times, there are no warehouses etc.). Current government is planning to move all UB terminals to the Hugshigtiin Hundii Valley. Hence, all these 11 terminals are waiting Government' resolution and ADB's implementation on the Bogdhaan railway project. Hence, 14 terminals' owners or private entities do not want to risk an investment (spent on new equipment and technologies) on the current place in Ulaanbaatar, they are waiting until to be moved to Hushigtiin Hundii Valley (area next to new international airport). Mongolian government should initiate a proposal to construct the second line of railway truck to be included in the Bogd Khaan Railway Project.

237. Mongolia approved "New Revival Policy", which is a mid-term policy of the Mongolian government to recover from the economic downturn caused from the post-Covid 19 pandemic effect. In 2014, Mongolia acceded to the "Intergovernmental agreement on dry port", 2013. By acceding into this agreement, Mongolia declared internationally that it will establish internationally acclaimed dry ports in the locations: (i) Zamiin-Uud, (ii) Sainshand, (iii) Ulaanbaatar, (iv) Altanbulag, (v) Choibalsan. In addition to above, the Government of Mongolia should add additional locations such as Bichigt port at Sukhbaatar province, and Bulgan port at Khovd province, by requesting to submit the amendment proposal to UNESCAP to add these two locations on the appendix of the Intergovernmental agreement on dry port, 2013.

238. Majority of imports bound to Mongolia transport via Tianjin port of PRC. According to the interview with the representatives of Mongolian freight forwarders, the reason they use mostly Tianjin port is that other seaports rarely give wagon plan[45]. Mongolia acceded to the International Convention on the Law of the Sea (1983) in 1993. By acceding into this convention, Mongolia secured the right to the access to the sea, by transiting via its neighbors: PRC and Russia. To ensure this provision of the multilateral treaty, Mongolia concluded bilateral agreement on "Transit and Access to and from Sea via Chinese Territory" on 1991. In 2014, this bilateral agreement amended by allowing Mongolia to use following seaports of the PRC, such as Tianjin, Dandong, Dalian and Jinzhou and Yinkou. The provision of this bilateral treaty does not limit above seaports explicitly, but Mongolia can access other seaports in PRC which are open for international market. Hence, Mongolia should review all secondary bilateral treaties (railways, borders, and roads). This requires a thorough study on the feasibility of each alternative seaports to facilitate Mongolian sea access via Chinese territory. There was second railway line finished in March 2023, on the route "Zuunbayan-

45 Meeting with "Monlogistics Holding" LLC, one of the prominent Mongolia freight forwarders' companies.

Hangi" that directs to the Hangi–Mandal port, this port located in the point right between import point (Zamiin-Uud port) and export point (Gashuunsuhait port) of Mongolia. Mongolia can ask ADB to aid in seeking Hangi port's access to sea via another Chinese southern seaport open to international market, that might become second potential Tianjin.

239. The Mongolian Customs General Administration (MCGA) uses Customs Automated Information System (to replace the former system called GAMMAS) to regulate container shipments, since 2010. This system monitors and controls the commodities and vehicles crossing the customs border, including declaration to customs, clearance, physical check and hand over the cargo to the consignee, and to permit the cargo to exit the customs border. All customs controlling activities are regulated via this system. In accordance Article 3 (3.1.5) of Customs law of Mongolia, 'vehicle' means the any vehicle entering the customs border for no less than six months, including the "container" transporting the commodities. The Customs consider the containers as "commodities, except the containers of international shipping which enter Mongolian customs temporary. The customs border authorities register the temporary entrance containers shipment in the system, monitors it until it exits the Mongolian customs territory.

240. Finally, the information systems in Zamiin-Uud need to be upgraded. The transshipment yards can benefit from the use of a container planning information system to help them record the incoming containers, plan for the change of gauge operation, and monitor the location of the containers until they depart the BCP to Ulaanbaatar. This automation will relieve the current manual process and the use of Microsoft Excel to track the containers.

South Asia and Central Asia 6

6.1 Route and Key Nodes

241. In recent years, there has been growing interest in enhancing trade and transport connectivity between South Asia and Central Asia. Despite the substantial economic potential, regional trade between these two regions remains limited, primarily due to a combination of infrastructural, geopolitical, and logistical barriers. One of the most important corridors for facilitating trade between these regions is through Pakistan, which offers the shortest and most efficient access to seaports for landlocked Central Asian countries, compared to using Georgian ports in the Black Sea in the west, that would be more than 3,000 km to most Central Asian Republics. The Chinesea seaports to the east would even be further, because the distance between Lianyungang to Khorgos alone is more than 4,200 km.

242. Despite the proximity, the trade volume between South Asia and Central Asia remains dismal. In 2023, total trade between these regions is estimated to be less than 5% of the potential trade volume, illustrating the underutilization of the existing transport routes. Central Asia's exports to South Asia are mainly concentrated in raw materials, including oil, gas, cotton, and minerals, while South Asia exports textiles, agricultural products, and machinery.

243. Although the trade between South Asia and Central Asia show a complementary pattern, the barriers to trade are significant. The geopolitical landscape plays a crucial role in shaping transport connectivity between South Asia and Central Asia. The South Asia region, particularly Afghanistan, has long been a source of instability, which deters trade and hinders the development of overland transport routes. Conflict and instability in Afghanistan, in particular, have historically disrupted trade flows and deterred investors from developing critical infrastructure such as highways and rail links. Moreover, the lack of trust and cooperation between regional governments and the absence of coordinated security measures along transport corridors continue to be key deterrents. A lack of formal agreements and harmonized customs procedures between South Asian and Central Asian countries also exacerbates these issues. Despite the

Table 40: Distance of Selected Key Cities to Karachi and Poti

Key Cities	Seaports	Distance (km)
Almaty	Karachi	3,424 km
	Poti	4,705 km
Tashkent	Karachi	2,665 km
	Poti	3,222 km
Bishkek	Karachi	3,586 km
	Poti	5,342 km
Dushanbe	Karachi	2,162 km
	Poti	3,264 km
Ashgabat	Karachi	2,351 km
	Poti	1,793 km

Source: Consultants' estimates.

geographic advantages of Pakistan's seaports, inadequate infrastructure along key transport corridors remains a significant barrier to regional trade. Key routes connecting Central Asia to Pakistan's major ports of Karachi, Port Qasim, and Gwadar are underdeveloped, which increases transit time and costs. Pakistan's road and rail networks, although improving, still face serious challenges, including limited capacity, poor road conditions, and insufficient railway infrastructure. While the China-Pakistan Economic Corridor (CPEC) has made strides in upgrading infrastructure, much of the investment has been focused on connecting PRC with Pakistan. Both Pakistan and PRC, together with Kazakhstan and Kyrgyz Republic, are the signatories to the Quadrilateral Agreement on Transit Trade (QATT), but it has been non-functional. Pakistan drivers experimenting with transit across China to Kazakhstan faced impediments at the Chinese BCPs. As such, Pakistan transport operators such as the National Logistics Company direct truck shipments to Afghanistan to Central Asia.

244. The corridors that connect South Asia and Central Asia resembles CAREC Corridor 5 and 6. Road transport is the only option because the rail infrastructure is missing in this region. There is frequent and high volume of container movements from Karachi to Kabul or Kandahar. This is because Pakistan Customs mandated that such movements (also called the Afghan Transit Trade) must be transported in containers due to security reasons, and to reduce the chances of smuggling or pilferage in transit. Besides transit traffic, this corridor is also interesting for Pakistan to use for exports to Central Asia. The origins are the production centers in Islamabad, Rawalpindi, Faisalabad etc. in the northern parts of Pakistan. In 2023, Pakistan experimented in using containers to hold a variety of consumer and industrial merchandize to enter Afghanistan and access to different destinations in Central Asia. All these container shipments use the TIR system to simplify border-crossings.

Table 41: Key Nodes in South Asia–Central Asia Corridor

Nodes	Country	Nature	Significance
Karachi Port, Port Qasim, Gwadar Port	Pakistan	Seaports	Seaports connect to international maritime trade lanes. Shortest distance to Central Asia.
Sost–Khunjerab	Pakistan and PRC	Border-crossing point (Road only)	Key node for CPEC. However, it is not open to international transit.
Torkham	Pakistan and Afghanistan	Border-crossing point (Road only)	Torkham is the gateway for Afghanistan Pakistan transit trade and can be used for international transit. ADB finances the RIBS to increase capacity at Torkham on Pakistan side.
Shirkhan Bandar–Nizhni Panj	Afghanistan and Tajikistan	Border-crossing point (Road only)	Key node for transit to enter Tajikistan.
Hairatan–Termez	Afghanistan and Tajikistan	Border-crossing point (Road and Rail)	Key node for transit to enter Uzbekistan. At Termez, freight can continue on the road or rail.
Towraghondi–Serkhed Abad	Afghanistan and Turkmenistan	Border-crossing point (Road and Rail)	Key node for transit to enter Turkmenistan. At Serkhed Abad, freight can continue on road or rail.

Source: Consultants.

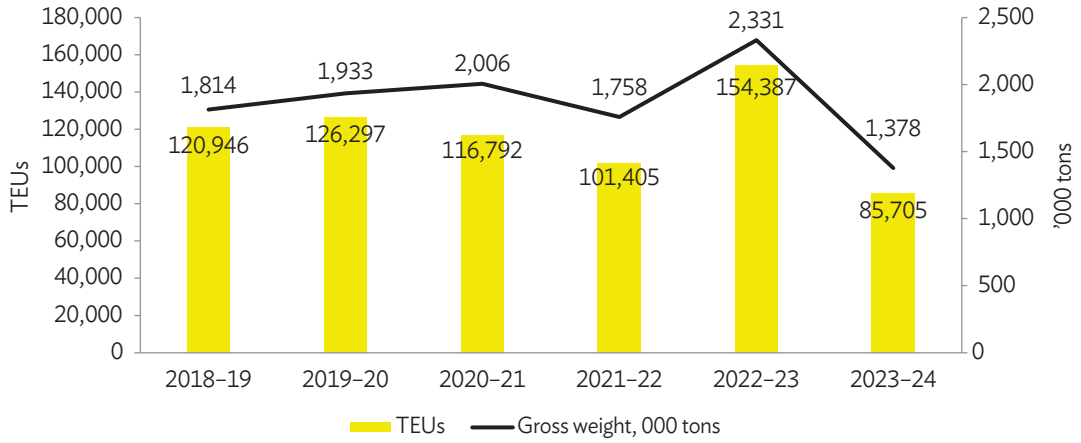
6.2 Container Flows and Throughput

245. The strategic location of Pakistan allows the country to serve as an important conduit for transit trade with Central Asia. The transit trade in 2023–24 involved 85,705 TEUs of containers totaling 1.4 million tons[46]. The average weight per TEU is 16.1 tons. The volume of containers handled by the transit trade had reached 126,297 TEUs in 2019–20 before declining to 101,405 TEUs in 2021–22. There was a strong increase of 52.2% reaching 154,387 TEUs in 2022–23. However, the number of containers for the transit trade fell back to below 100,000 TEUs in 2023–24.

46 Pakistan uses Islamic calendar and the year starts in July and runs to June next year. As such, the statistics are reported using the Islamic calendar.

246. The Pakistan Ministry of Commerce views containerization as an important driver of the transit trade. To date, the country has four bilateral transit trade agreements. These are with Afghanistan, Iran, Uzbekistan and Tajikistan[47]. A transit trade agreement was signed with Azerbaijan on 11 July 2024 and the target is for it to be operational by the end of the year. Pakistan is currently in discussions with Kazakhstan and Turkmenistan to reach bilateral transit trade agreements with these countries.

Figure 27: Container Volumes for the Pakistan Transit Trade



Source: Using information from Federal Board of Revenue (FBR).

247. Transit trade agreements are negotiated by the Ministry of Commerce while the implementation is by the Federal Board of Revenue (FBR). The FBR also serves as Pakistan Customs. Containers for the transit trade are sealed by the customs officers, and they will be transported by authorized bonded carriers such as the National Logistics Corporation (NLC).

Container Shipments by Road Transport

248. The regional connectivity for the ports of Karachi and Qasim is mainly by roads as cargo is typically moved inland using trucks. There are several road corridors that connect the seaports through Pakistan to various countries in Central Asia. Through this network of roads and border crossing points, containers can be transported between Pakistan and all five Central Asia countries. Hence, the ports of Karachi and Qasim can become important maritime gateways especially for the landlocked countries of Uzbekistan, Kyrgyz Republic and Tajikistan. Containers can also be transported between Azerbaijan, Türkiye and the Russian Federation, with Pakistan using the land route through Iran. An alternative route is to use the Trans-Caspian Sea crossing which goes through Turkmenbashi in Turkmenistan. Apart from these road corridors, there is also a land route for containers to be transported between Pakistan and PRC. Using the Khunjerab Pass Border Crossing Point, containers can be sent to Kashgar and other cities in PRC.

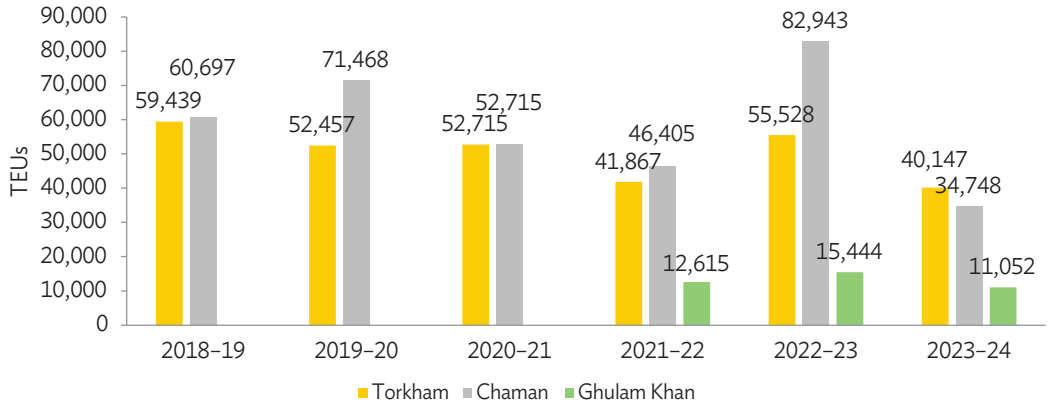
249. The main border crossing points between Pakistan and Afghanistan are at Torkham and Chaman. There is a third border crossing point at Ghulam Khan. However, the number of containers that moved through Ghulam Khan remain relatively small. Within the six-year period from 2018–19 to 2023–24, the Chaman Border Crossing Point handled 348,976 TEUs of containers. The same period saw the Torkham Border Crossing Point processing 316,985 TEUs. By comparison, containers passing through Ghulam Khan numbered only 39,435 TEUs. The figure also showed the Chaman Border Crossing Point

47 Source: Interview held with the Pakistan Ministry of Commerce on 30 September 2024. See also https://www.commerce.gov.pk/about-us/trade-agreements/.

to handle the largest volume of container traffic for most of the years. The gap between Chaman and the other crossing points was particularly substantial for 2019–20 and 2022–23. Nonetheless, the latest figure for 2023–24 showed more containers to move through Torkham compared to other two border crossing points.

250. The main route used by container trucks to reach Torkham is the N55 National Highway, also known as the Indus Highway. The national highway runs on the western bank of the Indus River, connecting Hyderabad in the south of Pakistan to Peshawar in the north of the country. The shortest distance to reach Afghanistan from Karachi is to go through Chaman. The border crossing point was closed for 10 months with the Pakistan government citing security concerns. It was recently reopened after protests and eight rounds of negotiations with Chaman residents[48]. Trucks can also use the N5 National Highway. However, the N55 National Highway offers a saving in travel time by some 300 kilometers. Furthermore, there are sections of the N5 National Highway where the condition of the road is poor[49].

Figure 28: Containers Handled at BCPs Points Between Pakistan and Afghanistan



Source: Federal Board of Revenue.

251. While the Pakistan Ministry of Planning, Development and Special Initiatives viewed the road network in the country to be capable of handling the transit trade and freight transportation within Pakistan, there are ongoing rehabilitation, and construction works with regards to the highway network. The N50 and N85 national highways will also require rehabilitation. For the N50 National Highway, the affected stretch of road is from Dera Ismail Khan to Zhob, while the section from Zhob to Quetta is under construction. To facilitate road transport between Sukkur and Hyderabad, the government will be constructing the M6 Motorway to run on the eastern bank of the Indus River. The M6 Motorway will be a 306-kilometer, 6-lane highway with 89 bridges and 15 major interchanges. A concern with the M6 Motorway is the rising cost of the project which has risen from US$617 million in 2018 to US$1.1 billion in 2022, and then to US$1.7 billion in 2024[50].

252. Since containers are mostly moved by trucks from the ports, the trucking community has become an important enabler of containerized transit trade. The community faces two key challenges in the form of rising costs of trucking, which has doubled from 2020, and lack of financing to renew the vehicles. Another challenge facing regulators is the issue of overloading. About 50% of the trucks are found to be overloaded, with some vehicles carrying up to 90 tons of cargo. The limit on loads is 60 tons. As such, emphasis is put on inspecting trucks around the port area. While keeping within the load limits, trucks are moving to use the motorways and

48 Source: Shah, S.A. (2024). "Chaman border opens after 10 months". *The Express Tribune*, July 22. Available online at: https://tribune.com.pk/story/2481737/chaman-border-opens-after-10-months.
49 Source: Interview held with Pakistan Ministry of Planning, Development and Special Initiatives on 1 October 2024.
50 Source: Rogers, D. (2024). "Cost of Pakistan's M6 motorway nearly triples to $1.7bn". *Global Construction Review*, August 21. Available online at: https://www.globalconstructionreview.com/cost-of-pakistans-m6-motorway-nearly-triples-to-1-7bn/.

pay for the required tolls. Another key challenge for the transit trade is the imbalance in trade flows. About 90% of the backhaul consists of empty containers. Hence, for trucks that are coming back from Central Asia (e.g. Kazakhstan), they will try to get backhaul cargo from the same or another country (e.g. Uzbekistan).

253. About 5,500 transit trade containers are handled by the Port of Karachi each month with two-thirds being FEU containers. Approximately, 90% of the containers go to Afghanistan and the rest to Central Asia. By comparison, Port Qasim handles less than 100 transit trade containers a month. There is not much demand for breakbulk going to Afghanistan and Central Asia. As such, the trade is performed using containers. The weight for each container is about 10 tons per TEU or 18–19 tons per FEU. The Port of Karachi is viewed to be capable of handling five times more transit trade containers. A key step is to create greater awareness of this business opportunity among traders and logistics companies.

254. The Afghanistan transit trade saw a decline of 49.2% for containers imported into Afghanistan through Pakistan from 102,886 containers handled in 2022–23 to only 52,294 containers in 2023–24. The value of containers handled for the trade also fell drastically from US$6.7 billion in 2022–23 to only US$2.4 billion in 2023–24. The decline continued into 2024–25 with combined container throughput for July and August falling by another 53.6% and corresponding trade value by 83.3%. Cargo which is exported from Afghanistan through Pakistan saw an even sharper decline of 96.0% in trade value from US$96.7 million to just US$3.9 million in the same period[51]. The sharp reduction can be attributed to imposition of restrictions on exports by Pakistan to Afghanistan following concerns over smuggling.

255. Containers can wait for 8 to 9 days at the Port of Karachi as Afghanistan Pakistan Transit Trade Agreement (APTTA) cargo require 100% checks. Containers for the Uzbekistan Pakistan Transit Trade Agreement (UPTTA) do not go through such checks. The containers are not open, which makes the transit time faster. The Uzbekistan transit trade saw 9,028 containers handled for the forward trade (i.e., exports from Pakistan through Afghanistan to Uzbekistan) with a value of US$259.8 million in 2023–24[52]. There is very little reverse trade, forming only 741 containers with a trade value of US$0.6 million. The numbers for the Uzbekistan transit trade appear to be increasing from about 7,000 TEUs handled in 2022–23 for the forward trade to 9,285 TEUs in 2023–24. The Tajikistan transit trade also goes through Afghanistan from Pakistan. The performance of the trade for 2023–24 was 2,455 TEUs, with a trade value of US$9.9 million.

256. Containers scanned in a month for the transit trade are about 1,500 containers distributed across the three container terminals in the Port of Karachi[53]. The bulk of Uzbekistan-bound containers are routed through South Asia Port Terminal (SAPT). There is no lack of scanners at the ports apparently. Furthermore, 65% of the containers can be processed by customs within 24 hours. Specifically, a declaration made on day 0 will likely see the container cleared by day 1. The longest time may be up to 36 hours for such containers. However, traders can take 3–4 days to arrange for a bank guarantee or insurance guarantee and this can cause delay in the picking up of the container. Note that only Afghan transit trade requires a bank guarantee. For transit trade to Central Asia, only an insurance guarantee is needed. Insurance guarantees are cheaper, being below 1% of the commercial goods value, and can be obtained by accredited insurance companies with good ratings. Nonetheless, insurance companies are reluctant to provide insurance coverage for containers moving through Afghanistan. As a result, the Pakistan government steps in to provide for such cargo.

257. Detention charges for containers is another major concern for the Afghanistan container transit trade. A container that goes into Afghanistan can take a month to return. Shipping lines are likely to impose detention charges. A solution is to perform transloading of containers at one of the off-dock terminals in Karachi, which is currently done by Uzbekistan traders. Transloading can also be done in Afghanistan. As a practice, containers for the Pakistan-Afghanistan-Uzbekistan trade are transloaded at least twice, from one truck to another[54].

51 Source: Yousafzai, F. (2024). "Afghan transit trade falls 84pc amid anti-smuggling efforts, import restrictions", *The Nation*, September 23. Available online at: https://www.nation.com.pk/23-Sep-2024/afghan-transit-trade-falls-84pc-amid-anti-smuggling-efforts-import-restrictions.

52 Source: Interview held with Pakistan Federal Board of Revenue on 1 October 2024.

53 Source: Interview held with Pakistan Directorate General Transit Trade (Karachi) on 3 October 2024.

54 Source: Interview held with Pakistan Directorate General Transit Trade (Karachi) on 3 October 2024.

This is because of the local trucking regulation that prohibits trucks from one country to enter and move freely in the other, despite the presence of a transit trade agreement. As such, Pakistan registered trucks can only go to Jalalabad, an inland checkpoint located about 70 kilometers from Torkham for transloading operations. For Afghanistan trucks, they cannot enter Uzbekistan. Uzbekistan will send their driver and a locally registered truck to collect the goods.

258. Processing capacity for trucks at Torkham presents another challenge. While the Pakistan side can process 5,000 trucks a day in both directions, it is only doing 300–400 trucks a day[55]. This is due to capacity limitations on the Afghanistan side which is estimated to be limited to only 500 trucks a day. For example, there are five vehicle lanes in Pakistan while there is only one vehicle lane in Afghanistan. Furthermore, the border is not operational 24/7[56]. The border opens at around 8:00–8:30 a.m. and customs officers in Afghanistan will come at around 9 a.m. The border will be closed at 8:30 p.m. The Pakistan border opens at 7–8 a.m. At the Chaman Border Crossing Point, traffic is about 100–150 trucks a day where waiting time for trucks can range from 5–7 days.

Table 42: TIR Carnets Issued Since Its Inception for Pakistan in 2017

Year	Import	Export	Transit	Total
2018	6	2	0	8
2019	7	1	0	8
2020	6	9	0	15
2021	14	28	0	42
2022	18	32	0	50
2023	76	119	38	233
2024	119	162	103	384
Total	246	353	141	**740**

Source: Pakistan Federal Board of Revenue.

259. With regards to TIR operations, the Pakistan Federal Board of Revenue estimated some 110,000 TEUs of containers were transported under TIR in 2022, and 75,000 TEUs in 2023. It is worth noting that all TIR operations are conducted using containers mandated by FBR to ensure maximum security for transit shipments. The biggest increase in issuance of TIR carnets was seen in 2023 and 2024 with 233 and 384 carnets issued respectively for those years. For the ports in Karachi City, DP World at Port Qasim is the only entity that is handling TIR containers. Every container needs to be weighed physically. In addition, 20% of the transit containers are scanned. Previously, only 5% of the transit containers were scanned. On average, TIR containers require only 3 hours to clear customs.

Table 43: Transit Time for Container Shipments from Karachi to Central Asia

Destination	**Duration** (days)	**Distance** (kilometers)
Istanbul (Türkiye)	20	5,295
Tashkent (Uzbekistan)	12	2,500
Almaty (Kazakhstan)	18	3,785
Bishkek (Kyrgyz Republic)	15	3,285
Kashgar (China)	8	2,610
Dushanbe (Tajikistan)	12	2,417
Baku (Azerbaijan) (planned, via Turkmenbashi)	12	2,547

Source: Consultants, using information from Pakistan National Logistics Corporation.

55 FBR provided this estimation.

56 Afghanistan and Pakistan have first agreed to operate 24/7 at Torkham in September 2019. However, FBR updated that operationally, the BCP is not functioning 24/7 due to the reasons described.

Box 4: National Logistics Corporation (NLC) and Its Role in Container Shipments to Central Asia

A major player in TIR operations for Pakistan is NLC. The company has 250 TIR vehicles and plans to expand the fleet to 500 vehicles[a]. NLC operates two off-dock terminals near the Port of Karachi. The first is located less than 3 kilometers from the port at Haji Camp Road along the Mai Kolachi Bypass. The second facility, which is called NLC Freight Terminal Landhi, is located along the N5 National Highway between Port Qasim and Karachi Port. The company is also developing a new logistics park about 20–25 kilometers from Karachi Port. Called KNB Logistics Park, the site which occupies about 13.4 acres of land is situated along the M10 Motorway (i.e., Northern Bypass) and close to the M9 Motorway.

For the company, such shipments have grown from 35 trucks in 2021 to 300 in 2022. NLC is looking to perform 3,000 TIR shipments in 2024[a]. Nonetheless, the lack of backhaul cargo from Central Asia remains a major concern. With reference to the table, the longest transit time from Karachi City is 20 days to reach Istanbul in Türkiye. The other major cities in Central Asia, such as Tashkent, Bishkek and Dushanbe, can be reached from Karachi City in 12–15 days. Reaching Almaty in Kazakhstan takes a little longer of 18 days. NLC is planning to operationalize a TIR route to Baku in Azerbaijan using the Trans-Caspian Sea route via the Port of Turkmenbashi in Turkmenistan. The journey is estimated to take 12 days to complete.

[a] Source: Interview held with Pakistan National Logistics Corporation on 1 October 2024.

260. For Pakistan to PRC, it takes 8 days to reach Kashgar in PRC from Karachi. The route uses the N35 National Highway (also known as Karakoram Highway) to reach the Khunjerab Pass Border Crossing Point. However, there is little traffic using this route. The border is closed during winter for the months of December to March. For the remaining period, each month would see about 150 NLC vehicles go through the border while PRC sends about 20–25 vehicles[57]. Due to safety, NLC does not allow their vehicles to move after 11pm local time. The company uses a tracking system to monitor their trucks. Containers for the TIR trade can be offloaded from Pakistan trucks at Sost and reloaded onto trucks from PRC as drivers from PRC are allowed to enter Pakistan to pick up the cargo[58]. Driving from Sost to Kashgar takes about one day. Immigration procedures are conducted at Tashkurgan in the PRC and the cargo will be examined at this location. For TIR containers, they can go directly from Sost to Kashgar. NLC is given 10,000 sq ft of land in the free zone to operate in Kashgar. The company also has a terminal at the Afghanistan-Turkmenistan and the Uzbekistan-Afghanistan border. The company is deciding between Almaty and Bishkek to locate their next terminal. Driving from Kashgar to Shanghai takes about 5 days. Hence, many major cities in PRC can be accessible via this route.

261. The Torkham Border Crossing Point is an important route that connects Pakistan to Central Asia. A truck typically takes 2–3 days to reach Torkham from Karachi City. It takes 1 day to clear the Pakistan border, and 5–6 hours to clear the Afghanistan border. It will take another 3 days to cross Afghanistan. If the Salang Tunnel is closed, the journey will incur an additional day. The tunnel is located on a vital land route that connects Kabul to Central Asia and can be closed due to the risk of snow avalanches. After reaching the Termez Border Crossing Point in Uzbekistan, clearance by Uzbek authorities can take 2–3 days. Uzbek Customs requires cargo to be unloaded and inspected. During this time, truckers will stay in hotels at the border. The inspection will be carried out in the presence of the drivers. Uzbekistan charges US$100 for each container inspection. After getting the clearance, it will take 2 days to reach the Kazakhstan border at Saryagash. Clearance at this border crossing point will take 1 day.

262. An alternative route to reach Central Asia without going through Afghanistan is to use the Khunjerab Pass. The route will enter through Hongqilafushankou Border Crossing Point and pass Tashkurgan in China before entering Tajikistan at the Kulma Pass Border Crossing Point. The road will lead to Dushanbe. However, the road condition at Kulma Pass is unable to handle a FEU container. A potential solution is

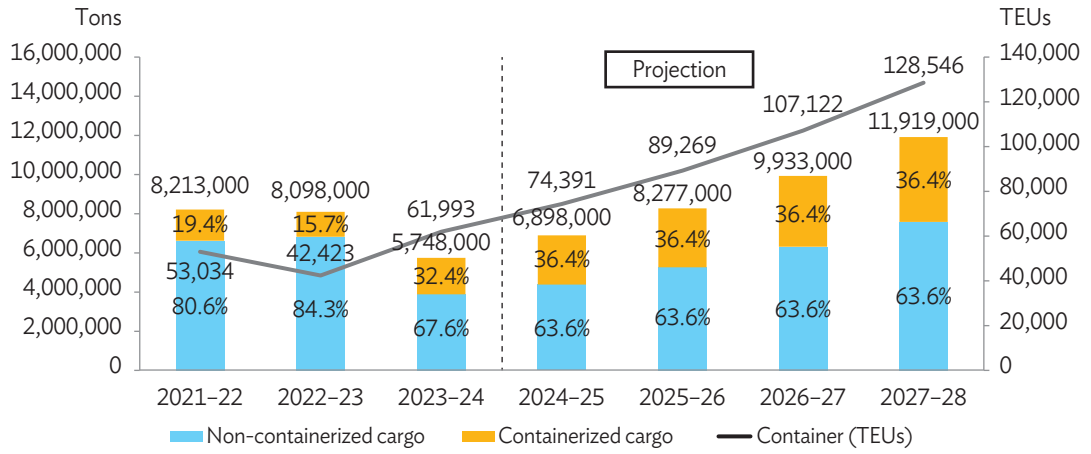
57 Source: Interview held with Pakistan National Logistics Corporation on 1 October 2024.
58 Source: Interview held with Pakistan Ministry of Commerce on 1 October 2024.

to transport using a truck that can carry two TEU containers on separate trailers as the vehicle will be more flexible when maneuvering tight bends in the mountains. Cross-docking for the containers can be performed at Tashkurgan.

Container Shipments by Rail Transport

263. Turning to the subject of railway connectivity for the Port of Karachi and Port Qasim, less than 10% of containers processed by the ports are moved by rail. Specifically for the Port of Karachi, less than 5% of cargo traffic from the port goes by rail[59]. For QICT, only 5%–10% of the containers are moved by rail[60]. Pakistan Railways handled 61,993 TEUs of containers totaling 3.9 million tons for 2023–24. This was a growth of 46.1% from 42,423 TEUs of 1.3 million tons over 2022–23. The share of containerized cargo also grew from 15.7% in 2022–23 to reach 32.4% in 2023–24. For 2024-25, Pakistan Railways is expecting containerized cargo to reach 2.5 million TEUs with 74,391 TEUs of containers handled. Pakistan Railways also is projecting container volumes handled by the company to grow at 20.0% per annum over the next three years. This will see the share of containerized cargo handled by rail rising to 36.4%. The figure further revealed the average weight of a TEU transported by rail at 30.0 tons. For projections from 2024–25 to 2027–28, Pakistan Railways is estimating average weight per TEU of container to be 33.8 tons.

Figure 29: Performance for Containers Moved by Railway in Pakistan



264. With 5.7 million tons of cargo transported by railways in 2023–24, the sector accounts for about 8% of the country's freight share[61]. This means that the amount of cargo transported by trucks on an annual basis is more than 65 million tons. The Pakistan Ministry of Railways aim to increase the share accounted by railways to 30%. The ministry also aims to increase the volume of containers handled by railways to 500,000–600,000 TEUs per year. This will require at least a doubling of wagons and more container-handling capacity at railway stations to accommodate the projected traffic. Pakistan Railways has about 750 wagons currently and these are fully utilized.

265. The largest volume of containers transported are for DP World. The container terminal operator in Port Qasim accounted for 45.7% of all containers handled by Pakistan Railways. This is followed by Mughal Steel, PPCT and MICT who respectively accounted for 19.1%, 9.8% and 9.5% of containers handled for the ports by Pakistan Railways. Together, the four companies accounted for 52,121 TEUs of containers or 84.1% of market share. It is also estimated that the Karachi area accounts for about 40% of total freight cargo handled in Pakistan.

59 Source: Ahmed, K. (2021). "Potential relocation of Karachi seaport to cost Pakistan $9.6 billion – World Bank". *Arab News*, November 6. Available online at: https://www.arabnews.com/node/1962586/amp.
60 Source: Interview held with Qasim Port Authority and DP World Karachi on 4 October 2024.
61 Source: Interview held with Pakistan Ministry of Railways on 30 September 2024.

266. For the destination of containers from the ports, Prem Nagar, which is located near to Lahore, took the majority share of 55.2% with 34,200 TEUs handled for 2023–24. Other key destinations are Qila Sattar Shah and Mughalpura with 11,824 TEUs and 7,606 TEUs handled respectively for the same period. The three destinations altogether accounted for 53,630 TEUs of containers or 86.5% of the market share. The locations also reveal Lahore to be a key destination. If we consider the container throughput for Prem Nagar, Qila Sattar Shah, Kot Radha Kishan and Jia Bagga, the share of containers attributable to the Lahore area reaches 79.8% or 49,499 TEUs. Mughalpura, which is located near Hyderabad, would come in second place. Containers from QICT are mostly destined for Prem Nagar and Qila Sattar Shah whereas containers from the Port of Karachi mostly go to Peshawar and Mughalpura. It is also revealed that it takes 4 days and costs about US$800–US$1,000 to transport a FEU container from Karachi to Lahore. Moving the container to Azakhel, which is near Peshawar, will take another 3 days and cost another US$1,500 approximately.

Table 44: Destinations for Containers Handled by Pakistan Railways (2023–24)

Company	TEUs	Destination	TEUs
DP World	28,310	Prem Nagar	34,200
Mughal Steel (Qila Sattar Shah, near Lahore)	11,824	Qila Sattar Shah	11,824
PPCT (Mughalpura, near Hyderabad)	6,097	Mughalpura	7,606
MICT/Pakistan Intermodal Limited (Prem Nagar)	5,890	Kot Radha Kishan	3,287
Chistian (Faisalabad)	2,209	Faisalabad	2,299
International Ports Logistics (SAPT)	2,137	Khewra	2,009
ICT Pakistan (Khewra, 120 km south of Islamabad)	2,009	Azakhel	499
Elite Cargo	598	Jia Bagga	188
International Logistics Solutions (Islamabad)	552	GITA* (Azakhel)	81
Port Link	508		
Azaan & Co. (Azakhel Dry Port, in Nowshera)	499		
Shahmir Oil Movers (Jia Bagga, near Lahore)	487		
Junaid Cargo	286		
Pakistan Logistics (Jia Bagga, near Lahore)	125		
Mobility Services (Mughalpura, near Hyderabad)	118		
Asim International (Mughalpura, near Hyderabad)	110		
National Logistics Corp. (Jia Bagga, near Lahore)	63		
International Ports Logistics GITA[a] (Azakhel)	62		
Ittehad Transport Company	50		
QFM International (Faisalabad Dry Port)	40		
RARS International GITA[a] (Azakhel)	19		
Total	**61,993**		**61,993**

[a] GITA denotes "Goods in Transit to Afghanistan".
Source: Pakistan Ministry of Railways.

6.3 Time and Cost Performance

267. There are 7 subgroups, defined by the direction of movement and the mode of transport. All samples use containers and move from Pakistan to Afghanistan and Central Asia.

- Subgroups 1 to 2 are transit movements from Peshawar to Dushanbe, crossing two BCPs (Torkham BCP between Afghanistan and Pakistan, and Shirkhan Bandar and Panji Poyon between Afghanistan and Tajikistan), further split into 20-foot and 40-foot containers.

- Subgroups 3 and 4 are transit movements from Peshawar to Tashkent, crossing two BCPs (Torkham BCP between Afghanistan and Pakistan, and Hairatan and Termez between Afghanistan and Uzbekistan). These samples are road-rail combination where the containers are transferred from a truck to a train at Hairatan.

- Subgroups 5 and 6 are transit movements from Quetta to Ashgabat, crossing two BCPs (Spin Buldak and Chaman BCP between Afghanistan and Pakistan, and Towraghondi and Serkhed Abad between Afghanistan and Turkmenistan). These samples are road-rail combination where the containers are transferred from a truck to a train at Serkhed Abad.

- Subgroups 7 focus on the Afghan Transit Trade, covering the movements of 40 ft containers from Karachi Port to Jalalabad, an inland customs office in Afghanistan. The shipments cross the Torkham BCP.

Table 45: General Time and Cost Indicators of the South Asia (SA)–Central Asia (CA) Corridor

Sub Group	Route	O-D	Sample Size	Container	Mode	Distance km	Payload Tons	Total Time Days	Total Cost USD
1	SA–CA	Peshawar–Dushanbe	36	20-foot	Road	969.00	16.07	4.73	2,091
2	SA–CA	Peshawar–Dushanbe	39	40-foot	Road	974.38	23.67	4.95	2,365
3	SA–CA	Peshawar–Tashkent	21	20-foot	Road-Rail	1,736.86	23.23	8.02	2,863
4	SA–CA	Peshawar–Tashkent	60	40-foot	Road-Rail	1,585.18	23.67	6.97	4,306
5	SA–CA	Quetta–Ashgabat	57	20-foot	Road-Rail	1,503.50	21.48	6.45	4,914
6	SA–CA	Quetta–Ashgabat	39	40-foot	Road-Rail	1,503.50	23.83	6.40	5,083
7	SA–CA	Karachi–Jalalabad	170	40-foot	Road	1,509.00	23.61	12.27	4,227

Source: ADB, CPMM.

268. Based on the descriptive statistics, the following observations are made.

- The transit movements from Pakistan to the Central Asian Republics cover the exports from Pakistan and this reflected the direction of trade. Based on the interviews, this flow is dominant while there is no movements in the reverse direction. This created the problem of empty backhaul, partially explaining the relatively high cost of shipment in this region. (Subgroups 1 to 6)

- For such trade, a container can reach the destination in Central Asia within 4 to 8 days. Shipment cost ranged from $2,000 to $5,000. (Subgroups 1 to 6)

- The movement of goods from Karachi Port to Jalalabad is an important route. A trip took more than 12 days, including the port dwell time. Karachi Port offers 5 days of free period and shippers delay the movement of goods from the port using the free period as free storage. It cost more than $4,000 to move the container to Afghanistan. These movements are conducted by Pakistan bonded carriers. (Subgroup 7)

269. Further time analysis is conducted to examine the percentage of time spent travelling against stoppage time which is considered non-value-added time. Based on the statistics derived, the following observations are made.

- Generally, the container shipments spent about three quarters of the total time in border-crossing or waiting. The shipment from Peshawar to Tashkent showed superior performance, registered only 51% stoppage time for a 20 ft container and 64% for a 40 ft container. This reflected the complicated and possibly cumbersome nature of the border-crossing procedures at the BCPs in these routes. (Subgroups 1 to 7)

- The travelling speed or SWOD averaged 30 km/h. This is a sign that the road infrastructure could be underdeveloped, thus unable to support higher SWOD observed in other corridors. The stoppage time further reduced the overall speed. A key issue is the Salang Tunnel, which is an important section

Table 46: Specific Time Indicators of the South Asia (SA)–Central Asia (CA) Corridor

Sub Group	Route	O-D	Total Days	Travel, days	Travel %	Stop, days	Stop %	SWOD	SWD
1	SA–CA	Peshawar–Dushanbe	4.73	1.33	28.06%	3.40	71.94%	30.45	8.55
2	SA–CA	Peshawar–Dushanbe	4.95	1.23	24.85%	3.72	75.15%	33.31	8.21
3	SA–CA	Peshawar–Tashkent	8.02	3.86	48.17%	4.15	51.83%	18.75	9.07
4	SA–CA	Peshawar–Tashkent	6.97	2.52	36.19%	4.45	63.81%	29.19	9.54
5	SA–CA	Quetta–Ashgabat	6.45	1.84	28.55%	4.61	71.45%	34.08	9.72
6	SA–CA	Quetta–Ashgabat	6.40	1.80	28.11%	4.60	71.89%	34.08	9.79
7	SA–CA	Karachi–Jalalabad	12.27	3.00	24.45%	9.27	75.55%	21.00	5.17

Source: ADB, CPMM.

connecting Kabul to the Central Asian Republics. Located in the north of Kabul, this Salang Tunnel is often closed, especially during periods of heavy snowfall in winter, affecting the traffic. Drivers have no alternative and have to wait until the Tunnel is open.

270. Further cost analysis is conducted to examine the percentage of time spent travelling against stoppage time which is considered as non-value-added time. Based on the statistics derived, the following observations are made.

- The cost indicators showed that the shipment cost in this region are comparatively high, particularly the unit cost per km. The reliance on road transport, with rail network serving passenger traffic and very little freight traffic implied that there is no competition between transport modes in Pakistan.

- The freight rate accounted for about three quarters of the total transport cost. The stoppage cost accounted for about one quarter, except Peshawar–Dushanbe section where the stoppage cost percentage was more than 50%.

Table 47: Specific Cost Indicators of the South Asia (SA)–Central Asia (CA) Corridor

Sub Group	Route	O-D	Total USD	Rate, USD	Rate %	Stop, USD	Stop %	$/km	$/ton	$/ton-km
1	SA–CA	Peshawar–Dushanbe	2,091	872.08	41.70%	1,219.11	58.30%	2.16	130.13	0.13
2	SA–CA	Peshawar–Dushanbe	2,365	1,034.49	43.75%	1,330.28	56.25%	2.44	147.16	0.10
3	SA–CA	Peshawar–Tashkent	2,863	1,771.19	61.87%	1,091.67	38.13%	1.65	123.22	0.07
4	SA–CA	Peshawar–Tashkent	4,306	3,171.50	73.66%	1,134.18	26.34%	2.72	181.93	0.11
5	SA–CA	Quetta–Ashgabat	4,914	3,787.81	77.08%	1,126.39	22.92%	3.27	228.75	0.15
6	SA–CA	Quetta–Ashgabat	5,083	3,925.51	77.23%	1,157.08	22.77%	3.38	213.26	0.14
7	SA–CA	Karachi–Jalalabad	4,227	3,166.79	74.92%	1,060.21	25.08%	2.80	179.02	0.12

Source: ADB, CPMM.

6.4 Commodities

271. Based on actual containerized shipments, Pakistan shipped tropical fruits and edible nuts to Central Asia, as well as pharmaceuticals, motorcycles and manufactured items. In return, the volume was much smaller and consisted of yarn and cotton as well as some machineries. The category of medicine and pharmaceuticals suit the use of container transport. These products have high unit value and low weight, packed in standardized boxes.

Table 48: List of Commodities Transported in Containers Between Pakistan and Trade Partners on Land

Destination	Duration (days)	Distance (kilometers)	Exports from Pakistan	Imports to Pakistan
Istanbul (Türkiye)	20	5,295	Fabric, sports goods	Textile, cotton yarn, home appliances
Tashkent (Uzbekistan)	12	2,500	Pharmaceuticals, sports goods, frozen meat, FMCG	Textile chemicals
Almaty (Kazakhstan)	18	3,785	Bananas, sports goods, FMCG	Machinery, insulation material
Bishkek (Kyrgyz Republic)	15	3,285	Motorcycles, medicine, sports goods	Unknown
Kashgar (China)	8	2,610	Pine nuts, walnuts, cherry, PVC resin, heavy machinery, chemicals	Unknown
Dushanbe (Tajikistan)	12	2,417	Potatoes, electric bulbs, heavy machinery, chemicals	Unknown

Source: Consultants, using information from Pakistan National Logistics Corporation.

6.5 Key Issues

Table 49: List of Issues on Containerization in the South Asia and Central Asia Corridor

No	Issues	Countries	Remarks
1	Heavy reliance on Afghanistan as transit country to Central Asia is a concentration risk for supply chains.	Afghanistan	If the Salang Tunnel in Afghanistan is closed, the driver has no alternative route to head northwards, especially in winter. Cultivating an alternative route is necessary to mitigate risk.
2	Torkham and Chaman are chokepoints.	Afghanistan	Border-crossing at Torkham and Chaman are usually time-consuming. Furthermore, Chaman was recently closed for an extended period due to local unrest. According to Pakistan Customs, Torkham is supposed to open 24 by 7, but Afghanistan customs do not work at night and tend to come to work later in the morning.
3	Unbalanced capacity at Torkham on the Afghan side.	Afghanistan	Under ADB's Regional Improvement in Border Services, Torkham (Pakistan sided) is being rapidly modernized. It can handle 5,000 trucks per day. However, Torkham on the Afghan side can only handle less than 10% of the adjacent, estimated to be 300 to 400 trucks per day. There are five lanes on the Pakistan side but only one lane on the Afghanistan side. This imbalanced capacity is likely to erode the benefits of RIBS.
4	High road freight rate for containerized shipment.	Pakistan	Multiple factors increase the cost of transport. Empty backhaul, rising cost of fuel, depreciating rupees, road transport being the most expensive in addition to the mandatory use of containers also confluence to raise prices. Rail transport is limited and does not offer compete effectively, while inland waterways have potential but requires massive investment.
5	Long port dwell time at Karachi	Pakistan	Containers remain in port for ten days. A major reason is the requirement to obtain bank guarantee for Afghan Transit Trade, which is a complicated process. Another reason is the mandatory 100% scanning of every container under Afghan Transit Trade.
6	Unclaimed containers taking up valuable space in the ports.	Pakistan	It is estimated that SAPT has 1,000 containers, KGTL 2,000 containers and KICT 1,800 containers that are unclaimed or abandoned. These occupy space and affect port operational efficiency and productivity.

continued on next page

Table 49 *continued*

No	Issues	Countries	Remarks
7	Accessibility constraints to Karachi Port.	Pakistan	The heavy reliance on trucks, the narrow road leading to SAPT and the traffic congestion at the Jinnah Bridge, result in massive clogging of roads that affect how fast a truck can enter and leave the terminal. This is worrisome because container volume is expected to increase, yet SAPT utilization is only 37.8% and already facing this accessibility issue. If left unchecked, the accessibility to SAPT will worsen.
8	Last mile rail connectivity to Karachi Port is missing.	Pakistan	Unlike Port Qasim, Karachi Port does not have a direct rail connection. This will require containers to be transloaded onto rail.
9	Pakistan Rail has capacity constraint.	Pakistan	All the 750 wagons are fully utilized. The lack of locomotives also hamper more train services to run the Karachi to Lahore line.
10	Afghanistan as a transit country has its political risk.	Afghanistan and Pakistan	The transit trade between the two countries are governed by the Afghanistan Pakistan Transit Trade Agreement. The sole reliance on Afghanistan as a transit country has concentration risk, given the unstable bilateral relations of both countries in the past. Alternative corridor is needed to mitigate such risk.

6.6 Recommendations

Table 50: List of Recommendations for South Asia and Central Asia Corridor

No	Action	Benefits	Importance	Urgency	Time-frame
Infrastructure and Equipment					
1	Complete the feasibility study and masterplan for a container terminal at Port Qasim.	Reduce time	*****	*****	Immediate
2	Commission a Time Release Studies to investigate the causes of long dwell time at Karachi Port.	Reduce time	*****	*****	Immediate
3	Complete the 192 km section between Kohat to Kharlachi so that container traffic can move along ML-2 to Central Asia.	Expand Connectivity	*****	****	Long term
4	Improve the access road to Karachi Port by constructing the Lyari Express (M9).	Reduce time	*****	*****	Medium term
5	Modernize Pipri Marshalling Yard.	Improve Capacity	*****	*****	Immediate
Policies and Regulations					
6	Promote Quadrilateral Agreement for Transit Trade (QATT) and work with PRC to develop access to Kazakhstan and Kyrgyz Republic for containerized traffic.	Improve connectivity	*****	*****	Short term
7	Improve the Public-Private Partnership Act to increase investment appeal and safeguards for local and foreign investors for container terminals, assets and equipment.	Increase competitiveness	****	**	Short term
8	Develop a containerization strategy under the National Trade Policy.	Reduce time	*****	****	Short term
Digitalization					
9	Promote the use of Pakistan Single Window (PSW) to improve the completeness and correctness of data entries in submitting Goods Declarations.	Reduce cost	*****	*****	Short term
10	Implement pre-declaration so that the port and customs can receive shipping data in advance.	Increase competitiveness	****	**	Short term
11	Launch electronic bill of lading to simplify the transfer of shipping document.	Reduce time	*****	****	Short term
12	Shorten the time for obtaining a bank or insurance guarantee through the PSW.	Improve transparency	****	****	Short term

272. There is a 10-acre plot of land allocated to develop an off-dock terminal for Central Asian Republics cargo. It is still under planning and Ministry of Commerce is formulating policies which involve government to government agreements for the transit trade. ADB can support this study as it can be a key node to improve connectivity between South Asia and Central Asia.

273. The delays in the cargo release at Karachi Port is widely known, but it is unclear what the root causes are[62]. The private sector claimed it is the customs and the non-functioning of scanners, while the port observed it is the shippers or consignees not able to obtain the bank or insurance guarantee on time. It is recommended for the policymakers to commission a formal study on this issue. An established methodology "Time Release Studies" advocated by the World Customs Organization can be adopted to analyze the customs and clearance procedure. Alternatively, a Business Process Analysis advocated by UNESCAP can also be used, as it is more comprehensive and focus on trade processes as well as the activities inside the port to ascertain reasons for delays. An investigation is necessary so that effective solutions can be prescribed.

274. Among the 4 key rail linkages in Pakistan, ML-2 is strategically important because it supports the Pakistan–Afghanistan–Uzbekistan trilateral railway corridor. The route bypasses the busy nodes in Faisalabad, Rawalpindi and Islamabad, thus do not congest the rail section. Transit freight from Karachi can be transported on the existing rail network to the north. The completion of the 192 km section from Kohat to Kharlachi will facilitate the containerized shipment to continue enroute to Kabul–Termez and access Uzbekistan. Feasibility study has been completed and the analysis showed that the project estimated capital expenditure is $642 million. Over a 40-year period, the project payback period is 13 years with an internal rate of return expected to be 10.46%.

275. To relieve the traffic congestion at Karachi Port, especially SAPT, the construction of the Lyari Express to connect to the trunk road M9 is necessary. To encourage the greater adoption of rail and improve the multimodal connectivity, the 50 km extension linking Karachi Port and the Pipri Marshalling Yard is essential. This will enable containers to move seamlessly between the two nodes, and avoid the breakage in the last mile connectivity, forcing shippers to use trucks and transfer the items. This will also help to improve the traffic congestion surrounding the Karachi Port, especially during peak hours.

276. South Asia and Central Asia connectivity can be improved in two main directions. One is via Afghanistan to reach Central Asia (Tajikistan, Uzbekistan and Turkmenistan). The second is via PRC and reach Kazakhstan and Kyrgyz Republic. In the past, the four countries (Kazakhstan, Kyrgyz Republic, Pakistan and PRC) have concluded a Quadrilateral Agreement on Transit Trade. This should be revisited for reactivation. In terms of policy, improving the Public Private Partnership and investors' safeguards will help to attract local and foreign investors. Pakistan currently has a high containerization level, and developing a containerization strategy will be helpful.

277. The use of Pakistan Single Window (PSW) should be supported to automate and streamline trade documentation processing. In particular, the use of PSW can facilitate the launch of new products such as pre-arrival declaration and electronic bill of lading. Most importantly, this solution can possibly simplify the process to obtain a bank guarantee and reduce the port dwell time for container shipments.

62 The consulting team was not granted full access to Karachi Port and did not have sufficient time to analyze the root causes of delays. During the field trip, stakeholders shared different beliefs on the causes of delays.

PRC–Central Asia–Europe

7

7.1. Route and Key Nodes

278. The PRC to Central Asia and Europe is the final cluster under this study and is significant due to the bilateral and transit trade volume. Cross-border trade between the PRC and Central Asia have strong complementarity. While the PRC produces and exports a wide range of industrial and consumer merchandize, Central Asia is well endowed with energy and minerals (notably Kazakhstan and Turkmenistan) as well as agricultural produce (notably Kyrgyz Republic, Tajikistan and Uzbekistan), which provides raw materials to the PRC. There are a few key routes but the main trade corridor traverses the PRC and Kazakhstan. The 1,215 km land border between the PRC and Kazakhstan is the longest border between the PRC and a Central Asian Republic. Lianyungang is the designated hub port for the consolidation of freight from other Chinese cities and international sources, where goods come in ocean containers. They are then loaded onto trains bound for Central Asia. Lianyungang is 4,245 km from the two key borders between the PRC and Kazakhstan, namely Alashankou–Dostyk BCP and Khorgos–Altynkol BCP. Another seaport is Tianjin, which serves as a hub port for the trade corridor PRC–Mongolia–Russian Federation–Europe. Containerized freight are transported in ocean containers and arrive in Tianjin, where they are transloaded onto trains and cross the border between the PRC and Mongolia, namely the Erenhot–Zamiin-Uud BCP. The PRC and Mongolia border is even longer at 4,630 km.

Table 51: Distance from Selected Cities in PRC to Key BCPs by Railway Connectivity (km)

Cities	To Alashankou/Khorgos	To Erenhot	To Manzhouli
Tianjin	3,463 (2)*	**865 (1)**	1,657 (2)
Qingdao	3,923 (4)	1,647 (4)	2,670 (3)
Shenyang	4,259 (6)	1,526 (3)	**1,419 (1)**
Zhengzhou	3,669 (3)	1,403 (2)	2,704 (4)
Xi'an	**3,151 (1)**	1,917 (6)	3,103 (6)
Lianyungang	4,245 (5)	1,785 (5)	3,018 (5)

* The number in parenthesis represents the ranking, in order of distance.

Source: Tianjin Dongjiang International Train Operations Management Co. Ltd. Shortest distance to BCP highlighted in bold.

279. For the period January to August 2024, a total of 1.8 million TEUs of containers were handled at the six border crossing points. Westbound containers totaled 1,065,000 TEUs with the remaining 760,000 TEUs being eastbound containers. There is also a significant difference in the number of containers transported by train services with China–Europe trains averaging 110 TEUs per service and China–Asia trains averaging 81 TEUs per service.

280. Alashankou has the largest share of containers handled with 571,000 TEUs or 31.3% of total container traffic processed in the first eight months of 2024. The proportion of containers handled for the China–Europe trade dominate border crossings with a share of 88.4% or 505,000 TEUs. The PRC to Europe container express

Table 52: Key Nodes in PRC–Central Asia–Europe Corridor

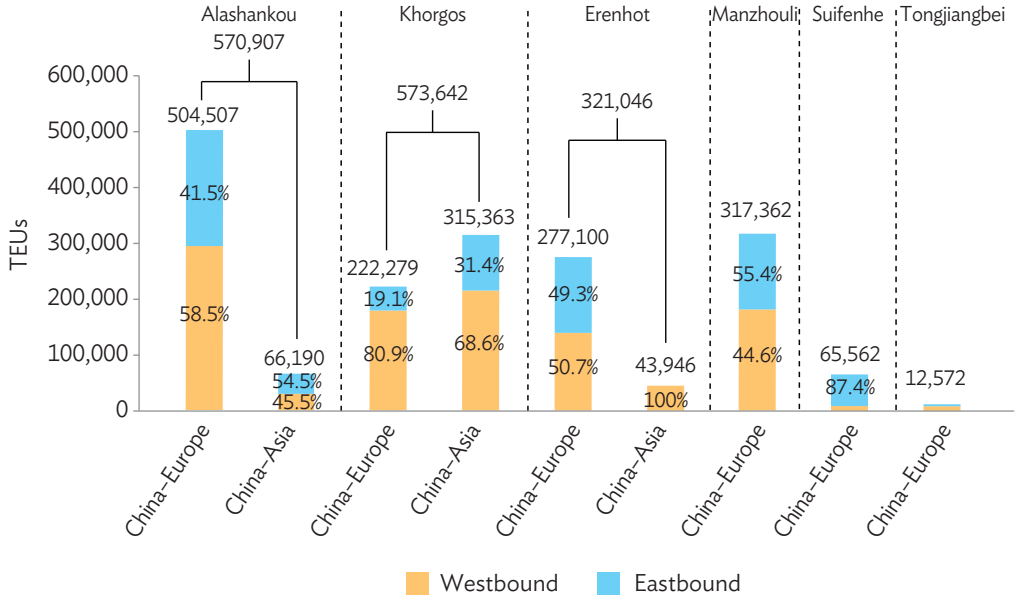
Nodes	Country	Nature	Significance
Port of Lianyungang	The PRC	Seaport	This is the hub port that consolidates freight from international and local origins and dispatch the freight to Central Asia.
Alashankou–Dostyk	The PRC and Kazakhstan	Border-crossing point (Road and Rail)	This BCP serves mainly rail traffic and was the sole BCP that handle rail traffic until Khorgos commenced rail handling in 2012.
Khorgos–Altynkol	The PRC and Kazakhstan	Border-crossing point (Rail only)	This is a BCP that can handle rail traffic. It is a BCP of choice for Urumqi to Almaty section.
Khorgos–Nur Zholy	The PRC and Kazakhstan	Border-crossing point (Road only)	Khorgos started as a BCP that can only handle road shipments but have since expanded to cover rail. At the Kazakhstan, trucks move to Nur Zholy for clearance. This is the busiest road BCP in CAREC.
Yierkesitan–Irkeshtam	The PRC and Kyrgyz Republic	Border-crossing point (Road only)	A popular BCP for shipments to Kyrgyz Republic and Uzbekistan.
Karasuu–Kulma	The PRC and Tajikistan	Border-crossing point (Road only)	This is a direct route for PRC shipments to reach Tajikistan, Afghanistan and beyond. Traditionally, shipments pass through Kyrgyz Republic, but this new route is increasing freight.
Port of Tianjin	The PRC	Seaport	Most popular seaport in PRC that serves as a gateway for freight to and from Mongolia. Other seaports such as Qingdao, Qinghuangdao and Caofeidian in PRC are also seaports that can serve freight to Mongolia, but Tianjin has the largest container handling capacity.
Erenhot–Zamiin-Uud	The PRC and Mongolia	Border-crossing point (Road and Rail)	The only international BCP pair that serves bilateral and international transit traffic at the PRC–Mongolia border. Able to handle both road and rail traffic, whereas other Mongolian BCPs only handle road.
Ulaanbaatar	Mongolia	Final destination or transshipment point	The main origin and destination for imports and exports in Mongolia.
Sukhbaatar–Naushki	Mongolia–The Russian Federation	Border-crossing point (Rail only)	The only international BCP pair that serves bilateral and international transit traffic at the Mongolia–Russian Federation border on rail.
Altanbulag–Khiagt	Mongolia–The Russian Federation	Border-crossing point (Road only)	The main international BCP pair that serves bilateral and international transit traffic at the Mongolia–Russian Federation border on road.
Port of Baku	Azerbaijan	Seaport	Seaport in Caspian to serve freight traffic with Kazakhstan and Turkmenistan.

Source: Consultants.

trains moved along this route, and entered the Russian Federation, bypassing CAREC Corridor 2. Shipments that moved through Dostyk follow the CAREC Corridor 1a.

281. Khorgos handled 538,000 TEUs with a market share of 29.5% in the same period. Unlike Alashankou, containers for the China–Asia trade dominate the traffic with a market share of 58.7% or 315,000 TEUs. Figures for the border crossing point also reflected a significant difference in containers carried between the westbound and eastbound train services. Specifically, China–Europe trains averaged 106 TEUs for each service whereas China–Asia trains averaged 92 TEUs for each service. For the container express trains that moved along CAREC Corridor 2, they tend to favor going through Khorgos as the rail connection to Aktau and Kuryk ports are better. Shipments that moved through Dostyk followed the CAREC Corridor 1b and then Corridor 2 for Caspian crossing.

Figure 30: Container Throughput Handled at Selected Chinese Border Crossing Points for the China–Europe and China–Asia Railway Routes for January–August 2024



Source: Using information from China Railway Express.

282. Erenhot is the third busiest border crossing point with 321,000 TEUs handled for the first 8 months of 2024. The Erenhot BCP accounted for a market share of 17.6% with China–Europe container traffic taking the majority at 277,000 TEUs. The China–Asia trade saw 44,000 TEUs handled at Erenhot, accounting for a market share of 13.7%. Containers carried for each train service for the China–Europe and China–Asia trades were similar at about 106–107 TEUs per service. Manzhouli and Suifenhe came in the fourth and fifth place respectively with 317,000 TEUs and 66,000 TEUs handled. Both border crossing points handle containers for the China–Europe trade. However, unlike the other border crossing points, the two locations saw a higher proportion of eastbound traffic at 55.4% and 87.4% respectively for Manzhouli and Suifenhe. The Tongjiangbei Border Crossing Point saw 13,000 TEUs for the China–Europe trade handled for the first eight months of 2024, accounting for 0.7% of the market. The shipments through Erenhot followed that of CAREC Corridor 4b.

7.2. Container Flows and Throughput

283. In 2023, the container throughput handled at ports in China reached 310 million TEUs, increasing 4.9% compared to the previous year. Among these, 271.9 million TEUs were handled by coastal ports and 38.39 million TEUs were handled by inland waterway ports, respectively increasing by 4.3% and 9.2% compared to 2022.

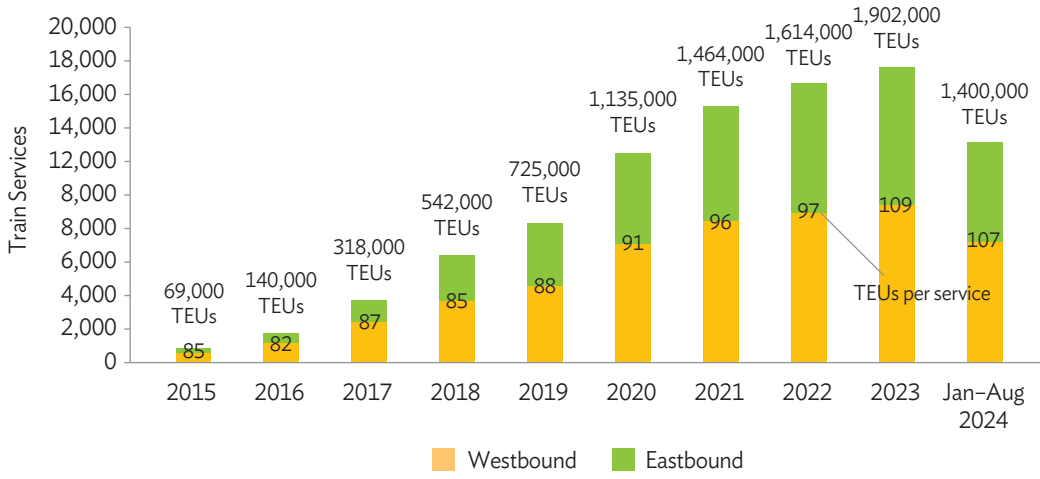
284. This study focuses on CAREC region. Since there are no inland waterways between the PRC and the other CAREC members, freight can only move on land. Rail is the mode of choice to transport the containers, since the distance from Lianyungang to Khorgos is 4,245 km and Tianjin to Erenhot is 865 km. Such distances generally render road transport costly, and container on truck adds to the cost due to smaller payload of a container compared to the truck compartment. To estimate the containerization level, the freight volume on rail is analyzed.

285. In 2023, the total freight handled by rail amounted to 3.9 billion tons, and the containerized freight on rail was 732 million tons. Thus the containerization level was 18.7%. There were 33.23 million TEU of railway containers volume, a year-on-year increase of 5.1%, and 732 million tons of goods have sent by railway containers, a year-on-year increase of 7.1%.

The PRC to Europe

286. The PRC–Europe trade route remains a key source of container demand with 1.9 million TEUs handled in 2023. The rate of growth was 17.8% from 1.6 million TEUs handled in 2022. The figure showed that containers carried on the China–Europe has grown steadily over the years. The figure also shows the average number of containers transported in each train service rising from 85 TEUs in 2015 to 96 TEUs by 2021 and then to 109 TEUs by 2023. The first eight months of 2024 saw 1.4 million TEUs transported for this trade route on a growth of 10.9% from the same period in 2023. Hence, given the favorable geographical location of the Port of Tianjin, it can have the potential to serve as a multimodal hub for containerized trade for both the China–Europe and China–Asia routes.

Figure 31: Containers Carried on Train Services Operating on the China–Europe Trade Route



Source: Using information including from China Railway Express.

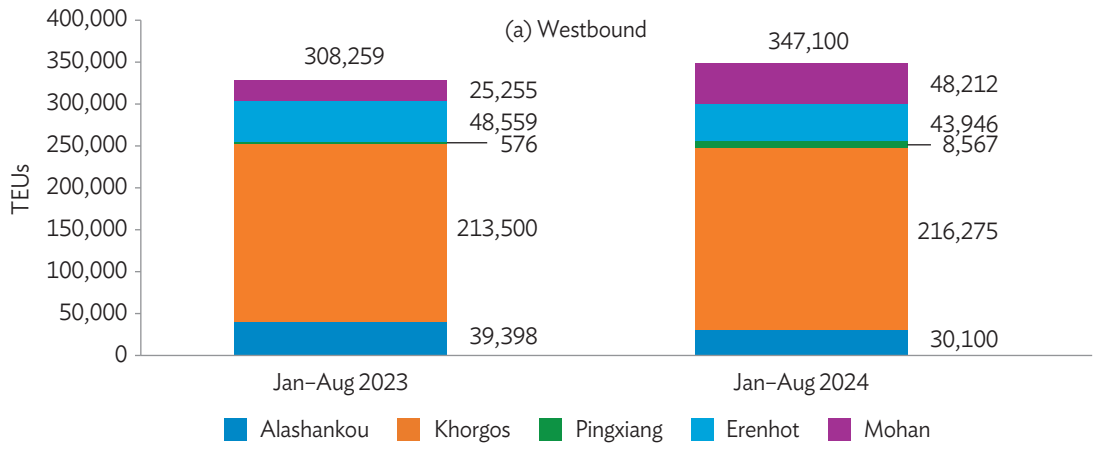
The PRC to Central Asia

287. Each block train service transports about 100 TEUs of containers on 50 rail platforms. The recent period has seen westbound container traffic growing by about 20% per annum. This development is attributed to growing investments by the PRC in Central Asia which boosted cargo demand for the headhaul trips. The development has also contributed to increasing cargo demand for backhaul trips. Westbound container traffic is typically FEU containers that are fully laden and comprise largely of autos, auto parts and breakbulk cargo while eastbound container traffic consists largely of ores and grain. Empty backhaul used to be an issue, although railway companies continuously strive to ensure the block trains are full. Due to the higher density of cargo for eastbound traffic, preference is for TEU containers. Nonetheless, an imbalance remains where the difference between headhaul westbound and backhaul eastbound cargo volume remains substantial. It is known that some companies sell their containers in Central Asia when they send cargo to the region as it can be difficult to get backhaul cargo.

288. It takes 5 days to go by rail from Lianyungang to Khorgos.[63] The same journey takes about 3–4 days by road. As such, a single day could see up to 20 truck trips if reliability of rail shipments is perceived to be low. For example, crossing the border at Khorgos which takes about a day to complete during the low season from February to May, can take 3–15 days due to delays caused by congestion.

63 Source. Interview held with Lianyungang Port Group on 19 September 2024.

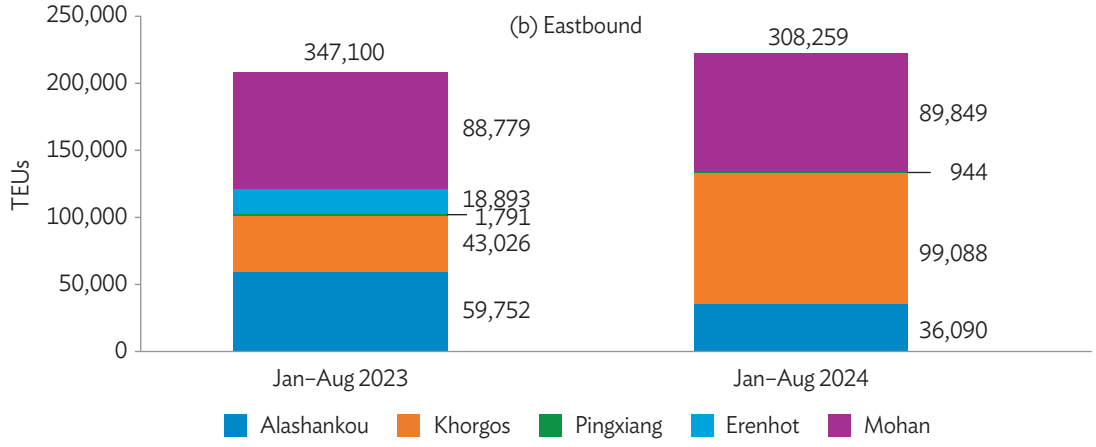
Figure 32: Container Throughput from PRC to Central Asia, Jan–Aug 2024, in TEUs



Note that Pingxiang is the Border Crossing Point between PRC and Vietnam, Erenhot is the Border Crossing Point between PRC and Mongolia, and Mohan is the Border Crossing Point between PRC and Laos.

Source: Using information from China Railway Express.

Figure 33: Container Throughput from Central Asia to PRC, Jan–Aug 2024, in TEUs



Source: Using information from China Railway Express.

289. If one considers the total time to transport a container from South Korea or Japan to its destination in Central Asia or Russia through the Port of Lianyungang, the journey will take 25 to 30 days using the combination of sea–rail transport modes.[64] Using the combination of sea–rail–road modes of transportation will incur less time of 15 to 20 days. Moving containers between Central Asia and Southeast Asia using the Port of Lianyungang will take 30 to 45 days. However, congestion can be a source of major disruption. During the period of July to December, congestion at the border can result in delays at the border crossing points which lead to a trip from Lianyungang to Central Asia taking 30–40 days. As mentioned earlier, the same journey using a combination of sea-rail transport modes should take only 25–30 days.

64 Source: Meeting held with Sinotrans Landbridge Transportation on 21 September 2024.

290. A key concern is the transloading capacity at the border crossing points. Interviews with stakeholders mentioned PRC being able to transload 13 block trains a day while Kazakhstan can process 10 block trains for the same period. A major constraint is the lack of rail platforms. The shortage of rail platforms is compounded by the organization of rail operations in Russia where the equipment is owned by individual companies. Hence, there is no centralized distribution and deployment of rail platforms where resources utilization can be optimized. The main flow of cargo with the Northern Corridor has also exacerbated the shortage of rail platforms for CAREC Corridor 2 and Central Asia trades. As such, a round trip for a container to Kazakhstan by rail can take two months. Similarly, sending a container by rail from Lianyungang to Moscow can take two months, although it would take only 3 days to reach the Erenhot Border Crossing Point from the Port of Lianyungang.

291. Trucks are also seen to offer greater reliability compared to railway transport. As such, companies often adopt a combination of rail and road transport for a trip to optimize on transit time. This can be seen with the figure which shows the containers being moved from rail to road transport after reaching Altynkol in Kazakhstan. Note that the situation has resulted in a shortage of drivers. As a result, transporting a FEU container from Khorgos to Almaty can cost US$2,000 to US$3,000, even though the distance is only 350 kilometers.[65]

292. There is adequate capacity for freight transport using the rail network in PRC given that passenger traffic has been largely separated through the latter's use of the high-speed rail network. Nonetheless, the post-COVID period has seen road transport gaining market share. While trains remain the dominant mode of transport, road transport now accounts for 30 to 40% of the market share and the trend for the latter appears to be growing. Trucks are particularly favored for transporting breakbulk cargo as they can carry more weight than a container. A key disadvantage of using railway transport is that there are only two border crossing points which are with Kazakhstan (i.e., Khorgos and Alashankou). By comparison, there are multiple border crossing points for road transport which include Baketu with Kazakhstan, and Tuergate and Irkeshtam with Kyrgyz Republic.

293. Each block train service transports about 100 TEUs of containers on 50 rail platforms. The recent period has seen westbound container traffic growing by about 20% per annum. This development is attributed to growing investments by China in Central Asia which boosted cargo demand for the headhaul trips. The development has also contributed to increasing cargo demand for backhaul trips.

Container Block Trains

294. At present, the China–Europe Railway Express connects 223 cities in 25 European countries and more than 100 cities in 11 Asian countries, and its service network basically covers the entire territory of Europe and Asia. Up to now, there have been 87 routes scheduled for the 120 km/h China–Europe trains, and the railway transport time between PRC and Europe has been generally reduced by more than 5 days compared with the beginning of the operation.

295. In 2023, a total of 17,523 China–Europe block trains were operated, sending 1.9 million TEU, a year-on-year increase of 6% and 18%. The return journey is basically balanced with 9,343 outbound trains and 8,180 return trains. More than 5,000 trains have run between China and Central Asia.[66]

296. At present, there are about 3,500 railway's container handling stations in the country, including the newly built railway container centers such as Shanghai, Kunming, Chongqing, Chengdu, Zhengzhou, Dalian, Qingdao, Wuhan, Xi'an, Harbin, Tianjin, Urumqi, Ningbo, Guangzhou, with other railway freight stations, basically forming a railway container network covering the whole country. Among them, the railway container centers are the main handling stations of the railway container block train, which plays an important role in the operation of China–Europe (Central Asia) Express. The key container handling centers are listed below.

65 Source: Interview held with Jiangsu Jindao Supply Chain Management Company on 21 September 2024.
66 China Railway Express, www.crexpress.

Chongqing Railway Container Center is located at Tuanjiecun in Chongqing Municipality. It has 4 cargo handling lines, with an annual container volume of 500,000 TEUs, There is a customs supervision area. At present, it mainly handles the China–Europe train from Chongqing to Duisburg, Germany.

Chengdu Railway Container Center is located at Chengxiang town, Qingbaijiang District in Chengdu Municipality. It has 4 freight loading and unloading lines and has a handling capacity of 500,000 TEU per year. There is a customs supervision area.

Xi'an Railway Container Center is located at International Port Park, Xi'an Municipality. It has 4 freight loading and unloading lines, and an annual container handling capacity of 500,000 TEU. There are two new loading and unloading lines under construction. In 2023, the volume of international containers handled of Xi'an Railway Container Center ranks first among the railway's container centers.

Wuhan Railway Container Center is located at Wujiashan, Wuhan Municipality. It has 4 freight loading and unloading lines, and an annual container handling capacity of 500,000 TEU. At present, it mainly handles the China–Europe block trains from Wuhan.

Zhengzhou Railway Container Center is located at Putian, Zhengzhou Municipality. It has 4 freight loading and unloading lines, and an annual container handling capacity of 500,000 TEU. At present, it mainly handles the China–Europe train from Zhengzhou to Hamburg, Germany.

Tianjin Railway Container Center is located at Haitie Dadao, Binghai District, Tianjin Municipality. It has 2 freight loading and unloading lines. Now another two loading and unloading lines are under construction. It works closely with Tianjin Port to run rail-waterway intermodal trains and the China–Europe(Central Asian) block trains between Tianjin, Mongolia, Russia and European Countries.

7.3. Time and Cost Performance

297. There are 4 subgroups, defined by the use of container and the mode of transport. All of the samples are from PRC to Kazakhstan or Uzbekistan (east to west direction).

- Subgroups 1, 2 and 3 are rail shipments between Urumqi to Astana, Almaty and Tashkent, respectively, as these cities are the transport hubs in the region. The shipment crosses through Alashankou–Dostyk to access Astana, while the shipment crosses Horgos–Altynkol to Almaty or Tashkent.

- Subgroup 4 include shipment by road transport that crosses Horgos from Urumqi to Almaty.

Table 53: General Time and Cost Indicators of the PRC–Central Asia (CA) Corridor

Sub Group	Route	O-D	Sample Size	Container?	Mode	Distance km	Payload tons	Total Time days	Total Cost USD
1	PRC–CA	Urumqi–Alashankou–Astana	30	40-foot	Rail	1,877.00	25.55	5.24	3,833
2	PRC–CA	Urumqi–Horgos–Almaty	55	40-foot	Rail	1,018.00	23.95	5.50	2,478
3	PRC–CA	Urumqi–Tashkent	5	40-foot	Rail	1,958.00	25.60	8.89	3,939
4	PRC–CA	Urumqi–Horgos–Almaty	27	No	Road	973.00	23.96	3.01	4,552

Source: ADB, CPMM.

298. Based on the descriptive statistics, the following observations are made.

- There was no significant difference in the payload for container and non-container shipments. This ranged from 23 to 26 tons per shipment. (Subgroup 1, 2 and 3 vs 4)

- For Urumqi–Almaty route, road shipment took only 3 days while the rail shipment took more than 5 days. This validated the feedback from private sector on the preference to use road transport, which is generally more flexible and is a faster mode of transport However, this came at a higher price. The container shipment on rail cost $2,478 while the truck shipment cost was 83% higher at $4,552. (Subgroup 2 vs 4).

- Interestingly, both the container shipments to Astana and Almaty took similar duration (more than 5 days) although the distance from Urumqi to Astana is longer than Urumqi to Almaty. This hinted that the border-crossing at Horgos could be longer. (Subgroup 1 vs 2)

- A container shipment on rail from Urumqi to Tashkent took close to 9 days and cost $3,939. (Subgroup 3)

299. Further time analysis is conducted to examine the percentage of time spent travelling against stoppage time which is considered non-value-added time. Based on the statistics derived, the following observations are made.

- A major issue was the high percentage of time spent on stoppage, such as border-crossing and waiting. The analysis showed that the percentage of time when the shipment was actually moving was less than 20%. Between 80% to 90% of the time was spent in stoppage, notably at the BCPs between PRC and Kazakhstan. This phenomenon was observed regardless of the use of containerization or not. (Subgroup 1 to 4)

- Even though the shipment enjoyed high speed of more than 70 km/h (SWOD), the long stoppage time negated the high SWOD, resulting in a low overall speed (SWD). (Subgroup 1 to 4)

Table 54: Specific Time Indicators of the PRC–Central Asia (CA) Corridor

Sub Group	Route	O-D	Total Days	Travel Days	Travel %	Stop, days	Stop %	SWOD	SWD
1	PRC–CA	Urumqi–Alashankou–Astana	5.24	0.98	18.68%	4.26	81.32%	79.83	15.50
2	PRC–CA	Urumqi–Horgos–Almaty	5.50	0.46	8.45%	5.03	91.55%	91.27	8.47
3	PRC–CA	Urumqi–Tashkent	8.89	1.03	11.56%	7.86	88.44%	79.42	9.20
4	PRC–CA	Urumqi–Horgos–Almaty	3.01	0.56	18.69%	2.45	81.31%	72.14	15.99

Source: ADB, CPMM.

300. Further cost analysis is conducted to examine the percentage of time spent travelling against stoppage time which is considered non-value-added time. Based on the statistics derived, the following observations are made.

- Container shipments from Urumqi to Almaty had the lowest total cost, which was conceivable due to the shortest distance. The two cities are only approximately 1,000 km apart. However, compared to the trips to Astana or Tashkent, both having longer distances, the cost per km was actually the highest in the Urumqi– Almaty route. (Subgroup 1 and 3 vs 2)

- Comparing Urumqi to Almaty for both road and rail, the road shipment cost twice as much compared to road, using the unit cost per km and cost per ton. The road shipment spent about 2.3 times as much at border-crossing, hinting that the border-crossing at Horgos entailed high fees and charges. (Subgroup 2 vs 4)

- Crossing Alashankou and Dostyk appeared to be more cost-effective. The container shipment from Urumqi to Astana through this BCP spent the least percentage (only 15% compared to more than 20%) compared to the crossing at Horgos.

Table 55: Specific Cost Indicators of the PRC–Central Asia (CA) Corridor

Sub Group	Route	O-D	Total USD	Rate, USD	Rate %	Stop, USD	Stop %	$/km	$/ton	$/ton-km
1	PRC–CA	Urumqi–Alashankou–Astana	3,833	3,253.14	84.88%	579.65	15.12%	2.04	149.99	0.08
2	PRC–CA	Urumqi–Horgos–Almaty	2,478	1,897.89	76.60%	579.65	23.40%	2.43	103.47	0.10
3	PRC–CA	Urumqi–Tashkent	3,939	2,839.10	72.08%	1,099.65	27.92%	2.01	153.86	0.08
4	PRC–CA	Urumqi–Horgos–Almaty	4,552	3,226.73	70.89%	1,325.23	29.11%	4.68	190	0.20

Source: ADB, CPMM.

7.4. Commodities

301. From the launch of the first China–Europe Railway Express in March 2011 to April 2024, the China–Europe Railway Express has sent more than 8.7 million TEUs of goods, with a cumulative value of more than 380 billion US dollars.[67] The categories of transported goods have gradually expanded from IT products such as laptops and printers in the early days to more than 50,000 kinds in 53 categories, including clothing, shoes and hats, automobiles and accessories, daily necessities, food, wood, furniture, chemical products, machinery and equipment. Since 2023, the electric vehicles, lithium batteries, and photovoltaic products have become a new growth point for the volume of China–Europe freight trains.

67 2024-05-23 Xinhua News Agency

Port of Batumi

8

8.1. Introduction

302. The Port of Batumi is located in the Southwestern part of Georgia on the coast of the Black Sea. The port is managed and operated by Batumi Sea Port Limited (BSP). BSP also serves as the port authority. In 2008, KazTransOil JSC, which is a subsidiary of Kazakhstan's national oil and gas company JSC NC KazMunaiGas, acquired exclusive control of BSP.[68] To date, BSP is a member of the Trans-Caspian International Transport Route (TITR), the Eurasian transport corridor TRACECA, and the Association of ports of the Black and Azov Seas.

Figure 34: Location of Port of Batumi



Source: Adapted from map provided by Batumi Sea Port Limited.

8.2. Port Facilities and Infrastructure

303. The port comprises of five terminals, 11 berths and a point of gratuitous filling. The port occupies 19.8 hectares of land and total cargo-handling capacity being 18 million tons per annum. Description of each terminal is given as:

Table 56: Capacity of Batumi Sea Port

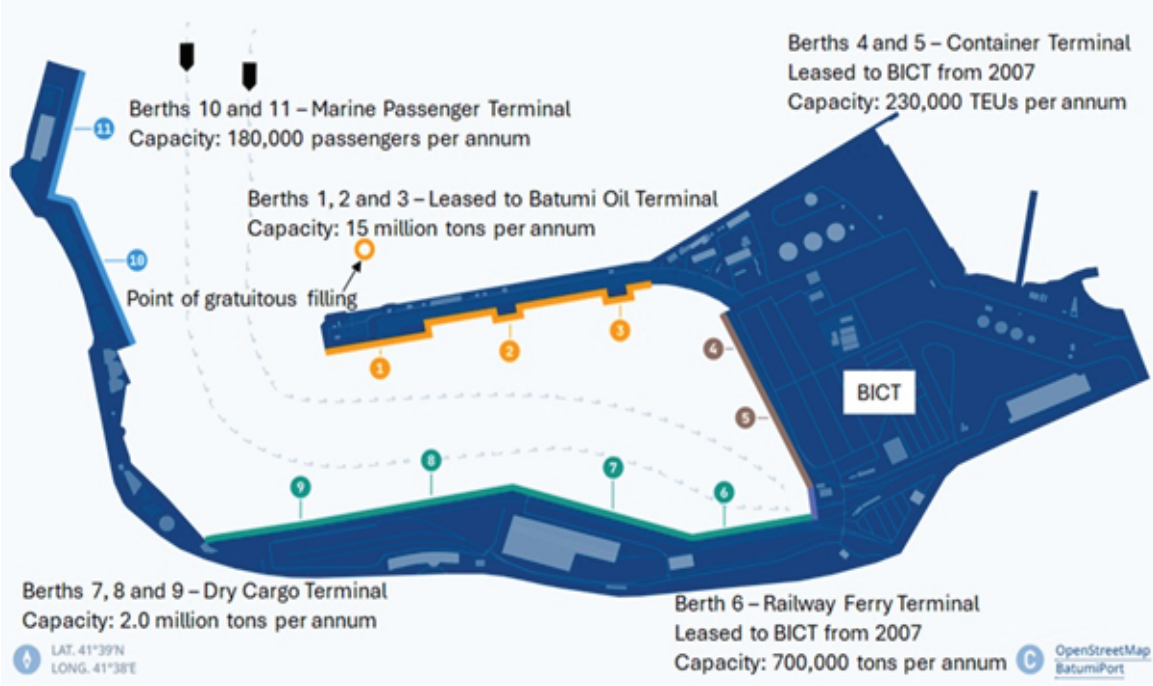
Terminal	Berths	Annual Handling Capacity
Oil Terminal	1, 2 and 3	15 million tons
Container Terminal	4 and 5	230,000 TEUs
Railway Ferry Terminal	6	700,000 tons
Dry Cargo Terminal	7, 8 and 9	2.0 million tons
Marine Passenger Terminal	10 and 11	180,000 passengers

Source: Batumi Sea Port.

68 Source: Batumi Sea Port (2024). *About Us*. Available online at: https://batumiport.com/company.

304. The oil terminal, which is made up of berths 1, 2 and 3, is capable of handling up to 15 million tons annually. The facility is equipped to handle almost all types of oil products including petrol, diesel fuel and crude. The three berths are leased to Batumi Oil Terminal Limited which manages the handling and logistics of oil and energy products through Batumi. The container terminal is made up of berths 4 and 5. Container-handling capacity being 230,000 TEUs annually. The berths are leased to Batumi International Container Terminal (BICT). BICT also operates berth 6 which is a railway ferry terminal. The capacity of the ferry terminal is about 700,000 tons annually. The dry cargo terminal comprises berths 7, 8 and 9. The facility is equipped to handle a variety of dry cargo including sugar, fertilizer, wheat grain, and four among others. The cargo-handling capacity of the terminal is 2.0 tons annually. There is also a marine passenger terminal which is located in the center of the city along the seaside boulevard. The terminal can handle approximately 180,000 passengers annually.

Figure 35: Layout of Batumi Port



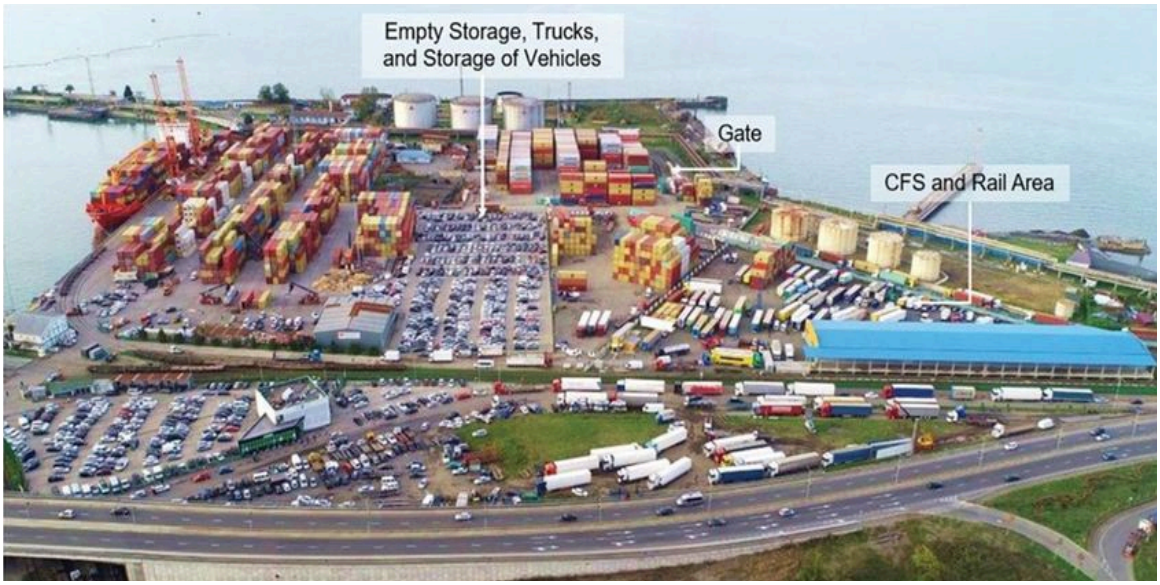
Source: Adapted from map provided by Batumi Sea Port (BSP).

305. BSP is the operator for dry bulk cargoes while container operations are done by Batumi International Container Terminal (BICT). BICT has a 48-year lease that runs from 2007 to 2055. The company is an investment by International Container Terminal Services Inc. (ICTSI) which is a global terminal operator that is headquartered in Manila of The Philippines.

306. BICT sits on a total area of 16.9 hectares. Berths 4 and 5 have a length of 284 meters and draft alongside of up to 11 meters. The berths are equipped with two mobile harbor cranes. Berth utilization is at 22% with vessel productivity of 25 moves per hour using two cranes. Waiting time for the berth can range from zero to 12 hours depending on availability upon the vessel's arrival at the port. Berth 6 is equipped with two portal cranes and has a length of 183 meters with draft alongside of 8 meters. BICT is also equipped with two on-dock rail tracks totaling 461 meters. This makes the facility capable of supporting rail-sea connections and block train services. The container yard has a total rea of 10.8 hectares with yard utilization at 31%. There is also a secure customs warehouse of 3,625 sqm (shown by the blue roof Container Freight Station in the figure). Other container-handling equipment of BICT consists of:

- 7 x reach stackers
- 2 x empty handlers/side lifters
- 7 x tractors
- 16 x chassis
- 5 x spreaders
- 12 x forklifts
- 192 x reefer plugs

Figure 36: Layout of Batumi International Container Terminal



Source: Batumi International Container Terminal (BICT).

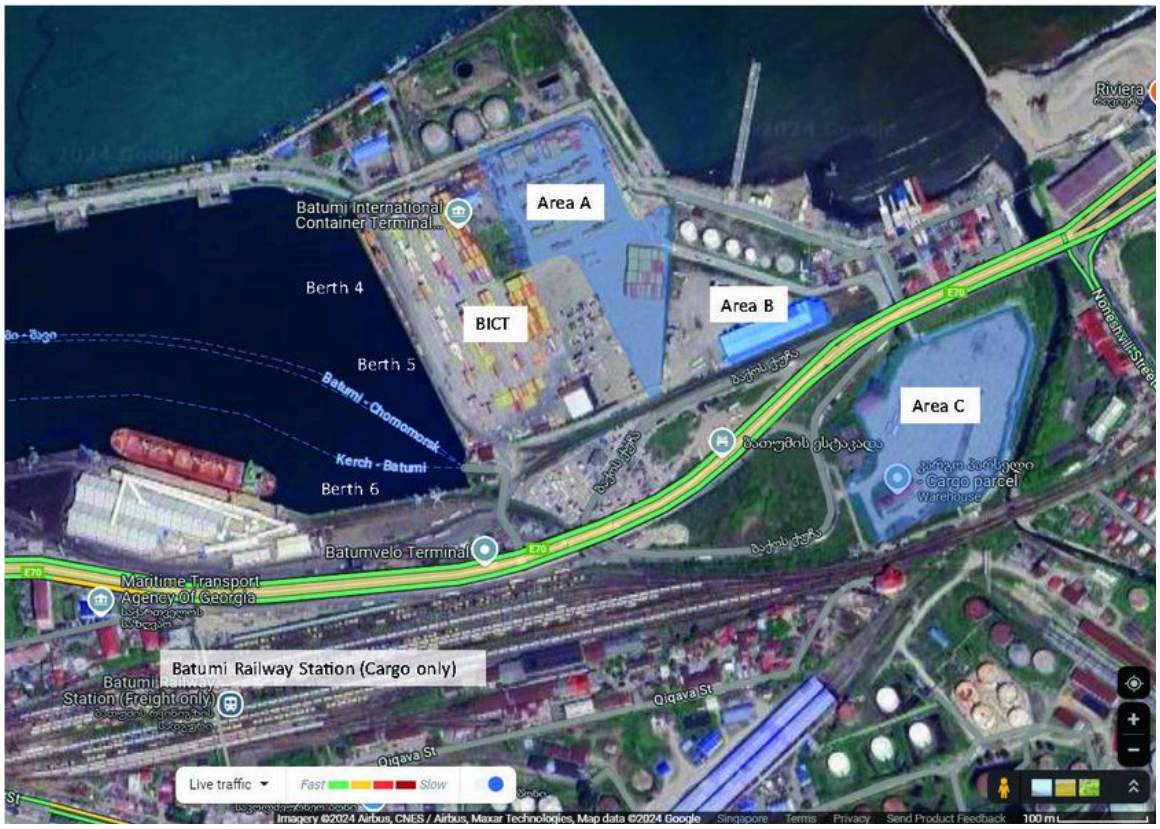
Figure 37: On-dock Rail Access for Batumi International Container Terminal



Source: Consultants, using information from BICT.

307. To cater for future growth in cargo volumes, BICT underwent expansion which was completed in 2023. Affected areas are shown by Area A, Area B and Area C. For Area A, BICT created 2.8 hectares of additional on-dock container yard space and acquired two reach stackers to support yard operations. For Area B, the container freight station is equipped with 3,625 sqm of warehouse space with 180 meters of rail spur to facilitate cross stuffing operations between railcars and containers. For Area C, BICT created an off-dock container yard with 33,500 sqm of Customs bonded territory with railway spurs. The aim is to enhance the capability of handling rail container shipments by allowing direct cross stuffing between rail wagons and containers.

Figure 38: Expansion of BICT



Source: Using information from BICT.

308. BICT uses the Navis Terminal Operating System (TOS) which is also used by other container terminals of the ICTSI Group. BICT will be launching a Port Community System (PCS) in January 2025. Discussions are also underway to develop a Single Window System.

Table 57: Facilities of Port of Batumi

Terminal	Berths	Annual Handling Capacity
Oil Terminal	1, 2 and 3	15 million tons
Container Terminal	4 and 5	230,000 TEUs
Railway Ferry Terminal	6	700,000 tons
Dry Cargo Terminal	7, 8 and 9	2.0 million tons
Marine Passenger Terminal	10 and 11	180,000 passengers

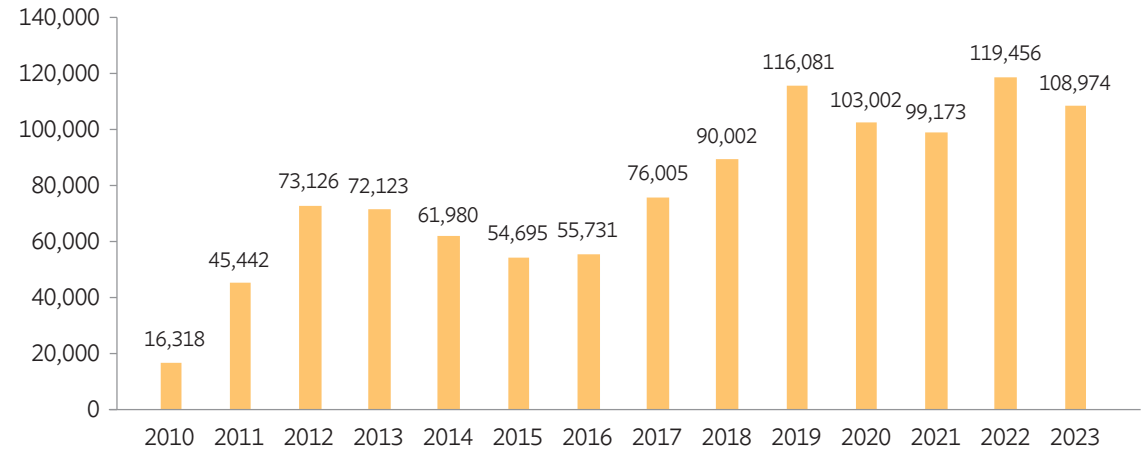
Source: BSP.

8.3. Container-handling Performance

309. BICT handled about 109,000 TEUs in container throughput for 2023. Based on a handling capacity of 230,000 TEUs, terminal capacity utilization is at 47.4%. Although container throughput for BICT declined by 8.8% from a historic high of 119,456 TEUs handled for 2022, the figure displayed a rising trend for container handling measured in TEUs.

310. However, the performance for container-handling measured in tonnage terms presents a different picture. Container throughput appeared to have reached a maximum of 860,542 tons handled in 2019. The subsequent years saw container throughput decline steadily. The latest annual performance in tonnage terms for container throughput handled by BICT was a decrease of 41.4% from 285,372 tons in 2022 to a low of 167,127 tons in 2023. This is a cause for concern as the declining containerized cargo tonnage also suggested that many of the boxes handled by BICT comprise of empty containers given that the average weight per TEU of container handled is only 1.5 tons. BICT shared that second-hand cars account for about 50% of containers handled in the terminal and the containers are typically opened in the port. The figure used to be about 70%.

Figure 39: Container Throughput for BICT, TEUs



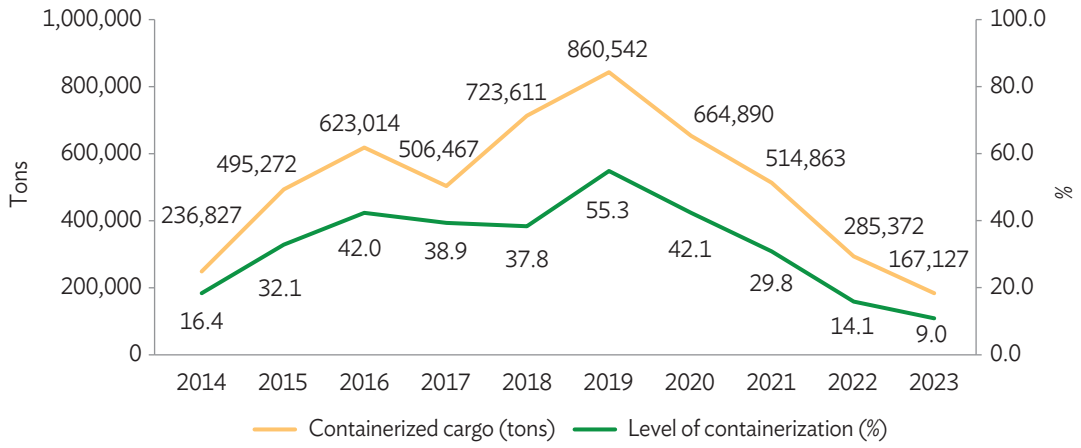
Source: BICT.

311. Displayed alongside the performance for containerized cargo tonnage handled is the level of containerization achieved by the port. The level of containerization mirrors the performance for containerized cargo handled in tons. The figure revealed the level of containerization to have reached a high of 55.3% in 2019 before declining to 9.0% by 2023. For comparison, the average weight per TEU of container handled in 2019 was 7.4 tons. The fall in containerized cargo tonnage was attributed to the negative impact of the COVID-19 pandemic and the Ukraine Crisis on containerized trade.

312. It is noted that the downward trend for containerized cargo from 2019 to 2022 lies in contrast with the rising trend for dry cargo and oil and petroleum products seen for the same period. BICT shared that the port can support additional demand from container block trains. In fact, the container terminal's on-dock rail facility was previously used by Ukrainian companies. This was negatively impacted from early 2022 with the Ukraine Crisis due the significant decline in Ukrainian vessels that are operating in the Black Sea.[69]

69 Source: Interview held with BICT on 16 August 2024.

Figure 40: Level of Containerization for Batumi Sea Port



Note: Level of containerization is calculated based on the assumption that all dry cargo handled by the port has the potential to be containerized.

Source: Using information from Batumi Sea Port and BICT.

313. BSP shared that while there could be opportunities to containerize some of the dry cargo which the operator handles, the operation would have to be commercially appealing for use of containers. As of now, the rail wagon is commonly used for transporting dry bulk as it has a higher payload compared to an ocean container. A rail wagon can load up to 68 tons of cargo whereas a twenty-foot and forty-foot container can load up to 22 tons and 27 tons of cargo respectively.[70] In addition, the dry cargo supply chain allows for commodities to be efficiently handled from their reception in Batumi through Baku to Central Asia. The commodities are loaded onto rail wagons when they land at Batumi. The wagons are transported by rail to Baku and subsequently moved onto ferries. The wagons are discharged at the Kazakhstan ports and moved by rail to their final destinations in Central Asia.

314. There could be opportunities for wheat grains and flour to be containerized. The commodity could be packed in polypropylene bags and loaded into containers. The port handles about 60,000 tons of wheat per year. Another area of opportunity for containerization is the trend towards using containers for imports. BSP cited the example of building and construction materials and consumables imported in containers.

8.4. Regional Connectivity

315. Regional connectivity for containerized shipments for the Port of Batumi is provided mainly through maritime, road and rail linkages. The container ships range from 957 TEUs to 1,118 TEUs in size. A weekly service comprising of these vessels that calls at Batumi Port could offer approximately 52,700 TEUs in annual container slots. These vessels connect Batumi in the Black Sea to Türkiye, North Africa and the Western Mediterranean area. Important ports-of-call in the Mediterranean are Gioia Tauro in Italy, and Marsaxlokk in Malta. Both ports serve as important transshipment hubs for mainline services that ply between Asia and Europe. Containers going to or coming from Asia which originate from or are destined for the Black Sea region would likely be feedered through these ports.

316. The Port of Batumi is also served by general cargo ships. The design container transportation capacity of both vessels is 1,287 TEUs. Both are Turkish-flagged vessels which may be deployed in the MSC Georgia Feeder Service to provide shuttle runs between the Georgian ports of Batumi and Poti and Turkish ports located around the Istanbul area. These vessels may also call at other ports in Türkiye that include Trabzon, Gemlik, Giresun, as well as Greek ports in the Aegean Sea such as Piraeus. Both vessels are built around 2009 and possess approximately a size of 156 (LOA) x 24 m with 15,479 GT and 22,000 DWT.

70 Sources: Include interview held with BSP on 16 August 2024, TMTM and references to https://middlecorridor.com/en.

317. A comparison of dwell time in port for vessels calling at Batumi or those that call at Batumi and Poti is illustrated. The figures suggest vessel dwell time for Batumi to be comparable to Poti for the same vessels. However, the information is incomplete as the amount of cargo handled should be considered.

Table 58: Comparison of Vessel Dwell Time for Ships Calling at Batumi and Poti

Vessel	Arrival	Ports	Departure	Time in port
MSC Amanda F	29/07/2024 08:47	Batumi	30/07/2024 11:55	1 day 3 hours
Gozde Bayraktar	15/08/2024 10:12	Batumi	16/08/2024 07:51	21 hours
Scarletta	16/08/2024 11:13	Batumi	17/08/2024 15:52	1 day 4 hours
Ayse Naz Bayraktar	25/08/2024 03:33	Poti	25/08/2024 19:36	16 hours
Gozde Bayraktar	20/08/2024 14:57	Poti	21/08/2024 14:53	23 hours
Gozde Bayraktar	01/09/2024 02:09	Poti	02/09/2024 09:00	1 day 6 hours
MSC Olga F	05/09/2024 23:14	Batumi	07/09/2024 08:07	1 day 8 hours
Ayse Naz Bayraktar	06/09/2024 10:05	Poti	07/09/2024 11:53	1 day 1 hour

Source: MyShipTracking.

318. In terms of road and rail connectivity, the distance and estimated transit time between selected origins and destinations in the Caucasus region with Batumi are shown.

Table 59: Distance and Estimated Transit Time by Road and Rail Between Selected Locations in the Caucasus Region

To/from Batumi	Distance via road (km)	Transit time via road (hours)[a]
Tbilisi, Georgia	374	8
Alat, Azerbaijan	947	22
Yerevan, Armenia	656	13
	Distance via rail (km)	**Transit time via rail (hours)**
Tbilisi, Georgia	338	11
Alat, Azerbaijan	889	35
Yerevan, Armenia	526	37

[a] Consultant estimates, assuming no congestion along the route and at the border crossing point.

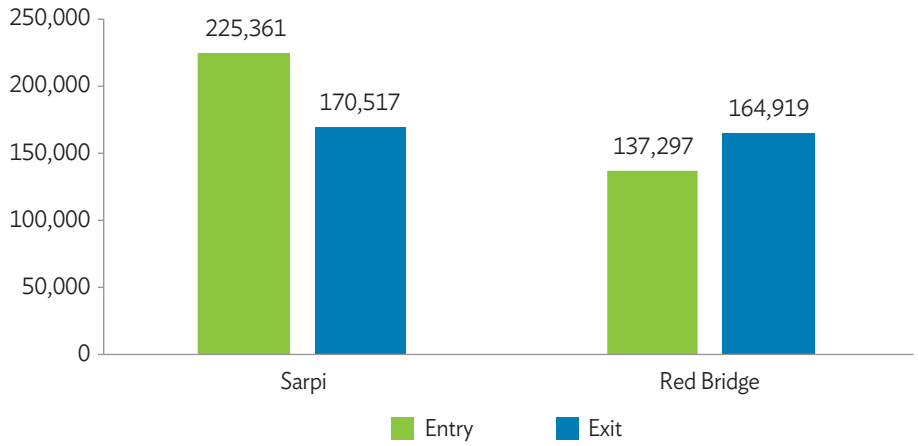
Source: Interview held with BICT on 16 August 2024.

319. The port is connected via a single-track railway line of approximately 100 km through Ureki and Lanchkhuti to Samtredia. This line is also shared with a passenger train service that runs to Tbilisi. By comparison, the Port of Poti is also connected via a single-track railway line of about 60 km through Senaki to Samtredia. The utilization by passenger train for this section of the rail network is comparatively less and the distance shorter by about 40 km. The rail network from Samtredia to Tbilisi comprises of a double-track railway line. Due to the configuration of the rail network, the Port of Batumi has a comparatively poorer connection with rail.

320. The current modus operandi is preference to use trucks to move containers to/from the Port of Batumi. With regards to access to the container terminal, the port is constrained by the city development with very limited physical space to expand. Furthermore, road access to the must be shared with the Batumi Sea Port for movement of dry cargo and Batumi Oil Terminal for handling energy products. It is also common to find cars illegally parked on BICT land which is adjacent to the popular Fish Market with quite a few seafood restaurants offering great views of dining next to the shores of the Black Sea.

321. As for road access to other cities, the Port of Batumi is connected by the E70 Highway which links the city of Batumi to the Sarpi Border Crossing Point with Türkiye in the south (less than 20 km away) and Port of Poti which is located about 70 km to the north. The Kobuleti Bypass and Senaki–Poti–Sarpi Highway have been constructed to improve traffic flow between Poti, Batumi and Sarpi at the Turkish border. However, congestion is also an issue near the city of Batumi. The Batumi Bypass Road Project aims to construct a new two-lane bypass road of 16.2 km and 14 m wide skirting Batumi.[71] Total project cost is at $201.2 million with the Asian Development Bank funding $114.0 million. Construction is estimated to be completed by end-2025 to early 2026.

Figure 41: Truck Traffic at Sarpi and Red Bridge Border Crossing Points in 2023



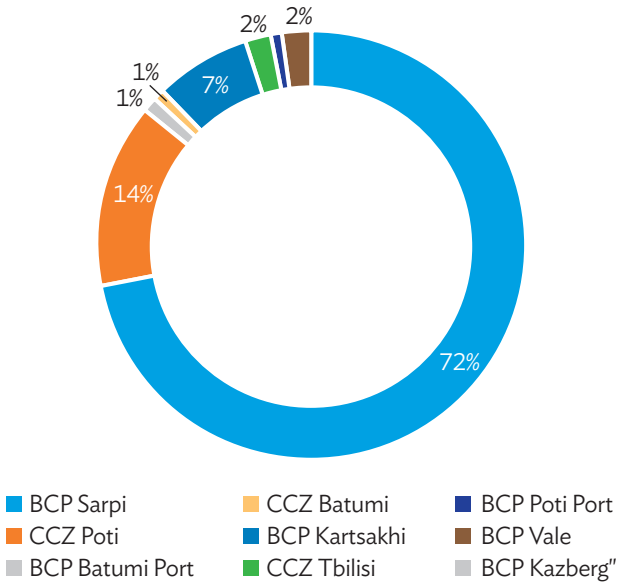
Source: GIRCA.

322. Congestion can also be serious issues at the Sarpi border crossing point with Türkiye and Red Bridge border crossing point with Azerbaijan. In 2023, Sarpi recorded almost 400,000 truck movements whereas Red Bridge saw more than 300,000 truck movements. On 26 May 2024, a record number of 1,309 trucks was recorded in both export and import directions. Before the COVID-19 pandemic, an average of 830 trucks could pass through Sarpi. A trucker may have to wait for up to two days at Sarpi and spend another 1–3 days at Red Bridge. Reefer trucks may however enjoy quicker transit as they are given priority at the border crossings. This traffic eventually would need to pass through Batumi and add to traffic concerns faced by the port and city.

323. The traffic at Sarpi was tilted towards incoming truck movements whereas Red Bridge saw a higher percentage of exiting traffic. The corresponds to the data captured for eastbound truck traffic processed at Red Bridge in 2022. The figure showed an overwhelming 72% of the truck traffic coming from Sarpi border crossing point. Batumi border crossing point and customs clearance zones accounted for only 2% of the eastbound traffic handled at Red Bridge.

71 Source: Asian Development Bank (2024). *Georgia: Batumi Bypass Road Project*, Projects. Available online at: https://www.adb.org/projects/50064-001/main.

Figure 42: Sources of Eastbound Truck Traffic Processed at Red Bridge in 2022



Source: Georgia International Road Carriers Association (GIRCA).

Port of Poti

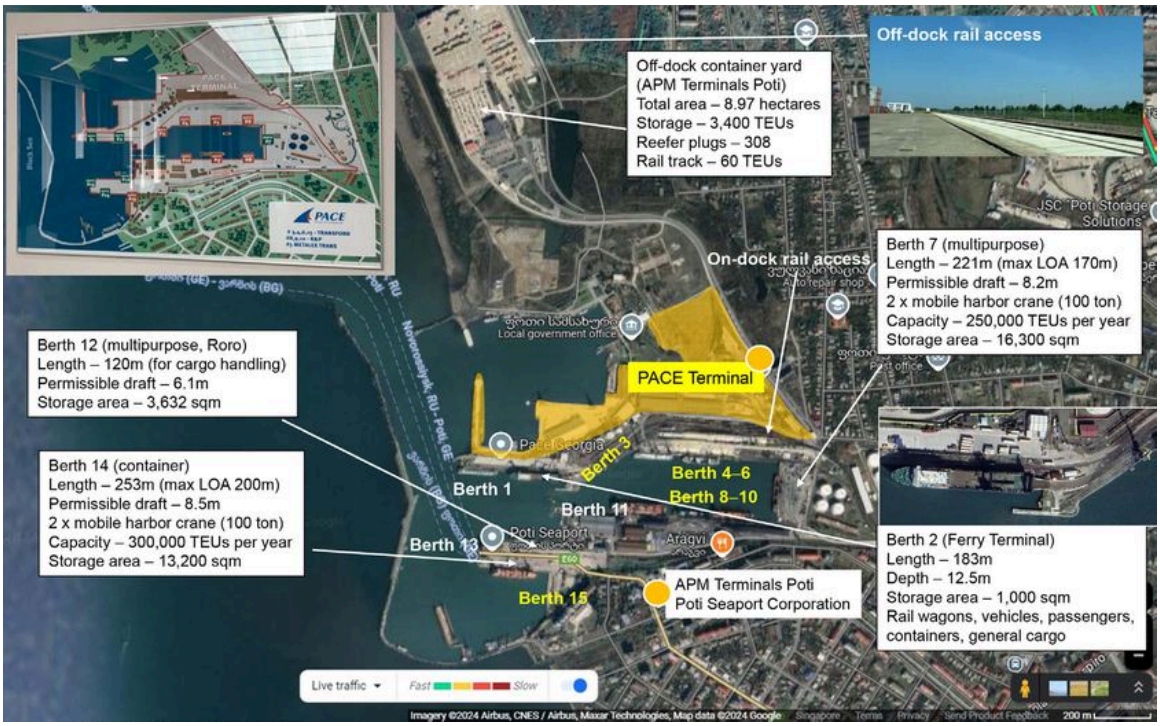
9

9.1 Introduction

324. The Port of Poti is located in Georgia on the shores of the Black Sea. The port sits at the western end of the Trans-Caspian International Transport Route (TITR) and connects to other key ports in the Caucasus and Central Asia regions along CAREC Corridor 2.

325. The port is managed and operated by Poti Seaport Corporation JSC, which is a wholly owned subsidiary of APM Terminals[72]. The company reported revenues of GEL202.5 million (approximately USD69.5 million[73]) in 2022 with operating and net profit of GEL97.5 million (approximately USD34.5 million) and GEL94.4 million (approximately USD32.4 million) respectively. Operating and net profit were 6% and 13.5% higher than the performances seen for 2021. Containers and cargo operations accounted for 50.0% of the earnings, followed by maritime services (26.0%), ground services (10.8%) and rental income (10.8%). APM Terminals, which is owned by A.P. Moller-Maersk Group, acquired the facility in 2011. Since then, APM Terminals has invested more than USD130 million.

Figure 43: Layout of Poti Port



Source: Georgian Port Authorities.

72 Source: Taktakishvili, N. (2023). "The net profit of Poti Port operator APM Terminals increased", *Business Media*, 31 August. Available online at: https://bm.ge/en/news/the-net-profit-of-poti-port-operator-apm-terminals-increased.

73 Using the average USD to GEL exchange rate for 2022 at USD1=GEL2.915.

9.2 Port Facilities and Infrastructure

326. The Port of Poti is the largest seaport in Georgia. It is capable of handling liquids, dry bulk, containers and passenger ferries. The facility has 15 berths and possesses a total quay length of 2,900 meters. The port is equipped with more than 20 quay cranes and 17 kilometers of rail track. The terminal sits on an operating area of 30.0 hectares with annual container-handling capacity at about 550,000 TEUs and bulk cargo-handling capacity of 9 million tons.

327. There are four berths operated by APM Terminals Poti. These are berths 2, 7, 12 and 14.

Table 60: Key Facilities for Berths Operated by APM Terminals at Poti Port

Berth	Length	Draft	Capacity	Description
2	183 m	12.5 m	Storage area 1,000 sqm	Ferry Terminal (rail wagons, vehicles, containers, general cargo, passengers)
7	221 m	8.2 m	250,000 TEUs p.a. Storage area 16,300 sqm	Maximum LOA 170 m Multipurpose (containers, bulk, general cargo)
12	253 m	6.1 m	Storage area 3,632 sqm	Cargo handling 120 m Multipurpose (roro, bulk, general cargo)
14	253 m	8.5 m	300,000 TEUs p.a. Storage area 13,200 sqm	Maximum LOA 200 m Containers, bulk cargo

Source: Using information from APM Terminals Poti.

Figure 44: Berth 2 (Ferry Terminal) Operated by APM Terminals at Poti Port



Source: Georgian Port Authorities.

Figure 45: Berth 7 Operated by APM Terminals at Poti Port



Source: Georgian Port Authorities.

328. APM Terminals also operates an off-dock container yard at the port. The facility occupies almost 9.0 hectares and is capable of storing 3,400 TEUs of containers. It comes with 308 reefer plugs and has onsite customs facilities. There is also a rail track capable of accommodating 60 TEUs of containers.

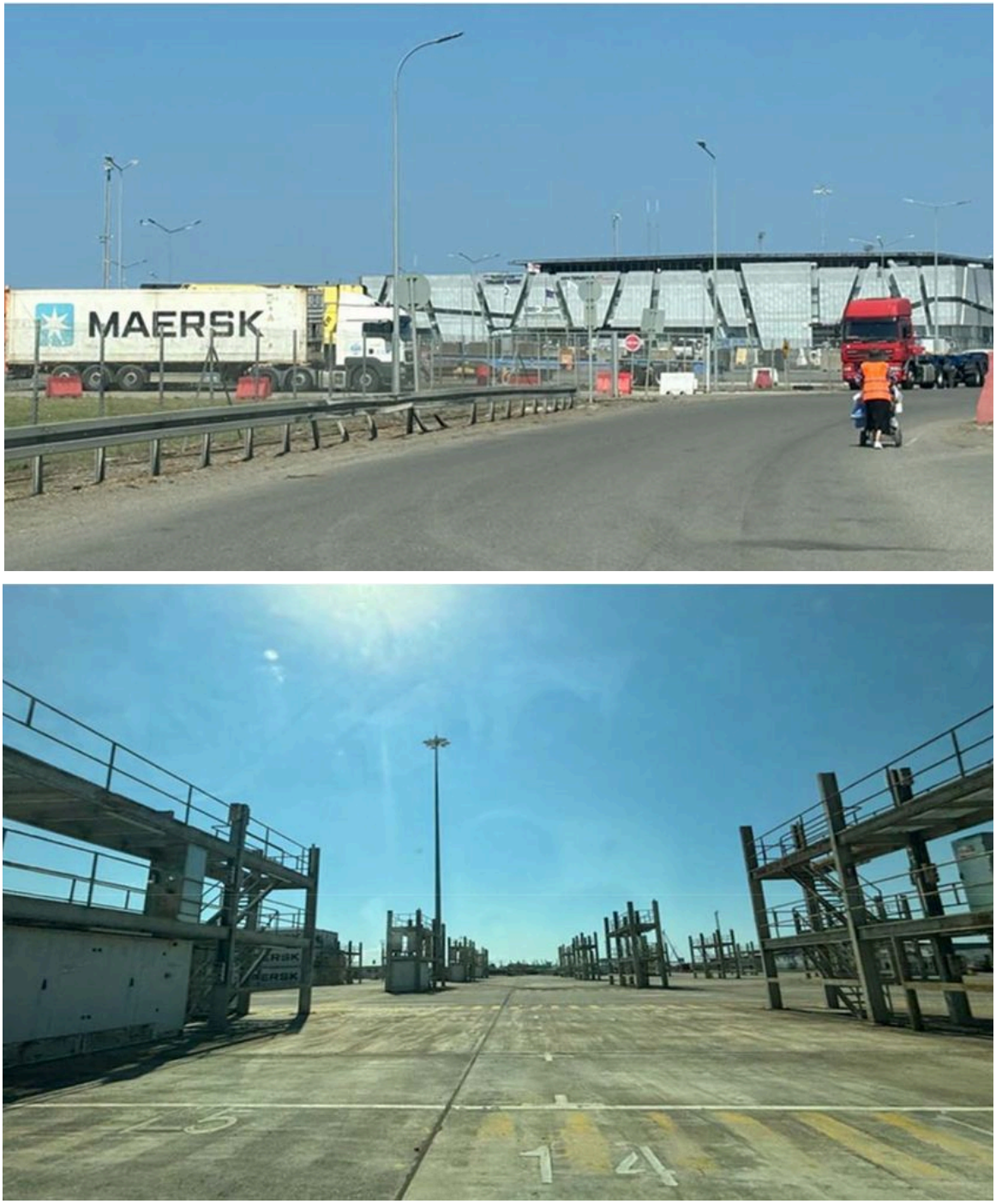
329. PACE Terminal manages berths 3, 4, 5, 6, 8, 9, 10 and 15 for APM Terminals as well as working as an off-dock container terminal for the company. PACE Terminal is 75% owned by PACE Georgia LLC which was established in 2000 as a privately held limited liability company. PACE Georgia also holds shares in PACE Trans (100% – freight forwarding), PACE Shipping (100% – ship agent), ZIM Integrated Shipping Service Georgia (49% – agent for Zim Lines), Transford (50% – port cargo-handling), B&P (80% owned by Transford – port cargo-handling), Metalex Trans (52.5% owned by Transford – port cargo-handling).

330. APM Terminals has plans to develop Poti into a deep-water port. An expansion plan was presented to the Government of Georgia which consists of two stages of construction and development. Phase 1 will see the construction of a 1,500m breakwater and a 330m container quay with 15.0m depth.

331. The new facility will be equipped with two post-Panamax quay cranes and add 400,000 TEUs in annual container-handling capacity. It will increase the annual container-handling capacity of Poti Port to about 1.0 million TEUs. Container vessels of up to 9,000 TEUs (LOA 300m/draft 13.5m) will be able to call at the new berth. This is the largest vessel that can enter the Black Sea. APM Terminals has committed over USD250 million for phase 1 of the expansion. Phase 1 of the project is estimated to take up to 36 months to be constructed. APM Terminals is looking to get approval to start work on the new terminal in 2024. If construction can start in 2024, the terminal can be completed by the end of 2026. In the second phase, a 300m container quay equipped with three quay cranes will be constructed.

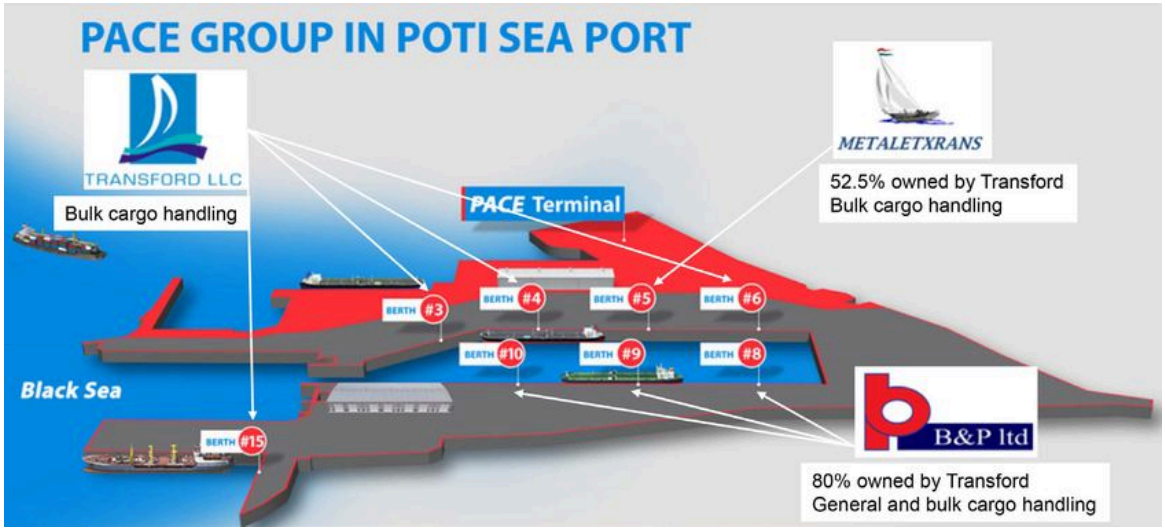
332. PACE Terminal has plans to expand container handling by the company to 100,000 TEUs per annum with the construction of a new container berth. The company is currently handling 24,000 TEUs and 3.6 million tons of dry and general cargo per year.

Figure 46: Off-dock Container Yard Operated by APM Terminals at Poti Port



Source: Georgian Port Authorities.

Figure 47: Berths Managed by PACE for APM Terminals Poti



Source: PACE Group (2024). *About Company*. Available online at: https://www.pace.ge/about.

Figure 48: PACE Terminal at Poti Port

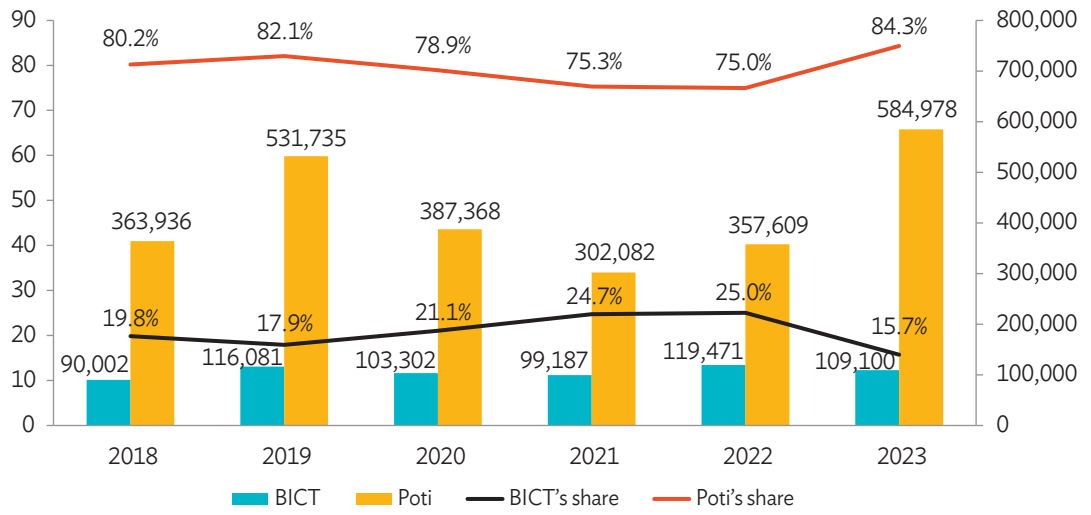


Source: PACE terminals officials.

9.3 Container-handling Performance

333. The Port of Poti handled 584,978 TEUs in 2023. Container throughput processed by the port grew by 63.6% from 357,609 TEUs handled in 2022. This performance lies in stark contrast to the 8.8% decline in container throughput seen for BICT at Batumi Port. The performance also signaled a recovery from the COVID-19 pandemic which previously saw two consecutive years of double-digit declines in 2020 and 2021. Strong container-handling performance seen for Poti also enabled the port to increase its share of container port traffic handled for Georgia to reach a new high of 84.3%. The figure further suggests an inverse relationship between container throughput handled by the ports of Poti and Batumi.

Figure 49: Container Throughput and Market Share of Poti Port Versus BICT



Source: Using information from APM Terminals Poti and BICT.

334. Shipping lines Maersk and MSC account for about 70% of the container throughput while PACE Terminal handles mostly containers for the shipping line ZIM. We note that the port is operating at 106.4% level, which is above its design container-handling capacity. It remains to be seen whether performance of this magnitude can be sustained, given that the port could expect to continue exceeding its container-handling capacity of 550,000 TEUs per year. APM Terminals Poti shared that the throughput was achieved with high crane productivity of about 17 moves per hour. APM Terminals Poti attributed this improvement from the previous 14.5 moves per hour to better coordination with third-party off-docks and information exchange which led to the reduction in container dwell times. Emphasis is on equipment reliability and availability by having the right equipment in the right place and at the right time.

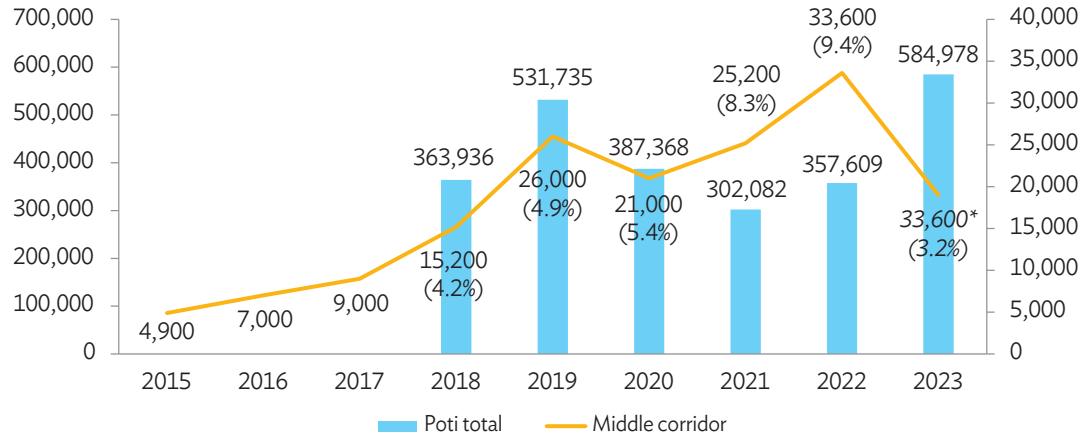
335. The primary flow of containers is eastbound with 55% of the throughput consisting of autos and auto parts. These are transported mainly using forty-foot containers. A significant proportion of the eastbound trade also involved FMCGs and white goods. For the westbound trade, it consists mostly of commodities that go to Europe. They include metals, fertilizers and agricultural products such as wheat. These are usually shipped using twenty-foot containers. Azerbaijan and Armenia are key markets accounting for 35%–45% of the total cargo throughput. 55%–65% of the total cargo consists of transit traffic, mainly going to other parts of the Caucasus and Central Asia.

336. The containerization level is estimated at about 15.8%[74]. There could be opportunities to achieve greater penetration of containerization for cargo handled at the port.

337. Container traffic generated by CAREC Corridor 2 accounts for a relatively small proportion of containers handled at Poti. The share of containers attributed to CAREC Corridor 2 account for less than 10% of total container throughput in 2022. Full year 2023 CAREC Corridor 2 container traffic is estimated at 19,000 TEUs which brings the share of such traffic down to 3.2% of the port's container throughput.

74 Initial figure given by APM Terminals was less than 5%. However, there was significant growth in 2023 for container throughput by 63.6%, which would include more laden containers. Assuming the average weight of containers handled for the year is about 2.0 tons per TEU, containerized cargo handled for 2023 would be 1.2 million tons. Total dry cargo handled by Poti was 7.6 million tons which is derived from the National Statistics Office of Georgia and Port of Batumi. As such, the containerization level is worked out to be 15.8%.

Figure 50: Container Traffic Handled for CAREC Corridor 2



[a] Indicates estimates.

Source: Using information from APM Terminals Poti.

338. The decline in CAREC Corridor 2 container traffic was viewed by APM Terminals Poti to be attributed to the lack of product reliability. The reputation of CAREC Corridor 2 was badly affected in the years of 2022 and 2023 where different parties were unable to work together to facilitate smooth transit for the cargo. The situation then could be summed up as one of overpromising and underdelivering.

339. However, feedback gathered from various parties seemed to indicate that the situation has improved significantly in 2024. Moving a container between Khorgos and Poti is now estimated to take about 15 days. The same journey would have taken about 30 days a year ago. A block train service operated by Trans Eurasia International Logistics which departed from Xi'an on 16 August 2024 took 16 days to reach Poti. The whole journey from Xi'an in PRC to Mannheim in Germany is expected to take 28 days to complete[75].

340. With the current infrastructure, container-handling capacity of CAREC Corridor 2 is estimated at 80,000 TEUs per annum. This is based on the container-handling capacity of Kazakhstan Port of Aktau which is about 80,000 TEUs per year. The connecting Port of Baku in Azerbaijan has a slightly higher container-handling capacity of 100,000 TEUs per year. Significant challenges also remain with the nature of the product being multimodal and involving multiple cross border touchpoints. Shippers typically lack supply chain visibility to track the status and route once the container enters Central Asia. Border-crossing procedures are still seen to be cumbersome, which can cause excessive and unexpected delays to shipments. Another issue is the rail network being shared with passenger train services. For example, in Georgia, the average speed of freight train between Poti and the Azerbaijan border is 40 km/h.

341. Nonetheless, APM Terminals Poti sees an upside potential in developing container trade for CAREC Corridor 2 and views Georgian Railways as a key partner. Economic growth in Central Asia will be key to driving demand expansion. The development is expected to help address the current container trade imbalance where repositioning empty containers remains a challenge.

75 Source: Interview held with Trans Eurasia International Logistics on 5 September 2024.

9.4 Regional Connectivity

342. Movements of general cargo, which include containers, are done almost exclusively by trucks. Rail transportation accounts for less than 2% of containers handled at Poti[76]. A key reason is trucks offer more flexibility in transporting to the Caucasus and Central Asia regions and can transport bigger cargo loads. A truck can transport 33 pallets whereas a FEU container carries only 24 pallets[77]. The rates are often comparable. Sending cargo by truck from Poti to Dushanbe takes about 14–21 days[78].

343. The E60 highway connects directly between the ports of Poti in Georgia and Alat in Azerbaijan. Driving time is approximately 10 hours between both ports and the border. However, a key issue for truck transportation is congestion at the Azerbaijan-Georgia border which can result in two days of waiting at the border. This can cause container shipments between Baku and Poti to take 4–5 days. It is quite normal to have 800–900 trucks waiting in line from both sides of the border. However, the situation has improved as it used to be 5–6 days of waiting.

344. The E60 highway is a preferred route for truck transit from Türkiye to Baku. A truck can take 5–6 days to reach Istanbul from Tbilisi with 2 days of waiting at Sarpi. Sending cargo by truck from Kuryk to Khorgos will take another 12 days. The Georgian International Road Carriers Association (GIRCA) shared that there were 150,000 truck trips transiting through the country from Türkiye through Baku to Central Asia in 2023. The numbers are expected to grow to 200,000 truck trips in 2024. The road capacity for trucks in Georgia is estimated at 5,000 vehicles per day for the highway segment[79]. GIRCA also shared that PRC is testing truck transportation from Khorgos to Tbilisi via Aktau and four trucks are understood to have made the journey in Spring 2024.

345. As with the road network, the rail network connects the Port of Poti directly to the Port of Baku. There is a stretch of about 60 kilometers of single-track railway line that connects Poti through Senaki to somewhere near Samtredia. Thereafter, a double-track railway line connects through Tbilisi and the border crossing points of Gardabani in Georgia and Böyük Kəsik in Azerbaijan, to the Port of Baku. Estimated travelling time for a freight train is 14 hours between Poti and the border and another 15 hours between the border and Port of Baku[80]. Block trains take 3–4 hours to cross the border at Azerbaijan. Hence, the Port of Poti can be seen to have better connectivity compared to the Port of Batumi.

346. The rail network serves an important function for the Port of Poti. APM Terminal's off-dock container yard at Poti handles about 20%–25% of the containers for the port. The remaining containers are handled in various off-dock locations near to the port. Many of these facilities have direct connections to the rail network such as GTE Poti Container Terminal and Iceberg Poti.

347. GTE Terminal at Poti handles mostly cars. Most of the containers are transported as full loads and delivered to Baku in Azerbaijan, Armenia, Turkmenbashi in Turkmenistan, and Aktau and Kuryk in Kazakhstan. The company is beginning to handle containers from Korea with cargo consisting mostly of cars. Containers from Korea are transported via the ocean route with a transit time of 45–60 days. The transit has become longer due to the Red Sea crisis as shipping lines adopted the Cape route to bypass the traditional Suez Canal route. In normal times, the transit time would take 30–40 days. The company views it as more cost effective to use the all-sea route for cargo shipments between East Asia and Poti. GTE Terminal also handles containers from the US which are mostly second-hand cars.

76 Source: Interview held with APM Terminals Poti on 19 August 2024.
77 Source: Interview held with Georgian International Road Carriers Association on 20 August 2024.
78 Source: Interview held with PACE Terminal on 19 August 2024.
79 Source: Interview held with Ministry of Economy and Sustainable Development of Georgia on 20 August 2024.
80 15 hours for the rail segment in Azerbaijan is estimated by consultants based on total rail journey time of 36 hours between Poti and the Port of Baku.

348. Containers The company is testing block trains from China to Georgia with each block train shipment comprising 35–45 FEU wagons. It costs about USD8,000 to transport an FEU container from Xi'an to Poti through Aktau Port with the journey taking 25–30 days. The experience of GTE lies in contrast that of Trans Eurasia International Logistics which recently handled a block train service for the same that took 16 days to reach Poti from Xi'an. It remains to be seen if the service standards and productivity can be sustained, especially when transit traffic increases for CAREC Corridor 2.

349. While GTE Terminal views Asia to have potential to grow export containers through CAREC Corridor 2, there remains a shortage of rail platforms and the challenge of having to manage the multimodal transportation arrangement which requires multiple handling. Limited shipping capacity between Baku and the Kazakhstan ports of Aktau and Kuryk was also cited as a concern. As a result, containers typically have to wait for 3–5 days at the Kazakhstan ports. Congestion at Poti could also see shipments taking about a week to process.

350. Another company which operates an off-dock facility is Iceberg Poti. The company has a cold storage facility with rail access where products can be moved easily between reefer containers on rail wagons and the storerooms. Each shipment of FEU reefer containers can comprise of 12 to 15 containers with each container weighing about 28 tons. The company has about 300 reefer containers in circulation. Iceberg Poti shared that moving the containers by rail from Poti to Baku can take 4–5 days with another 48–72 hours by ferry from Baku to Aktau. The company has its own ferry to make the transportation.

351. Most of the shipping services connect Poti to various ports in Istanbul and the Aegean Sea regions. This is unlike the Port of Batumi which has a few vessels operated by MSC that connects the port to beyond the Aegean Sea area, reaching the western Mediterranean and North Africa. Hence, the Port of Poti will be largely dependent on feeder services that perform transshipment operations at container terminals located in places such as Ambarli in Türkiye and Piraeus in Greece.

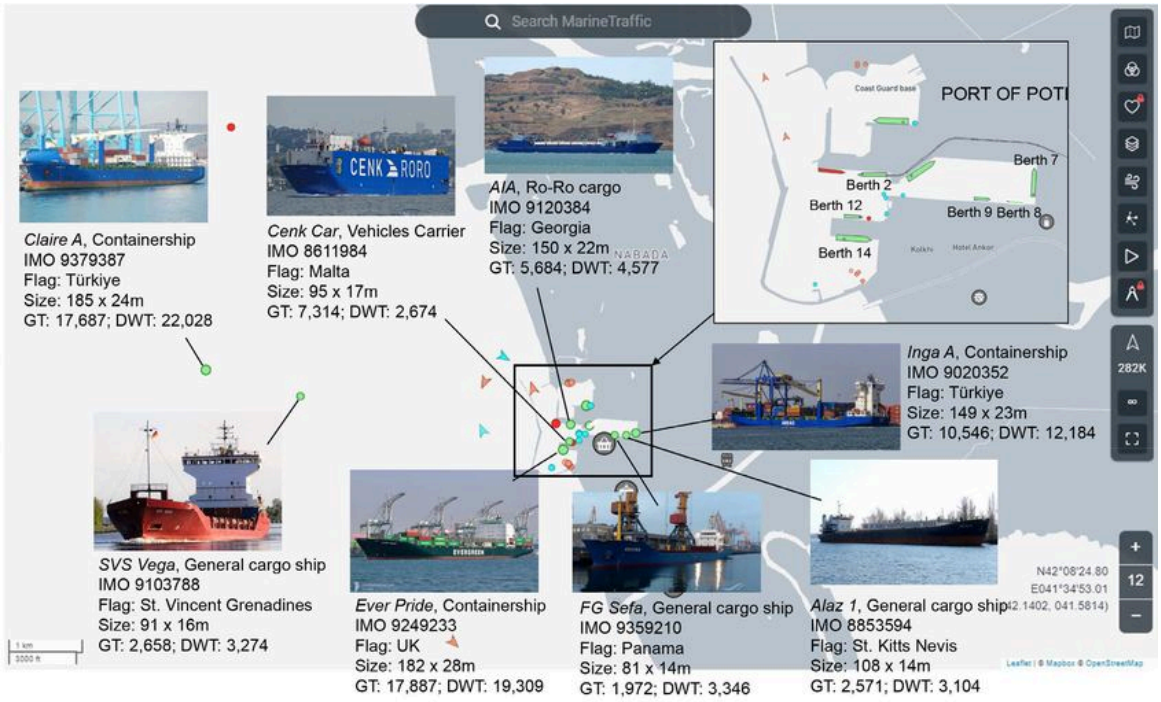
352. The Turkish Port of Ambarli located near to Istanbul is a prominent port-of-call for several vessels that call at Poti. They include the 1,138-TEU *Inga A*, 1,221-TEU *Daniel A*, 1,604-TEU *Claire A*, and 1,618-TEU *Karla A* containerships which are mostly operated by Turkish shipping company Arkas Line. The *Karla A* is operated by CMA CGM while the French shipping line also charters slots on the *Claire A* and sister ship *Bernard A*. These vessels are all flagged with Türkiye and typically provide weekly shuttle runs between the Ambarli Port region and Poti.

353. Another prominent port-of-call connected to Poti is the Greek Port of Piraeus which is located near to the city of Athens. A round trip between Poti and Piraeus takes about 10 sailing days. Vessels that provide this connection include the 951-TEU general cargo ship *Moliva* operated by UFS, 1,118-TEU general cargo ship *MSC Ada F* operated by MSC, 1,604-TEU containership *Cristina A* operated by Arkas Line, and 1,618-TEU containership *Ever Pride* operated by Evergreen The *Cristina A* and *Ever Pride* also call at the Romanian Port of Constanta in the same service schedule.

354. The study noted that shipping line Maersk is exploring the feasibility of shipping containers from Poti to the Italian Port of Trieste or Croatian Port of Rijeka where they can be subsequently moved by rail to North Europe. The route could offer greater reliability than going through the rail networks of Romania or Bulgaria. Nonetheless, there is a possibility of having to wait for 2 to 2.5 days at the Straits of Bosporus which creates uncertainty.

355. There are significantly more container-handling vessels calling at the Port of Poti compared to the Port of Batumi. The figure showed that all four container-handling berths operated by APM Terminals are occupied. These are Berth 2 used by Ro-Ro cargo ship *Aia*, Berth 7 used by containership Inga A, Berth 12 used by vehicle carrier *Cenk Car*, and Berth 14 used by containership *Ever Pride*. The figure also shows Berth 8 and Berth 9 occupied respectively by general cargo ships *Alaz 1* and *FG Sefa*. In addition, we see a general cargo ship *SVS Vega* and a containership *Claire A* waiting in the anchorage.

Figure 51: Vessel Situation in the Port of Poti as at 1000 Hours on 11 September 2024



Source: Using information from MarineTraffic, VesselFinder and My Ship Tracking.

356. The dwell time for a container-handling vessel at the Port of Poti typically averages slightly more than one day. This applies to different vessel types including containerships, general cargo ships and vehicles carriers. However, we observed vessel dwell time for the general cargo ship *SVS Vega* to be nine hours or less. This can be due to requirements set by the vessel charterer Trans Eurasia International Logistics which uses the vessel to transport containers in their block train service. The vessel had only recently begun to call at Poti and runs a shuttle service between the Georgian port and Burgas in Bulgaria. As mentioned above in paragraph 17, the block train service was able to achieve a transit time of 16 days from Xi'an to Poti. The final destination being Mannheim in Germany which will take another 9 to 12 days to complete, including crossing the Black Sea.

Table 61: Vessel Dwell Time for Ships That Call at Port of Poti (August–September 2024)

Vessel	Type	Arrival	Departure	Time in Port
Ever Pride	Containership	01/08 07:36	02/08 10:36	1 day 3 hours
Inga A	Containership	04/08 10:13	05/08 11:28	1 day 1 hour
Cenk Car	Vehicles carrier	12/08 11:35	12/08 23:24	11 hours
Med Aydin	Containership	15/08 09:21	17/08 13:28	2 days 4 hours
Claire A	Containership	17/08 14:21	18/08 21:31	1 day 6 hours
Inga A	Containership	19/08 17:41	20/08 20:12	1 day 2 hours
Cenk Car	Vehicles carrier	19/08 18:37	20/08 08:45	14 hours
Gozde Bayraktar	General cargo	20/08 14:57	21/08 14:53	23 hours
Ever Pride	Containership	21/08 22:41	23/08 08:57	1 day 9 hours
Ayse Naz Bayraktar	General cargo	25/08 03:33	25/08 19:36	16 hours
MSC Ada F	General cargo	25/08 15:00	26/08 15:44	1 day
Med Aydin	Containership	27/08 08:25	29/08 09:05	2 days
Cenk Car	Vehicles carrier	27/08 00:17	27/08 16:08	15 hours
Claire A	Containership	29/08 09:54	31/08 00:07	1 day 14 hours
Karla A	Containership	29/08 13:32	30/08 19:08	1 day 5 hours
Inga A	Containership	30/08 22:35	01/09 03:13	1 day 4 hours
Gozde Bayraktar	General cargo	01/09 02:09	02/09 09:00	1 day 6 hours
SVS Vega	General cargo	01/09 06:29	01/09 16:17	9 hours
Cenk Car	Vehicles carrier	03/09 13:45	04/09 18:33	1 day 4 hours
Ayse Naz Bayraktar	General cargo	06/09 10:05	07/09 11:53	1 day 1 hour
FG Sefa	General cargo	07/09 12:05	14/09 02:53	6 days 14 hours
Med Aydin	Containership	08/09 12:41	10/09 15:50	2 days 3 hours
SVS Vega	General cargo	08/09 17:13	08/09 23:41	6 hours
MSC Ada F	General cargo	03/09 08:45	06/09 09:37	3 days
Daniel A	Containership	09/09 00:45	10/09 14:08	1 day 13 hours
Inga A	Containership	10/09 14:33	11/09 20:21	1 day 5 hours

Source: MyShipTracking.

Port of Baku

10

10.1 Introduction

357. The Port of Baku is located on the western shores of the Caspian Sea about 70 kilometers to the south of Baku City in Azerbaijan. Apart from being at the junction of main highway and railway networks of Azerbaijan, the port is also strategically located to serve three major trade corridors. The port was relocated to Alat in 2018 to accommodate growing maritime traffic. The Port of Baku, or Alat Seaport, is operated by Baku International Sea Trade Port CJSC (BISTP). The state-owned company also owns, invests and develops the port.

10.2 Port Facilities and Infrastructure

358. The Port of Baku occupies an area of 400 hectares. As an important transport node on the Trans-Caspian International Transport Route (TITR), the port is designed to handle all types of cargo. There are four terminals which are the Ro-Ro terminal ferry terminal, general cargo terminal and fertilizer terminal. The first stage of development was completed in 2018 which endows the port with 15 million tons in total handling capacity. This includes 100,000 TEUs of container-handling capacity. The port also comes with 40 hectares of bonded area which contains 10,000 sqm of closed warehousing space. The total open warehouse area is 56,000 m^2.

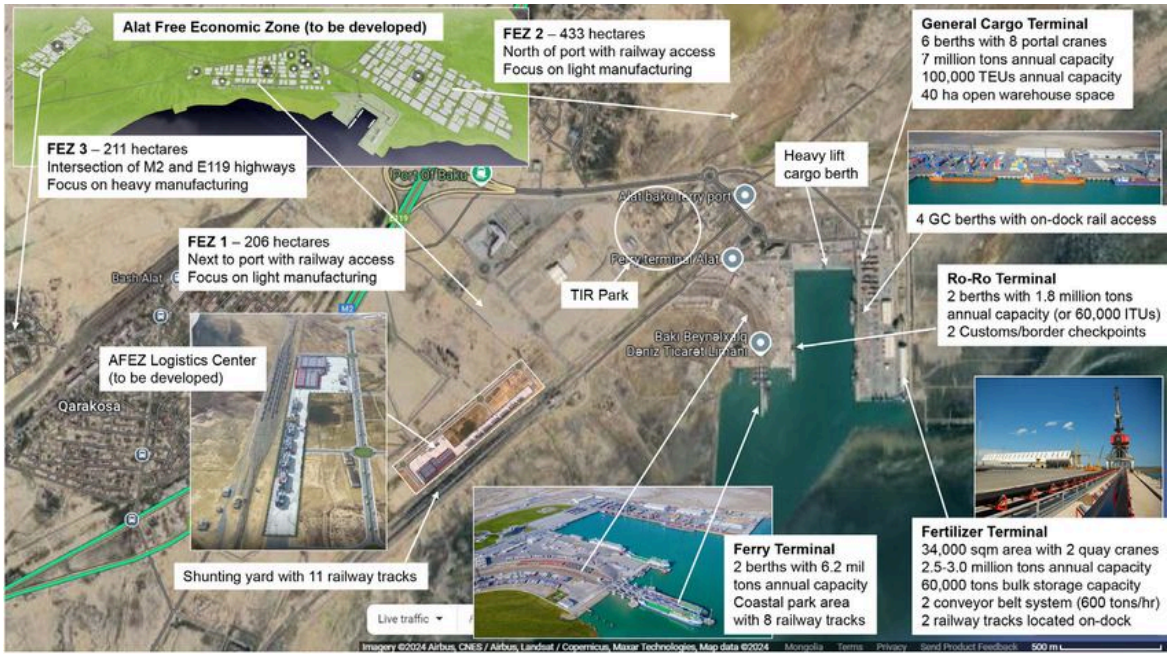
359. The Ro-Ro terminal has a total berth length of 457 meters and is designed to handle 1.8 million tons of cargo or 60,000 ITUs (intermodal transport units) per year. There are two Customs checkpoints with each capable of receiving eight lines of vehicles. There are weigh brides installed for vehicles and parking areas for import, export and transit vehicles. Universal tractors can be deployed for discharging and loading trailers from the vessels. A close warehouse is situated on-dock for storage and transfer of cargo. The terminal is also equipped to handle passengers.

Table 62: Key Facilities for Berths at Alat Seaport

Facility	Annual Capacity	Berths	Berth Attributes	Draft
Ro-Ro Terminal	1.8 million tons (60,000 ITUs)	2	Ro-Ro North 360 m Ro-Ro South 97 m	7.0 m
Ferry Terminal	6.2 million tons	2	No. 1 – 162 m No. 2 – 162 m	6.5 m
General Cargo Terminal	7.0 million tons (includes 100,000 TEUs)	6	Berth 1 – 162 m Berth 2 – 295 m Berth 3 – 162 m Berth 4 – 163 m Berth 5 – 162 m Berth 6 – 163 m	7.0 m
Fertilizer Terminal	2.5–3.0 million tons	1	2 conveyor belt system with cargo handling rate of 600 tons per hour	7.0

Source: Consultants, using information including from the Port of Baku.

Figure 52: Layout of Alat Seaport and Surrounding Area



Source: Using information from various sources including Port of Baku.

360. The ferry terminal contains two berths which are capable of processing 6.2 million tons of cargo. Each berth has a length of 162 meters and is connected to an on-dock rail yard with four railway tracks. There is a shunting yard located about 2.0 kilometers from the ferry terminal by rail distance that is equipped with 11 railway tracks. There is a planned logistics center to be developed next to the shunting yard.

361. The general cargo terminal has six berths which are capable of processing up to 7.0 million tons of cargo including 100,000 TEUs in annual capacity. Four of the berths are equipped with on-dock rail access that can handle up to 25 wagons[81]. The terminal has eight portal cranes with productivity of 20 moves per hour. It takes about 24 hours to discharge or load a container ship. The terminal also comes with 40 hectares of open warehouse space. There is also 10,000 sqm of closed warehouse space available. The container yard is being expanded with the aim of raising annual container-handling capacity to 153,000 TEUs[82]. The project is scheduled to be completed in 2024.

362. There is a newly constructed fertilizer terminal capable of handling 2.5–3.0 million tons of cargo per year. The facility has two warehouses with a total storage capacity of 60,000 tons. Each warehouse has a dedicated intake system and a dedicated train loading station. There is also a conveyor belt system along the whole berth length that can process 600 tons of fertilizers per hour. The train loading station also has an outtake capacity of 600 tons/hour. There are two railway tracks which can accommodate 50 hopper wagons. The port aims to have Baku becoming a major fertilizer transshipment hub between the Black Sea and Caspian Sea regions and Central Asia. The terminal is operated as a joint venture between the Port of Baku and Albayrak Group.

363. Located to the north of the port is Free Economic Zone (FEZ) 1 of the Alat Free Economic Zone (AFEZ). The approved master plan sees AFEZ occupying 719 hectares of land over three separate zones. These are FEZ 1 and FEZ 2, which focuses on light manufacturing, and FEZ 3 which focuses on heavy

81 Source: Interview held with Port of Baku on 22 August 2024.
82 Source: Interview held with Port of Baku on 22 August 2024.

Figure 53: Ro-Ro Terminal at Alat Seaport



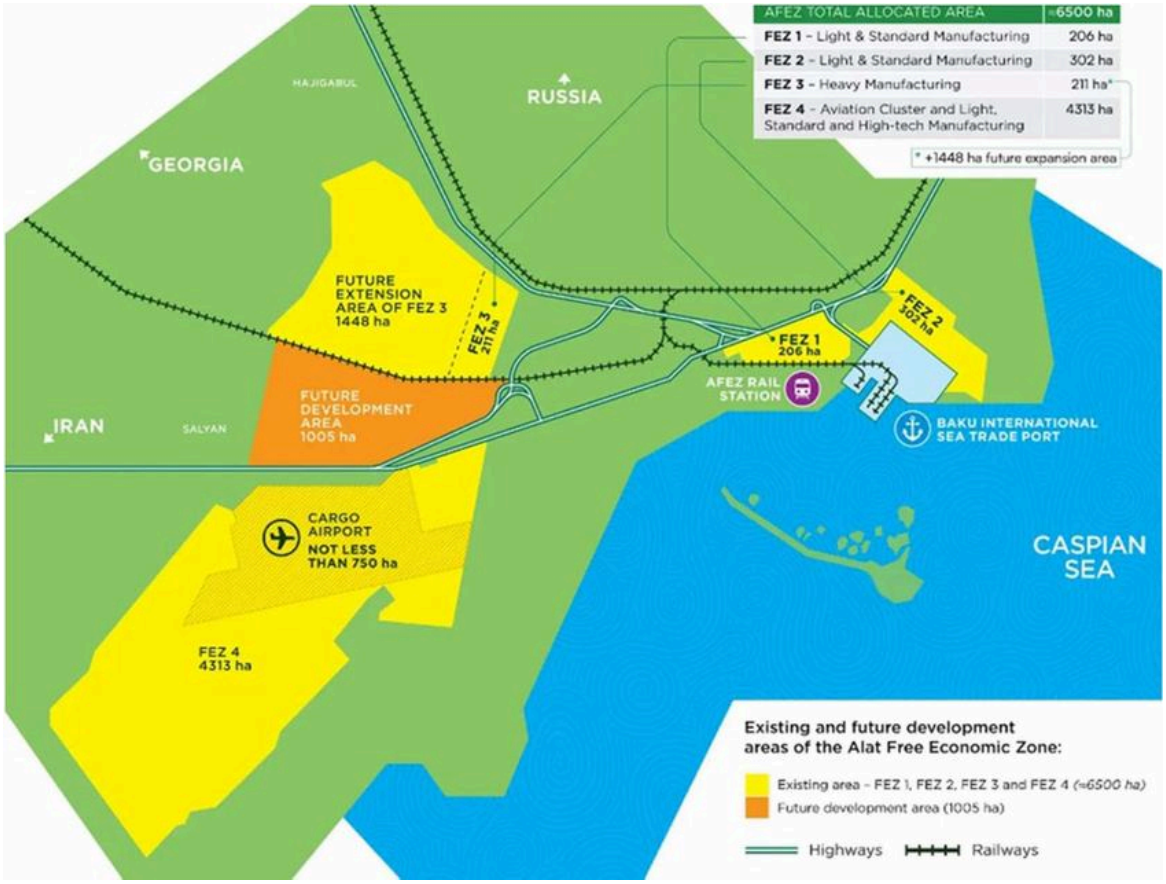
Source: Alat Seaport Officials.

manufacturing. There is also FEZ 4 which aims to focus on aviation cluster, light manufacturing and high-tech manufacturing. A cargo airport will be established with an annual cargo-handling capacity of 500,000 tons. There are plans to increase the cargo-handling capacity of the airport to 1.5 million tons per annum. The cargo airport is projected to be operational in 2026. In total, approximately 6,500 hectares of territory has been allocated to the AFEZ with an additional 1,000 hectares of area reserved for future expansion.

364. A logistic center is to be developed next to the off-dock shunting yard. Known as the AFEZ Logistics Center, the facility will occupy 16 hectares of land. Total storage capacity is planned for 15,500 pallets in an area of 14,500 sqm. This includes having a 2,200-pallet capacity for products that require special storage, and 1,300-pallet capacity for temperature-controlled products. Warehouse and cross-docking facilities will allow for simultaneous loading or unloading of 50 vehicles. As the facility is adjacent to the railyard, it will also be capable of simultaneous loading or unloading for 40 train wagons. The container yard will see installation of one rail mounted gantry crane.

365. The Port of Baku projects cargo volume could reach 17 million tons by 2030 and 22 million tons by 2040 based on the baseline scenario. The topline scenario gives the projections at 31 million tons for 2030 and 42 million tons for 2040. Corresponding projections for the bottom scenario ate 11 million tons by 2030 and 15 million tons by 2040. In the projection, containers and oil are likely to see the fastest growth. Sustained economic growth and ongoing developments of transportation infrastructure in the South Caucasus and Central Asia are also expected to boost growth in grain, fertilizer and metal cargoes. The container and fertilizer could even be fully utilized before 2030.

Figure 54: Master Plan of the Alat Free Economic Zone

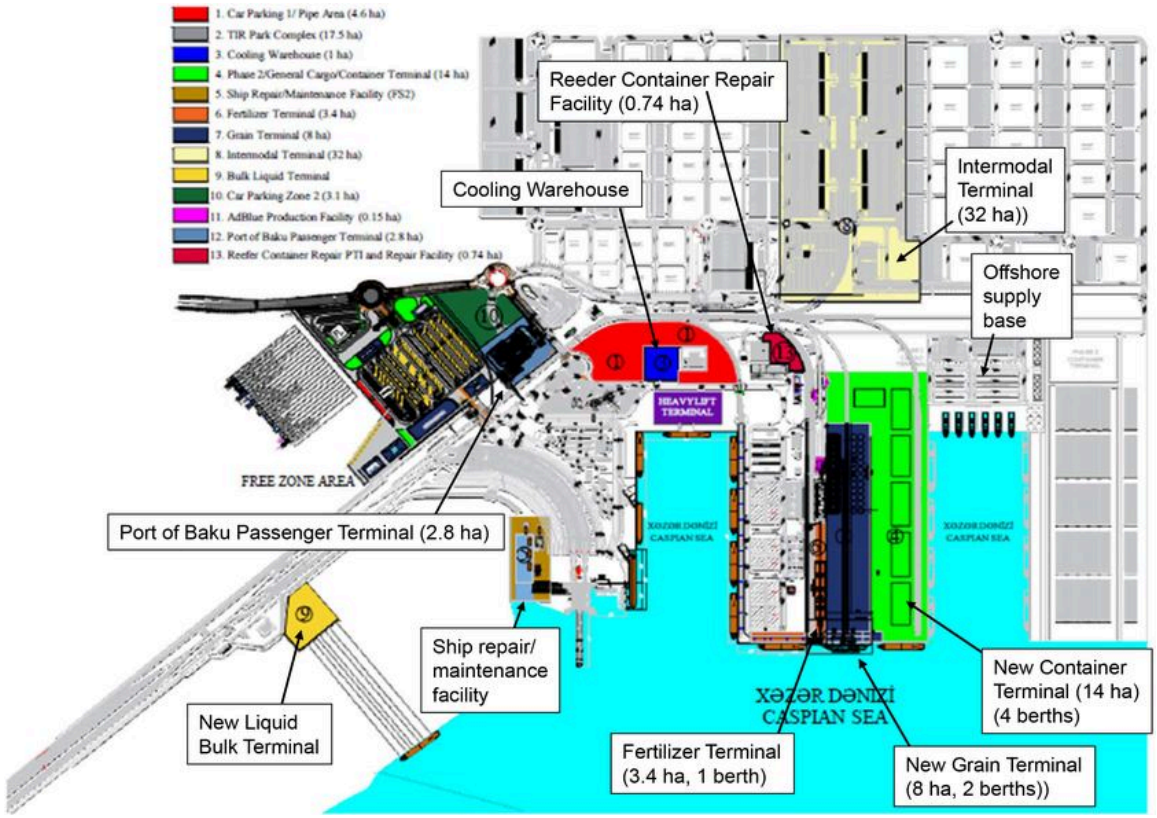


Source: Alat Free Economic Zone (2024). Available online at: https://afez.az/map.

366. The Port of Baku also plans to expand annual cargo-handling capacity to 25 million tons of total cargo and up to 500,000 TEUs of containers. The current number of 13 berths will be increased to 17 berths. Container-handling capacity will see significant expansion with a new terminal that comes equipped with four berths. The new container terminal will occupy 14 hectares of land. Located close to the existing container berth (i.e., General Cargo Berth 3) and the new container terminal will be a reefer container repair facility, A new grain terminal of 8 hectares will also be developed. The terminal will be adjacent to the fertilizer terminal which occupies 3.4 hectares of land The expanded Port of Baku will also see a liquid bulk terminal developed to the southwest of the port, a ship repair and maintenance facility next to the current ferry terminal, an offshore supply base located to the east of the new container terminal, and a 32-hectare intermodal terminal located to the north of the port. There will also be a passenger terminal developed on 2.8 hectares of land.

367. Digitalization and climate action strategies are viewed as important areas by the port. The Digital Transport Logistics Information system is being developed as an integrated platform to facilitate real-time information exchange among stakeholders of the port to improve coordination, minimize dwell times, provide real-time tracking of containers, and improve visibility of the transport chain. The Port of Baku is understood to be digitalizing electronic data exchanged for vessel arrivals and container operations. Azerbaijan Railways is also embarking on digitalization efforts by creating real-time reporting of container trains on the route. The Azerbaijan Customs Committee is also developing a digital declaration system which is set to begin operational testing. Such electronic platforms will streamline the process of submitting, processing and managing customs declarations. The system will also allow businesses to interact with the Customs Authority digitally, and thereby improve efficiency, accuracy and compliance.

Figure 55: Phase 2 Development of Alat Seaport



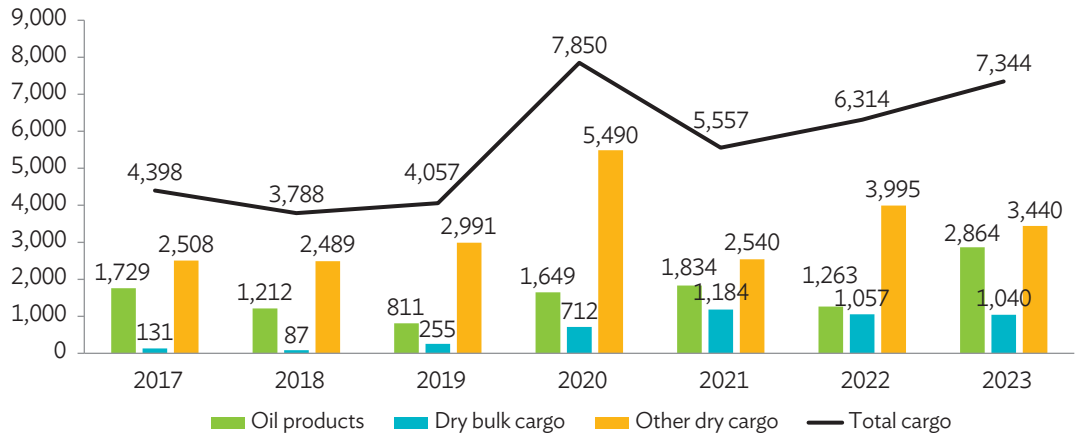
Source: Alat Seaport.

10.3 Container-handling Performance

368. The Port of Baku handled 7.3 million tons of cargo in 2023. The performance was achieved on a growth of 16.3% from 6.3 million tons handled for 2022. A key factor driving the growth was the expansion in oil products by 126.8% to reach 2.9 million tons. The growth in cargo volume for oil products was able to offset the decline in throughput handled for dry bulk cargo which fell by 1.6% to 1.0 million tons and other dry cargo which declined by 13.9% to 3.4 million tons. For the first seven months of 2024, the port saw 4.6% growth in total cargo volume. Oil products continued to witness expansion with a similar growth rate of 4.6%. Other dry cargo, which includes containers, the cargo category managed to reverse the previous year of decline to achieve a growth of 7.2%. However, for dry bulk cargo, the decline continued with a 3.7% fall in traffic seen for the period of January to July.

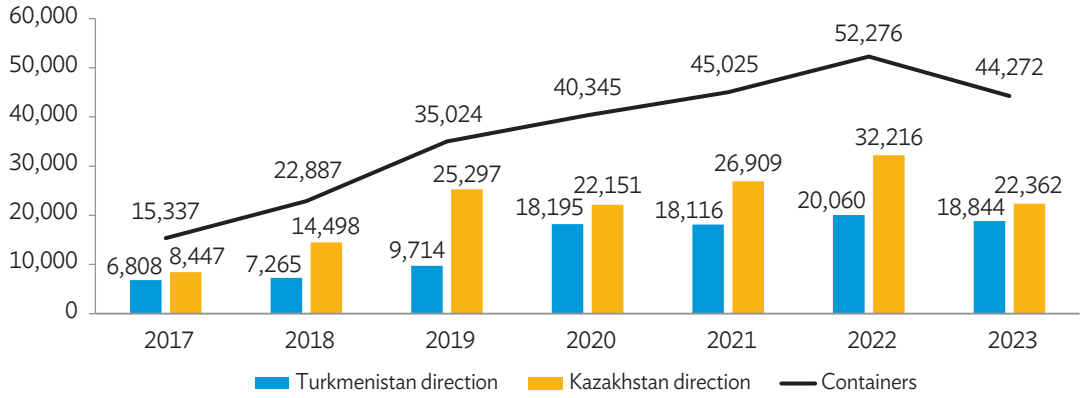
369. Turning to containers, the Port of Baku handled 44,272 TEUs in 2023, which marked a decline of 15.3% from 52,276 TEUs in 2022. Container-handling capacity utilization is only 44.3%. Containers bound for or originate from Kazakhstan accounted for slightly more than 50% of total container traffic. The figure showed that Kazakhstan-related container traffic had dominated container traffic flows through Alat Seaport where the market share reached a high of 72.2% with 25,297 TEUs handled in 2019. Nonetheless, performance for this category of traffic was quite volatile with double-digit increases and declines recorded in the following years of 2020 to 2023. The year 2023 alone saw a 30.6% drop in Kazakhstan-related container traffic, which is almost 10,000 TEUs less containers handled compared to 2022. In contrast, container throughput related to Turkmenistan showed greater stability and remained at between 18,000 TEUs to 20,000 TEUs between 2020 to 2023.

Figure 56: Total Cargo Handled at the Port of Baku



Source: Alat Seaport.

Figure 57: Container Traffic Handled at the Port of Baku



Source: Alat Seaport.

370. The level of containerization at the Port of Baku is estimated to be 12.9% for 2023[83]. Of the container traffic handled at the port, the bulk of which will consist of transit containers. There were about 48,000 TEUs of transit containers in 2022. Due to capacity and various operational issues, transit traffic fell to 36,000 TEUs in 2023. Even so, the share of transit containers remains above 80% of total container traffic. Transit traffic is expected to see significant growth. Kazakhstan-related containers experienced a phenomenal growth of 93.0% in the first seven months of 2024. The rate of growth was much stronger compared to 17.9% witnessed for Turkmenistan-related container traffic. The total number of Kazakhstan-related containers reached more than 5.000 TEUs in June and July of 2024[84]. Exports from Kazakhstan comprises 70% of FEU containers and 30% of TEU containers. Overall, the period of January to July 2024

83 The numbers for containerization are estimated based on an average of 13.07 tons per TEU of container handled at the Port of Baku. The figure is derived from design container-handling capacity of General Cargo Berth No. 3 which is dedicated to handle containers by the port. The berth has an annual handling capacity of 2.0 million tons and 153,000 TEUs of containers. This translates to an average weight of 13.07 tons per TEU of container. Total container throughput for 2023 of 44,272 TEUs is calculated to contain 579,000 tons of containerized cargo. Based on the dry cargo volume handled by the port, which was 4.9 million tons in 2024, the containerization level worked out to be 12.9%.

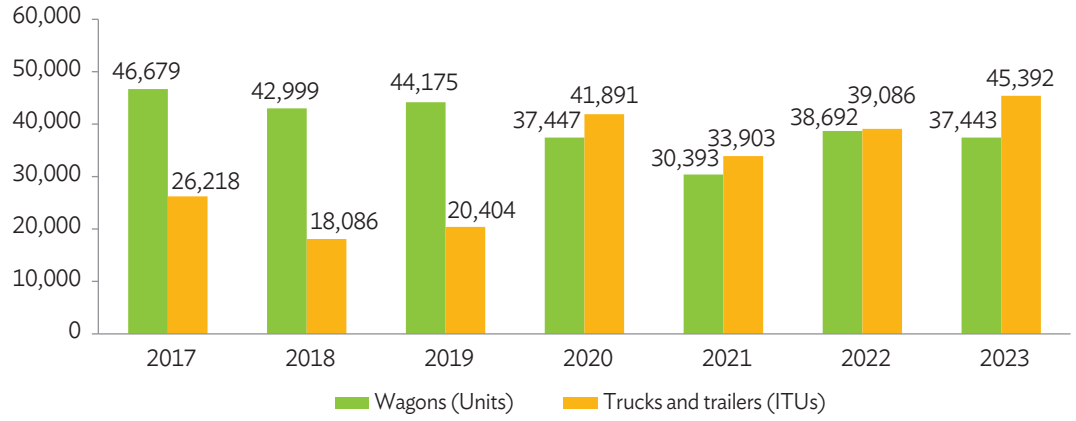
84 Source: Interview held with the Port of Baku on 22 August 2024.

saw container throughput for the Port of Baku rise by 55.9% to reach 30,184 TEUs. About 85% of the transit containers are westbound while 15% are eastbound. Azerbaijan Railway known to be offering 50% discount for eastbound containers[85].

371. In the first seven months of 2023, container block trains from PRC to Azerbaijan showed remarkable increase. In this period, 128 block trains from PRC entered Azerbaijan, with 74 import and 54 transiting to Georgia and onto Europe. Container block trains are key drivers for container traffic in CAREC Corridor 2. 173 block trains in the direction from Xi'an to Baku are expected in 2024. Of these, 67 are transit traffic and 87 are imports to Azerbaijan. 154 block trains have arrived in the Port of Baku as of end-August 2024 with another 19 block trains expected to be received. As a whole, CAREC Corridor 2 has the capacity to handle some 70,000 to 80,000 TEUs of containers.

372. There were 45,392 ITUs of trucks and trailers and 37,443 wagons handled in 2023 by the Port of Baku. The trend for trucks and trailers shows a rising trend with the jump between 2019 and 2020 being particularly significant. The number of trucks and trailers doubled from 20,404 ITUs in 2019 to 41,891 ITUs in 2020. The first seven months of 2024 saw an 18.9% growth with 29,227 ITUs of trucks and trailers received by the port.

Figure 58: Wagons, Trucks and Trailers Handled at the Port of Baku



Source: Alat Seaport.

373. More than 90% of the wagons handled at the ferry terminal are transit traffic. Nonetheless, the figure above appears to exhibit a declining trend, falling from 46,679 units handled in 2017 to 37,443 units handled in 2023. Half of the period in the figure recorded declines in wagon units processed by the port. In the first seven years of 2024, the number of wagons grew by 15.9%. It remains to be seen if this performance can be sustained for the remaining months to enable the port to see growth for this traffic category in 2024.

10.4 Regional Connectivity

374. The Port of Baku is well-connected to serve rail, road and maritime traffic for various trade corridors that pass-through Azerbaijan. The 9,400–11,000 kilometers route which connects Lianyungang in PRC through the cities of Almaty and Aktau in Azerbaijan, Alat Seaport in Azerbaijan, and Poti in Georgia to reach Europe is expected to take 13–23 days to complete. By comparison, the traditional sea route, which passes through the Suez Canal and measures some 16,400 kilometers, will take 35–45 days to complete. However, with the Red Sea crisis and shipping lines having to use the Cape route, the distance lengthens to some 30,500 kilometers and the journey from Lianyungang to Europe will require 60–65 days.

85 Source: Interview held with the Azerbaijan Ministry of Digital Development and Transport on 21 August 2024.

375. Other than Kazakhstan in Central Asia, the Port of Baku also considers Uzbekistan and Turkmenistan to be constituents of CAREC Corridor 2. In fact, almost half of the container throughput handled by the port for 2023 can be attributed to Turkmenistan. Nonetheless, conditions of operations can be difficult for businesses in Turkmenistan. By comparison, Kazakhstan is seen to offer greater ease of doing business. As such, the coming years are expected to see container traffic grow significantly for the Kazakh-route. A key driver of this traffic will be the container block train services from PRC.

376. Azerbaijan positions itself as a transit country which can facilitate international transit cargo across the Caucasus. Transit cargo has increased from 5.7 million tons in 2019 to 13.4 million tons in 2023, achieving a growth of 2.4 times. Between 2022 and 2023, cargo volume has risen by 13%. CAREC Corridor 2 is estimated to be capable of handling some 15 million tons of cargo which includes 100,000 TEUs per year. These numbers are also the design capacity for the first phase of the port. According to TITR, volume of cargo transported via CAREC Corridor 2 for the first five months of 2024 grew by 30% to reach 1.3 million tons. During the first six months of 2024, the number of block trains also rose by 13 times to reach 105 services. During the same period, containers transported along the TITR grew by 135% to reach 19,800 TEUs. TITR estimates total capacity of the route to be 5.78 million tons of cargo and 80,000 TEUs for container throughput.

377. Azerbaijan has an inter-ministerial body called the Transit Council. The body is chaired by the Minister of the Ministry of Digital Development and Transport. The Transit Council sets targets and performance indicators for each ministry and authorities, and review is done periodically to address issues faced with international cargo transportation, border-crossing procedures, coordination between private companies and government agencies, and improving the regulatory framework. On 23 November 2023, an action plan was launched to increase the transit potential of international transport corridors that passes through Azerbaijan.

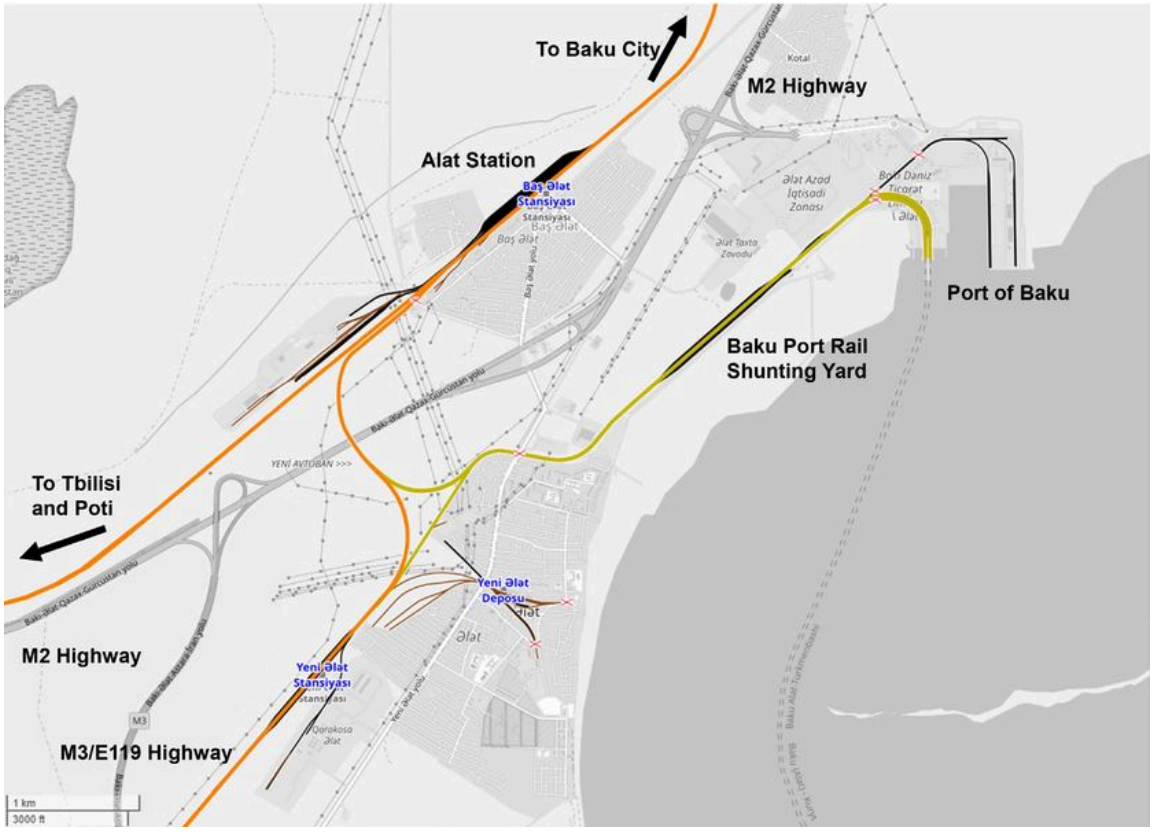
378. In 2023, the rail mode of transportation handled slightly more cargo at 6.7 million tons compared to road transportation which moved 6.5 million tons of cargo[86]. Container block trains are seen as a key driver for container traffic in CAREC Corridor 2. As mentioned above, the first seven months of 2024 saw 128 block trains coming from China which transported 10,485 TEUs of containers. Each block train service carries an average of 82 TEUs or 41 FEU wagons.

379. The rail network connecting the Port of Baku to Poti pass through the border crossing points are Böyük Kəsik in Azerbaijan and Gardabani in Georgia. The railway capacity between Baku and Poti is estimated at 20 million tons per year. Estimated travelling time for a freight train is 15 hours between Alat and the border and another 14 hours between the border and Poti[87]. Block trains take 3–4 hours to cross the border at Azerbaijan. The railway network in Azerbaijan is double track while some portions of the railway network in Georgia are of single track. There is a stretch of about 60 kilometers of single-track railway line that connects Poti through Senaki to somewhere near Samtredia. Thereafter, a double-track railway line connects through Tbilisi to the border crossing point of Gardabani in Georgia.

380. Maximum handling capacity along the Caucasus is estimated at 50 block trains per month[88]. With a block train capable of transporting 50-55 FEUs, this puts the maximum annual container-handling capacity by railway on the Caucasus at 66,000 TEUs[89]. This number is even lower than the container-handling capacity at ports such as Poti, Aktau or Baku. It could be possible to increase the capacity to 60 block trains per month which translates to 79,200 TEUs in container-handling capacity by the Caucasus railway network. However, performance could be affected with longer transit times. There are discussions about China wanting to increase the volume of rail traffic to 100 block trains per month. A key constraint

86 Source: Interview held with the Azerbaijan Ministry of Digital Development and Transport on 21 August 2024.
87 15 hours for the rail segment in Azerbaijan is estimated by consultants based on total rail journey time of 36 hours between Poti and Alat.
88 Source: Interview held with ADY Containers and ADY Express on 22 August 2024.
89 Calculated based on each block train carrying 55 FEUs, which translates to 50 block trains carrying 5,500 TEUs per month, and therefore 66,000 TEUs per year.

Figure 59: Railway Network connecting Alat Seaport to Tbilisi, Poti and Baku City



Source: Using map data from OpenRailwayMap.

will be the number of rail platforms as handling 100 block trains will require a doubling of the number of wagons available. As of August 2024, there are 1,050 wagons in circulation with Azerbaijan having about 650 wagons and Georgia about 400.

381. The containers will be moved from the port to Alat Station before making the journey to Poti. A block train takes 12–14 days to move from Xi'an to Baku. It takes another 2–3 days to go from Baku to Poti. From Poti, the vessel could reach Constanta in two days and arrive in Germany in four days. Another option which is usually cheaper is to go by sea from Poti to Trieste. The sailing time is about four days, and another 2–3 days to reach Germany. Testing of such block train services began in November 2023. The Port of Aktau is known to give priority to block trains. After reaching the Port of Baku, block trains typically spend less than two days in the port. A key issue identified with regards to the railway network is the lack of rail platforms.

382. The second issue is the lack of cargo going from west to east. The westbound cargo volume being 25 million tons while the eastbound cargo traffic is 9 million tons[90]. The imbalance applies to the container trade as well. This imbalance in the container trade resulted in the lack of empty containers. Azerbaijan is trying to establish a closed loop circulation of containers between China and the country to improve the situation[91]. The country may consider having a container production plant in Baku which may help to improve the availability of empty containers. It will also be helpful to have Baku become a container hub to serve the regional trade. However, there are no specific plans to build a container production plant due to concerns for insufficient demand for containers to generate a profit as of now. However, this option could be viable in the future.

90 Source: Interview held with the Azerbaijan Ministry of Digital Development and Transport on 21 August 2024.
91 Source: Interview held with the Azerbaijan Ministry of Digital Development and Transport on 21 August 2024.

383. The third issue relates to the concern that the end of the Red Sea Crisis could see container traffic significantly reduced. The freight rate to move a container from Xi'an to Poti is about USD6,000 to USD8,000. The crisis had seen the ocean route from Lianyungang to Europe taking 60–65 days, which is an increase of sailing time by 15–30 days. Sending the same container from Shanghai in China to Rotterdam in The Netherlands will cost as much as USD10,500[92]. The longer sailing time by taking the ocean route makes CAREC Corridor 2 become an attractive proposition especially for cities that are located further inland from the coast of China. An example being Xi'an. However, ending of the crisis will see sailing time between Asia and Europe significantly reduced to 35–45 days and cost much lower, which may impact on CAREC Corridor 2 trade. Note that sending a FEU high-cube container from Xi'an to Europe via the ocean route can cost as low as USD2,000 which was seen during October 2023.

384. The fourth issue deals with the capability of handling the projected growth in container transit traffic. An alternative rail option is to go by the Baku–Tbilisi–Kars (BTK) railway line. It takes 6–7 days to go from Alat Seaport to Istanbul. An option is to send the cargo to Mersin which will take 5 days to reach from Alat Seaport. The BTK railway network has an initial capacity to transport 5 million tons of cargo per year. There are plans to increase the cargo-handling capacity to 17 million tons with future upgrades. Another railway network development is the Zangezur Corridor project, which is aimed at linking Baku to Horadiz, Ordubad, Nakhichevan and Kars. The sections of Kars-Nakhichevan and Ordubad-Horadiz sections are under development. Completion of the route could generate a transit potential of 8–10 million tons a year.

385. The fifth issue is the attractiveness of using trucks, which is seen as significant. The headhaul journey for trucks is eastbound. Trucks going from Turkey through Azerbaijan to Central Asia typically include the return journey in their charges. Hence, they can offer nominal rates for the return journey from Central Asia. It takes about 12–14 days to go by truck from Khorgos to Poti. The same journey can take 16–18 days by rail.

386. There are three key highways of Azerbaijan which provide the Port of Baku with a strategic location by being at the crossroad of the East–West and North–South corridors. It can play a key role in improving regional connectivity and facilitate trade. Major road networks converge at the port. This includes the M2 Highway (also known as the E60 from Kurdchu onwards) which connects the cities of Baku, Alat, Ganja and Gazakh to the Georgian Border, the M1 Highway which connects Baku to Guba to the Russian border, and the M3 Highway which connects Baku to Astara to the Iranian border. The M2 Highway forms a key segment of CAREC Corridor 2 while the M1 and M3 highways serve the North–South Corridor.

387. As mentioned above, road transportation handled almost equal volume of cargo in 2023 with 6.5 million tons moved by trucks. However, of the 4.3 million tons of transit cargo handled in 2023, TIR comprises 2.8 million tons while rail handled only 1.5 million tons. The statistics for wagons handled at the Port of Baku seemed to indicate a declining trend while the trend for trucks and trailers handled by the port suggests increasing traffic. In 2024, testing of truck transport from China to Europe began. The future is likely to see more trucks participating in this transport option for CAREC Corridor 2.

388. A key issue that can have a major impact on Trans-Caspian performance is weather conditions in the Caspian Sea. Conditions can prohibit sailing between the ports of Aktau and Kuryk and Baku. Weather conditions can result in the container shipment stopping at Aktau Port for 1–2 days. A delay can be even up to two weeks. For example, there was a block train service which took 27 days to reach Baku from Xi'an due to bad weather in the Caspian Sea. There will be 30–35 days in a year where Trans-Caspian crossing is impossible due to weather conditions[93].

389. The state of precipitation in the Caspian Sea is heavy. The weather radar showed rain appearing to gain intensity from 1900 hours on 6 September 2024 and began to subside in the morning of 7 September. Vessel data showed that there was no movement between the ports of Baku and Aktau in the early morning

92 Source: Quotation from Freightos on 15 September 2024 to ship a FEU High-cube container from Shanghai to Rotterdam. Available online at: https://www.freightos.com/routes/route/cn-baoshan-shanghai/nl-rotterdam.

93 Source: Interview held with the Port of Baku and 22 August 2024.

Figure 60: Major Highways of Azerbaijan



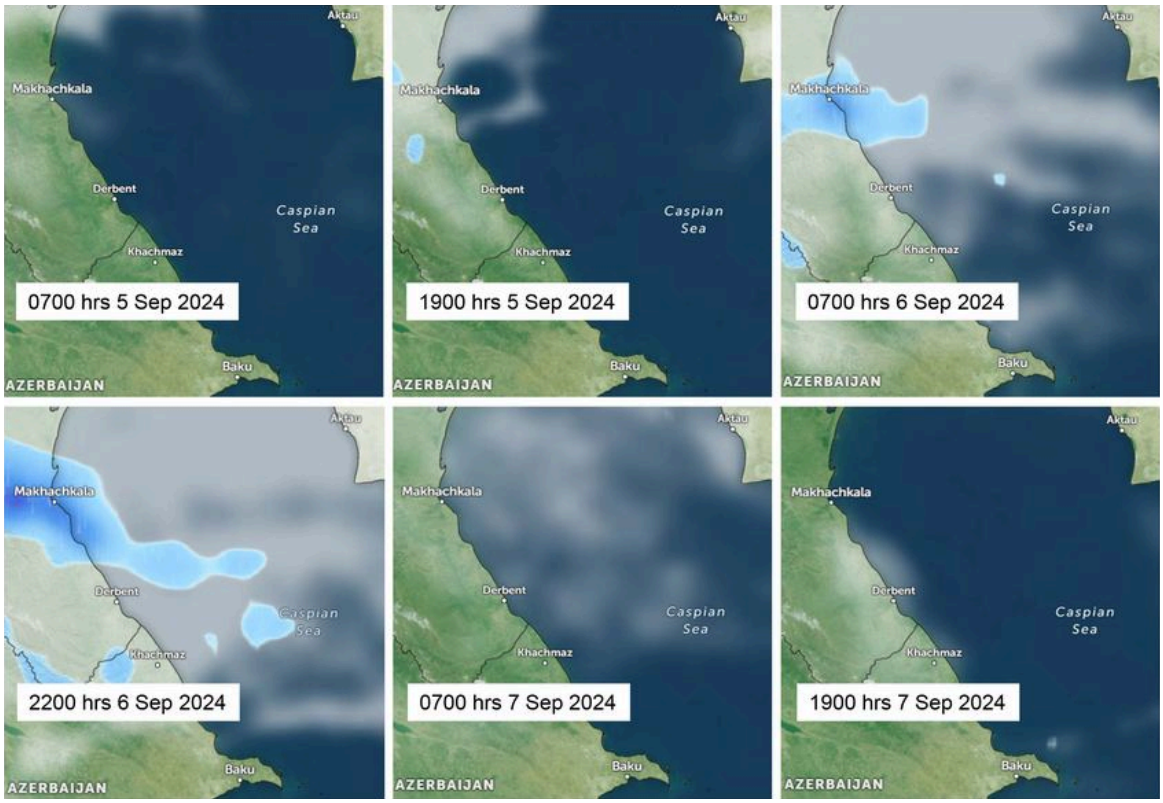
Source: Azerbaijan Road Highways.

of 7 September. At the same time, there were many vessels anchored in Baku with several of the ships involved in the Trans-Caspian trade, connecting between the ports of Baku, Aktau and Kuryk. Another reading of the radar for vessel movement later at 1700 hours on 7 September showed vessels to resume their Trans-Caspian crossing.

390. Major ports to which the port is connected are Turkmenbashi, Kuryk, and Aktau. Although connectivity between the ports of Baku and Turkmenbashi in Turkmenistan is the strongest, connections with the ports of Aktau and Kuryk are of particular importance given their positions in serving CAREC Corridor 2 container trade. Both the Kazakhstan ports are connected by rail or road to China and other major cities in Central Asia. Westbound container block train services from China are known to be using Aktau as the key port-of-loading for the Caspian Sea crossing. As such, availability of vessel capacity to support the trans-Caspian Sea transit becomes an important factor for CAREC Corridor 2 container transportation chain.

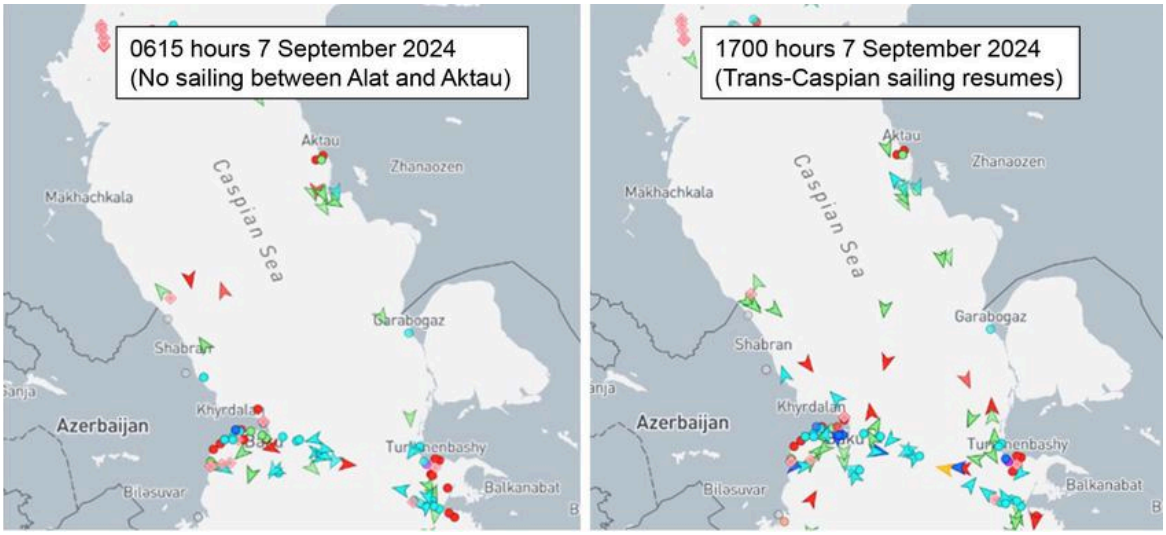
391. Five vessels are typically deployed to sail between the ports of Baku and Aktau, and seven vessels between Baku and Kuryk. The number can vary as vessels can be added to the trade or redeployed for other uses such as transporting grain. Vessels which operate between the ports of Baku and Aktau are shown in **Table 63**. They comprise of three containerships and two general cargo ships. The Kazakhstan-

Figure 61: Tracking of Precipitation Over the Caspian Sea (5–7 September 2024)



Source: Zoom Earth (2024). Available online at: https://zoom.earth/.

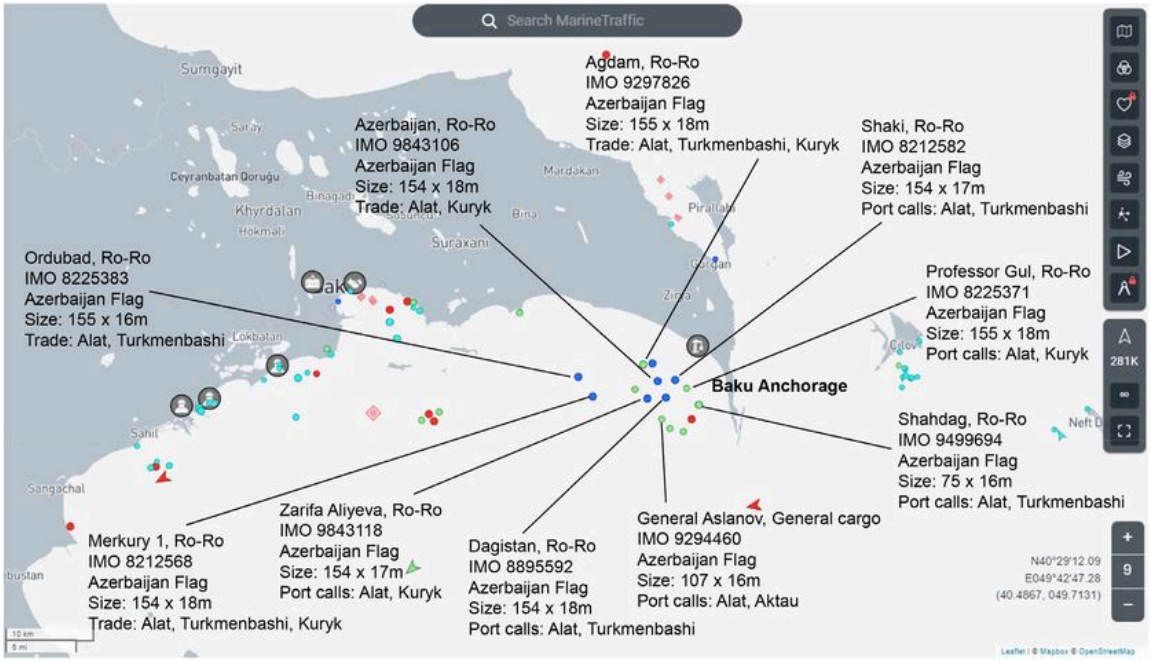
Figure 62: Situation for Trans-Caspian Vessel Traffic on 7 September 2024



Source: MarineTraffic.

flagged containership *Barys* provides a regular service and can transport up to 350 TEUs. Similarly, the Kazakhstan-flagged vessels *Sunkar* and *Berkut* can transport up to 350 TEUs. However, during winter, low water levels in the Caspian Sea and storms can result in fewer containers being handled. Conversely, there tends to be more shipments during the summer season. As such, a vessel capable of carrying 350 TEUs of containers typically transports about 290 TEUs on average in a year[94]. The vessels *Barys*, *Sunkar* and *Berkut* are operated by Kazmortransflot which is the national sea carrier of Kazakhstan.

Figure 63: Vessels Involved in the Caspian Sea Container Trade Anchored at the Baku Anchorage as at 0615 Hours on 7 September 2024



Source: Using information from MarineTraffic.

Table 63: Vessels Which Can Be Deployed Between the Ports of Baku and Aktau

Vessel Name	Type	Flag	Size	Annual Average Capacity per Trip[a]
Barys	Containership	Kazakhstan	113 x 21 m	290 TEUs
Sunkar	Deck cargo	Kazakhstan	113 x 21 m	
Berkut	Deck cargo	Kazakhstan	113 x 21 m	
Huseyn Javid	General cargo	Azerbaijan	108 x 16 m	135 TEUs
General Aslanov	General cargo	Azerbaijan	107 x 16 m	

[a] Estimates.

Source: Including using information from Azerbaijan Caspian Shipping Company (ASCO), Kazmortransflot, Port of Aktau, MarineTraffic and My Ship Tracking.

392. Azerbaijan Caspian Shipping Company (ASCO) operates two general cargo vessels between Alat Seaport and Aktau Port. The vessels are flagged with Azerbaijan and are estimated to be able to transport up to 170 TEUs of containers per trip[95]. However, the average operating capacity is typically at about 135 TEUs. ASCO may deploy up to five vessels when required. The other three vessels are dry bulk ships which can transport about 150–160 TEUs of containers.

94 Source: Interview held with Kuryk Port on 23 August 2024 with vessel information available from Kazmortransflot. See https://www.kmtflot.com/fleet/sudno-konteynerovoz/container-ship-barys/index.html.

95 Source: Interview held with the Port of Baku on 22 August 2024.

393. Each of the five vessels typically make about four round trips per month. With an average container-carrying capacity of about 228 TEUs for each vessel, total container transportation capacity between the ports of Baku and Aktau is estimated at 54,720 TEUs. However, weather conditions in the Caspian Sea can disrupt sailings with 30–90 days being affected[96]. As such the computation of capacity considers alternative scenarios with disruptions ranging from 30 to 90 days in a year. With 30 days of disruption, container transportation capacity of the Alat–Aktau connection will be reduced to 50,222 TEUs. With 60 days of the Trans-Caspian transit being affected, container transportation capacity of the Alat–Aktau connection will be reduced to 45,725 TEUs. With 90 days of transit being affected, container transportation capacity between the two ports will be further reduced to 41,227 TEUs. This does not consider the factor of port congestion.

Table 64: Vessels Which Can Be Deployed Between the Ports of Baku and Kuryk

Vessel Name	Type	Flag	Size	Annual Average Capacity per Trip[a]
Merkury 1	Ro-Ro	Azerbaijan	155 x 18 m	88 TEUs
Dagistan	Ro-Ro	Azerbaijan	154 x 18 m	
Azerbaijan	Ro-Ro	Azerbaijan	154 x 18 m	
Zarifa Aliyeva	Ro-Ro	Azerbaijan	154 x 17 m	
Nakhichyvan	Ro-Ro	Azerbaijan	154 x 18 m	
Professor Gul	Ro-Ro	Azerbaijan	155 x 18 m	
Karabakh	Ro-Ro	Azerbaijan	154 x 18 m	

[a] Estimates.

Source: Consultants, including using information from Azerbaijan Caspian Shipping Company (ASCO), MarineTraffic and My Ship Tracking.

394. The maritime connection between the ports of Baku and Kuryk typically sees seven Ro-Ro vessels deployed. The dimensions of these vessels are relatively similar with LOA of 154–155 meters and beam of 17–18 meters. These vessels are operated by ASCO, and they are flagged with Azerbaijan. ASCO has a fleet of 15 vessels in total where the six largest vessels can transport about 52 trucks or 60 trailers whereas the smaller vessels can carry about 30 trucks or 40 trailers[97]. There are Ro-Ro/passenger vessels which can also carry 28 trucks or 33 trailers.

395. The vessels typically transport trucks, trailers and wagons and very few containers. As such, the estimates assume that vessels serving the Baku-Kuryk trade are carrying entirely containers with the average container-carrying capacity being 88 TEUs per vessel. Each vessel typically completes 4–5 round trips in a month. Hence, total container transportation capacity by the seven vessels is estimated to be 33,264 TEUs per year. The route between Baku and Kuryk is also subjected to weather conditions which can disrupt sailing. With 30 days of disruption, container transportation capacity of the Alat-Kuryk connection will be reduced to 30,530 TEUs. Based on the assumption of 60 days of disruption, container-carrying capacity for the route diminishes to 27,796 TEUs. With 90 days of disruption, capacity of the route is reduced further to 25,062 TEUs.

396. Note that the assumption is that the vessels carry only containers. For example, vessels calling at Kuryk Port typically transport trucks and wagons with a small proportion of the cargo being containers. As such, container-carrying capacity for vessels plying on the Baku–Kazakhstan trade route will be reduced further. Due to the imbalance in container trade, vessels may also sail empty from Baku to Aktau. For the case of eastbound containers that come through Poti or Batumi in Georgia, shipping lines may mandate that the containerized freight be unstuffed and not allowed to go to Central Asia or even the Caucasus. Hence, we have the situation of freight continuing to be moved inland by trucks or wagons but without using containers. On the other hand,

96 Source: Interview held with Kuryk Port on 23 August 2024 indicated 60-90 days of disruption. Interview held with the Port of Baku on 22 August 2024 indicated 30–35 days of disruption.

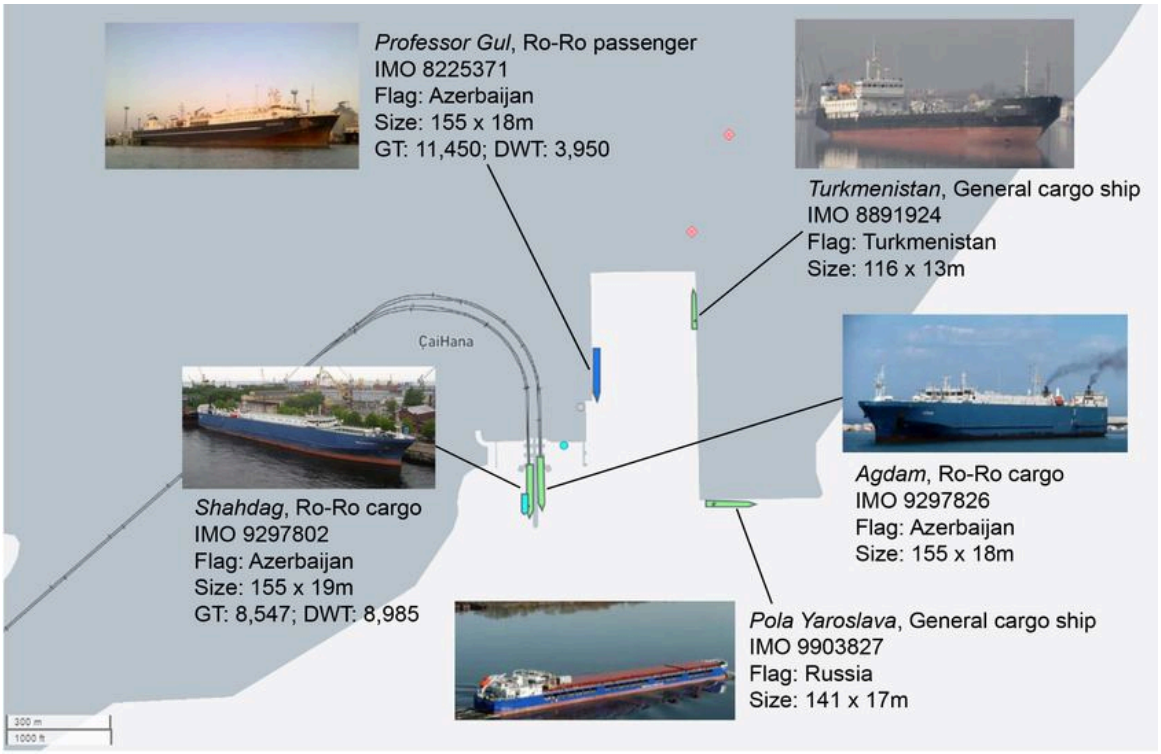
97 Source: Interview held with the Port of Baku and 22 August 2024 with vessel information available from ASCO. See https://www.asco.az/en/pages/4.

Table 65: Impact of Weather Disruptions on Container Transportation Capacity for the Trans-Caspian Sea Transit

	Baku-Aktau Capacity	Baku-Kuryk Capacity[a]	Total Capacity
No disruptions	54,720 TEUs	33,264 TEUs	87,984 TEUs
Disruption for 30 days	50,222 TEUs	30,530 TEUs	80,752 TEUs
Disruption for 60 days	45,725 TEUs	27,796 TEUs	73,521 TEUs
Disruption for 90 days	41,227 TEUs	25,062 TEUs	66,289 TEUs

[a] Note that the Port of Kuryk handles very limited container traffic.
Source: Consultants.

Figure 64: Vessel Situation in the Port of Baku as at 0300 Hours on 17 September 2024



Source: Using information from MarineTraffic, VesselFinder and My Ship Tracking.

containerized freight from China is sent across the Caspian Sea in containers. This results in a demand for containerships for the route between Aktau and Kuryk to Alat Seaport. Both ASCO and Kazmortransflot are assessing the demand to justify the commercial viability of deploying containerships.

397. A snapshot of the situation in the Port of Baku on 17 September 2024 is shown in the figure. The figure shows the ferry terminal being fully occupied by the vessels *Agdam* and *Shahdag*. The vessel *Shahdag* has just arrived by Turkmenbashi after a sailing time of almost 34 hours. The general cargo ship *Turkmenistan* which is occupying General Cargo Berth No. 3 also came from Turkmenbashi. Another vessel which has arrived from Turkmenbashi is the Russian-flagged *Pola Yaroslava* general cargo ship. Sailing from Turkmenbashi to Alat Seaport took 30 hours for this Meanwhile, the South Berth of the Ro-Ro Terminal is occupied by Ro-Ro vessel *Professor Gul* which is getting ready to leave for Kuryk Port.

398. The dwell time for vessels that called at the Port of Baku during August to September is analyzed. Vessels generally spend less than 24 hours in the port with many tending to spend 12 hours or less. This observation was made for different ship types including Ro-Ro vessels, containerships, and general cargo ships.

Table 66: Vessel Dwell Time for Selected Ships That Call at Port of Baku (August–September 2024)

Vessel	Type	Arrival	Departure	Time in Port
Shahdag	Rail/vehicles carrier	06/08 15:29	07/08 05:16	13 hours
Merkury 1	Ro-Ro	06/08 19:24	08/08 04:33	9 hours
Zarifa Aliyeva	Ro-Ro	07/08 08:01	08/08 20:14	1 day 12 hours
Azerbaijan	Ro-Ro	08/08 22:25	08/09 10:22	11 hours
Professor Gul	Ro-Ro	10/08 18:39	11/08 02:44	8 hours
Zarifa Aliyeva	Ro-Ro	11/08 13:41	12/08 01:55	12 hours
Agdam	Ro-Ro	14/08 22:36	15/08 19:16	20 hours
Zarifa Aliyeva	Ro-Ro	18/08 00:56	18/08 15:19	14 hours
Huseyn Javid	General cargo	18/08 09:37	19/08 01:33	15 hours
Dagistan	Ro-Ro	18/08 16:07	18/08 23:50	7 hours
Ordubad	Ro-Ro	20/08 20:06	21/08 15:08	19 hours
Sunkar	Containership	21/08 06:35	22/08 00:12	17 hours
Zarifa Aliyeva	Ro-Ro	21/08 12:19	21/08 22:09	9 hours
Dagistan	Ro-Ro	21/08 23:21	22/08 08:12	9 hours
Barys	Containership	21/08 10:47	21/08 23:37	12 hours
Turkmenistan	General cargo	21/08 17:10	22/08 11:00	17 hours
Azerbaijan	Ro-Ro	22/08 09:21	22/08 19:36	10 hours
Agdam	Ro-Ro	22/08 18:12	23/08 10:26	16 hours
Huseyn Javid	General cargo	22/08 18:57	23/08 13:20	18 hours
Merkury 1	Ro-Ro	22/08 20:59	23/08 11:07	14 hours
Professor Gul	Ro-Ro	23/08 12:41	23/08 18:36	5 hours
Zarifa Aliyeva	Ro-Ro	24/08 12:23	24/08 22:42	10 hours
Azerbaijan	Ro-Ro	25/08 00:04	25/08 17:35	17 hours
Berkarar	Ro-Ro	25/08 15:22	27/08 13:12	1 day 21 hours
Barys	Containership	26/08 18:40	27/08 12:01	17 hours
Agdam	Ro-Ro	27/08 12:02	28/08 02:08	14 hours
Sunkar	Containership	27/08 15:32	28/08 10:59	19 hours
Professor Gul	Ro-Ro	27/08 19:26	28/08 07:25	11 hours
Dagistan	Ro-Ro	31/08 05:32	31/08 16:40	11 hours
Agdam	Ro-Ro	31/08 08:33	31/08 17:41	9 hours
Balaken	Ro-Ro	31/08 19:40	01/09 10:09	14 hours
Barys	Containership	01/09 01:10	01/09 12:21	11 hours
Sunkar	Containership	01/09 15:36	02/09 03:42	12 hours
Ordubad	Ro-Ro	01/09 07:04	01/09 16:32	9 hours
Barda	Rail/vehicles carrier	01/09 11:07	01/09 22:53	11 hours
Sheki	Ro-Ro	03/09 09:21	03/09 22:34	13 hours
Berkarar	Ro-Ro	04/09 03:11	04/09 18:52	15 hours
Uzeyir Hajibeyli	General cargo	04/09 11:51	12/09 18:36	8 days 6 hours
Ordubad	Ro-Ro	04/09 20:27	05/09 09:46	13 hours
Dagistan	Ro-Ro	05/09 03:59	05/09 12:14	8 hours

continued on next page

Table 66 *continued*

Vessel	Type	Arrival	Departure	Time in Port
Sunkar	Containership	08/09 18:20	09/09 19:32	1 day 1 hour
Dagistan	Ro-Ro	10/09 10:25	10/09 20:11	9 hours
Sheki	Ro-Ro	11/09 15:20	12/09 01:09	9 hours
Merkury 1	Ro-Ro	11/09 18:20	12/09 02:57	8 hours
Berkarar	Ro-Ro	11/09 21:27	12/09 13:18	15 hours
General Aslanov	General cargo	11/09 23:29	13/09 02:43	1 day 3 hours
Barda	Rail/vehicles carrier	12/09 04:01	12/09 16:26	12 hours
Azerbaijan	Ro-Ro	12/09 14:39	13/09 05:44	15 hours
Agdam	Ro-Ro	13/09 05:14	13/09 10:17	5 hours
Dagistan	Ro-Ro	13/09 06:59	13/09 16:54	9 hours
Balaken	Ro-Ro	13/09 11:16	13/09 18:43	7 hours
Shahdag	Rail/vehicles carrier	13/09 19:39	14/09 07:51	12 hours
Professor Gul	Ro-Ro	13/09 17:53	14/09 06:39	12 hours
Zarifa Aliyeva	Ro-Ro	14/09 06:50	14/09 17:54	11 hours
Sunkar	Containership	14/09 10:25	15/09 02:39	16 hours

Source: MyShipTracking.

399. With regards to the state of developments in regional connectivity, it can be summed up by the comment given by Mr. Fariz Aliyev from the Azerbaijan Ministry of Digital Development and Transport who said that "*We do not want [CAREC Corridor 2] to be the second or third choice for our customers*". The expansion of CAREC Corridor 2 could also see traffic having the option of taking the China–Kyrgyz Republic–Uzbekistan–Turkmenistan route as well. Apart from facilitating trade, it will also be important for economic growth and development to generate domestic cargoes within the Caucasus and Central Asia regions.

Port of Aktau

11

11.1. Introduction

400. The Port of Aktau is located on the eastern shores of the Caspian Sea in the country of Kazakhstan. The port holds the position as the largest port of Kazakhstan and plays a vital role in facilitating trade for CAREC Corridor 2. The Port of Aktau provides a crucial link in the Trans-Caspian route with shipping services that offer regular sailings between the port and Alat Seaport in Azerbaijan. This maritime connection is essential in enabling shorter transit times for cargo moving from the PRC to Europe. The Port of Aktau is owned by the Kazakhstan government and managed by Kazakhstan Temir Zholy (KTZ) Group.

11.2. Port Facilities and Infrastructure

401. The Port of Aktau is a major transit point in the Trans-Caspian International Transport Route (TITR). The port is equipped to handle various types of cargo which include liquid bulk, dry bulk, break bulk, general cargo, and Ro-Ro cargo. Annual cargo-handling capacity totals 11.8 million tons. There are 9 berths with a total berth length of 1,446 meters.

Table 67: Key Facilities for the Port of Aktau

Terminal	Berths	Draft Alongside	Annual capacity
Oil	No. 4, 5, 8	5.1–7.0 meters	7.5 million tons
Dry cargo (container)	No. 1, 2, 3	4.8 meters	1.5 million tons
Ferry	No. 8	5.1 meters	2.0 million tons
Grain	No. 6	4.8 meters	0.8 million tons
		Total	**11.8 million tons**

Source: Consultants, using information from various sources including Port of Baku.

402. The single berth of the ferry terminal has an annual cargo-handling capacity of 2.0 million tons. Railway ferries can handle up to 54 rail wagons while Ro-Ro ships can transport up to 35 trucks. Draft alongside the berth is 5.1 meters. The time required to load a ferry can be 8 to 10 hours. Main cargoes transported in ferries include grain, minerals, fertilizers, consumer goods, and oil products. A regular service provides connectivity between Aktau and the Port of Baku with 253 nautical miles in sailing distance and travelling time of 18–20 hours.

403. The oil terminal comprises of three berths. Berths 4 and 5 have a maximum draft alongside of 7.0 meters and can handle oil tankers with displacement of 12,000 tons. Berth 8 has a draft alongside of 5.1 meters. The oil terminal can store up to 12.0 million tons of oil and handling rate for the cargo being 900 tons per hour. The port is redeveloping berths 9 and 10 with support of LLP Tengizchevroil and LLP Kazmortransflot.[98] Completion of the redevelopment project will bring annual handling capacity for oil cargo up to 12.5 million tons.

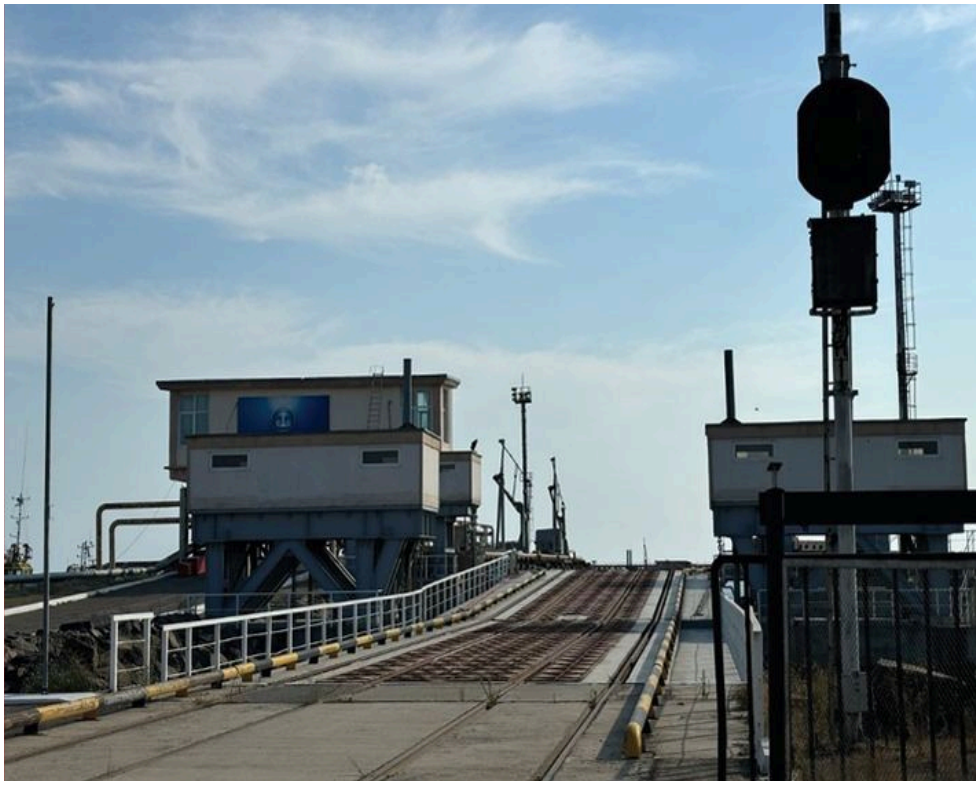
98 Source: Port of Aktau (2022). "As part of the business visit to Mangystau region, the General Director (Chairman of the Board) of JSC "KazTransOil" Talgat Kurmanbayev had a call to Sea port of Aktau". Available online at: https://www.portaktau.kz/en/as-part-of-the-business-visit-to-mangystau-region-the-general-director-chairman-of-the-board-of-jsc-kaztransoil-talgat-kurmanbayev-had-a-call-to-sea-port-of-aktau/.

Figure 65: Layout of Aktau Port



Source: Field visit shared by officials.

Figure 66: Ferry Terminal at Aktau Port



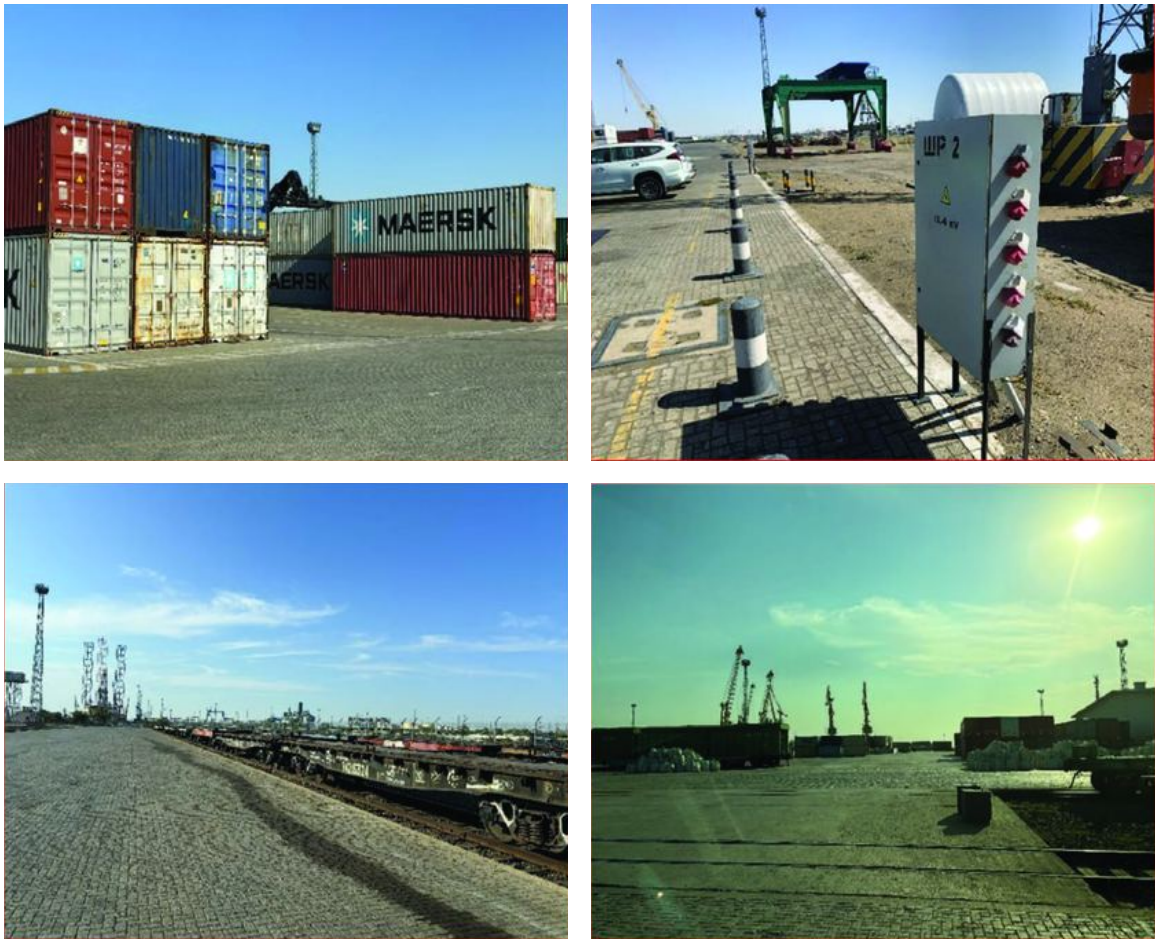
Source: Field visit shared by officials.

404. The grain terminal is owned by JSC "National Company" Food Contract Corporation and comprises a single berth. The facility has 11 silos capable of storing up to 22,500 tons of grain. The loading rate for a consignment of 3,000 tons of grain can be completed over 12 hours. This translates to a productivity of about 250 tons per hour. Handling rate for grain cargo can be up to 350 tons per hour.

405. The dry cargo terminal has three berths with about 400 meters of berth length and can handle 1.5 million tons of cargo per year. Cargo handled includes cement, metals and containers. The annual container-handling capacity of the port is put at 70,000 TEUs. The maximum draft alongside for the berths is 4.8 meters. Port equipment includes 12 mobile harbor cranes, 2 reach stackers and 16 tractors and semi-trailers. The 2 Liebherr LRS 545 reach stackers were acquired recently to handle containers. An entire train load of 50 platforms takes about 2 hours to unload with the two reach stackers. The terminal has an open storage area of 8 hectares and a roofed warehouse of 2,000 sqm to provide covered storage. The port is also equipped with 61 reefer plugs to handle temperature-controlled cargo. The container yard can store up to 2,500 TEUs of containers. These are stacked up to 2 high in the container yard owing to strong wind and safety reasons. The port can also handle oversized cargo weighing up to 84 tons.

406. The berth area has direct rail access with two train tracks. The port is equipped with another six train tracks with the facility able to store up to 249 rail wagons. However, as the length of a track can accommodate a train consignment of about 40 FEUs, a block train service of 50 platforms will require splitting up the train load of containers for unloading operations.

Figure 67: Open Storage Area, Reefer Plugs and Rail Tracks at Aktau Port



Source: Field visit.

407. Another key facility located to the north of the port is the Aktau Sea North Terminal. The terminal is owned by Inter Port Development Pte Ltd (60% share), KTZ Express (30% share), and Aktau Port (10% share).[99] Inter Port Development Pte Ltd is a Turkish-owned company that is registered in Singapore.[100] The terminal is equipped with a berth of 150 meters and draft alongside of 5.5 meters. Annual cargo-handling capacity of the terminal is 1.0 million tons of grain, 640,000 tons of metal, 11,111 TEUs of containers, and 610,000 tons of other cargo.

Figure 68: SEZ Subzones of Aktau



Source: SEZ Seaport Aktau. SEZ Seaport Aktau (2024). Territory of SEZ. Available online at: https://www.sez.kz/en/for_investor/map.

408. The Port of Aktau is in Subzone 7 of the Special Economic Zone Seaport Aktau. Subzone 7 has 189.5 hectares of land and is designated for port-related activities while the other subzones are for manufacturing activities. The SEZ is meant to boost local cargo generating capacity which can benefit Aktau Port. The SEZ has a total of 9 subzones and a gross land area of 2,140 hectares. The positioning of the special economic zone is for export-oriented industries. Compared to other special economic zones in Kazakhstan, SEZ Seaport Aktau has the advantage of access to the Caspian Sea with shipping routes connecting to Azerbaijan and Iran. 47 companies have set up operations in SEZ.

409. There are a series of development projects underway or planned for in the near future. Priority areas are dredging works, construction and redevelopment of berths, and development of a container hub. Dredging operations are slated to begin in 2025 with the aim of increasing cargo-handling capacity of the port by 30% with berths being able to handle larger vessels. Aktau Port is looking at the possibility of acquiring a long-term loan of $40–42 million for the first phase of dredging which will increase the depth by 1.5 meters.[101] The second phase of dredging works is also estimated to cost $40–42 million.

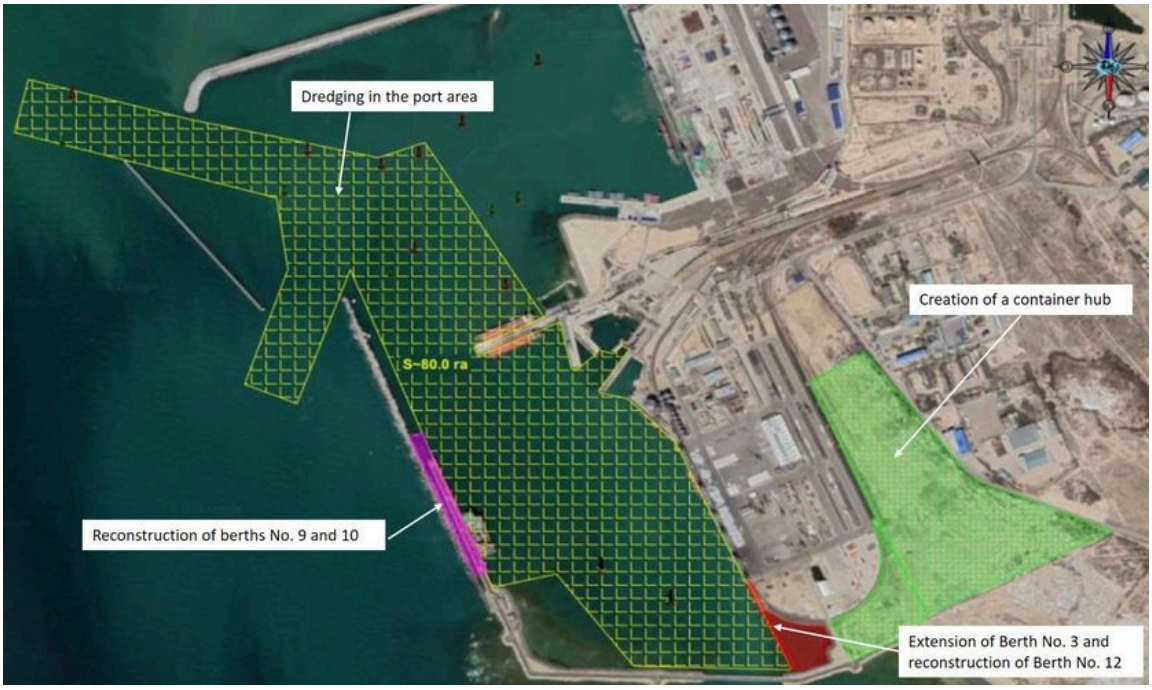
99 Samruk Kazyna (2022). *Aktau Sea Northern Terminal LLP*. Available online at: https://sk.kz/upload/iblock/664/664fc06312edab9a53954a01781fb17e.pdf.

100 SGP Business (2022). *Inter Port Development Pte Ltd.* Available online at: https://www.sgpbusiness.com/company/Inter-Port-Development-Pte-Ltd.

101 Source: Interview held with the Port of Aktau on 23 August 2024.

410. For the construction and redevelopment of berths, the port will be extending Berth No. 3 at the dry cargo terminal. The current infrastructure has three berths capable of handling containers. The port is also aiming to expand the length for Berth No. 3 by 50 meters and construct another berth of 150 meters. The total addition of new berth length to the port will be 200 meters. The project is expected to increase container-handling capacity to 300,000 TEUs per year. The project will also involve reconstruction of Berth No. 12. Redevelopment of these two berths is expected to cost $60–65 million. In addition, the Port of Aktau will be reconstructing Berth No. 9 and Berth No. 10 of the oil terminal with an estimated cost of $28 million.

Figure 69: Aktau Port Development Projects



Source: Port of Aktau.

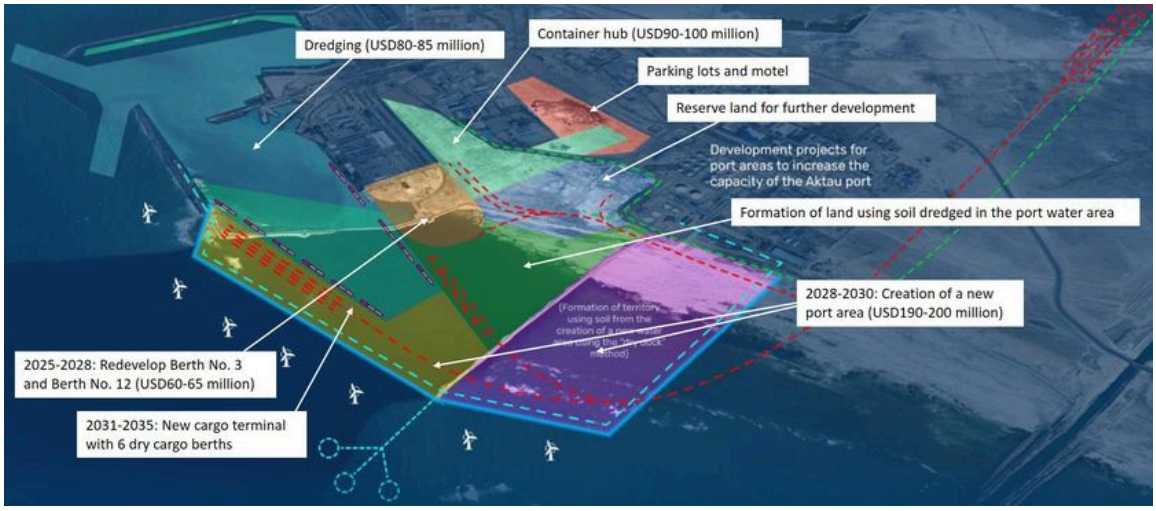
411. At the same time, a container hub is being developed at Aktau Port. The project is meant to support the redevelopment of the container berths to increase container-handling capacity to 300,000 TEUs per year. Construction is slated to start in Q4 2024. The facility is a joint venture between Lianyungang Port Group, KTZ Express,[102] and the Port of Aktau. The respective shareholdings are 51%, 24.5% and 24.5%. The container hub will occupy 19 hectares of land and is expected to be in operation by the end of 2025. Lianyungang Port Group is planning to invest about $100 million with the first phase development involving 9.1 hectares and costing $45 million.[103] The development will raise the capacity of the port to 120,000 TEUs. The container hub will contain a customs facility and three railway tracks and construction is scheduled to take 11 months. As the container hub will not include adjacent berths, discussions are underway to allow the JV company to lease one berth at Aktau Port if throughput reaches 60,000 TEUs, and a second berth if throughput reaches 100,000 TEUs.

102 KTZ Express JSC multimodal company is a sales center of cargo transportation and logistics services for KTZ. KTZ Express provides a full range of transport and logistics services in all types of transportation on all routes, integrates transportation by rail, sea, and road transport using sea and dry ports infrastructure, a network of warehouses and terminals

103 Source: Interview held with Lianyungang Port Group on 19 September 2024.

412. The longer-term expansion of the Port of Aktau is planned to take place in the southerly direction. This will see the capacity of the port increase substantially. A new area with parking lots and a motel for customers and cargo carriers will be created adjacent to the container hub. An area of 19.0 hectares will also be reserved for further development of the container hub. Dredged materials from the port deepening project will be used to create a new port area of 30.0 hectares. By 2030, the port is looking to add another three new dry cargo berths (i.e., No. 13, 14 and 15), which will be developed to the south of the current port in the form of a new dry cargo terminal. The development is expected to cost $190–200 million and bring total container-handling capacity of the Port of Aktau to 480,000 TEUs per year. By 2035, depending on demand, the port is looking at building six additional dry cargo berths to add 480,000 TEUs in annual container-handling capacity. This will bring total container-handling capacity of the Port of Aktau to 960,000 TEUs.

Figure 70: Longer-term Expansion of Aktau Port



Source: Port of Aktau.

Figure 71: New Railway and Road Network Development Plan of Aktau Port



Source: Port of Aktau.

413. Extension of the port to the south will be supported by new railway and road connections to the hinterland. A new railway bypass will be constructed. The bypass, which is linked directly to berths in the Port of Aktau, will include a shunting park with a length of 9.0 kilometers. A new road which runs parallel to the railway line will also be built. The road will provide better connections between the port and key facilities in the hinterland which include SEZ Subzone No. 6.

414. Digitalization initiatives at the Port of Aktau saw efforts to establish exchange of vessel and cargo-related information between Aktau and Baku ports, and implementation of a terminal operating system (TOS) at the port. Aktau Port uses the Solvo TOS, which is developed by Solvo Group, a Russian company based in St. Petersburg. The TOS helps Aktau Port in areas that include vessel management, berth planning, and container yard management. The port is known to lease the solution rather than owning it. Any request for changes must be communicated with Solvo who will then update the software.

415. KTZ Group, who is the national railway operator, is developing an electronic single window to connect all the stakeholders under one platform. The stakeholders include shippers, consignees, freight forwarders, and various government authorities. The electronic single window is envisioned to streamline communication process and improve the data flow between stakeholders. The Solvo TOS will likely be integrated with the electronic single window.

11.3. Container-handling Performance

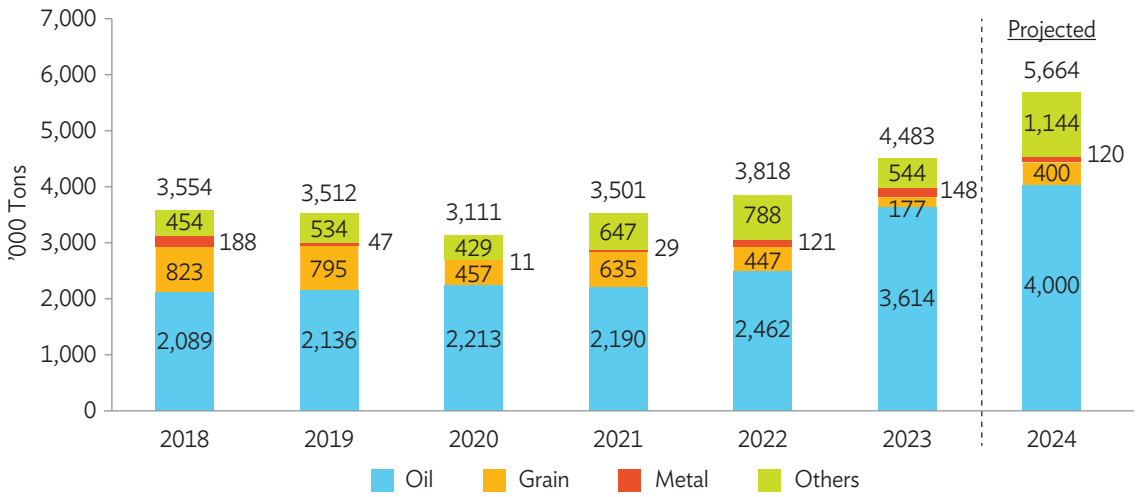
416. The Port of Aktau handled 4.5 million tons of cargo in 2023 with a growth of 17.4% from the previous year. Oil cargo accounted for the majority with a share of 70.6% or 3.6 million tons. The main direction of trade is from Aktau to Azerbaijan and Russia. Grain cargo accounted for 177,000 tons or 3.9% share of total cargo handled while metals accounted for 148,000 tons or 3.3%. It is worth noting that the volume of grain has declined significantly from previous years. The port used to handle about 800,000 tons of grain in 2018–2019. However, the volume fell to 635,000 tons in 2021 and 447,000 tons in 2022. The main direction of the grain trade is from Aktau to Iran. By comparison, the volume of metals has risen from 11,000 tons in 2020 to 29,000 tons in 2021 and further to 121,000 tons in 2022. The port also handles a significant volume of cement at about 100,000 tons per year. The direction of trade being from Iran to Aktau.

417. For the year 2024, the Port of Aktau is expecting strong growth with cargo volume projected to reach 5.7 million tons on a growth rate of 26.3%. Significant contribution is expected from the grain trade which is expected to rise by 126.0% to reach 400,000 tons. The container trade is also expected to see strong growth with the port projecting containers to almost double from 22,782 TEUs in 2023 to reach 45,000 TEUs in 2024. The port is also expecting to handle 120,000 tons of metal in 2024.

418. With regards to container port performance, the Port of Aktau handled 22,782 TEUs of containers in 2023. This would put capacity utilization for container-handling by the port at 32.5%. There was a substantial decline of 25.8% from 30,708 TEUs handled in 2022. The reason for the decline was attributed to inefficiencies encountered with handling transit containers for CAREC Corridor 2, which left many users disappointed with the experience. However, the situation in 2024 saw renewed interest and various supply chain parties worked to resolve teething issues. For the period January to July of 2024, there were 27,582 TEUs handled which already exceeded the entire volume of the previous year. 92% of the containers were attributed to CAREC Corridor 2.

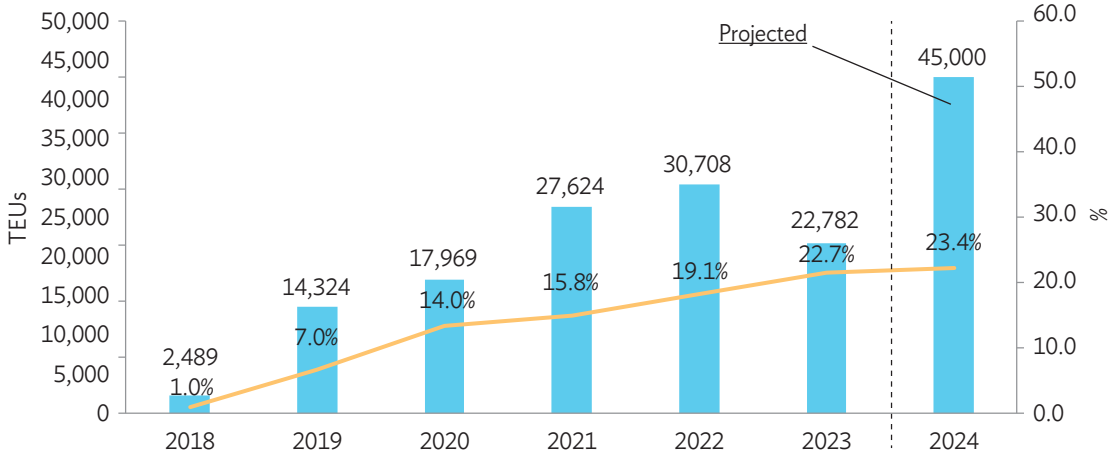
419. In January 2024, the port handled only 2,395 TEUs which comprised mainly of exports from Kazakhstan. By May 2024, the number of containers had risen to 5,186 TEUs. In June, the port handled 5,687 TEUs of which 3,768 TEUs or 66.3% were from China. The number of block trains from China has also grown from only 4–5 services per month in January–February to more than 40 services in June. The month of July saw 5,800 TEUs handled, and the port expects more than 6,000 TEUs for August with almost 50 block train services from China. For the full year of 2024, the Port of Aktau is projected to handle 45,000 TEUs of containers, bringing capacity utilization for container-handling by the port up to 64.3%. Container volumes for Kazakhstan and Central Asia are expected to remain stable at 800 to 1,200 TEUs per month. Block trains from

Figure 72: Cargo Throughput of Aktau Port (2018–2024)



Source: Port of Aktau.

Figure 73: Container Throughput and Level of Containerization at Aktau Port (2018–2024)



Source: Port of Aktau.

China are seen as the main demand driver where one block train service can transport 80–104 TEUs using 40–52 rail platforms.

420. Growing interest in CAREC Corridor 2 has seen the level of containerization grow for the Port of Aktau. The level of containerization in 2023 is estimated at 22.7% based on the average weight of 8.65 tons per TEU for transit containers.[104] This was a significant increase from 19.1% in 2022, and 15.8% in 2021. The average weight of a transit container has also grown from 7.48 tons per TEU in 2021 to 8.45 tons per TEU in 2021, and then to 8.65 tons per TEU in 2023. Hence, despite the drop in containers handled in 2023, the level of containerization rose by 3.6 percentage points. In 2024, containerized cargo tonnage handled by the Port of Aktau is projected to reach almost 400,000 tons to account for 23.4% of non-oil cargo.

104 Source: Government of Kazakhstan (2024). "Comprehensive plan – Development of cargo containerization and container transportation in the Republic of Kazakhstan for 2025–2029". 23 August.

11.4. Regional Connectivity

421. The logistics and transportation sector accounted for 6.2% of Kazakhstan's GDP in 2022.[105] The government plans to increase the share of GDP contribution by the sector to 9% over the next three years. In this regard, the thirteen international trade corridors that pass through the country of Kazakhstan has an important role to play. Five of these are railway networks while the remaining eight are auto corridors. As the largest port of the country, the Port of Aktau is a key transportation and logistics hub, especially for corridors that utilize the Caspian Sea. The Aktau-Baku container trade is the largest in the Caspian Sea. In 2023, the trade transported 22,782 TEUs of containers with 16,387 TEUs or 71.9% share of container traffic attributed to CAREC Corridor 2. For the first seven months of 2024, the share of transit containers has risen to 92.1%. This figure could reach above 95% for the whole of 2024 with strong demand from container block train services from PRC.

422. The transit time taken to transport containers along CAREC Corridor 2 has seen significant improvements. For example, a block train service carrying 55 FEU containers for the company Trans Eurasia International Logistics which departed from Xi'an on 16 August 2024 took 16 days to reach Poti in Georgia.[106]The whole journey from Xi'an in PRC to Mannheim in Germany took 29 days to complete. It took the block train 3–4 days to reach Khorgos from Xi'an and 2 days to cross the border which included a change of rail gauge. It took another 3–4 days to go from Altynkol to Aktau Port.

423. When the block train arrives at the port, containers are unloaded from the rail platforms and moved into the container yard. It takes about 2.5 minutes to unload a container from the block train and move it into the container yard. With FEU containers comprising about 90% of a typical shipment, moving containers for the block train to the container yard is estimated at not more than 3 hours. When the containership arrives, containers are then moved from the yard to the berth by reach stackers. A mobile harbor crane loads the containers onto the containership *Barys*. Productivity of the mobile harbor crane is at 12–15 moves per hour. In cases where the block train arrival is timed to coincide with that of the containership, containers can be moved directly from the block train to the berth for loading onto the vessel. Total dwell time of a containership is estimated at 17 hours which includes loading operations. For the case of Barys, the containership spent 1 day and 16 hours in the Port of Aktau.[107] This could be due to the summer period when the containership will

Figure 74: Containers Unloaded from Block Train by Reach Stackers and Moved to the Berth





Source: Field visit.

105 Source: Satubaldina, A. (2023). "Cargo transportation along the Middle Corridor soars 88%, reaches 2 million tons in 2023", *The Astana Times*, 28 December. Available online at: https://astanatimes.com/2023/12/cargo-transportation-along-middle-corridor-soars-88-reaches-2-million-tons-in-2023/.

106 Source: Interview held with Trans Eurasia International Logistics on 5 September 2024.

107 Source: myShipTracking (2024). *Barys*. Available online at: https://www.myshiptracking.com/vessels/barys-mmsi-436000365-imo-9814521.

Figure 75: Containers Loaded onto the Containership *Barys*



Source: Field visit.

typically take a full load of 350 TEUs of containers. This means that containers for Trans Eurasia International Logistics will be consolidated with other containers before the vessel makes a departure for the Port of Baku in Azerbaijan.

424. Crossing the Caspian Sea typically took a day. The train had to wait for a day in Aktau. After crossing the Caspian Sea, it took 17 hours to unload the containers at the Port of Baku. The containers took another 2 days to reach Poti from Alat Seaport. After reaching Poti, a day is spent waiting at a rail terminal about 20 kilometers from Poti Port. Crossing the Black Sea took 3 days to reach Burgas in Bulgaria. The company chartered the general cargo ship *SVS Vegas* to perform maritime transportation between Poti and Burgas. The small size of the vessel allows it to perform a dedicated shuttle run carrying the 55 FEU containers between the two ports in the Black Sea. After the containers were unloaded at Burgas, the train subsequently went through Serbia and took 9 days to reach Mannheim.

425. The whole journey time of 29 days was significantly faster than the traditional 60-day journey if the container went by the ocean route. The company is trying to further optimize the process and reduce transit time to 25 days and have this attained on a consistent basis. The same journey from Xi'an in PRC to Poti in Georgia would have taken 38–53 days in 2022 to complete. The block train service which carries 55 FEU containers performs one shipment a week.

426. Trans Eurasia International Logistics has operations in Germany, PRC, Kazakhstan, Russia, and Poland. It offers door-to-door multimodal transportation services, with a fleet of locomotives, railcars, and container ships. The company shared that the Northern Corridor would offer a faster transit as it would take only 12 days to reach Mannheim by going through Russia and the Port of Kaliningrad. The transit time from Xi'an to Kaliningrad takes about 9 days with half a day spent in the port. It takes another day of sailing to reach the Germany port of Mukran and 1.5 days to reach Mannheim. Another possible route of the Northern Corridor is to go by the Poland–Belarus border where the journey from Xi'an to Mannheim would take 15 days. However, congestion at the border can result in the journey taking 30 days. Nonetheless, due to the war, shippers are interested in exploring CAREC Corridor 2 route if the transit can be accomplished within 30 days or less. Auto parts and consumer electronics are potential backhaul cargo from Europe to the Caucasus and Central Asia region.

427. It is worth noting that the container-handling capacity of Aktau Port is 70,000 TEUs per year. There are discussions about container traffic expanding from the current 40 block trains a month to 100 block trains from PRC. With each block train estimated to contain about 50 rail platforms, we could see container traffic increase from 48,000 TEUs per year to 120,000 TEUs per year. In recognition of the growing demand, the Port of Aktau will be deploying larger cranes in Q4 of 2024 to raise container handling capacity to 100,000 TEUs.

428. Rail transport remains the paramount mode of hinterland connectivity for the Port of Aktau. Block trains from PRC to Europe are seen as a major demand driver for the port. The bulk of the rail traffic (i.e., 90% share) is handled by China Railways. To accommodate the rising rail traffic, cargo-handling capacity at the crossings at Altynkol and Dostyk are being upgraded from 30 million tons a year to 55 million tons.[108] The aim is to increase the flow of containers through Kazakhstan as well as creating the capacity to handle more containerized exports. The increase in capacity will be accomplished through railway capacity expansion and digitalization initiatives.

429. To address the importance of managing transit time for containers that go by rail, the Port of Aktau is giving priority to such cargo. As for the railway operator, the train from Altynkol to Aktau will depart without the need to fill up all the 50 platforms. Each block train typically carries 50 platforms which translates to 100 TEUs of containers. The train service which runs twice a week, can depart with 30 to 40 platforms.

430. Kazakhstan is aiming to achieve 800,000 TEUs in container rail traffic that goes through the country from China to Europe via CAREC Corridor 2 by 2040.[109] This will comprise of 500,000 TEUs for the Aktau–Baku connection and 300,000 TEUs from Turkmenistan via Turkmenbashi Port to Alat Seaport. Transit containers handled for 2023 totaled only about 20,000 TEUs. Hence there is a big gap to fill. By comparison, total China/Asia to Europe container traffic saw 897,000 TEUs sent through Kazakhstan. Hence, CAREC Corridor 2 traffic accounts for a very proportion of this cargo flow. For comparison, the Northern Corridor is projected to handle 2.0 million TEUs in container traffic by 2030. To facilitate the growth of cargo for CAREC Corridor 2, the three national railway companies of Kazakhstan, Azerbaijan and Georgia established a joint venture company to develop multimodal service on the TITR in November 2023.[110] The company will offer services with guaranteed delivery times on a one-stop-shop basis.

431. Kazakhstan is rapidly modernizing her railway network to serve as a crucial link for Asia–Europe transit traffic. 2024 is expected to see the completion of the Almaty Station Bypass. The project involves construction of a new 50-kilometer railway line between Zhetygen and Kazybek Beka. Almaty as a transport hub can see congestion for rail traffic. With the bypass, transit shipments can reduce the load for Almaty. The bypass connecting Zhetygen and Kazybek Bek stations is expected to reduce traffic for Almaty by 40%. It will also reduce transit time from Altynkol to Aktau from 4 days to 3 days. The cost of the project is estimated at $204 million.

432. To increase capacity at the border with Uzbekistan, a new Darbaza-Maktaaral line is under construction. The 152-kilometer project is scheduled for completion by 2025. The objective of the railway line is to relieve congestion at the Saryagash station and integrate the Maktaaral region into the main rail network. At the same time, the project can increase the capacity for handling transit container trains in the China–Central Asia direction by 2.5 times. The estimated cost of the project being $544 million.

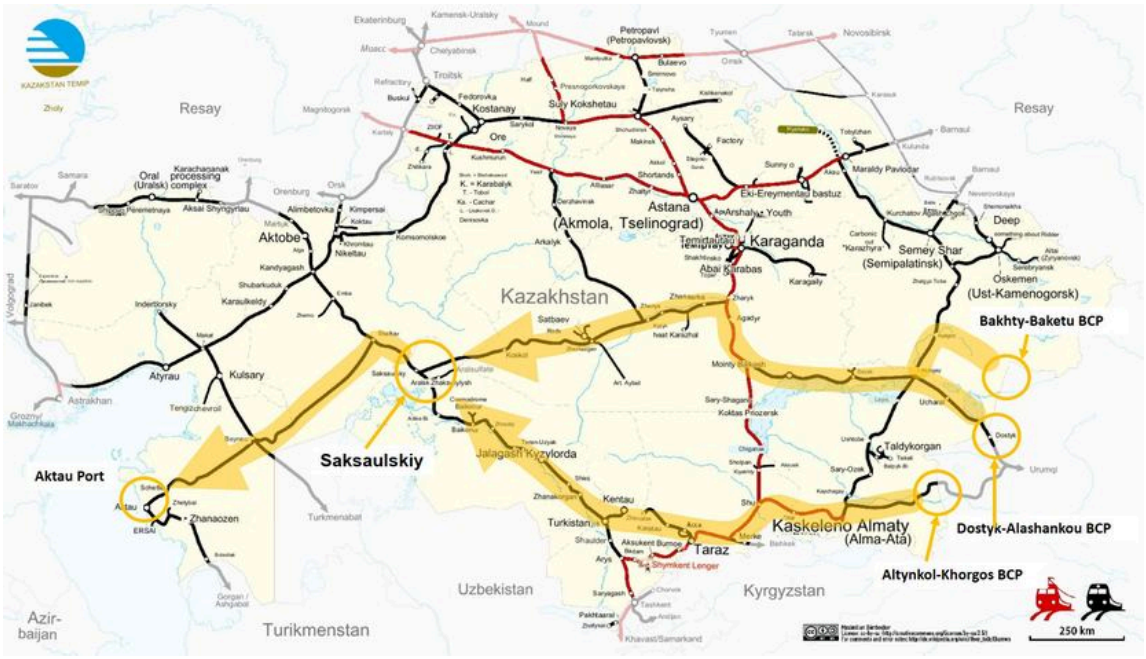
433. Another project slated to complete in 2025 is the second line for the 836-kilometer Dostyk–Moiynty section. The project which cost $1.18 billion started in 2022. The development aims to increase the capacity of the railway line by five times from 12 pairs of trains to 60 pairs, and boost transportation speed from

108 Source: Interview held with the Kazakhstan Ministry of Transport on 26 August 2024.
109 Source: Interview held with the Kazakhstan Ministry of Transport on 26 August 2024.
110 Source: Satubaldina, A. (2023). "Cargo transportation along the Middle Corridor soars 88%, reaches 2 million tons in 2023", *The Astana Times*, 28 December. Available online at: https://astanatimes.com/2023/12/cargo-transportation-along-middle-corridor-soars-88-reaches-2-million-tons-in-2023/.

800 kilometers a day to 1,500 kilometers a day. Projected revenues over a 20-year period are estimated at $8.8 billion.

434. In 2027, the 272-kilometer long Bakhty–Ayagoz railway line is expected to be completed. Construction began in late 2023. The project is aimed to complement the two existing border crossing points between Kazakhstan and PRC which are at Dostyk–Alashankou and Altynkol–Khorgos. With the new border crossing point, cargo-handling capacity for rail traffic between Kazakhstan and PRC can be increased by another 20 million tons.

Figure 76: Potential Bottleneck for Rail Traffic at Saksaulskiy Station



Source: Using map data from the Kazakhstan Ministry of Transport.

435. With the aim of attaining 500,000 TEUs for the Aktau–Alat Seaport connection, the projected requirement could see 400–500 block trains a month. While there are two border crossing points between Kazakhstan and PRC, the rail traffic will converge on Saksaulskiy. There are plans to create another two border crossing points at Bakhty and near to Kolzhat which is located some 80 kilometers south of Altynkol. However, this is likely to worsen the bottleneck at Saksaulskiy.

436. The TITR saw more than 10,000 TEUs of containers transported in 2023. Westbound traffic accounted for more than 80%. Although trucks offer greater flexibility, the proportion of containers that go by trucks remains in the minority. The volume of trucks that go from PRC to Europe is even smaller, estimated at less than 1,000. Container trains have the advantage of a unified transit tariff along the entire route. Nonetheless, a decline in the reliability of rail services could see shippers turning to trucks for shipments between PRC and the Caucasus and even Europe. Apart from flexibility, trucks can carry more cargo and can use other crossing points in addition to Dostyk and Altynkol. For trucks, they can also go through the Bakhty–Baketu and Kolzhat–Dulata border crossing points between PRC and Kazakhstan. For cargo shipments to Uzbekistan and Kyrgyz Republic, trucks can also opt to use the Irkeshtam and Torugart–Tuergate border crossing points between PRC and Kyrgyz Republic.

437. The imbalance in container trade remains a key concern. 55% of CAREC Corridor 2 transit containers are bound from PRC to Europe and countries the Caucasus.[111] The share of westbound containers is estimated to reach more than 70% of total container trade flow through the Port of Aktau. This situation has exacerbated the lack of rail platforms and lack of empty containers for exports. The result is some cargo has to be exported in break bulk or bulk form as there is insufficient containers to go around. The city of Almaty is where empty containers are typically brought for consolidation and distribution. The location is seen as not being ideal in view of traffic congestion in the transport network in and around the city.

438. The lack of container repair facilities was mentioned as another concern.[112] Damaged containers are an issue especially when transporting heavy items such as copper ingots. Damaged containers have to be removed from the supply chain which worsens the shortage of containers. Container repairs are typically performed in Altynkol, Turkistan and Aktobe. This will require sending damaged containers from Aktau Port to these locations for repair. The three locations are also situated along the more established transit routes of the Middle and Northern Corridors. The Port of Aktau has the potential to become a repair center for containers with the establishment of the container hub.

439. The port is served by vessels connecting to various ports in the Caspian Sea which include Astrakhan and Makhachkala in Russia, the City of Baku and Alat Seaport in Azerbaijan, and the Iranian ports of Bandar Anzali, Nowshahr and Amirabad. The maritime trade for containerized cargo is primarily between the ports of Aktau and Alat Seaport. There are five vessels deployed to serve this trade. However, the number can vary as vessels can be added to the trade or redeployed for other uses such as transporting grain.

440. They comprise of three containerships and two general cargo ships. The Kazakhstan-flagged containership *Barys* provides a regular service and can transport up to 350 TEUs. Similarly, the Kazakhstan-flagged vessels *Sunkar* and *Berkut* can transport up to 350 TEUs. However, during winter, low water levels in the Caspian Sea can result in fewer containers being handled. Conversely, there tends to be more shipments during the summer season. As such, a vessel capable of carrying 350 TEUs of containers typically transports about 290 TEUs on average in a year.[113] The vessels *Barys*, *Sunkar* and *Berkut* are operated by Kazmotransflot which is the national sea carrier of Kazakhstan.

Table 68: Vessels Which Can Be Deployed Between the Ports of Baku and Aktau

Vessel name	Type	Flag	Size	Annual Average Capacity per Trip*
Barys	Containership	Kazakhstan	113 x 21 m	290 TEUs
Sunkar	Deck cargo	Kazakhstan	113 x 21 m	
Berkut	Deck cargo	Kazakhstan	113 x 21 m	
Huseyn Javid	General cargo	Azerbaijan	108 x 16 m	135 TEUs
General Aslanov	General cargo	Azerbaijan	107 x 16 m	

* Estimates.

Source: Consultants, including using information from Azerbaijan Caspian Shipping Company (ASCO), Kazmotransflot, Port of Aktau, MarineTraffic and My Ship Tracking.

441. Azerbaijan Caspian Shipping Company (ASCO) operates two general cargo vessels between Aktau Port and Alat Seaport. The vessels are flagged with Azerbaijan and are estimated to be able to transport up to 170 TEUs of containers per trip.[114] However, the average operating capacity is typically at about 135 TEUs. ASCO may deploy up to five vessels when required. The other three vessels are dry bulk ships which can

111 Source: Interview held with the Port of Aktau on 23 August 2023.
112 Source: Interview held with KTZ Express on 26 August 2023.
113 Source: Interview held with Kuryk Port on 23 August 2024 with vessel information available from Kazmotransflot. See https://www.kmtflot.com/fleet/sudno-konteynerovoz/container-ship-barys/index.html.
114 Source: Interview held with the Port of Baku on 22 August 2024.

Table 69: Impact of Weather Disruptions on Container Transportation Capacity between Aktau Port and Alat Seaport

	Aktau-Alat Seaport Container Transportation Capacity
No disruptions	54,720 TEUs
Disruption for 30 days	50,222 TEUs
Disruption for 60 days	45,725 TEUs
Disruption for 90 days	41,227 TEUs

Source: Own calculation.

transport about 150–160 TEUs of containers. The shipping charge to transport containers in one direction from Aktau to Alat is $230 for one TEU container and $460 for one FEU container.[115] The charge for the reverse direction from Alat Seaport to Aktau is the same.

442. Various stakeholders have highlighted the shortage of shipping capacity for the Caspian Sea transit as a key bottleneck for CAREC Corridor 2 trade route. Each of the five vessels typically make about four round trips per month. With an average container-carrying capacity of about 228 TEUs for each vessel, total container transportation capacity between the ports of Aktau and Baku is estimated at 54,720 TEUs. However, weather conditions in the Caspian Sea can disrupt sailings with 30–90 days being affected.[116] As such the computation of capacity considers alternative scenarios with disruptions ranging from 30 to 90 days in a year. With 30 days of disruption, container transportation capacity of the Aktau–Alat Seaport connection will be reduced to 50,222 TEUs. With 60 days of the Trans-Caspian transit being affected, container transportation capacity of the Aktau–Alat Seaport connection will be reduced to 45,725 TEUs. With 90 days of transit being affected, container transportation capacity between the two ports will be further reduced to 41,227 TEUs. This does not consider the factor of port congestion. Hence, if there are 50 block trains per month, with each service transporting 50 rail platforms (or 100 TEUs), the annual container demand generated by these train services will equate to 60,000 TEUs. This volume of container traffic will exceed even the shipping transportation capacity for the Trans-Caspian transit even if there was no disruption to sailings caused by weather conditions.

443. In addition, due to the imbalance in container trade, vessels may sail empty from Alat Seaport to Aktau. For the case of eastbound containers that come through Poti or Batumi in Georgia, shipping lines may mandate that the containerized freight be unstuffed and not allowed to go to Central Asia or even the Caucasus. Hence, we have the situation of freight continuing to be moved inland by trucks or wagons but without using containers. On the other hand, containerized freight from PRC is sent across the Caspian Sea in containers. This results in a demand for containerships for the route between Aktau and Alat Seaport. Both ASCO and Kazmotransflot are assessing the demand to justify the commercial viability of deploying containerships. For the case of Kazmotransflot, the shipping company is looking at building a containership that can transport up to 530 TEUs of containers. The vessel has a length of 140 meters and is estimated to cost $25 million apiece. Deployment of one such vessel can raise the container transportation capacity for the trade to about 80,000 TEUs.

444. A key issue is the concern over cargo-handling capacity at the Port of Aktau, for example, a comparison of dwell times in the period of August to September 2024 for the containerships *Barys* and *Sunkar* which ply between Aktau Port and Alat Seaport revealed that both vessels tend to spend longer time in the Port of Aktau. Specifically, both containerships tend to spend less than 24 hours in Alat Seaport whereas they would spend more than a day when calling at the Port of Aktau.

115 Source: Interview held with the Port of Baku on 22 August 2024.
116 Source: Interview held with Kuryk Port on 23 August 2024 indicated 60-90 days of disruption. Interview held with the Port of Baku on 22 August 2024 indicated 30–35 days of disruption.

Table 70: Dwell Time for Selected Ships That Call at Port of Aktau (August–September 2024)

Vessel	Type	Arrival	Departure	Time in Port
Sania	General cargo	02/08 22:52	07/08 01:28	4 days 2 hours
Kangalassy	General cargo	06/08 23:12	07/08 12:28	13 hours
Kasra	General cargo	07/08 13:56	09/08 13:20	1 day 23 hours
Adrina	General cargo	15/08 11:47	16/08 14:16	1 day 4 hours
Kangalassy	General cargo	16/08 06:00	17/08 00:11	18 hours
Sunkar	Containership	23/08 12:08	25/08 11:00	1 day 23 hours
Barys	Containership	23/08 13:44	25/08 05:56	1 day 15 hours
Kangalassy	General cargo	24/08 10:29	25/08 01:20	14 hours
Sarina	General cargo	31/08 14:01	03/09 23:01	3 days 9 hours
Kangalassy	General cargo	01/09 11:28	04/09 02:40	2 days 14 hours
Sania	General cargo	04/09 09:56	09/09 23:13	5 days 13 hours
Sunkar	Containership	04/09 22:49	06/09 20:24	1 day 21 hours
Mir	General cargo	05/09 01:13	07/09 20:04	2 days 18 hours
Barys	Containership	05/09 06:36	06/09 22:08	1 day 15 hours
General Aslanov	General cargo	08/09 17:04	09/09 11:44	18 hours
Barys	Containership	11/09 00:24	12/09 11:05	1 day 10 hours
Sunkar	Containership	11/09 15:51	12/09 22:08	1 day 6 hours
Parand	General cargo	12/09 03:05	20/09 01:24	7 days 21 hours
Kangalassy	General cargo	12/09 04:11	12/09 23:19	19 hours
Sormovskiy 3051	General cargo	14/09 18:44	17/09 13:13	2 days 18 hours
General Aslanov	General cargo	15/09 01:57	16/09 13:49	1 day 11 hours
Barys	Containership	16/09 14:13	18/09 00:44	1 day 10 hours
Sarina	General cargo	16/09 21:29	18/09 01:48	1 day 3 hours
Sabrina	General cargo	17/09 00:15	19/09 05:48	2 days 5 hours
Sunkar	Containership	17/09 17:46	20/09 15:05	2 days 21 hours
Omskiy 103	General cargo	19/09 01:21	20/09 22:28	1 day 21 hours

Source: My Ship Tracking.

445. Hence, there could be scope for improvements for the Port of Aktau in terms of vessel productivity. Related to this issue is the overall commercial sustainability of CAREC Corridor 2 route. The war in Ukraine and Red Sea crisis are seen to benefit the trade route with shorter transit times and relatively more competitive freight rates. The freight rate to move a container from Xi'an to Poti is about $6,000 to $8,000. The crisis had seen the ocean route from Lianyungang to Europe taking 60–65 days, which is an increase of sailing time by 15–30 days. Sending the same container from Shanghai in China to Rotterdam in The Netherlands will cost as much as $10,500.[117] The longer sailing time by taking the ocean route makes CAREC Corridor 2 become an attractive proposition especially for cities that are located further inland from the coast of PRC. An example being Xi'an. However, ending of the crisis will see sailing time between Asia and Europe significantly reduced to 35–45 days and cost much lower, which may impact on CAREC Corridor 2 trade. Freight rates for the ocean route could fall significantly to as low as $2,000 per FEU which was seen during the period of October 2023. Low ocean freight rates could result in CAREC Corridor 2 becoming unfeasible.

117 Source: Quotation from Freightos on 15 September 2024 to ship a FEU High-cube container from Shanghai to Rotterdam. Available online at: https://www.freightos.com/routes/route/cn-baoshan-shanghai/nl-rotterdam.

Figure 77: Vessel Situation in the Port of Aktau as at 1800 Hours on 16 September 2024



Source: Using information from MarineTraffic, VesselFinder and My Ship Tracking.

Table 71: Comparison of Dwell Time for *Barys* and *Sunkar* in Aktau Port and Alat Seaport

	Arrival	Departure	Dwell Time
Containership *Barys*			
Alat Seaport	21/08 10:47	21/08 23:37	12 hours
Aktau Port	23/08 13:44	25/08 05:56	1 day 15 hours
Alat Seaport	26/08 18:40	27/08 12:01	17 hours
Alat Seaport	01/09 01:10	01/09 12:21	11 hours
Aktau Port	05/09 06:36	06/09 22:08	1 day 15 hours
Aktau Port	11/09 00:24	12/09 11:05	1 day 10 hours
Containership *Sunkar*			
Alat Seaport	21/08 06:35	22/08 00:12	17 hours
Aktau Port	23/08 12:08	25/08 11:00	1 day 23 hours
Alat Seaport	27/08 15:32	28/08 10:59	19 hours
Alat Seaport	01/09 15:36	02/09 03:42	12 hours
Aktau Port	04/09 22:49	06/09 20:24	1 day 21 hours
Alat Seaport	08/09 18:20	09/09 19:32	1 day 1 hour
Aktau Port	11/09 15:51	12/09 22:08	1 day 6 hours
Alat Seaport	14/09 10:25	15/09 02:39	16 hours
Aktau Port	17/09 17:46	20/09 15:05	2 days 21 hours

Source: My Ship Tracking.

Port of Kuryk

12

12.1. Introduction

446. The Port of Kuryk is located approximately 63 kilometers to the southeast of Aktau Port. The port sits on the east coast of the Caspian Sea and is owned and managed by KTZ Express. The port is positioned to serve the Trans-Caspian International Transport Route (TITR) which connects PRC to Europe through Central Asia and the Caucasus.

447. Kuryk Port has the advantages of being ice-free and being operational for 24 hours a day, 7 days a week. Kuryk Port was developed as a facility to handle exports of crude oil from the Kashagan oil fields to Baku in Azerbaijan. From there, the commodity would be transported to Türkiye. As a relatively newly developed facility, the Port of Kuryk aims to become a key transshipment point for the TITR.

12.2. Port Facilities and Infrastructure

448. The main cargo-handling center is the ferry complex which is operated by KTZ Express. The ferry complex is also the key facility for handling containers. The complex began operations in 2017 with two berths. The facility is connected to 12 railway tracks and is capable of handling rail and road traffic. The ferry complex is equipped with two finger piers that offer four berths with total berth length of 696 meters, bringing total capacity to 6.0 million tons of cargo per year.

449. Four million tons of the capacity is accounted for by railway cargo and 2.0 million tons by vehicle cargo. The 4.0 million tons of rail cargo translates to approximately 44,000 wagons while the 2.0 million tons of truck cargo translates to 57,000 trucks.[118] The ferry complex has a draft of 7.0 meters and occupies 67.4 hectares of land. By 2030, the annual capacity of the complex will be raised further to 5 berths and 10 million tons.

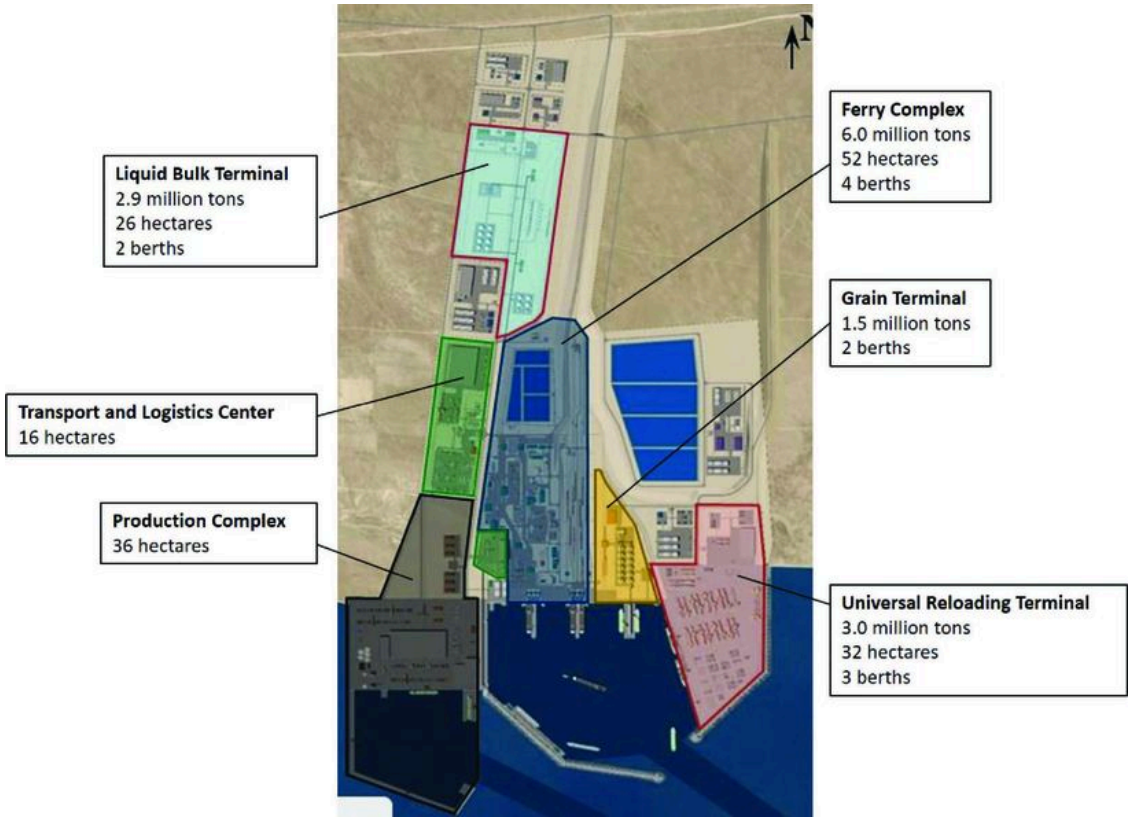
450. The ferry complex can process up to five ferries each day. For vehicle cargo, it takes 30–40 minutes to discharge a full load of 52 trucks from the ferry, and 30 minutes to one hour to load.[119] Total turnaround time for a ferry is about 3 hours. After discharge, a ferry-load of trucks will take 3–4 hours to clear customs and leave the port. For railway cargo, it takes 4–5 hours to discharge the ferry for rail wagons, and 4–5 hours to load. Total turnaround time for a ferry transporting rail wagons is about 10 hours. The process for handling rail cargo is longer due to shunting operations by the locomotive and caution taken to ensure that the vessel is kept at level with the bridge. As such, only 3 loaded wagons on 2 lines (i.e., 6 wagons in total) are loaded on board the ferry at a time. A ferry can transport 44 rail platforms which translates to 88 TEUs of cargo.

451. The container-handling capacity of Kuryk Port is about 30,000 TEUs per year.[120] A typical vessel which calls at Kuryk Port is the *Zarifa Aliyeva*. The Ro-Ro vessel is registered in Azerbaijan and possesses a LOA of 154 m x beam 17 m x draft 4.5 m. The vessel was newly constructed in 2021 at Baku Shipyard and has a gross tonnage of 8,523 tons. It took about 3 years to build the vessel. Equipped to carry 52 rail wagons or 50 standard trucks, the vessel sails regularly between the ports of Kuryk and Baku.

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118 Source: Interview held with the Port of Kuryk on 23 August 2024.
119 Source: Interview held with the Port of Kuryk on 23 August 2024.
120 Source: Interview held with the Port of Kuryk on 23 August 2024. On the Port of Kuryk website, the universal reloading terminal was stated to handle 150,000 TEUs, but this refers to future expansion.

Figure 78: Layout of Ferry Complex and Sarzha Multifunctional Marine Terminal of Kuryk Port



Source: Port of Kuryk.

Table 72: Key Facilities at the Ferry Complex and Sarzha Multifunctional Marine Terminal

Facility	Capacity	Berths	Attributes	Draft
Ferry complex	6.0 mil tons 52 hectares	4	Railway: 4.0 mil tons Car: 2.0 mil tons	7.0 m
Universal reloading terminal	3.0 mil tons 32 hectares	4	General and bulk: 1.65 mil tons Containers: 1.35 mil tons 30,000 TEUs/year	7.0 m
Liquid bulk terminal	2.9 mil tons 26 hectares	2	Oil and oil products: 2.6 mil tons LPG: 300,000 tons	7.0 m
Grain terminal	1.5 mil tons	2	Handles grain exports to Iran	7.0 m
General cargo terminal	1.0 mil tons	1	Handles general cargo	7.0 m
Production complex	36 hectares	NA	Shipyard, and production of metal structures and caissons	NA
Transport and logistics center	16 hectares	NA	Accommodates 230 trucks	NA

Source: Consultants, using information including from the Port of Kuryk.

Figure 79: Ferry Complex and Railway Tracks Kuryk Port





Source: Consultants.

Figure 80: Zarifa Aliyeva (IMO Number 9843118)



Source: Consultants.

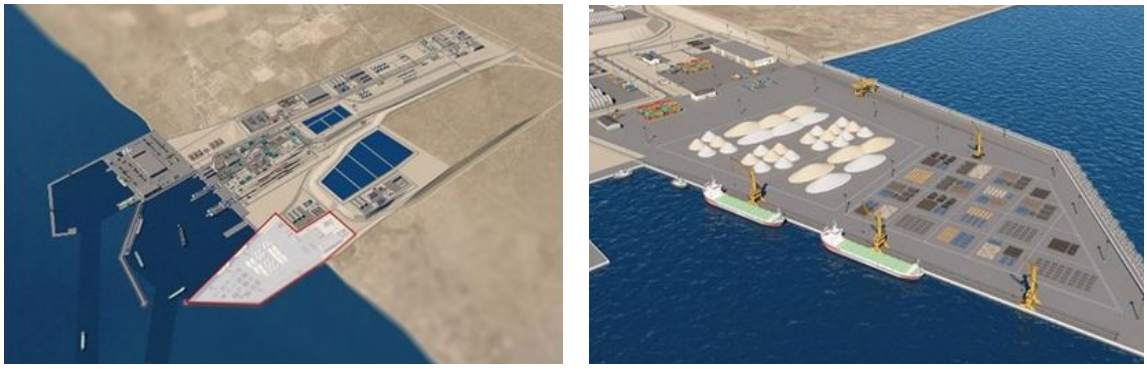
452. Semurg Invest is developing the Sarzha Multifunctional Marine Terminal which will have nine berths that are allocated between the Universal Reloading Terminal, Liquid Bulk Terminal, Grain Terminal, and General Cargo Terminal. Semurg Invest LLP also possesses rights to land plots with a total area of 224.2 hectares.

453. Located next to the ferry complex is the Universal Reloading Terminal. The facility is under construction with major earthworks, reclamation, and approach railroad completed. Upon completion, the terminal will be able to handle 3.0 million tons of general, bulk and containerized cargo. Cargo-handling capacity for general and bulk cargo being 1.65 million tons, and containerized cargo being 1.35 million tons. Container-handling capacity is designed at 150,000 TEUs per year.[121] The facility occupies 32 hectares of land and possesses 4 berths with draft alongside being 7.0 meters.

454. There are plans to develop a transport and logistics center to support cargo-handling at the Port of Kuryk. The center will provide logistics services to port users which include warehouse storage for various types of cargo, temporary storage facilities, and facilities to carry out customs procedures. The transport and logistics center will occupy 16 hectares of land. The current site is used as a TIR park.

121 Source: Anet, M. (2024). Kuryk Port – A sustainable ESG gateway between Europe and Asia. *Fifteenth International Capacity-Building Seminar on Trade and Transport Facilitation*, Aktau, 12 June. Available online at: https://unece.org/trade/documents/2024/06/presentations/kuryk-port-sustainable-esg-gateway-between-europe-and-asiaf.

Figure 81: Universal Reloading Terminal at Sarzha Multifunctional Marine Terminal



Source: Kuryk Port.

Figure 82: Transport and Logistics Center at Sarzha Multifunctional Marine Terminal



Source: Kuryk Port.

455. The Port of Kuryk plans to have a terminal dedicated to handling liquid bulk cargo . The terminal will cater to oil, oil products and LPG cargo. Situated on an area of 26 hectares, the terminal will have 2 berths with depth alongside of 7.0 meters. There is another terminal designed to handle liquid cargo at Kuryk Port. The terminal shall cater to oil, bulk cargo and LPG. Located on an area of 26 hectares, the terminal will be served by 2 dedicated berths with depth alongside being 7 meters. The design capacity of the terminal is 2.6 million tons for oil and oil products, and 300,000 tons for LPG per year.

Figure 83: TIR Park at Sarzha Multifunctional Marine Terminal



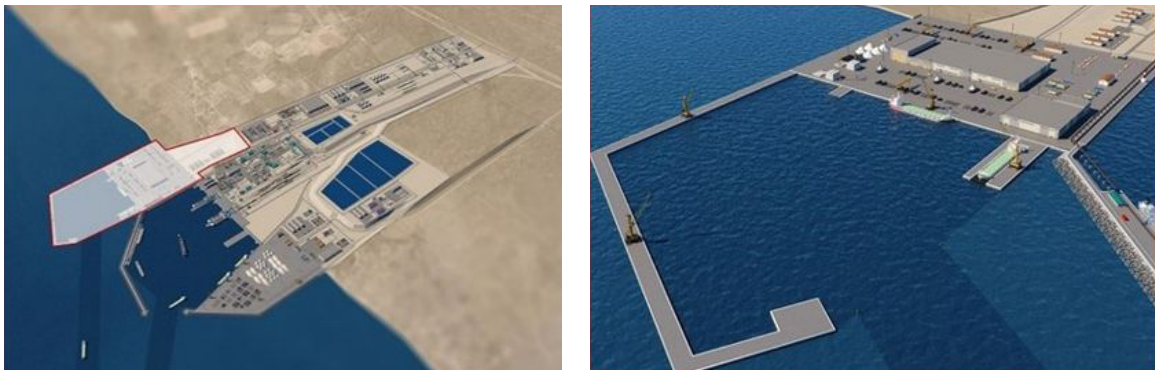
Source: Consultants.

Figure 84: Liquid Cargo Terminal at Sarzha Multifunctional Marine Terminal



Source: Kuryk Port.

Figure 85: Production Complex at Sarzha Multifunctional Marine Terminal



Source: Kuryk Port.

456. A production complex which encompasses a shipyard and production of metal structures and caissons is also planned at Kuryk Port. The production complex aims to service oil and gas projects in the Kazakh section of the Caspian Sea. The production complex will also be able to perform ship repair and bunkering activities.

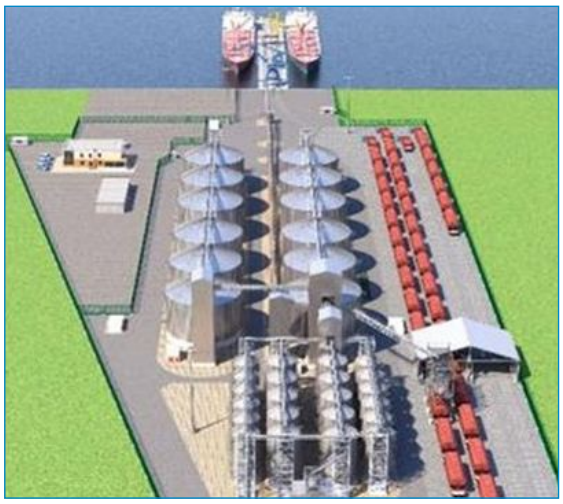
457. The Port of Kuryk also has a grain terminal. The terminal is capable of handling 1.5 million tons of grain per year. The grain terminal comes with a two-sided berth and is targeted at handling grain exports to Iran. The facility comes with railway access and the network is connected to Aktau Port. The facility is also exploring opportunities to send grain cargo to Azerbaijan and possibly Europe.

458. Another cargo-handling facility of Kuryk Port is the ERSAI terminal which is located 12 kilometers to the east of Sarzha Multifunctional Marine Terminal. The terminal began operations in June 2024 by receiving the first dry cargo vessels. The terminal sits on 35 hectares of land with a berth length of 1,300 meters. It has an annual cargo-handling capacity of 3.0 million tons and water depth of 3.5 meters.

459. With the aim of handling vessels of larger transportation capacity, the Port of Kuryk is undergoing dredging to allow handling of ferries that can transport up to 52 rail platforms (or 104 TEUs of containers). This is an increase of 18.2%. Dredging works are expected to be completed by the end of 2024. The project is also seen as an important counter to dropping sea levels in the Caspian Sea.

460. In the longer term, the development of Sarzha Multifunctional Marine Terminal will see a container terminal equipped with four berths and capability to handle 150,000 TEUs a year. The liquid bulk terminal will

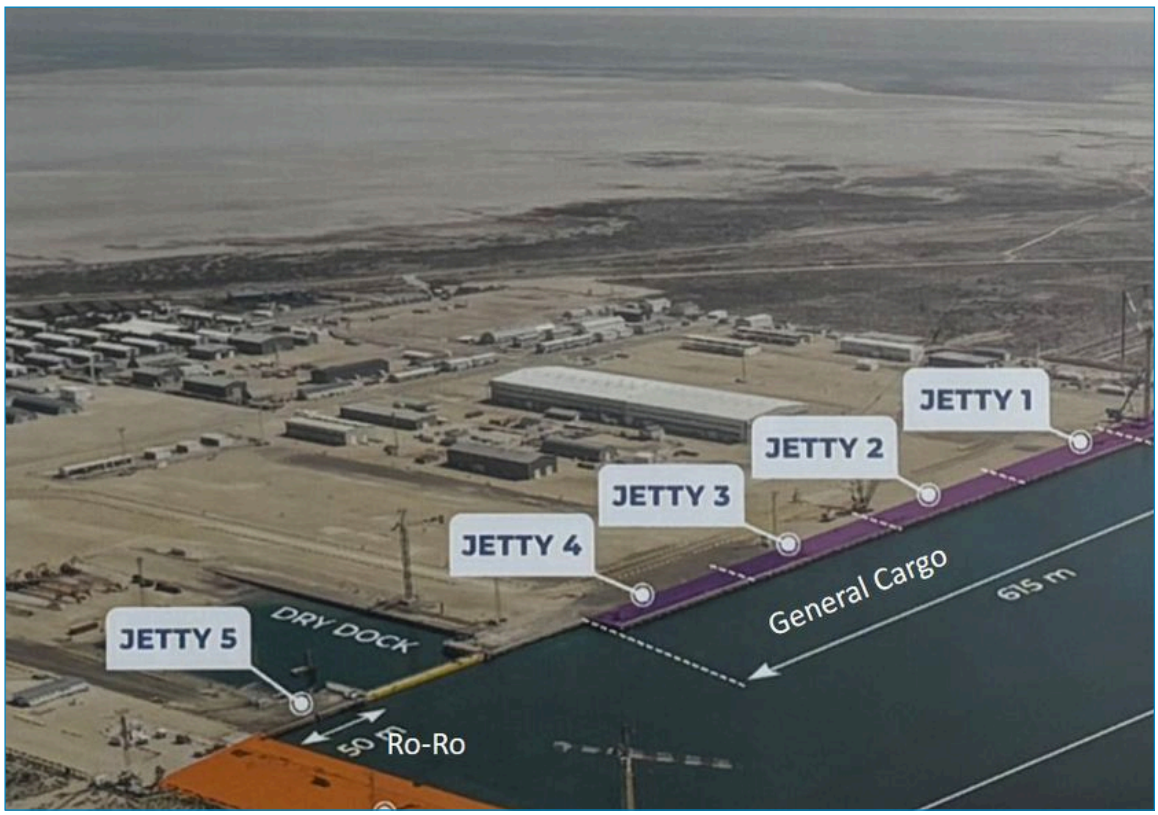
Figure 86: Grain Terminal at Sarzha Multifunctional Marine Terminal





Source: Semurg Invest and photo from consultants.

Figure 87: ERSAI Terminal



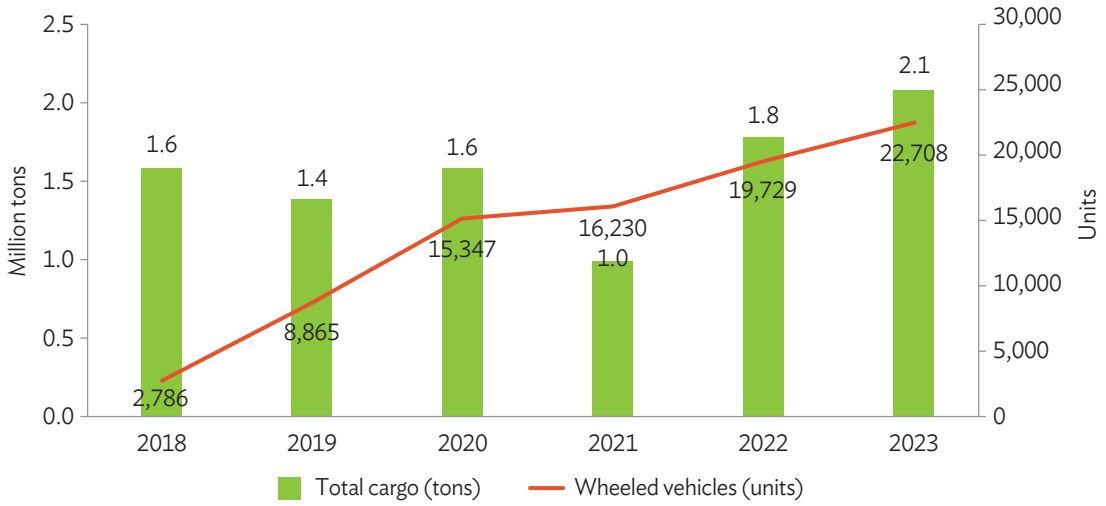
Source: Port of Kuryk.

also be expanded to handle 5.5 million tons of cargo a year. The ferry complex will have 5 berths and an annual capacity of 6.0 million tons while the Sarzha Multifunctional Marine Terminal will have 9 berths and an annual capacity of 11 million tons. The combined cargo-handling capacity of the two facilities will be 17 million tons across 14 berths.

12.3. Container-handling Performance

461. The Port of Kuryk handled 2.1 million tons of cargo in 2023, on a growth of 16.7% from 1.8 million tons for 2022. The performance for 2022 was similarly strong with cargo handling by the port having grown by 80.0% from 1.0 million tons in 2021. The substantial reduction in cargo handled in 2021 was attributed to the effects of the COVID-19 pandemic. Nonetheless, cargo performance for the port has recovered and exceeded the volumes seen for the pre-COVID period.

Figure 88: Cargo Throughput Performance for Kuryk Port



Source: Using information from the Port of Kuryk.

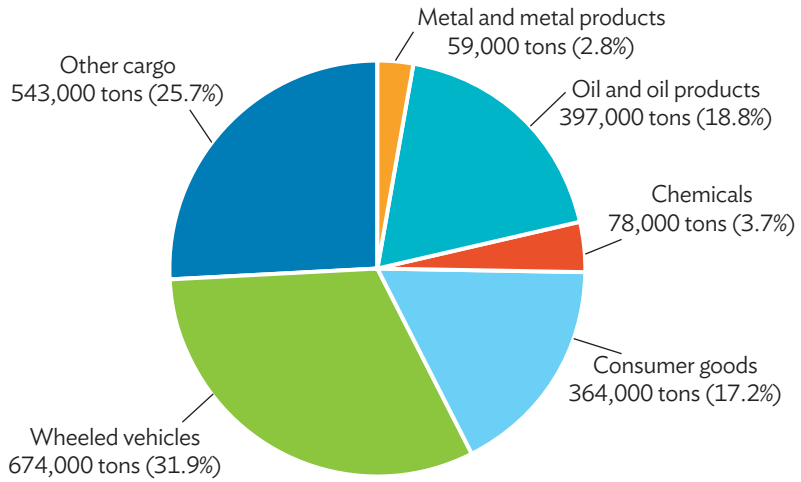
462. A significant contributor to the steady expansion of cargo handled by the Port of Kuryk are wheeled vehicle traffic. In 2023, the port processed 22,708 wheeled vehicles, representing a 15.1% growth of 19,729 units handled in 2022. In fact, the number of wheeled vehicles has been rising steadily over the years, expanding by 8.2 times between 2018 and 2023.

463. The largest cargo segment is accounted for by wheeled vehicles. The port processed 674,000 tons of wheeled vehicles, which translated to approximately 30 tons per vehicle unit. The cargo segment had seen steady growth, growing by 9.1% between 2022 and 2023. For the first quarter of 2024, wheeled vehicles grew by another 36.3% to reach 184,000 tons.

464. Oil and oil products accounted for the second largest category at 387,000 tons handled for 2023 on a growth of almost 23 times from less than 20,000 tons handled in 2022. Consumer goods form the third biggest category of cargo handled at the port with a share of 17.2%. In 2023, the Port of Kuryk handed 384,000 tons of consumer goods. The figure was slightly lower than the 386,000 tons handled in 2022. Together, the three types of cargo accounted for about two-thirds of total cargo throughput for Kuryk Port. For 2024, the port is planning to handle 2.3 million tons of cargo.[122]

122 Source: Interview held with the Port of Kuryk on 23 August 2024.

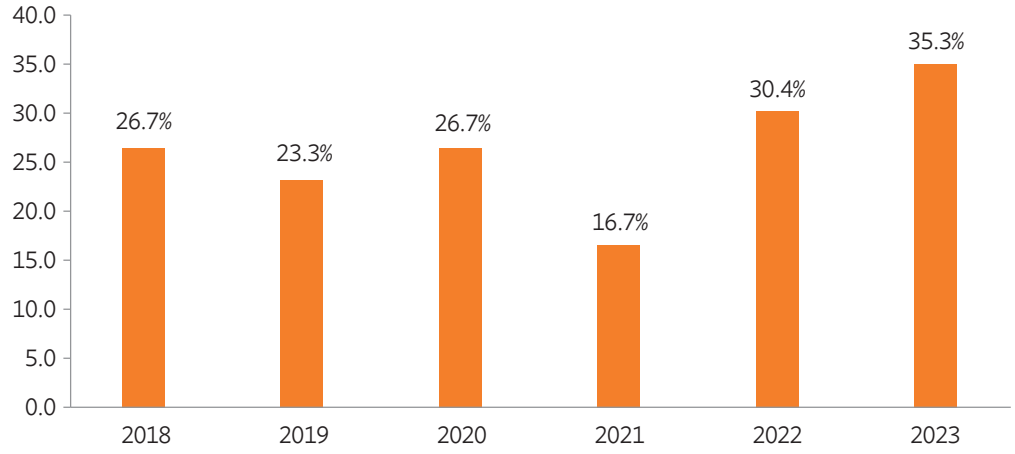
Figure 89: Composition of Cargo Throughput of Kuryk Port for 2023



Source: Using information from the Port of Kuryk.

465. With 2.1 million tons of cargo handled in 2023, annual capacity utilization of the Port of Kuryk is estimated at 35.3% based on a capacity of 6.0 million tons per year. Capacity utilization, which fell to a low of 16.7% in 2021 was an exception. The figure shows the trend of a steady rise in capacity utilization for the port which is in line with the cargo throughput. As for container throughput, the Port of Kuryk handled 4,438 TEUs in 2023. The average weight of a container is assumed to be 9.0 tons per TEU.[123] Hence, with 39,942 tons of containerized cargo, the level of containerization for Kuryk Port would be 2.3%.[124]

Figure 90: Annual Cargo-handling Capacity Utilization for Kuryk Port (%)



Source: Using information from the Port of Kuryk.

123 Calculated based on the assumption of 150,000 TEUs equating to 1.35 million tons of containerized cargo, following from information available at the website pf the Port of Kuryk (see https://kuryk.kz/en/projects.html).

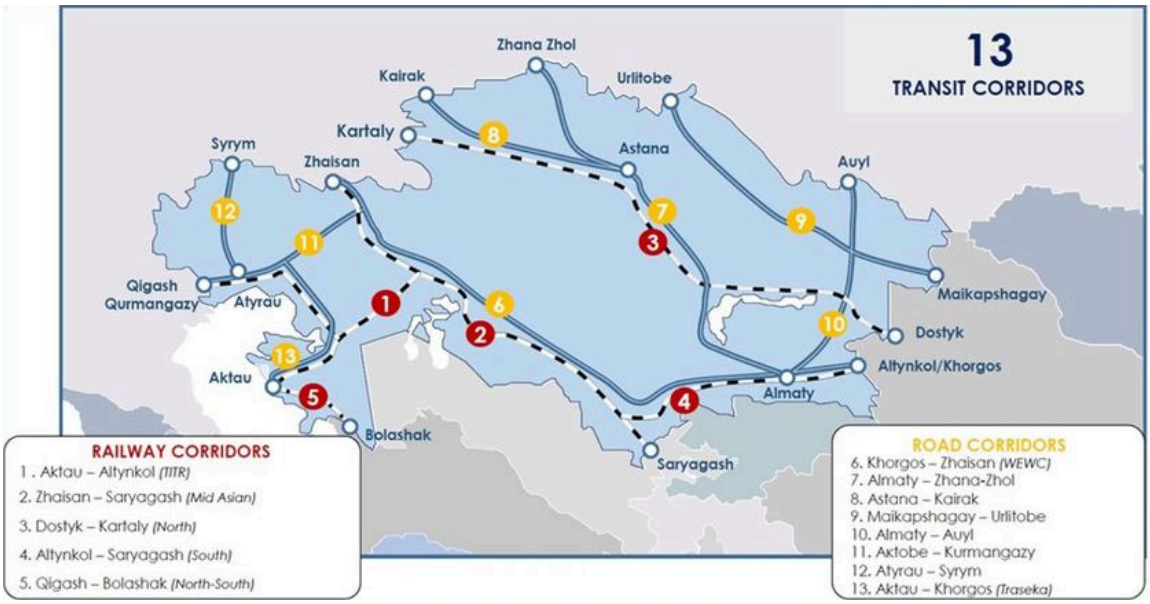
124 Calculated based on the total tonnage of non-oil cargo for 2023, which is 1,703,000 tons. Assuming that all the other cargo can be containerized, the level of containerization works out to be 2.3%.

12.4. Regional Connectivity

466. The strategic location of Kazakhstan allows the country to serve as an important conduit for transit cargo moving between East Asia, Europe, Central Asia, and the Middle East. Kazakhstan has identified thirteen transit corridors in the country. For rail cargo, there are five transit corridors. These are (1) Aktau–Altynkol (for TITR cargo), (2) Zhaisan (i.e., Yaysan)–Saryagash (for Central Asia cargo), (3) Dostyk–Kartaly (for Northern Corridor cargo), (4) Altynkol–Saryagash (for Central Asia cargo), and (5) Qigash–Bolashak (for North–South cargo).

467. For cargo that goes by truck transportation, there are eight transit corridors in the country. These are (1) Khorgos–Zhaisan (i.e., Yaysan) (for Western Europe–Western China, or WEWC, cargo), (2) Almaty–Zhana Zhol, (3) Astana–Kairak, (4) Maikapshagay (i.e., Maykapchigay)–Urlitobe (i.e., Urlyutyub), (5) Almaty–Auyl, (6) Aktobe–Kurmangazy, (7) Atyrau–Syrym, and (8) Aktau–Khorgos (for TRACECA[125] cargo).

Figure 91: Transit Corridors of Kazakhstan



Source: Kazakhstan Ministry of Transport (2023). Subregional capacity building workshop on supporting the policies on green and resilient transport infrastructure. *Connectivity along the Trans-Caspian/Eurasian Middle Transport Corridor*, 13 December. Available online at: https://www.unescap.org/sites/default/d8files/event-documents/1.Kazakhstan.pdf.

468. The Port of Kuryk handled 22,708 units or 674,000 tons of wheeled vehicles in 2023. Trucks transiting through the country have access to some 94,800 kilometers of the highway network.[126] Majority of the highways can accommodate more than 200 vehicles daily while 39.5% of the roads can accommodate 2,000 or more vehicles daily. To upgrade the highway network, construction and redevelopment works are ongoing for 2,800 kilometers of the road network while 2,300 kilometers are undergoing repairs.

125 TRACECA is a regional transportation network that aims to develop international transport and trade in the Black Sea, Caucasus, and Central Asia. Member countries are Armenia, Azerbaijan, Bulgaria, Georgia, Iran, Kazakhstan, Kyrgyz Republic, Moldova, Romania, Tajikistan, Türkiye, Turkmenistan, Ukraine and Uzbekistan.

126 Source: Astana International Financial Centre (2024). *Transport and Logistics in Kazakhstan*, April. Available online at: https://aifc.kz/wp-content/uploads/2024/07/2.3-transport-and-logistics-in-kazakhstan-april-2024.pdf.

Figure 92: TIR Trucks Handled at the Port of Kuryk




Source: Field visits.

469. Apart from flexibility, trucks can carry more cargo compared to a container. Specifically, a TIR truck can transport 33 pallets while a FEU container carries only 24 pallets.[127] A twenty-foot and forty-foot container can load up to 22 tons and 27 tons of cargo respectively. Trucks coming to Kuryk from the direction of Alat Seaport are typically fully laden. The port also handles import cargo for Uzbekistan and Tajikistan. As trucks leaving on the return trip to Alat Seaport will try to take full cargo as well, they can charge nominal rates to do so.[128] As such, competition posed by trucks to railway cargo can be significant. Nonetheless, a key challenge faced by truck transportation is potential congestion at the Georgia–Azerbaijan border and at Sarpi as well, which is the Türkiye–Georgia border. Trucks may have to wait for several days for the border-crossing.

470. For rail connectivity, the Port of Kuryk handled approximately 1.0 million tons of rail cargo in 2023. The cargo is handled by ferries which provide direct connections between the ports of Kuryk and Baku. The Port of Kuryk does not handle block trains from PRC as of 2024 although it has the capacity to perform this function. As such, it may be possible for the port to handle block trains from PRC if traffic volumes increase. Nonetheless, the problem of imbalance will likely occur for Kuryk Port as most of the rail traffic is in the westbound direction from PRC to Europe. The port is likely to face the situation of the lack of rail platforms and lack of empty containers for exports as is encountered in the Port of Aktau.

471. Although trucks offer greater flexibility, the proportion of cargo that go by trucks remains in the minority. Railway wagons have the advantage of a unified transit tariff along the entire route. Nonetheless, a decline in the reliability of rail services could see shippers turning to trucks for shipments. Sections that see heavy utilization are the Dostyk–Moiynty and Aktogai–Almaty sections. Capacity utilization is also heavy on the Shu–Shymkent section. Kazakhstan is currently expanding the Dostyk–Moiynty capacity by building a second railway track. The country is also constructing a new line to connect Bakhty at the Kazakhstan–China border to the national railway system. At the same time, another 1,000 kilometers of the railway network will be electrified by 2025. Nonetheless, only 5,200 kilometers or 32.5% of the railway network would have been electrified by then.

472. In terms of maritime connectivity, the Port of Kuryk can be served by vessels that call at various ports in the Caspian Sea. These include Turkmenbashi in Turkmenistan, Bandar Anzali and Amir Abad in Iran, Astrakhan, Olya and Makhachkala in Russia, and Baku and Alat Seaport in Azerbaijan. The main container shipping route is the Kuryk–Alat Seaport connection which is typically provided using 7 Ro-Ro vessels that

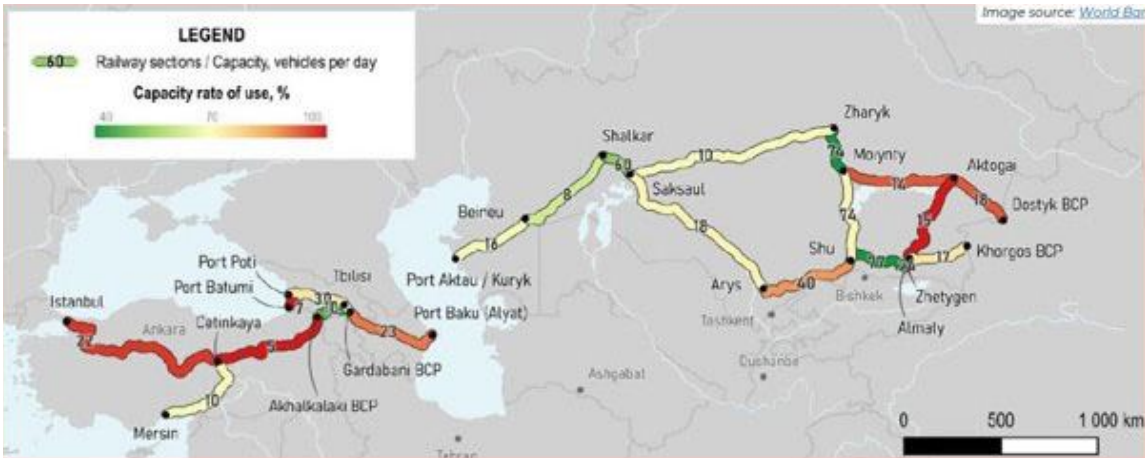
127 Source: Interview held with Georgian International Road Carriers Association 20 August 2024.
128 Source: Interview held with ADY Express and ADY Containers on 22 August 2024.

Figure 93: Dagistan Getting Ready to Load Rail Wagons at Kuryk Port on 22 August 2024



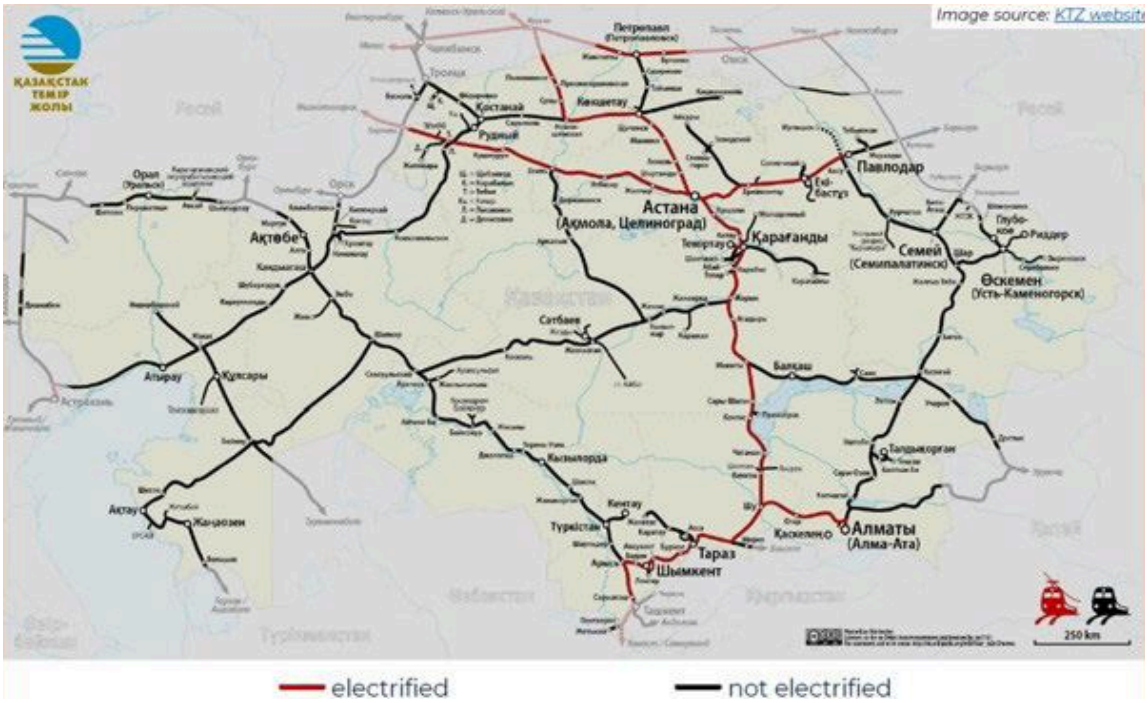
Source: Field visits.

Figure 94: Railway Capacity and Utilization for CAREC Corridor 2



Source: Astana International Financial Centre (2024). *Transport and Logistics in Kazakhstan*, April. Available online at: https://aifc.kz/wp-content/uploads/2024/07/2.3-transport-and-logistics-in-kazakhstan-april-2024.pdf.

Figure 95: Electrification of Kazakhstan Railway Network



Source: Astana International Financial Centre (2024). *Transport and Logistics in Kazakhstan*, April. Available online at: https://aifc.kz/wp-content/uploads/2024/07/2.3-transport-and-logistics-in-kazakhstan-april-2024.pdf.

are operated by ASCO. These are *Merkury 1, Dagistan, Azerbaijan, Zarifa Aliyeva, Nakhichyvan, Professor Gul*, and *Karabakh*. The dimensions of these vessels are relatively similar with LOA of 154–155 meters and beam of 17–18 meters. These vessels are operated by ASCO, and they are flagged with Azerbaijan. ASCO has a fleet of 15 vessels in total where the six largest vessels can transport about 52 trucks or 60 trailers whereas the smaller vessels can carry about 30 trucks or 40 trailers.[129] There are Ro-Ro/passenger vessels which can also carry 28 trucks or 33 trailers.

473. While the sailing schedules of the vessels are typically stable, ASCO can change their deployment, depending on cargo demand and weather conditions among other factors. We saw the vessels *Azerbaijan, Ordubad, Professor Gul, Karabakh* and *Shahdag* enroute to Kuryk Port. The vessel *Ordubad* can be seen as a substitute for the *Nakhichyvan* which was deployed to call at Turkmenbashi. The vessel *Zarifa Aliyeva* is approaching Alat Seaport whereas *Dagistan* is already berthed at the port. The vessel *Merkury 1* is anchored off Baku, awaiting orders.

474. The figure shows a congested port with the two berths of the ferry complex being occupied by the Ro-Ro vessels *Azerbaijan* and *Professor Gul*. Both vessels had arrived 30 minutes apart at the port. For the Ro-Ro vessels *Shahdag* and *Ordubad* which arrived later, they had to wait in the anchorage.

475. The vessels typically transport trucks, trailers and wagons and some containers. As such, the estimates for shipping capacity assume that vessels serving the Kuryk–Baku trade are carrying entirely containers with the average container-carrying capacity being 88 TEUs per vessel. Each vessel typically completes 4–5 round trips in a month. Hence, total container transportation capacity by the seven vessels is estimated to be 33,264 TEUs per year.

129 Source: Interview held with the Port of Baku and 22 August 2024 with vessel information available from ASCO. See https://www.asco.az/en/pages/4.

Figure 96: Maritime Connectivity of Kuryk Port



Source: Using information from Anet, M. (2024). Kuryk Port – A sustainable ESG gateway between Europe and Asia. *Fifteenth International Capacity-Building Seminar on Trade and Transport Facilitation*, Aktau, 12 June. Available online at: https://unece.org/trade/documents/2024/06/presentations/kuryk-port-sustainable-esg-gateway-between-europe-and-asiaf.

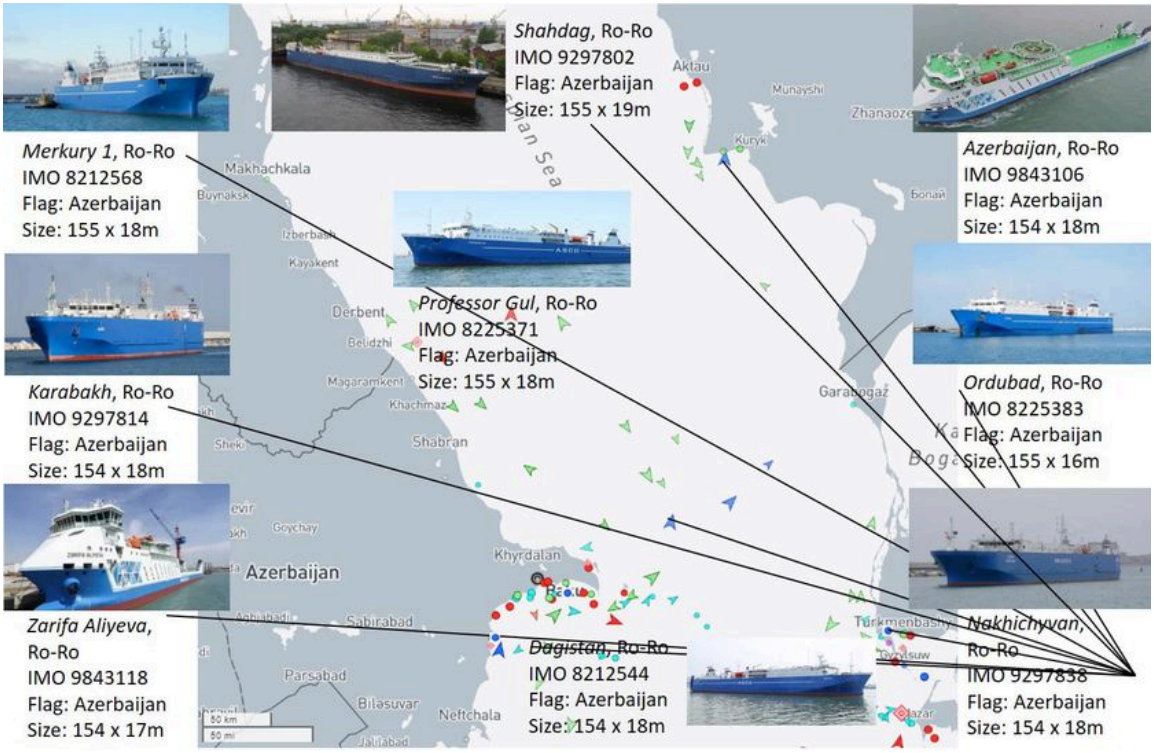
Table 73: Vessels Which Can Be Deployed Between the Port of Kuryk and Alat Seaport

Vessel Name	Type	Flag	Size	Average Capacity per Trip*
Merkury 1	Ro-Ro	Azerbaijan	155 x 18 m	88 TEUs
Dagistan	Ro-Ro	Azerbaijan	154 x 18 m	
Azerbaijan	Ro-Ro	Azerbaijan	154 x 18 m	
Zarifa Aliyeva	Ro-Ro	Azerbaijan	154 x 17 m	
Nakhichyvan	Ro-Ro	Azerbaijan	154 x 18 m	
Professor Gul	Ro-Ro	Azerbaijan	155 x 18 m	
Karabakh	Ro-Ro	Azerbaijan	154 x 18 m	

* Estimates.

Source: Including using information from Azerbaijan Caspian Shipping Company (ASCO), MarineTraffic and My Ship Tracking.

Figure 97: Situation for Vessels that Provide Connectivity between the Port of Kuryk and Port of Baku as at 0800 Hours on 27 September 2024



Source: Using information from MarineTraffic, VesselFinder and My Ship Tracking.

476. The crossing time for a Ro-Ro vessel from Kuryk to Alat Seaport is about 18 hours. At the Port of Kuryk, the turnaround time for a ferry transporting vehicle cargo is about 3 hours.[130] The turnaround time for a ferry transporting rail wagons is about 10 hours. However, vessel capacity is seen as an issue where there can be a lack of transportation capacity across the Caspian Sea. A key issue that can have a major impact on Trans-Caspian performance is weather conditions in the Caspian Sea. Conditions can prohibit sailing between the ports of Kuryk and Baku. Weather conditions can result in the vessel stopping at Kuryk Port for 1–2 days. A delay can be even up to two weeks. There will be 30–35 days in a year where Trans-Caspian crossing is impossible due to weather conditions.[131]

130 Source: Interview held with the Port of Kuryk on 23 August 2024.

131 Source: Interview held with the Port of Baku and 22 August 2024. Interview held with Kuryk Port on 23 August 2024 indicated 60–90 days of disruption.

477. With 30 days of disruption, container transportation capacity of the Alat–Kuryk connection will be reduced to 30,530 TEUs. Based on the assumption of 60 days of disruption, container-carrying capacity for the route diminishes to 27,796 TEUs. With 90 days of disruption, capacity of the route is reduced further to 25,062 TEUs.

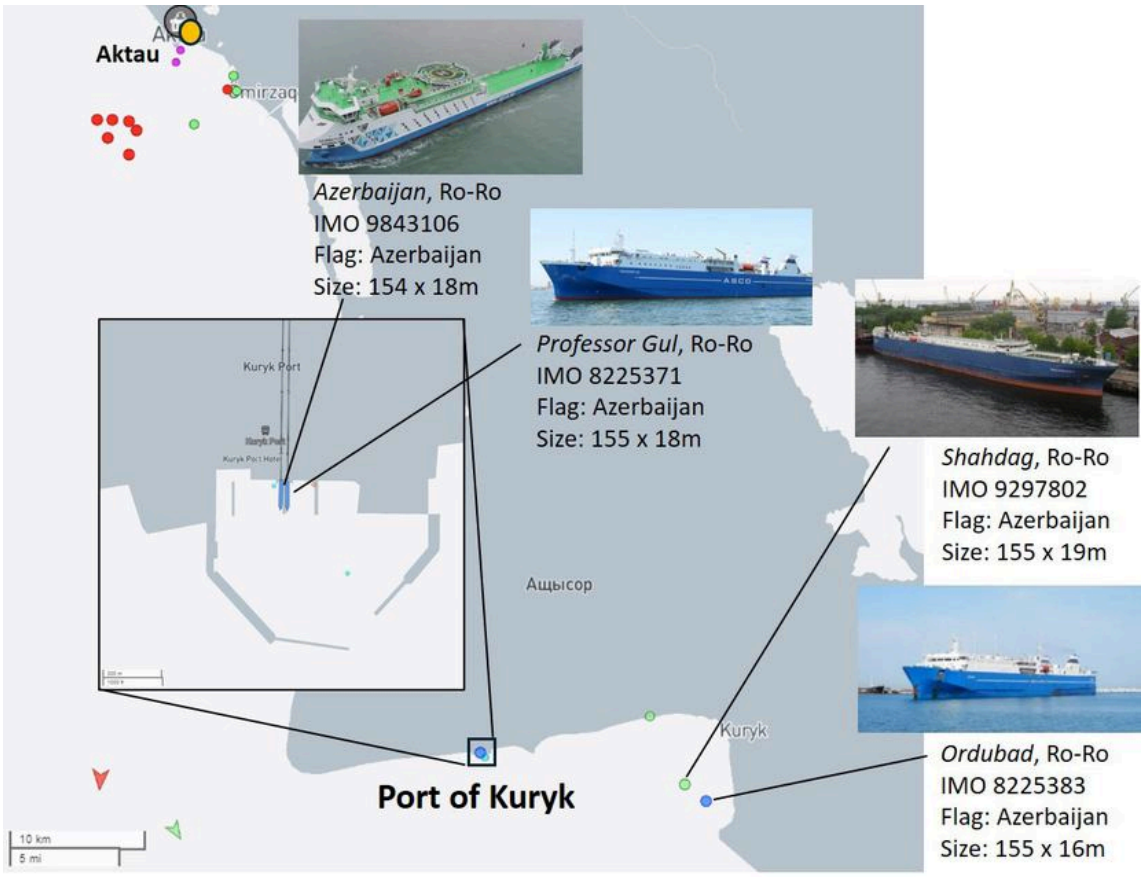
Table 74: Impact of Weather Disruptions on Container Transportation Capacity for the Trans-Caspian Sea Transit

	Aktau–Alat Seaport Container Transportation Capacity*
No disruptions	33,264 TEUs
Disruption for 30 days	30,530 TEUs
Disruption for 60 days	27,796 TEUs
Disruption for 90 days	25,062 TEUs

* Note that the Port of Kuryk handles very limited container traffic.

Source: Consultants.

Figure 98: Congestion at the Port of Kuryk as at 1700 Hours on 27 September 2024



Source: Consultants, using information from MarineTraffic, VesselFinder and My Ship Tracking.

478. The assumption for the container transportation capacity is that the vessels are carrying only containers. For example, vessels calling at Kuryk Port typically transport trucks and wagons with a small proportion of the cargo being containers. As such, container-carrying capacity for vessels plying on the Kuryk–Baku trade route will be reduced further. Due to the imbalance in container trade, vessels may also sail empty from Baku to Aktau. For the case of eastbound containers that come through Poti or Batumi in Georgia, shipping lines may mandate that the containerized freight be unstuffed and not allowed to go to Central Asia or even the Caucasus. Hence, we have the situation of freight continuing to be moved inland by trucks or wagons but without using containers. On the other hand, containerized freight from PRC is sent across the Caspian Sea in containers. This results in a demand for containerships for the route between Kuryk to Alat Seaport. Both ASCO and Kazmortransflot are assessing the demand to justify the commercial viability of deploying containerships.

479. Despite growing interest from freight forwarders and shippers to use the Trans-Caspian route, significant challenges remain. Nonetheless, there could be opportunities to capitalize on this growing interest in containerized shipments from PRC to Europe and position the Port of Kuryk as a strategic location to serve this trade as well. Interviews with various stakeholders for CAREC Corridor 2 showed that the transit time has improved significantly in 2024. Moving a container from Xi'an to Poti would take about 16–18 days whereas going by trucks could be faster. Doing so would also help to boost the development of containerized cargo traffic and improve the level of containerization for the port.

Table 75: Transit Time for Container Transportation Using CAREC Corridor 2

Stakeholder	Role	Country	Transport Mode	Route	Transit Time
ADY Express	Freight forwarder	Azerbaijan	Rail	Xi'an-Baku	12–14 days
				Xi'an-Poti	16–18 days
			Truck	Xi'an Poti	12–14 days
Alat Seaport	Terminal operator	Azerbaijan	Rail	Xi'an-Poti	18–21 days*
APMT Poti	Terminal operator	Georgia	Truck	Khorgos to Poti	15 days
GTE	Freight forwarder	Georgia	Rail	Xi'an to Poti	16 days
Iceberg	Shipper	Georgia	Rail	Poti to Aktau	7–8 days
KTZ Express	Freight forwarder	Kazakhstan	Rail	Altynkol-Poti	12 days
Trans Eurasia	Logistics company	China	Rail	Xi'an-Poti	16 days

* Via the Port of Kuryk.
Source: Consultants.

Port of Tianjin

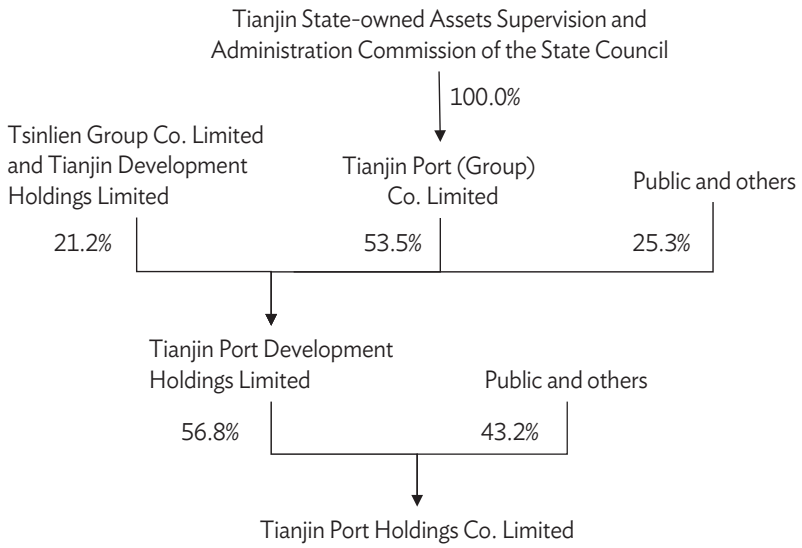
13

13.1 Introduction

480. The Port of Tianjin is in North China and faces the Bohai Bay. The port is seen as a vital maritime gateway for the capital region as well as many provinces in the north of the country. There are three routes that are of importance for the port. The first route uses the Erenhot Border Crossing Point to reach Mongolia, Russia, Belarus and countries in the European Union. The port also serves to connect markets in South Korea and Japan to these countries. The second route uses the Alashankou or Khorgos border crossing points to reach countries in Central Asia, Azerbaijan, and on to Romania via the Caspian Sea and Black Sea. The third route uses the Manzhouli Border Crossing Point to serve various cities in Russia. As such, the Port of Tianjin can be seen as a strategic location to serve containerized trade for the Northern Corridor and CAREC Corridor 2.

481. There are two major port operating companies in the port. These are Tianjin Port Holdings Co. Limited and Tianjin Port Development Holdings Limited. The company Tianjin Port Holdings Co. Limited dominates the bulk cargo-handling sector and is formerly known as Tianjin Port Storage and Transportation Co. Limited. The company is listed on the Shanghai Stock Exchange with a market capitalization of about US$2.0 billion[132]. Tianjin Port Holdings Co. Limited is a subsidiary of Tianjin Port Development Holdings

Figure 99: Port of Tianjin Shareholding and Ownership Structure



Source: Consultants, using information from various sources, including Tianjin Port (Group) Co. Limited, Tianjin Port Development Holdings Limited, and Tianjin Port Holdings Co. Limited.

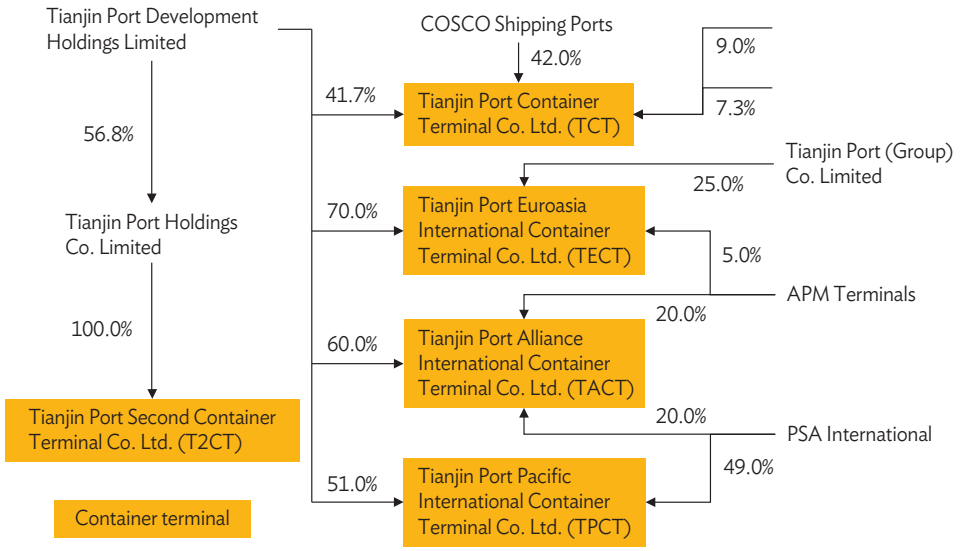
132 Source: Yahoo Finance (2024). "Tianjin Port Holdings Co., Ltd. (600717.SS)". *Summary*, October 11. Available online at: https://finance.yahoo.com/quote/600717.SS/.

Limited who holds a 56.8% stake in the company. Tianjin Port Development Holdings Limited is in turn, listed on the Hong Kong Stock Exchange with a market capitalization of about US$600 million[133]. The majority shareholder of Tianjin Port Development Holdings Limited is Tianjin Port (Group) Co. Limited who holds a 53.5% stake in the company[134]. Tianjin Port (Group) Co. Limited is in turn wholly owned by the Tianjin State-owned Assets Supervision and Administration Commission of the State Council (i.e., Tianjin SASAC).

482. Tianjin Port Development Holdings Limited holds a majority stake in Tianjin Port Euroasia International Container Terminal (TECT) with a share of 70.0%. The other shareholders are Tianjin Port (Group) Co. Limited with a share of 25.0% and APM Terminals with a share of 5.0%[135]. The company also holds a majority stake of 60.0% in Tianjin Port Alliance International Container Terminal (TACT) (share of 60.0%) and 51.0% in Tianjin Port Pacific International Container Terminal (TPCT). The other shareholders of TACT are APM Terminals and PSA International, who each hold 20.0% stake in the container terminal[136].

483. For TPCT, the other shareholder is PSA International, who holds a 49.0% stake[137]. For Tianjin Port Container Terminal (TCT), the company Tianjin Port Development Holdings Limited holds a 41.7% share with COSCO Shipping Ports having the majority stake of 42.0%[138]. China Merchants Port Holdings holds a 7.3% stake in the container terminal. Container shipping line OOCL, which is a subsidiary of COSCO, holds the remaining 9% stake in TCT. The remaining container terminal is Tianjin Port Second Container Terminal

Figure 100: Port of Tianjin Container Terminals Shareholding and Ownership Structure



Source: Using information from various sources, including Tianjin Port (Group) Co. Limited, Tianjin Port Development Holdings Limited (2024). "Container and non-containerized cargo handling businesses". *Our Business*. Available online at: https://www.tianjinportdev.com/html/bus_cargo.php, and Tianjin Port Holdings Co. Limited.

133 Source: Yahoo Finance (2024). "Tianjin Port Development Holdings Limited (3382.HK)". *Summary*, October 11. Available online at: https://finance.yahoo.com/quote/3382.HK/.

134 Source: Tianjin Port Development Holdings Limited (2024). About us. Available online at: https://www.tianjinportdev.com/html/about_structure.php.

135 Source: COSCO Shipping Ports Limited (2021). Disclosable transaction disposal of interests in Tianjin Euroasia Terminal". *Hong Kong Exchange and Clearing Limited and The Stock Exchange of Hong Kong*. Available online at: https://doc.irasia.com/listco/hk/coscoship/announcement/a210428.pdf.

136 Source: APM Terminals (2024). *Port of Tianjin*. Available online at: https://www.apmterminals.com/en/tianjin.

137 Source: PSA International (2023). *PSA International Annual Report 2022*. Available online at: https://www.globalpsa.com/wp-content/uploads/2024/04/PSAI-Annual-Report-2022.pdf.

138 Source: Lloyd's List (2024). "OOCL to take minor stake in Tianjin terminal for $49m". August 30. Available online at: https://mykn.kuehne-nagel.com/news/article/oocl-to-take-minor-stake-in-tianjin-terminal-10-Sep-2024.

(T2CT) which is wholly owned by Tianjin Port Holdings Co. Limited[139]. The container terminal is also the latest to be inaugurated in the port, having begun operations in 2021.

484. The Xingang Station is owned and managed by China Railways Beijing Group Co. Ltd. The Xingang North Container Center Station is managed by Tianjin CRL intermodal Co Ltd which is joint invested by China Railways Beijing Group Co.,(44.15%), Tianjin Port (Group) Co. Ltd (40%) and China Railways United International Container Transport Co. Ltd (15.85%).

13.2 Port Facilities and Infrastructure

485. The largest container terminal is TCT which has 13 berths with a total berth length of 3,543 meters and maximum draft of 17.0 meters. The terminal sits on 150 hectares of land and has a design capacity for handling 6.0 million TEUs of containers per year. TCT is a merger between Tianjin Container Terminal, Tianjin Five Continents Terminal and Tianjin Orient Container Terminal[140]. The merger was completed in September 2019.

Table 76: Key Container-handling Facilities in the Port of Tianjin

Container Terminals	Berths	Berth Length (meters)	Area (hectares)	Maximum Draft (meters)	Design Capacity (million TEUs)
Tianjin Port Container Terminal (TCT)	13	3,543	150	17.0	6.0
Tianjin Port Pacific International Container Terminal (TPCT)	6	2,300	218	16.5	4.0
Tianjin Port Second Container Terminal (T2CT)	3	1,100	75	16.0	2.5
Tianjin Port Alliance International Container Terminal (TACT)	4	1,100	63	15.5	2.1
Tianjin Port Euroasia International Container Terminal (TECT)	3	1,100	84	16.0	1.7
Total	**29**	**9,143**	**590**	**17.0**	**16.3**

Source: Using information from various websites, including from Tianjin Port Development Holdings Limited (2024). "Container and non-containerized cargo handling businesses". *Our Business*. Available online at: https://www.tianjinportdev.com/html/bus_cargo.php.

486. The second largest container terminal is TPCT which is equipped with 6 berths with a berth length of 2.3 kilometers and maximum depth of 16.5 meters. The terminal sits on 218 hectares of land and has a design capacity for processing 4.0 million TEUs per year. In the third position is the 75-hectare T2CT with a design capacity for handling 2.5 million TEUs of containers a year. The container terminal has 3 berths with a maximum depth of 16.0 meters. The total berth length is 1,100 meters. The container terminal is also equipped with 92 "artificial intelligence robot of transportation or ART" units. These units are 30% lighter than traditional automated guided vehicles and cost 50% less[141]. The ART units can operate continuously for 12 hours and require one hour of charging. They are designed at a maximum speed of 35 kilometers per hour.

487. In the fourth position is TACT which has 4 berths with a maximum depth of 15.5 meters. As with T2CT, the container terminal has a berth length of 1,100 meters. TACT sits on 63 hectares of land and has a design capacity of handling 2.1 million TEUs of containers in a year. The fifth container terminal is TECT, which has the smallest design capacity at 1.7 million TEUs of containers per annum. The facility has 3 berths with total berth length of 1,100 meters. It occupies 84 hectares of land and has a maximum depth of 16.0 meters.

139 Source: Sina.com.cn (2024). "Tianjin Port Co., Ltd. signed a contract with Tianjin Port (Group) Co., Ltd.". Available online at: http://file.finance.sina.com.cn/211.154.219.97:9494/MRGG/CNSESH_STOCK/2024/2024-4/2024-04-25/10052493.PDF.
140 Source: Joshua (2019). "Tianjin container terminals wrap up merger". *Shipping Position*, September 2. Available online at: https://shippingposition.com.ng/tianjin-container-terminals-wrap-up-merger/.
141 Source: Interview held with Tianjin Port Group on 23 September 2024.

Figure 101: Tianjin Port Container Terminal (TCT)



Source: Tianjin Binhai Net (2023). "Tianjin Port: Riding the wind and waves, aiming for a long distance, delivering high-scoring answers to the entrustment." January 17. Available online at: http://www.tjbh.com/c/2023-01-17/1153808.shtml.

Figure 102: Tianjin Port Pacific International Container Terminal (TPCT)



Source: Xinhua News (2024). "Research trip to PRC in the new era | A look at the maritime gateway of Beijing-Tianjin-Hebei". February 4. Available online at: https://www.gov.cn/yaowen/tupian/202402/content_6930994.htm#1.

Figure 103: Tianjin Port Second Container Terminal (T2CT)



Source: People.com.cn (2024). "Tianjin Port opens new route to Southeast Asia". August 25. Available online at: http://pic.people.com.cn/n1/2024/0825/c1016-40305585-2.html.

Figure 104: Tianjin Port Alliance International Container Terminal (TACT)



Source: Xinhua News (2024). "Research trip to China in the new era | A look at the maritime gateway of Beijing-Tianjin-Hebei". February 4. Available online at: https://www.gov.cn/yaowen/tupian/202402/content_6930994.htm#1.

Figure 105: Tianjin Port Euroasia International Container Terminal (TECT)



Source: China Securities Journal (2023). "Tianjin Port: Developing multimodal transport to enhance the port's agglomeration and radiation capabilities". November 14. Available online at: https://www.cs.com.cn/xwzx/hg/202311/t20231114_6375755.html.

Figure 106: Key Container Terminals at the Port of Tianjin



Source: Field visit.

488. The container terminals TCT, TACT, TECT and T2CT are situated in the Beijiang Port Area whereas TPCT is situated in the Dongjiang Port Area. The Dongjiang Port Area handles mainly containers for shipping services on the main trades such as Asia-Europe trade route and Transpacific trade route[142].

Figure 107: Location of Xingang North Container Center Station and Xingang Station



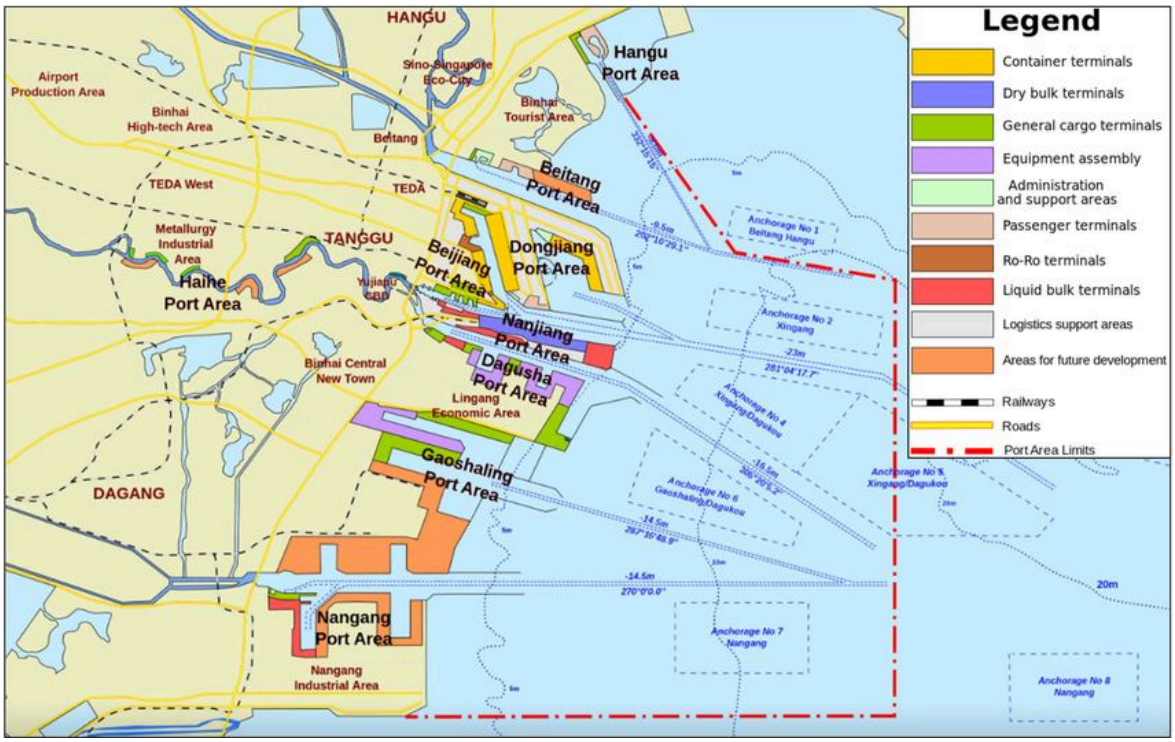
Source: Using information including from Tianjin Dongjiang International Train Operations Management Co Ltd. and OpenRailwayMap.

489. Also located in the Dongjiang Port Area is the Tianjin Xingang North Container Center Station. The terminal has a container-handling capacity of 400,000 TEUs per year based on the design of a pair of railway tracks[143]. The length of each track is 1,050 meters and the maximum number of wagons which a single track can handle is 55. There has been a tendency to use block trains comprising of 55 wagons instead of 50 wagons previously. There are plans to add another pair of railway tracks to increase the annual container handling capacity to 800,000 TEUs. In 2023, the Tianjin Xingang North Container Center Station handled 55 train

142 Source: Interview held with Tianjin Dongjiang International Train Operations Management Co Ltd. on 23 September 2024.
143 Source: Interview held with Tianjin Dongjiang International Train Operations Management Co Ltd. on 23 September 2024.

services for the China-Europe trade route. The Tianjin Xingang North Container Center Station is equipped with four rail-mounted gantry (RMG) cranes. Containers are stacked up to two-high in the receiving/departure yard to facilitate loading and unloading operations with railway wagons. The adjacent container yard has containers that are stacked up to four high. Given that many container terminals in the Port of Tianjin do not have on-dock rail access, trucks are used to provide inter-terminal haulage between the rail terminals and container terminals.

Figure 108: Cargo-handling Areas of Tianjin Port



Source: Consultants, using information from Tianjin Port.

490. As mentioned, the container terminals TCT, TACT, TECT and T2CT are situated in the Beijiang Port Area. Containers for Mongolia are handled mainly in this area[144]. Also located in the Beijiang Port Area is the Tianjin Xingang Station. The loading capacity of the terminal is designed at 26 trains per day, comprising of 14 trains for iron ore cargo, 10 trains for containers, and 2 trains for grain cargo. Unloading capacity is designed at 20 trains per day, comprising 8 trains for steel cargo, 10 trains for containers, and 2 trains for miscellaneous cargo. The year 2023 saw the terminal handling 437 train services for the China-Mongolia trade route, accounting for 89.6% of total cross-border train services handled by the facility[145]. With 72,000 TEUs of containers handled by the Port of Tianjin for Mongolia[146], the estimated market share for Tianjin Xingang Station is about 48,000 TEUs or 67% with the remaining 24,000 TEUs or 33% handled at the Tianjin Xingang North Container Center Station.

491. Apart from container-handling services, the other port-related businesses of Tianjin Port Development Holdings Limited include handling other types of cargo such as metal ore, automobiles, general cargo, break bulk cargo, and oil and liquid bulk cargo. These facilities are distributed mainly across the Beijiang Port Area and Nanjiang Port Area. Shareholding by the company ranges from 45% in Guoneng (Tianjin) Port Affairs

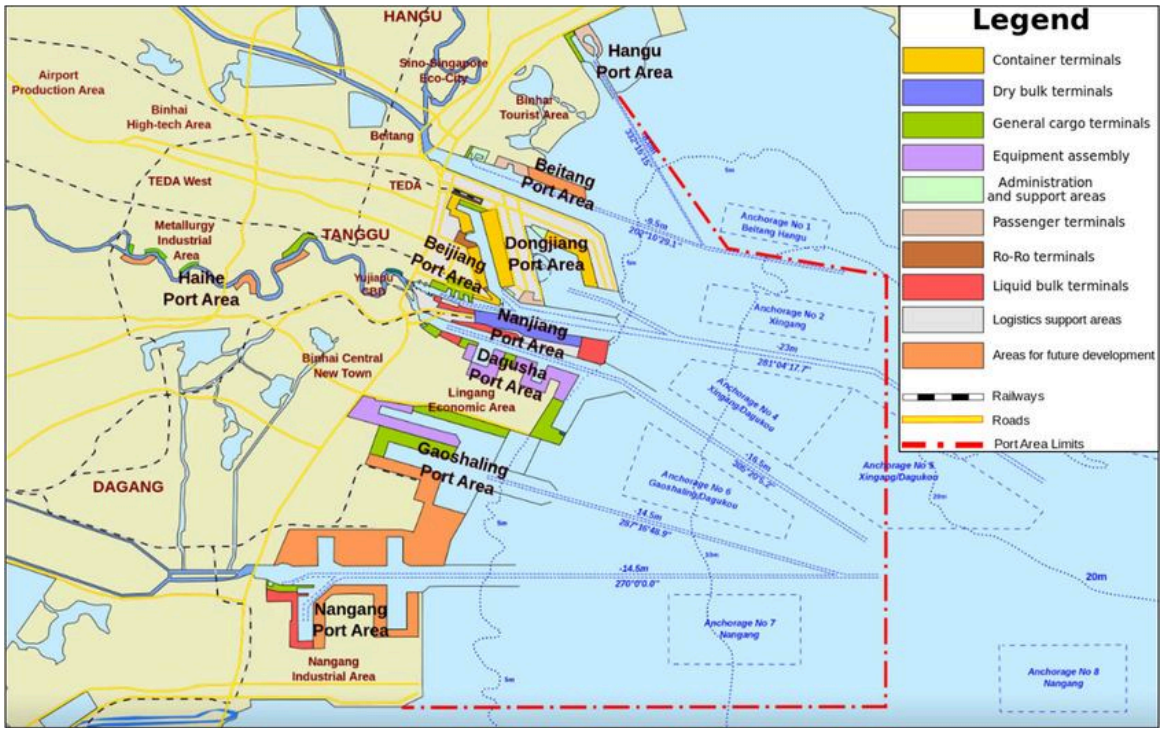
144 Source: Interview held with Tianjin Dongjiang International Train Operations Management Co Ltd. on 23 September 2024.
145 Source: Interview held with Tianjin Dongjiang International Train Operations Management Co Ltd. on 23 September 2024.
146 Source: Interview held with Tianjin Port Group on 23 September 2024.

Table 77: Other Cargo-handling Facilities of Tianjin Port Development Holdings Limited

Cargo Type	Terminal Companies	Shareholding
Metal ore	Tianjin Port Yuanhang International Ore Terminal Co. Ltd.	51%
Coal	Tianjin Port Coke Terminals Co. Ltd.	100%
	Tianjin Port China Coal Huaneng Coal Terminal Co. Ltd.	51%
	Guoneng (Tianjin) Port Affairs Co. Ltd.	45%
Oil/liquid bulk	Tianjin Port Petrochemicals Terminal Company Limited	100%
	Tianjin Port CNAF Terminal Co. Ltd.	51%
	Tianjin Port Shihua Crude Oil Terminal Co. Ltd.	50%
Automobiles	TPG Global RO-RO Terminal Co. Ltd.	56.2%
	Tianjin Port Ro-Ro Terminal Co. Ltd.	56.2%
General/	Tianjin Port No. 1. Stevedoring Co. Ltd.	100%
break bulk	Tianjin Port No. 4. Stevedoring Co. Ltd.	65%

Source: Consultants, using information from Tianjin Port Development Holdings Limited (2024). "Container and non-containerized cargo handling businesses". *Our Business*. Available online at: https://www.tianjinportdev.com/html/bus_cargo.php.

Figure 109: Development Plan of Tianjin Port to 2030



Source: China Discovery.

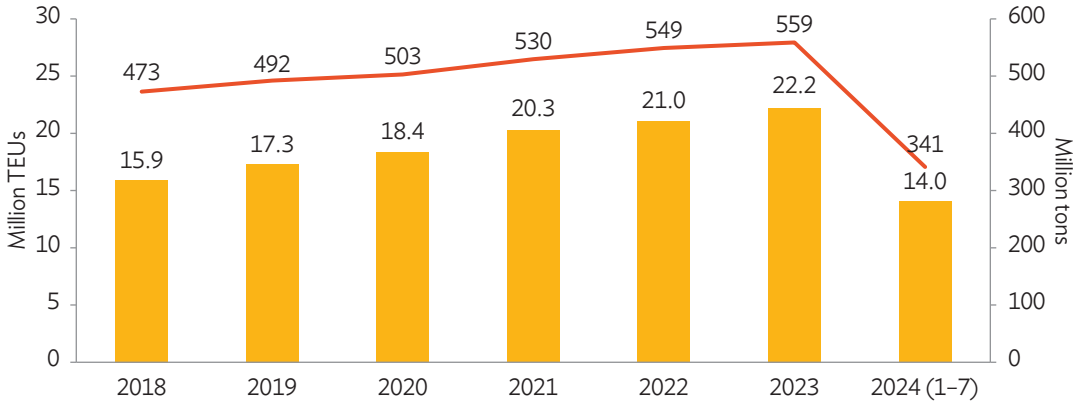
Co. Ltd. which handles coal, to majority shareholding in many of the other facilities. The company also holds 100% ownership of the Tianjin Port Coke Terminals Co. Ltd. and Tianjin Port No. 1. Stevedoring Co. Ltd.

492. Container-handling facilities will be concentrated in the Beijiang Port Area and Dongjiang Port Area. The figure shows container terminals will be developed in the inner basin between the Beijiang Port Area and Dongjiang Port Area, and new container terminals will be constructed in the Dongjiang Port Area extension. These facilities are expected to double the container-handling capacity of the port to more than 30 million TEUs.

13.3 Container-handling Performance

493. The Port of Tianjin handled 22.2 million TEUs of containers in 2023 on a growth rate of 5.6% from 21.0 million TEUs in 2022. The port has seen steady growth container throughput, having expanded handling by more than 6.0 million TEUs in the period from 2018 to 2023. The fastest rate of growth of 10.5% was seen in 2021 where the Port of Tianjin saw an acceleration in container throughput handled despite the effects of the COVID-19 pandemic. For the first 7 months of 2024, container throughput handled by the port grew by 14.0% to reach 14.0 million TEUs over the same period in 2023. Shown alongside container throughput is the performance for total cargo handled by the port. The growth rate for total cargo handled in terms of tonnage mirrored the performance for container handling, albeit at a slightly lower growth rate. In 2023, the port reached 321.5 million tons of cargo on a growth rate of 1.8% from 301.1 million tons in 2022.

Figure 110: Container Throughput and Cargo-handling Performance for Tianjin Port



Source: Using information from the Ministry of Transport of the People's Republic of China.

494. The Port of Tianjin entered into the ranks of top 10 busiest container ports in the world in 2012, holding the 10th position with 12.3 million TEUs of containers handled in that year. By 2023, the port had risen to the position as the 8th busiest container port in the world, overtaking Dubai in 2018, and overtaking Hong Kong in 2020. The Port of Tianjin could look to overtake Busan to become the 7th busiest container port in the coming years with a gap of less than 1.0 million TEUs between the two ports.

495. As of 2023, capacity utilization of container-handling facilities in the Port of Tianjin is at 136.1%. This is based on the container throughput of 22.2 million TEUs handled in the year measured against the design container-handling capacity of the port. The figure shows capacity utilization to increase steadily from 115.4% in 2018 to 129.0% in 2022 and then to the current state. The level of capacity utilization in 2023 surpassed the previous peak of 133.0% in 2020. There was a decline in capacity utilization in 2021 due to the introduction of T2CT which added 2.5 million TEUs to the port, bringing total design container-handling capacity to 16.3 million TEUs. The previous design capacity of the port was 13.8 million TEUs of containers.

496. At the level of individual container terminals, data available for TCT shows that capacity utilization for the container terminal at 137.1% based on a container throughput of 8.2 million TEUs against the capacity of 6.0 million TEUs[147]. Nonetheless, the peak for capacity utilization for the container terminal was seen in 2021 at 144.0% with 8.6 million TEUs handled against the same design capacity of the facility. The majority

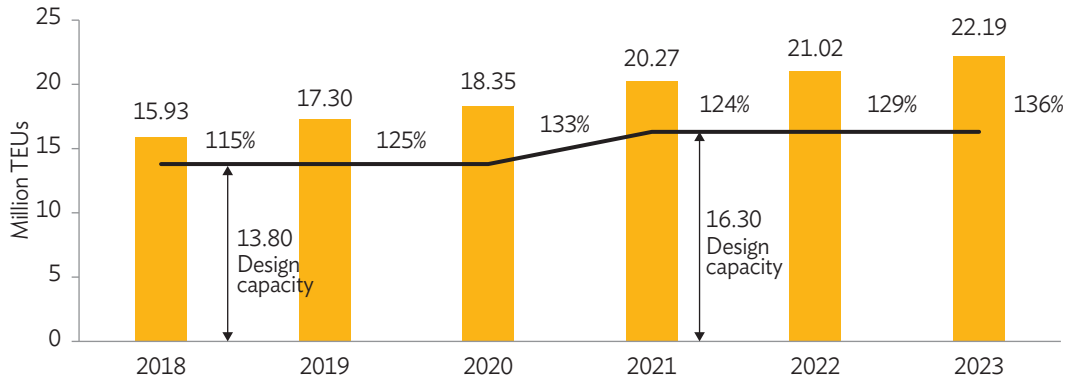
147 Source: COSCO Shipping Ports (2023). "Annual Report 2023". *Annual Reports*. Available online at: https://doc.irasia.com/listco/hk/coscoship/annual/2023/ar2023.pdf.

Table 78: Global Ranking of Tianjin Port[a]

Rank	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
1	Shanghai 32,529	Shanghai 33,617	Shanghai 35,285	Shanghai 36,537	Shanghai 37,133	Shanghai 40,233	Shanghai 42,010	Shanghai 43,303	Shanghai 43,503	Shanghai 47,033	Shanghai 47,303	Shanghai 49,158
2	Singapore 31,649	Singapore 32,579	Singapore 33,869	Singapore 30,922	Singapore 30,904	Singapore 33,667	Singapore 36,599	Singapore 37,256[a]	Singapore 36,942[b]	Singapore 37,571	Singapore 37,290	Singapore 39,013
3	Hong Kong 23,117	Shenzhen 23,728	Shenzhen 24,037	Shenzhen 24,205	Shenzhen 23,979	Shenzhen 25,209	Ningbo-Zhoushan 26,351	Ningbo-Zhoushan 27,535	Ningbo-Zhoushan 28,722	Ningbo-Zhoushan 31,079	Ningbo-Zhoushan 33,351	Ningbo-Zhoushan 35,301
4	Shenzhen 22,941	Hong Kong 22,352	Hong Kong 22,226	Ningbo-Zhoushan 20,627	Ningbo-Zhoushan 21,561	Ningbo-Zhoushan 24,607	Shenzhen 25,736	Shenzhen 25,769	Shenzhen 26,548	Shenzhen 28,768	Shenzhen 30,036	Shenzhen 29,880
5	Busan 17,046	Busan 17,686	Ningbo-Zhoushan 19,450	Hong Kong 20,073	Hong Kong 19,813	Hong Kong 20,770	Guangzhou 21,912	Guangzhou 23,223	Guangzhou 23,505	Guangzhou 24,467	Qingdao 25,672	Qingdao 28,769
6	Ningbo-Zhoushan 16,175	Ningbo-Zhoushan 17,351	Busan 18,683	Busan 19,469	Busan 19,456	Busan 20,493	Busan 21,663	Busan 21,992	Qingdao 22,008	Qingdao 23,714	Guangzhou 24,858	Guangzhou 25,414
7	Guangzhou 14,547	Qingdao 15,522	Qingdao 16,580	Guangzhou 17,625	Guangzhou 18,858	Guangzhou 20,356	Hong Kong 19,596	Qingdao 21,012	Busan 21,824	Busan 22,706	Busan 22,078	Busan 23,151
8	Qingdao 14,503	Guangzhou 15,311	Guangzhou 16,389	Qingdao 17,436	Qingdao 18,050	Qingdao 18,309	Qingdao 19,315	Hong Kong 18,303	Tianjin 18,353 →	Tianjin 20,269 →	Tianjin 21,021 →	Tianjin 22,187
9	Dubai 13,280	Dubai 13,641	Dubai 15,249	Dubai 15,592	Dubai 14,772	Dubai 15,368	Tianjin 15,927 →	Tianjin 17,301	Hong Kong 17,969	Hong Kong 17,798	Hong Kong 16,685	Dubai 14,472
10	Tianjin 12,303 →	Tianjin 13,012 →	Tianjin 14,061 →	Tianjin 14,111 →	Tianjin 14,519 →	Tianjin 15,069	Dubai 14,954	Rotterdam 14,821	Rotterdam 14,349	Rotterdam 15,300	Rotterdam 14,455	Hong Kong 14,401

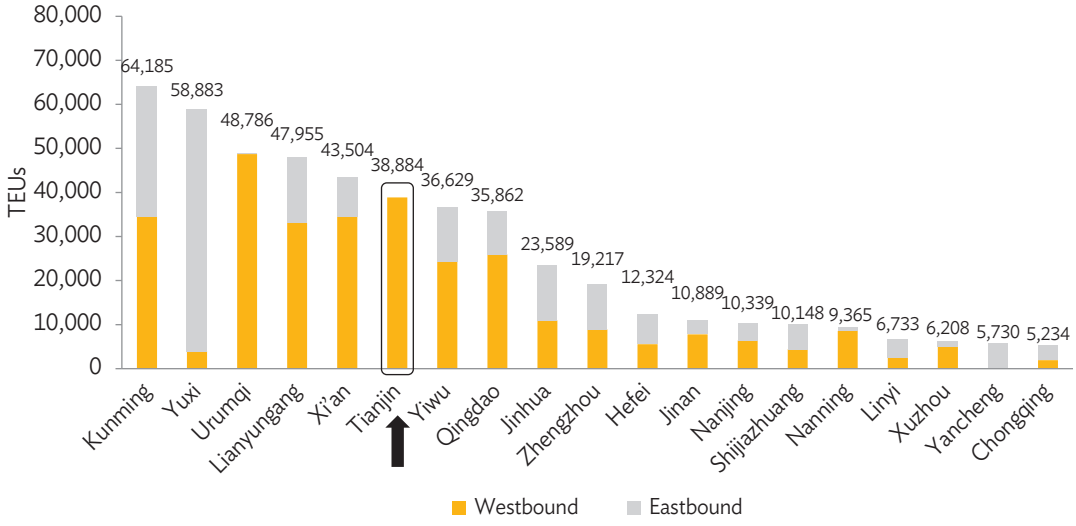
Source: Hong Kong Marine Department (2024). *Port and Maritime Statistics*. Available online at: https://www.mardep.gov.hk/en/materials-and-publications/publications/port-and-maritime-statistics/index.html. [a] Container throughput for 2018 for Tianjin Port revised to reflect the figure stated by the Ministry of Transport of the People's Republic of China (2024). "Port cargo and passenger throughput". *Statistics*. Available online at: https://www.mot.gov.cn/tongjishuju/gangkouhuowulvkettl/. [b] Revised figures.

Figure 111: Capacity Utilization of Container-handling Capacity at Tianjin Port



Source: Using information from various websites, including from Tianjin Port Development Holdings Limited (2024). "Container and non-containerized cargo handling businesses". *Our Business*. Available online at: https://www.tianjinportdev.com/html/bus_cargo.php.

Figure 112: Container Throughput Handled by Major PRC Cities for the China-Asia Railway Route for Jan–Aug 2024



Source: Using information from China Railway Express.

shareholder of TCT is COSCO Shipping Ports, who holds a 42.0% stake in the container terminal. The other shareholders are Tianjin Port Development Holdings Limited (share of 41.7%), Orient Overseas Container Line (share of 9.0%), and China Merchants Port Holdings Co. Ltd. (share of 7.3%).

497. In terms of containers handled by the railway terminals, the Port of Tianjin processed 38,884 TEUs of containers through 361 train services for the China-Asia trade route for the first eight months of 2024. This equates to an average of 108 TEUs handled by each train service. The figure is significantly higher than the average number of containers transported for the China-Asia trade route which was 73 TEUs per train service. All the containers handled by Tianjin for this trade route were for the westbound direction[148]. This figure also represents a decline of 13.4% from 44,901 TEUs handled for the same period in 2023. Nonetheless,

148 The Chinese version of the website termed "westbound" direction of the container trade by railway as "outbound" direction (see https://www.crexpress.cn/en/#/sendCityRankings).

Tianjin was ranked as the second largest city for the westbound China-Asia trade after Urumqi even with the decline in containers handled. The market share held by Tianjin for the trade route stood at 11.2%, behind Urumqi who had a market share of 14.0%. In the third and fourth positions for the westbound China-Asia container trade by railway are Kunming (9.9% share)[149] and Lianyungang (9.5%). If the focus is on the China-Central Asia and China-Mongolia container shipments by railway, then the top three cities in China would be Urumqi with 48,786 TEUs, followed by Lianyungang with 47,955 TEUs, Xi'an with 43,504 TEUs, and Tianjin with 38,884 TEUs.

498. For the first 8 months of 2024, Khorgos handled 216,275 TEUs of containers for the westbound railway traffic and 99,088 TEUs of containers for the eastbound traffic. The market share held by Khorgos for the China-Asia trade being 62.3% and 43.9% respectively for the westbound and eastbound train services. As for Alashankou, the Border Crossing Point handled 30,1000 TEUs of westbound containers and 36,090 TEUs of eastbound containers for the first 8 months of 2024. Hence, between the two border crossing points, Khorgos accounted for a significantly larger share of the market.

499. Apart for the China-Asia railway container trade, Tianjin also handled 4,510 TEUs of containers through 41 train services for the China-Europe trade route. This equates to an average of 110 TEUs of containers carried by each train service. As with the China-Asia railway container trade, this figure registered by Tianjin for the China-Europe trade is significantly higher than the average of 107 TEUs of containers carried by each train service. Also, like the China-Asia trade, all the containers are in the westbound direction. Hence, there is a problem of imbalance where there are no containers received by Tianjin for the eastbound direction for both trade routes. As a whole, 43,394 TEUs of containers were handled by Tianjin for the China-Asia and China-Europe trades for the first eight months of 2024 with the former having a market share of 89.6% and the latter having a market share of 10.4%.

13.4 Regional Connectivity

500. As a major container port in the world, the port is well-connected to many other major container ports. The strongest connectivity is with the rest of East Asia which includes South Korea, Japan and other ports in the East China Sea, Yellow Sea and Bohai Bay. There are 45 services operating on this trade deploying 95 vessels with a capacity of almost 200,000 TEUs. The second largest number of vessels can be seen connecting the Port of Tianjin with Southeast Asia. There are 19 services with 84 vessels deployed in this trade route, totaling more than 300,000 TEUs in vessel capacity. Shipping lines that are active on this trade include COSCO, CNC Line, Sealand and MSC. CNC Line and Sealand are the regional feeders of CMA CGM and Maersk respectively.

501. The largest number of vessel capacity is found deployed on the trade route that connects the port to North Europe. Some 1.23 million TEUs of vessel capacity are deployed in 6 services which commanded 67 ships. The average size of a containership being 18,364 TEUs, the largest of any trade route that is connected to the port. The shipping lines HMM, Maersk, COSCO and Evergreen dominate shipping connectivity for the port for this trade. The Asia-Mediterranean trade saw the average size of containerships reaching 15,238 TEUs, which is the second largest among the trade routes connected to Tianjin Port. There is a single shipping service operated by Maersk which deployed 12 vessels totaling 183,000 TEUs. The Port of Tianjin is also well connected to West Africa and the Middle East with 27 and 26 vessels operating respectively to these regions. MSC being the most active shipping line for these two trade routes. The average size of containership operating on both trade routes is also considerable, reaching almost 10,000 TEUs in size. The other mainline east-west trade, which is the Transpacific trade route, saw 14 containerships with almost 100,000 TEUs in capacity operated by COSCO and Wan Hai. The Port of Tianjin also has maritime connectivity with South Asia through 4 services and 25 vessels deployed on the trade route. Total vessel capacity being 141,000 TEUs, which is dominated by COSCO, X-Press Feeders, Evergreen and SITC.

149 The westbound container traffic by railway for the China-Asia trade was reflected as an "outbound" direction based on information available from the Chinese version of the website by China Railway Express (see https://www.crexpress.cn/en/#/sendCityRankings).

Table 79: Estimated Capacity by Shipping Lines Calling at Tianjin Port (as of 2023)

Shipping Line	Services	Vessels	Vessel Capacity (TEUs)	% share
Maersk	7	59	811,000	30.5
COSCO	17	58	487,000	18.4
MSC	7	36	374,000	14.1
HMM	3	15	279,000	10.5
Evergreen	8	24	265,000	10.0
SITC	7	23	40,000	1.5
Wan Hai	4	10	30,000	1.1
Quanzhou Shipping	2	7	17,000	0.6
Sinotrans	6	7	14,000	0.5
Zhonggu Shipping	2	4	13,000	0.5
Others	31	110	327,000	12.3
Total	**85**	**353**	**2,656,000**	**100.0**

* Subsidiary of CMA CGM. ** Subsidiary of Maersk Line. # Related to COSCO.
Source: Using information from various shipping lines.

502. Topping the ranking is Maersk who operates 7 services with 59 containerships deployed. The shipping line contributed more than 800,000 TEUs in vessel capacity, which accounted for 30.5% of the market share. The second largest shipping line is COSCO, with 58 vessels deployed in 17 services. Containerships of the shipping line totaled almost 500,000 TEUs in vessel capacity with a market share of 18.4%. MSC, HMM and Evergreen are ranked respectively in the third, fourth and fifth positions with 14.1%, 10.5% and 10.0% of market share for vessel capacity deployed to the port. For shipping lines that are ranked in the fifth to tenth positions, these are carriers that operate largely in the intra-Asia trade routes. The ten largest shipping lines which call at the Port of Tianjin accounted for 243 vessels and 2.3 million TEUs in vessel capacity. The respective shares accounted for by the top ten shipping lines in terms of vessel capacity is 87.7%. Hence, we see that the Port of Tianjin is well served by a plethora of mainline carriers, regional operators, and feeder lines.

Port of Lianyungang

14

14.1 Introduction

503. The Port of Lianyungang is in the province of Jiangsu in PRC and faces the Yellow Sea. The port is served by land and maritime connections. The railway connection from the port reaches as far as Western Europe, serving as the choice of the northern route through Russia, the central route through Kazakhstan, and CAREC Corridor 2 which goes through the Caspian Sea. The Port of Lianyungang considers itself as the eastern terminal of the new Eurasia landbridge.

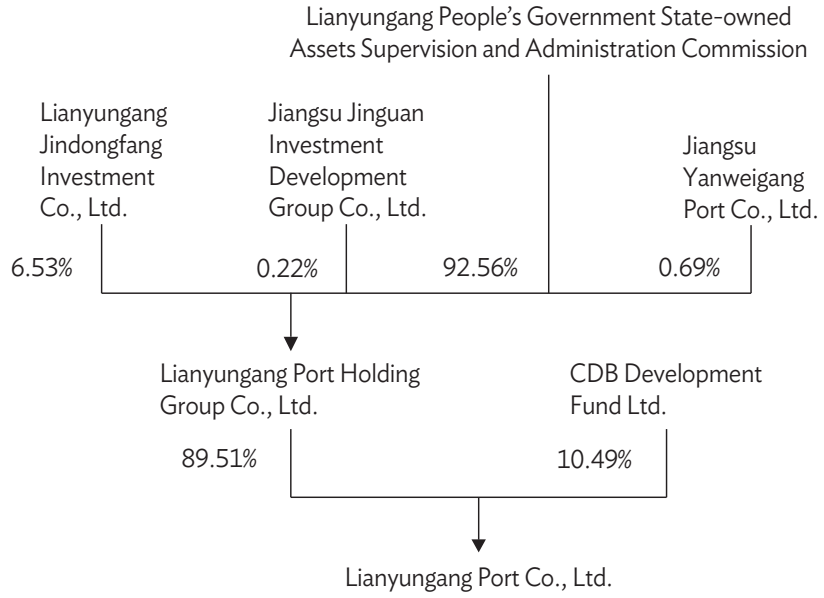
504. The journey by railway is estimated to take about 10 days to reach Russia, whereas the transit time to reach Europe is about 18 days. As for Central Asia, the railway journey would take about 6 to12 days. Arriving at Türkiye will take about 20 days. For maritime connections, the port has direct sailings with countries such as Japan and South Korea in Northeast Asia, and those located in Southeast Asia such as Vietnam, Indonesia, Malaysia, Singapore, Thailand and the Philippines.

Figure 113: Port of Lianyungang as the Eastern Terminal of the New Eurasia Landbridge



Source: Field visits.

Figure 114: Port of Lianyungang Shareholding and Ownership Structure



Source: Lianyungang Port Co., Ltd.

505. The Port of Lianyungang is managed and operated by Lianyungang Port Co., Ltd[150]. The biggest shareholder is the Lianyungang People's Government State-owned Assets Supervision and Administration Commission (SASAC). The entity owns 92.6% of Lianyungang Port Holding Group Co., Ltd., which in turn owns 89.5% of Lianyungang Port Co., Ltd. The second largest shareholder of Lianyungang Port Co., Ltd. Is CDB Development Fund Ltd. This entity was incorporated by the China Development Bank in 2015 as a policy tool to support investment efforts by the country in key infrastructure projects[151]. The other shareholders of Lianyungang Port Co., Ltd. Are Lianyungang Jindongfang Investment Co., Ltd., Jiangsu Yanweigang Port Co., Ltd., and Jiangsu Jinguan Investment Development Group Co., Ltd.

14.2 Port Facilities and Infrastructure

506. Container-handling at the Port of Lianyungang is performed at three key facilities. These are the LYG-PSA Container Terminal, Lianyungang New Oriental International Terminals, and Lianyungang China–Kazakhstan International Logistics Base. The LYG-PSA Container Terminal is owned by Lianyungang Port Group (with shareholding of 51%) and PSA International (shareholding of 49%). The container terminal is equipped with 5 berths (i.e., berth number 24 to 28) and has a total berth length of 1,700 meters). The maximum draft alongside is 16.5 meters, which allows the port to handle containerships in mainline services that call directly to Europe or the US. The facility has a design capacity of 3.5 million TEUs per year[152]. PSA International had acquired the stake in the facility from China Shipping Container Lines in 2013[153].

150 Also known as "Lianyungang Port Group".

151 Source: China Development Bank (2024). CDB Development Fund. Available online at: https://www.cdb.com.cn/English/ywgl/zhjryw/gkfzjj/.

152 The combined capacity for Lianyungang New Oriental International Terminals and LYG-PSA Container Terminals is given as 4.9 million TEUs per year by Lianyungang Port Group. The 2023 annual report for COSCO Shipping Ports indicates the annual design capacity for Lianyungang New Oriental International Terminals to be 1.4 million TEUs (see https://doc.irasia.com/listco/hk/coscoship/annual/2023/ar2023.pdf.). This suggests the design capacity for LYG-PSA Container Terminals is estimated at 3.5 million TEUs per year. Note that the PSA International website states the annual handling capacity of the terminal to be 2.8 million TEUs (see https://www.globalpsa.com/wp-content/uploads/2024/07/LYG-PSA-CONTAINER-TERMINAL.pdf).

153 Hand, M. (2013). "PSA snaps up stake in Yangtze terminal from CSCL." *Seatrade Maritime News*, November 13. Available online at: https://www.seatrade-maritime.com/terminals/psa-snaps-up-stake-in-yangtze-terminal-from-cscl.

Figure 115: Key Container-handling Facilities at the Port of Lianyungang



Source: Field visits.

507. The other container terminal is the Lianyungang New Oriental International Terminals, which is 55% owned by COSCO Shipping Ports and 45% by Lianyungang Port Group. The terminal has 4 berths with a berth length of approximately 1,200 meters. The maximum draft alongside being 15.0 meters. Design capacity of the terminal is 1.4 million TEUs per year. As with LYG-PSA Container Terminal, the container terminal is also connected to the national railway network. The container terminal operates more than 20 international and domestic shipping routes. There is no physical barrier between LYG-PSA Container Terminal and Lianyungang New Oriental International Terminals. Containers can be moved easily between the two container terminals.

Table 80: Key Container-handling Facilities at the Port of Lianyungang

Facility	Design Capacity	Shareholders
LYG-PSA Container Terminal	5 berths, 1,700 meters length 16.5 meters maximum draft 3.5 million TEUs per year	Lianyungang Port Group 51% PSA International 49%
Lianyungang New Oriental International Terminals	4 berths, 1,200 meters length 15.0 meters maximum draft 1.4 million TEUs per year	COSCO Shipping Ports 55% Lianyungang Port Group 45%
Lianyungang China-Kazakhstan Logistics Cooperation Base	35 hectares 0.41 million TEUs per year	Lianyungang Port Group 51% KTZ Express 49%

Source: Field Visit.

Figure 116: View of LYG-PSA Container Terminal and Berth Number 29 of Lianyungang New Oriental International Terminals



Source: State Council of the People's Republic of China and Xinhua (2024).

508. Located across the road from the container terminals is the Lianyungang China–Kazakhstan Logistics Cooperation Base. The facility is 51% owned by Lianyungang Port Group, and 49% by Kazakhstan Temir Zholy (KTZ) Express. The facility was established in 2014 and has handled more than 500,000 TEUs of containers from inauguration until January 2024[154]. The facility also serves as an important departure port for grain from Kazakhstan and countries in Central Asia.

Figure 117: Lianyungang New Oriental International Terminals



Source: Officials shared during field visit.

154 Source: State Council of the People's Republic of China (2024). "China-Kazakhstan logistics base handles over 500,000 TEUs". *Xinhua*, January 14. Available online at: https://english.www.gov.cn/archive/statistics/202401/14/content_WS65a31ca7c6d0868f4e8e30db.html.

Figure 118: Railway Line Connecting to Lianyungang New Oriental International Terminals



Source: Officials shared during field visit.

509. The Port of Lianyungang has aggressive expansion plans. Container-handling capacity will be increased from the current 4.9 million TEUs per year at the Miaoling Work Area to 10 million TEUs per year with addition of the Dadi Work Area. The port will also see the development of a free trade zone port center for passengers and vehicles, an international bulk grain center, liquid bulk center, and a green specialized bulk commodity distribution center. Design capacity will increase to 40 berths with a length of 12.6 kilometers and cover 1,110 hectares.

Figure 119: View of Lianyungang China–Kazakhstan Logistics Cooperation Base



Source: Using information including from the State Council of the People's Republic of China and Xinhua (2024).

Table 81: Planned Development and Expansion of Port Facilities at the Port of Lianyungang

Facility	Design Capacity
Super Large Intelligent Container Center (Miaoling Work Are and Dadi Work Area)	17 berths, 5,350 meters berth length 390 hectares 10 million TEUs per year
International Bulk Grain Center	6 berths, 1,550 meters berth length 15 hectares 10 million tons per year
Green Specialized Bulk Commodity Distribution Center	7 berths, 2,320 meters berth length 460 hectares 120 million tons per year
Liquid Bulk Center	5 berths, 1,650 meters berth length 145 hectares 10 million tons per year
Free Trade Zone Port Center	5 berths, 1,770 meters berth length 100 hectares 0.6 million passengers, 0.5 million vehicles per year

Source: Using information from Lianyungang Port Group.

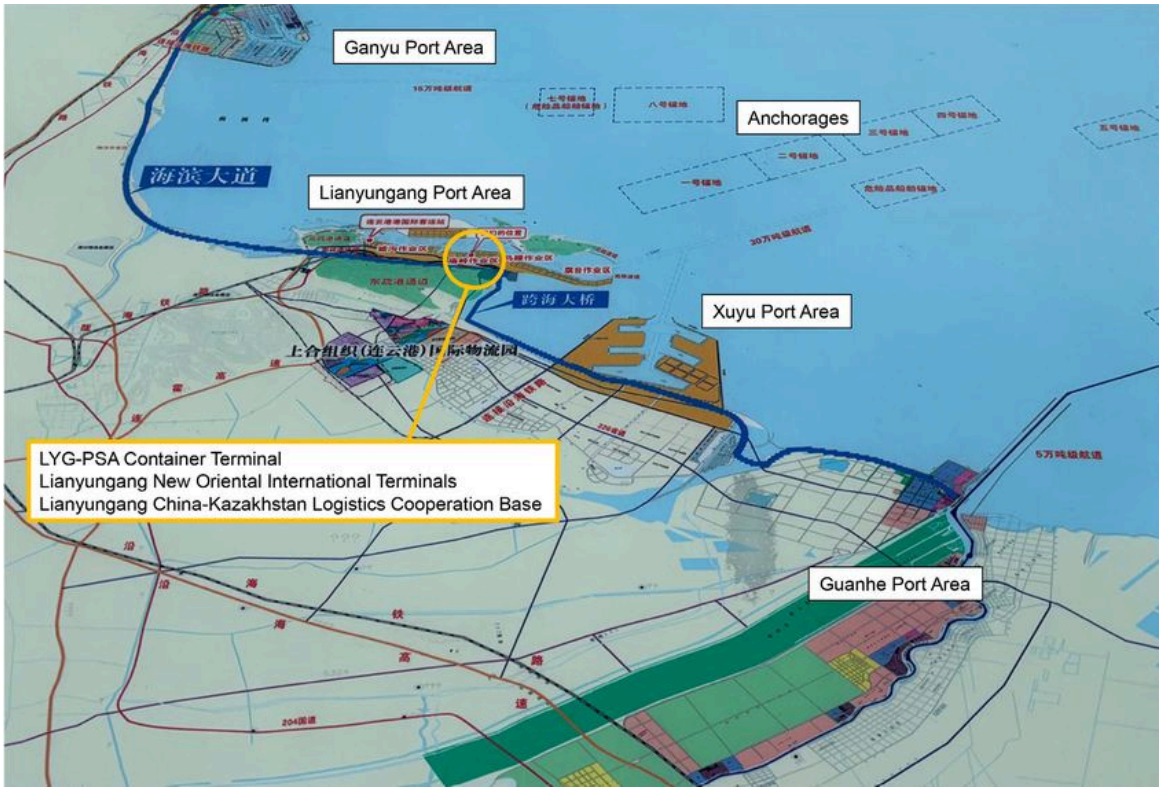
Figure 120: Planned Development and Expansion of Lianyungang Port



Source: Lianyungang Port Group.

510. There are plans to develop other port facilities in the vicinity of the Port of Lianyungang. These are the Ganyu Port Area, Xinyu Port Area, and Guanhe Port Area. However, container-handling facilities are likely to be concentrated in the Lianyungang Port Area. This is in view of the new container terminal in the Dadi Work Area which will raise total container-handling capacity of the port to 10 million TEUs per year.

Figure 121: Development Plan for Port Facilities in the Surrounding Areas



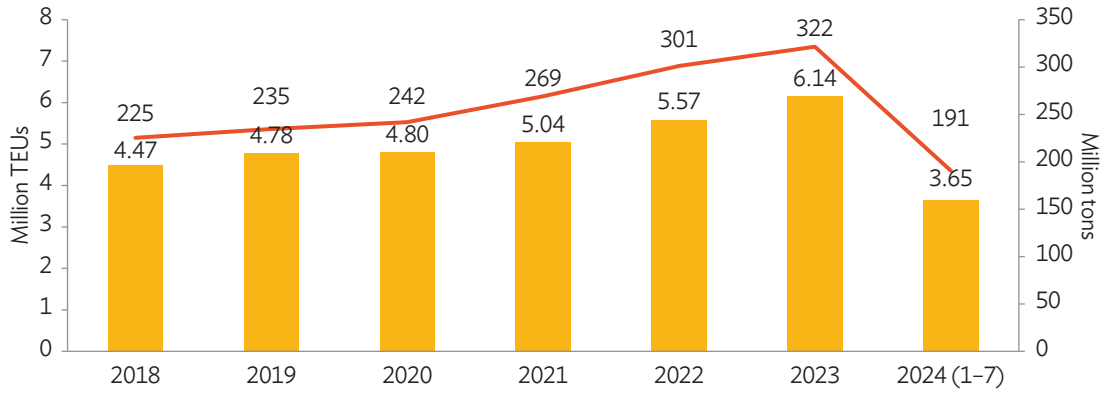
Source: Lianyungang Port Group.

14.3 Container-handling Performance

511. The Port of Lianyungang handled 6.1 million TEUs of containers in 2023, on a growth of 10.2% from 5.6 million TEUs handled in 2022. The container handling for 2023 marked a new era where throughput reached above 6.0 million TEUs for the first time in its history. The performance in 2022 was similarly strong with a growth rate of 10.6% witnessed in that year. The first seven months of 2024 saw container throughput reaching 3.7 million TEUs on a growth of 9.3%. With this rate of growth, Lianyungang Port could be looking at a container throughput reaching 6.7 million TEUs in 2024. As for total cargo handling, the port processed 322 million tons of cargo in 2023 with a growth of 6.8% over 301 million tons in 2022. By comparison, the rate of growth appears to have slowed from double-digit performances seen for 2021 and 2022 where total cargo handled grew by 11.3% and 11.9% respectively. These performances in cargo-handling saw the port penetrated the 300-million-ton mark for the first time in its history.

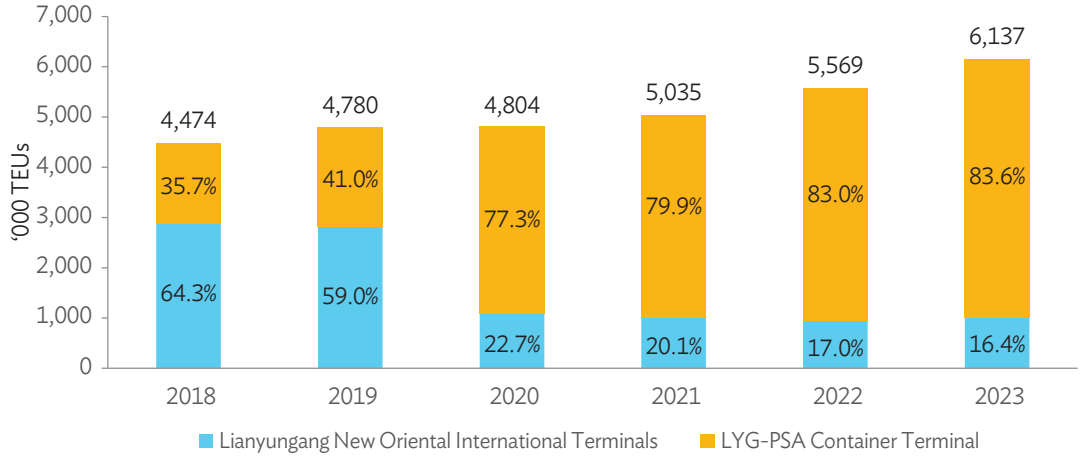
512. Based on data available from the Ministry of Transport and COSCO Shipping Ports, majority of the container throughput is accounted by the LYG-PSA Container Terminal. The LYG-PSA Container Terminal is estimated to account for 83.6% of the container throughput of the port in 2023 with 5.1 million TEUs handled. With a design capacity of approximately 3.5 million TEUs for the container terminal, the estimated capacity utilization of the facility being 146.5%. As for the Lianyungang New Oriental International Terminals, the facility handled 1.0 million TEUs of containers in 2023, putting its market share at 16.4%. With a design capacity of 1.4 million TEUs, capacity utilization of the container terminal is therefore estimated at 72.0%. For the two container terminals, the combined design capacity of 4.9 million TEUs would put capacity utilization at 125.2% for the Port of Lianyungang.

Figure 122: Container Throughput and Cargo-handling Performance for Lianyungang Port



Source: Using information from the Ministry of Transport of the People's Republic of China.

Figure 123: Distribution of Container Throughput for LYG-PSA Container Terminal and Lianyungang New Oriental International Terminals

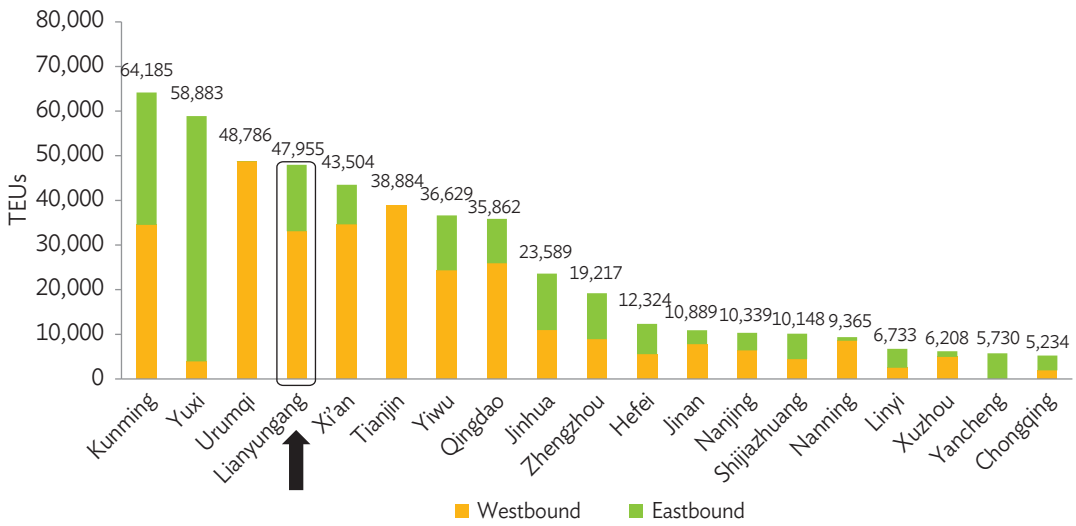


Source: Using information from the Ministry of Transport of the People's Republic of China and COSCO Shipping Ports.

513. Lianyungang handled 633 train services in 2023 which offered sea-rail connection between South Korea, Japan, Southeast Asia and Central Asia through the port[155]. Total containers transported grew by 10.7% from about 60,000 TEUs in 2022 to reach 66,100 TEUs in 2023[156]. This translates to 104 TEUs carried on each train service. The westbound traffic from Lianyungang to Central Asia saw 44,000 TEUs of containers handled. The average weight of a container is 6–7 tons per TEU. This works out to be 286,000 tons of containerized cargo. Of this amount, about 1,000 TEUs of containers are estimated to reach Western Europe. Majority of the westbound containers are for Kazakhstan (60% share) and Uzbekistan (30% share). The bulk of containers that reach Western Europe originate from Xi'an rather than Lianyungang. For the eastbound traffic, the year 2023 saw some 22,000 TEUs of containers shipped to Lianyungang. The average weight of 27 tons per TEU equates to 594,000 tons of containerized cargo handled. Of this amount, 90% of the traffic came from Kazakhstan with the remaining 10% from Uzbekistan. Cargo from Kazakhstan includes

155 Source. Interview held with Lianyungang Port Group on 19 September 2024.
156 Source: News of Jiangsu Provincial Committee of the Communist Party of China (2024). "Lianyungang China-Kazakhstan Logistics Cooperation Base cumulative throughput surpasses 500,000 TEUs". January 15. Available online at: https://www.zgjssw.gov.cn/yaowen/202401/t20240115_8191123.shtml.

Figure 124: Container Throughput Handled by Major Chinese Cities for the China–Asia Railway Route for January–August 2024



Source: Using information from China Railway Express.

grain shipments to Southeast Asia, white asbestos to India, and manganese-iron alloy to Japan, while cargo from Uzbekistan includes potassium chloride to Southeast Asia and Japan[157]. The main products shipped from Central Asia comprise of bulk cargo such as fertilizers.

514. For the first 8 months of 2024, the Lianyungang China-Kazakhstan Logistics Cooperation Base handled 509 train services which carried 51,900 TEUs for the China-Europe and China-Asia routes on a growth rate of 15.6% from the previous year[158]. For the whole country, the China-Asia railway network transported 572,711 TEUs of containers in 7,846 train services. The average train service transported 73 TEUs of containers. For Lianyungang, the city handled 47,955 TEUs of containers that were transported by 486 train services which connect to Asia. This translates to approximately 99 TEUs of containers transported in each train service. The traffic comprises mostly westbound services with 333 trains and 153 eastbound trains. The corresponding numbers for westbound and eastbound containers were 33,103 TEUs and 14,852 TEUs respectively.

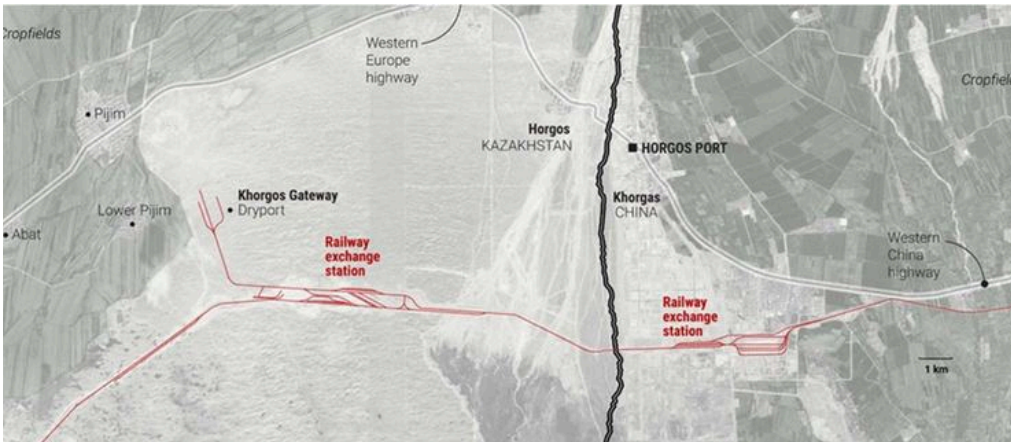
515. Information provided by China Railway Express further revealed healthy growth in container traffic with westbound train services and container throughput having grown by 22.9% and 22.5% respectively for the period of January to August 2024 compared to the same period in the previous year. The performance for eastbound traffic also saw healthy growth of 15.9% and 21.0% for train services and container throughput respectively for the first 8 months of 2024 relative to the same period in 2023. In terms of market share, figures from China Railway Express further revealed that Lianyungang was ranked fourth in terms of container throughput handled for the China-Asia railway container trade at a share of 8.4%, after Kunming (11.2%), Yuxi (10.3%) and Urumqi (8.5%), and ahead of Xi'an (7.6%), Tianjin (6.8%), Yiwu (6.4%) and Qingdao (6.3%)[159].

157 Source: Information from Lianyungang China-Kazakhstan Logistics Cooperation Base.
158 Source: Sina.cn (2024). "In the first eight months, Jiangsu's imports and exports to countries participating in the Belt and Road Initiative reached RMB 1.61 trillion". September 25. Available online at: https://jiangsu.sina.cn/news/2024-09-25/detail-incqiris8504077.d.html?pos=341.
159 Source: China Railway Express (2024). "Operating Information by Chinese Cities (August, 2024) (China-Asia)", *Data Center: Volume by City*. Available online at: https://www.crexpress.cn/en/#/sendCityRankings.

14.4 Regional Connectivity

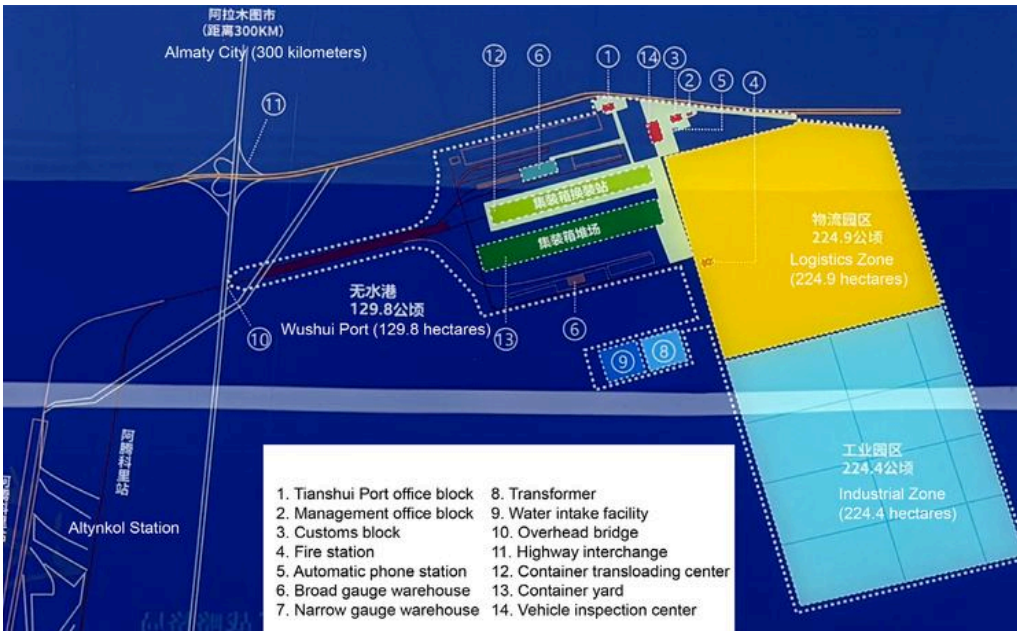
516. To facilitate connectivity with Central Asia, Lianyungang Port Group has made two investment projects in Kazakhstan. The first project is the Khorgos Gateway Dry Port which began operations in 2015[160]. KTZ Express holds a 51% stake in the dry port while the remaining 49% share is held by Lianyungang Port Group and China COSCO Group. The 579 hectares facility is located within Kazakhstan and 15 kilometers from the border with the PRC.

Figure 125: Location of Khorgos Gateway Dry Port



Source: South China Morning Post (n.d.). "Khorgos: the biggest dry port in the world – A visual explainer." Available online at: https://multimedia.scmp.com/news/china/article/One-Belt-One-Road/khorgos.html.

Figure 126: Layout and Facilities of Khorgos Gateway Dry Port



Source: Lianyungang China-Kazakhstan Logistics Cooperation Base.

160 Source: Association of participants of special economic zones of Kazakhstan "SezUnion" (n.d.). *SEZ Khorgos – Eastern Gates*. Available online at: http://sezunion.kz/en/component/k2/item/39-spetsialnaya-ekonomicheskaya-zona-sez-khorgos-vostochnye-vorota.html.

517. The dry port comprises three components. These are the 129.8-hectare Wushui Port, a 224.9-hecatre logistics zone, and a 224.4-hectare industrial zone. The facility is located adjacent to the Altynkol Railway Station and some 300 kilometers from Almaty. The facility is designed to handle 540,000 TEUs per year. The dry port is equipped with a container transloading area and a container yard which runs parallel to the transloading work area. There are also warehouses to handle cargo bound for Kazakhstan or China.

518. The second project is the development of a container hub at the Port of Aktau which is located on the eastern shores of the Caspian Sea. The project is meant to support the redevelopment of the container berths to increase container-handling capacity to 300,000 TEUs per year. Construction is slated to start in Q4 2024. The facility is a joint venture between Lianyungang Port Group, KTZ Express, and the Port of Aktau. The respective shareholdings are 51%, 24.5% and 24.5%[161]. The container hub will occupy 19 hectares of land and is expected to be in operation by the end of 2025. Lianyungang Port Group is planning to invest about USD100 million with the first phase development involving 9.1 hectares and costing USD45 million[162]. The development will raise the capacity of the port to 120,000 TEUs. The container hub will contain a customs facility and three railway tracks and construction is scheduled to take 11 months. As the container hub will not include adjacent berths, discussions are underway to allow the JV company to lease one berth at Aktau Port if container throughput reaches 60,000 TEUs, and a second berth if throughput reaches 100,000 TEUs.

Figure 127: Location of Container Hub at Aktau Port



Source: Port of Aktau.

519. Port of Lianyungang received calls from 25 shipping services in 2023. These services deployed 67 vessels totaling 176,000 TEUs in vessel capacity. The largest amount of shipping capacity was provided by COSCO, which accounted for 23.0% or 40,400 TEUs of vessel capacity. If we include the related shipping companies Shanghai Panasia and OOCL, the combined shipping capacity of COSCO would increase to 26.3% or 46,352 TEUs in vessel capacity. The number of vessels would also increase to 12. COSCO was followed by the shipping lines Sealand, CNC Line and SITC which were ranked in the second, third and fourth positions.

161 Source: Interview held with Lianyungang Port Group on 19 September 2024.
162 Source: Interview held with Lianyungang Port Group on 19 September 2024.

Together, these four shipping lines accounted for 71.9% of shipping capacity available at Lianyungang Port. It is worth noting that CNC Line and Sealand are operated respectively by CMA CGM and Maersk Line as regional feeders in the Asia-Pacific. Other shipping lines that offer container shipping capacity at Lianyungang Port include mainline operators Yang Ming, Evergreen and HMM, and smaller carriers such as Taicang Container Lines, EAS Line, FESCO, KMTC and Namsung.

Table 82: Estimated Capacity by Shipping Lines Calling at Lianyungang Port (as of 2023)

Shipping Line	Services	Vessels	Vessel Capacity (TEUs)	% share
COSCO	5	10	40,400	23.0
Sealand[b]	1	6	34,173	19.4
CNC Line[a]	2	7	29,322	16.7
SITC	6	15	22,563	12.8
FESCO	2	6	11,334	6.4
Taicang Container Lines	1	3	5,700	3.2
Evergreen	1	3	5,036	2.9
Sinotrans	2	2	4,380	2.5
Shanghai Panasia#	1	1	4,250	2.4
Yang Ming	1	2	3,610	2.1
KMTC	2	3	3,096	1.8
Namsung	1	3	2,924	1.7
EAS Line	1	1	1,728	1.0
OOCL[c]	1	1	1,702	1.0
Wan Hai	1	1	1,660	0.9
Others	1	3	4,100	2.3
Total	**25**	**67**	**176,000**	**100.0**

[a] Subsidiary of CMA CGM.
[b] Subsidiary of Maersk Line.
[c] Related to COSCO.

Source: Using information from various shipping lines.

520. The maritime connectivity of the Port of Lianyungang can be differentiated into connectivity for ports located within the region and along the coast of PRC, and international connectivity to other countries. Maritime connectivity of the Port of Lianyungang to the coastal region of PRC shows the port to be served by container shipping services that call at various ports in the Bohai Bay, Yellow Sea, Yangtze River Delta, Taiwan Strait, Pearl River Delta, and Hainan Province. The ports of Qingdao and Tianjin had the greatest number of container services that are also calling at Lianyungang Port. Shipping lines active on this trade are SITC, COSCO and CNC Line. In the third position is Dalian Port with 6 services and 21 containerships providing direct connections between itself and Lianyungang. We saw the strongest maritime connectivity of Lianyungang is with ports that are in the Bohai Bay and Yellow Sea areas.

521. There are some shipping services which provide maritime connectivity between the Port of Lianyungang with major container ports in PRC. These ports include Nansha and Hong Kong and Shenzhen in the Pearl River Delta, and Ningbo and Shanghai in the Yangtze River Delta region. While shipping line COSCO dominates shipping capacity for the ports of Ningbo and Shanghai, maritime connectivity to the Pearl River Delta is more diverse, with shipping capacity offered by shipping lines such as Sealand, CNC Line, COSCO, SITC and FESCO. The figure also shows shipping line Yang Ming to be active in providing shipping capacity linking the Port of Lianyungang to various ports in Taiwan, which are Kaohsiung, Keelung, and Taichung. Other ports in the region along the coast of China which are connected to Lianyungang also include Xiamen and Quanzhou in Fujian Province, Rizhao in Shandong Province, and Yangpu in Hainan Province.

522. The largest number of shipping services connects the port of South Korea. As of 2023, there were 12 services deploying 31 vessels that called at various ports in South Korea with majority of services linked to Busan and Gwangyang ports. Shipping lines active in this trade are COSCO, SITC and Sealand. The second largest market by maritime connectivity is Japan with 7 services and 22 vessels deployed. The shipping line SITC was found to be active in this trade. Maritime connections to Northeast Asia by the port also include shipping services calling at the Russian ports of Vladivostok and Vostochny.

523. The figure also shows strong maritime connectivity between the Port of Lianyungang with the region of Southeast Asia. Regular shipping services connect the port to the countries of Vietnam, Thailand, Malaysia, Indonesia, Singapore and The Philippines. Shipping lines that are active in providing maritime connectivity for this region include SITC, CNC Lines and Sealand. For the case of Vietnam, Taicang Container Lines was found to be a major player in the Lianyungang-Vietnam trade. Apart from Northeast Asia and Southeast Asia, there are two services which serve the market of India and Sri Lanka. However, the shipping capacity provided for these services is comparatively small with only six vessels involved.

Port of Karachi, Qasim and Gwadar

15

15.1. Introduction

524. Location of the Port of Karachi, Port Qasim and Gwadar Port are shown in Figure 129. With reference to the figure, the ports are strategically positioned to serve as maritime gateways for countries in Central Asia. Apart from this, the ports are also strategically located to become maritime gateways for the Arabian Gulf and Arabian Sea regions for mainline container trades that connect to Europe, the Mediterranean and Asia.

525. The role of port authority in Karachi is held by the organization Karachi Port Trust (KPT). KPT was established by the Karachi Port Trust Act of 1886 and oversee operations of Karachi Port.[163] The organization reports to the Pakistan Ministry of Maritime Affairs (MMA). KPT also functions as a Trust, working under a Board of Trustees that is legally separate from the federal government. The chairman, who is also the chief executive officer of KPT, is appointed by the federal government. The remaining 10 trustees are distributed between the public and private sectors, with public sector trustees being appointed, while private sector trustees are elected. The term is for a period of two years.

526. Port Qasim Authority (PQA) and Gwadar Port Authority (GPA) also come under the administrative control of MMA. PQA was established by the Port Qasim Authority Act of 1973.[164] PQA is headed by the chairman who is also chief executive of the port. There are seven other board members who come from public and private sector backgrounds. The board has the authority to make policy decisions, subject to exceptions and restrictions stated in the Act. For GPA, the organization was established by the Gwadar Port Authority Ordinance No. LXXVII of 2002.[165] GPA is tasked with constructing, operating, managing, and maintaining the Gwadar Deep Water Port. As with KPT and PQA, the chairman of GPA is also appointed by the federal government. The other members of the current board come mainly from the public sector. They include Chairman (National Highway Authority), Secretary (Ministry of Defense), Joint Secretary (Communications), Chief Secretary (Development, Government of Baluchistan), and Director General (Ports and Shipping). The board also has a representative from the Quetta Chambers of Commerce and Industry.

15.2. Port Facilities and Infrastructure

527. Containers in Pakistan are handled mostly by the ports of Karachi and Qasim. The operations are conducted primarily through container terminals in both ports. These are Karachi International Container Terminal (KICT – wholly owned by Hutchison Port Holdings[166]), Karachi Gateway Terminals Limited (KGTL – 60% owned by Abu Dhabi Ports[167]), and South Asia Pakistan Terminals (SAPT – 90% owned by Hutchison Port

163 Source: Karachi Port Trust (n.d.). *About Us*. Available online at: https://kpt.gov.pk/pages/38/about-us.
164 Source: Port Qasim Authority (n.d.). *Introduction*. Available online at: https://www.pqa.gov.pk/en/about-us/introduction.
165 Source: Gwadar Port Authority (n.d.). *About*. Available online at: https://gwadarport.gov.pk/about.aspx.
166 Source: CK Hutchison Holdings Limited (2024). 2023 *Annual Report*. Available online at: https://doc.irasia.com/listco/hk/ckh/annual/2023/ar2023.pdf.
167 Source: AD Ports Group (n.d.). *AD Ports Group Integrated Annual Report and Accounts 2023*. Available online at: https://www.adportsgroup.com/en/investors/annual-report.

Figure 128: Location of Container Terminals in Port of Karachi and Port Qasim and Their Respective Shareholding Structure



Source: Using information including from CK Hutchison Holdings Limited, DP World, and AD Ports Group.

Holdings, HPH[168]) in the Port of Karachi, and Qasim International Container Terminal (QICT) in Port Qasim. DP World holds a 75% stake in QICT.[169]

528. The largest container terminal is US$1.4 billion SAPT, which has a design container-handling capacity of 3.1 million TEUs per year. The terminal is a joint venture between HPH and KPT. HPH was ranked as the 6th largest container terminal operator in the world in 2022.[170] The facility occupies 8.5 hectares and is equipped with 4 berths which will be dredged to a depth of 16.0 meters. The all-weather depth being 14.0 meters.[171] HPH holds a 25-year concession for SAPT which is extendable by another 25 years, contingent on mutual agreement. SAPT is located at the estuary of the Keamari Groyne basin

Table 83: Key Container-handling Facilities in the Port of Karachi and Port Qasim

Facility	Number of Berths	Berth Length (meters)	Maximum Depth (meters)	Capacity (mil TEUs per year)	Terminal Area (hectares)
SAPT	4 (No. 1–4, South Wharf)	1,500	16.0[a]	3,100,000	85.0
KGTL	5 (No. 6–10, East Wharf)	800	13.0	800,000	27.0
KICT	5 (No. 26–30, West Wharf)	970	13.0	750,000	26.0
QICT 1	3 (No. 5–7)	600	12.5	850,000	24.0
QICT 2	2 (No. 8–9)	600	13.0	1,175,000	35.0

[a] The design draft may be deepened to 18 meters.

Source: Using information from Karachi Port Trust and Port Qasim Authority.

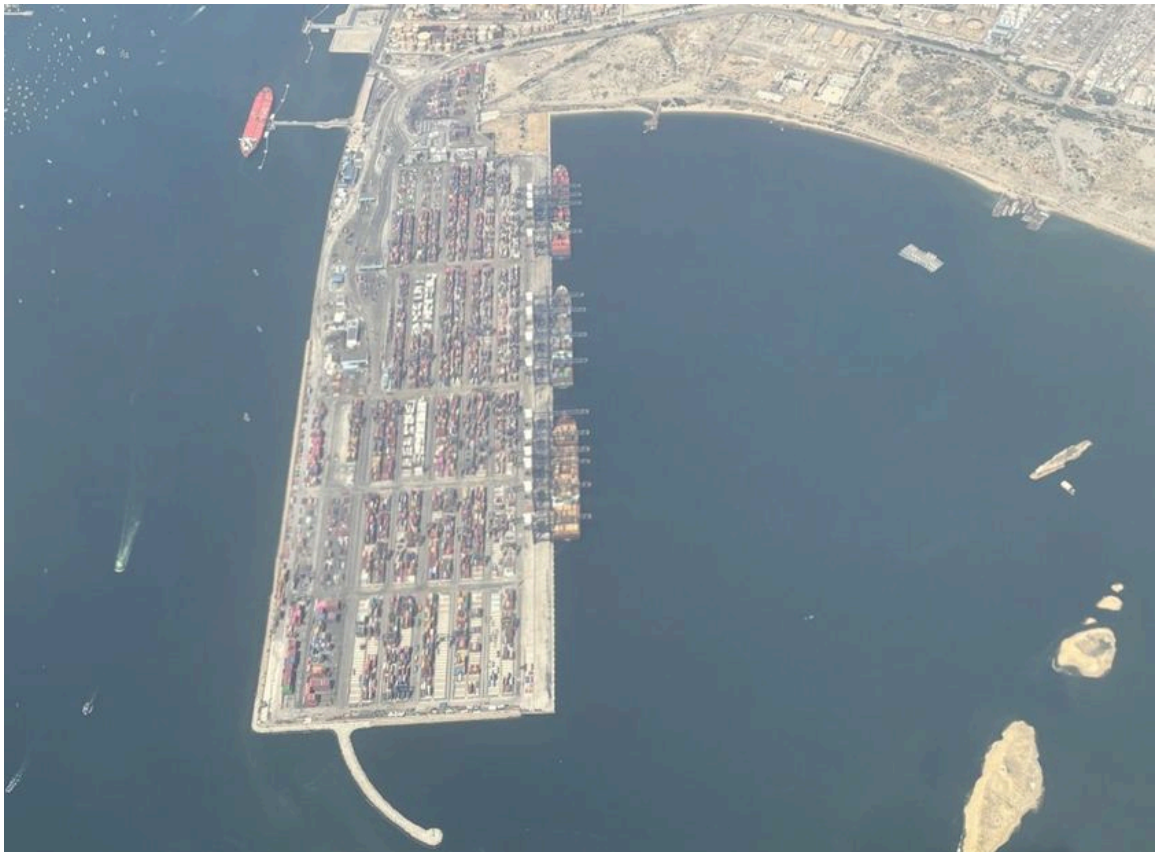
168 Source: CK Hutchison Holdings Limited (2024). 2023 *Annual Report*. Available online at: https://doc.irasia.com/listco/hk/ckh/annual/2023/ar2023.pdf.

169 Source: DP World (2024). *The Smarter Trade Report: Annual Report and Accounts 2023*. Available online at: https://www.dpworld.com/investors/annual-report-2023.

170 Source: Lloyd's List (2023). *Top 10 box operators 2023*. Available online at: https://www.lloydslist.com/LL1147252/Top-10-box-port-operators-2023.

171 Source: Karachi Port Trust (n.d.). *Port Parameters*. Available online at: https://kpt.gov.pk/pages/24/port-parameters.

Figure 129: Aerial View of SAPT



Source: Field visit.

and offers convenient access to vessels entering Karachi. As the latest addition to the container-handling scene in Karachi Port, SAPT is capable of hosting mainline containerships such as those that ply on the Asia–Europe trade route.

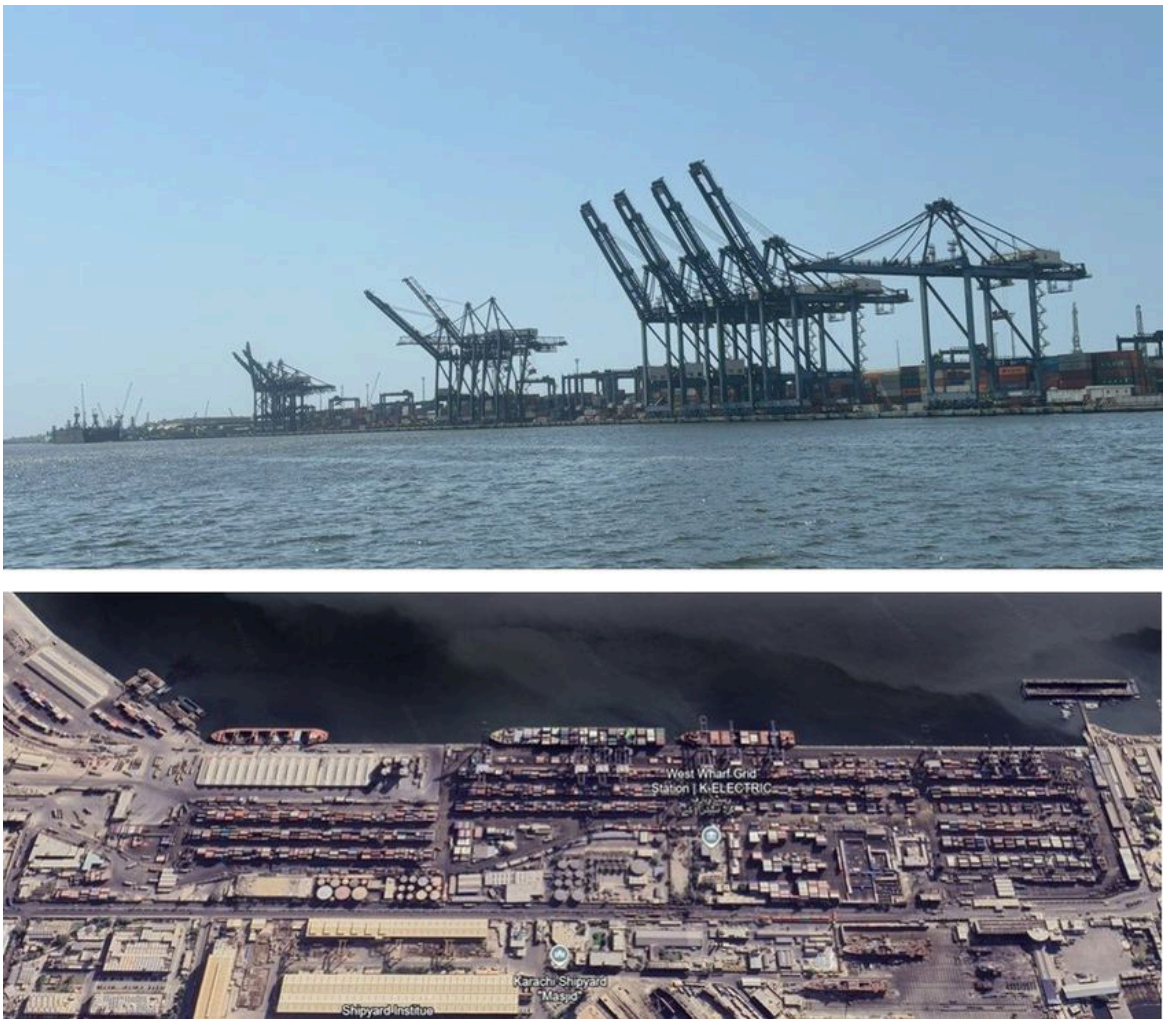
529. HPH operates another container terminal in the Port of Karachi. Known as KICT, the facility occupies 26 hectares of land and comes with 5 berths totaling 960 meters. The maximum draft alongside being 13.0 meters. KICT has a design container-handling capacity of 750,000 TEUs per year. Located in the West Wharf, KICT is also the oldest container terminal having been established in 1996. The concession is slated to expire in 2030.

530. The third container terminal in Karachi Port is KGTL. The terminal was formerly known as Pakistan International Container Terminals (PICT) and 80% owned by International Container Terminal Holdings Incorporate (ICTSI), which is a global container terminal operator headquartered in Manila in the Philippines. The container terminal has been generating revenue of about US$55 million and EBIDTA of around $30 million per year.[172] PICT is also listed on the Karachi Stock Exchange. The concession which started in 2002 expired in 2023 whence the container terminal was taken over by KPT on 18 June 2023.[173] In accordance with the concession terms, PICT must retain its legal existence for a minimum of three years following the end of the concession.

172 Source: AD Ports Group (2023). AD Ports Group signs 50-year concession agreement with Karachi Port Trust for container terminal. *News & Media*, June 22. Available online at: https://www.adportsgroup.com/en/news-and-media/2023/06/22/adpg-signs-50-year-concession-agreement-with-karachi-port.

173 Source: Pakistan International Container Terminal Limited (2024). *Half Yearly Report June 30, 2024*. Available online at: https://dps.psx.com.pk/download/document/236098.pdf.

Figure 130: Karachi International Container Terminals (KICT)



Source: Google Earth.

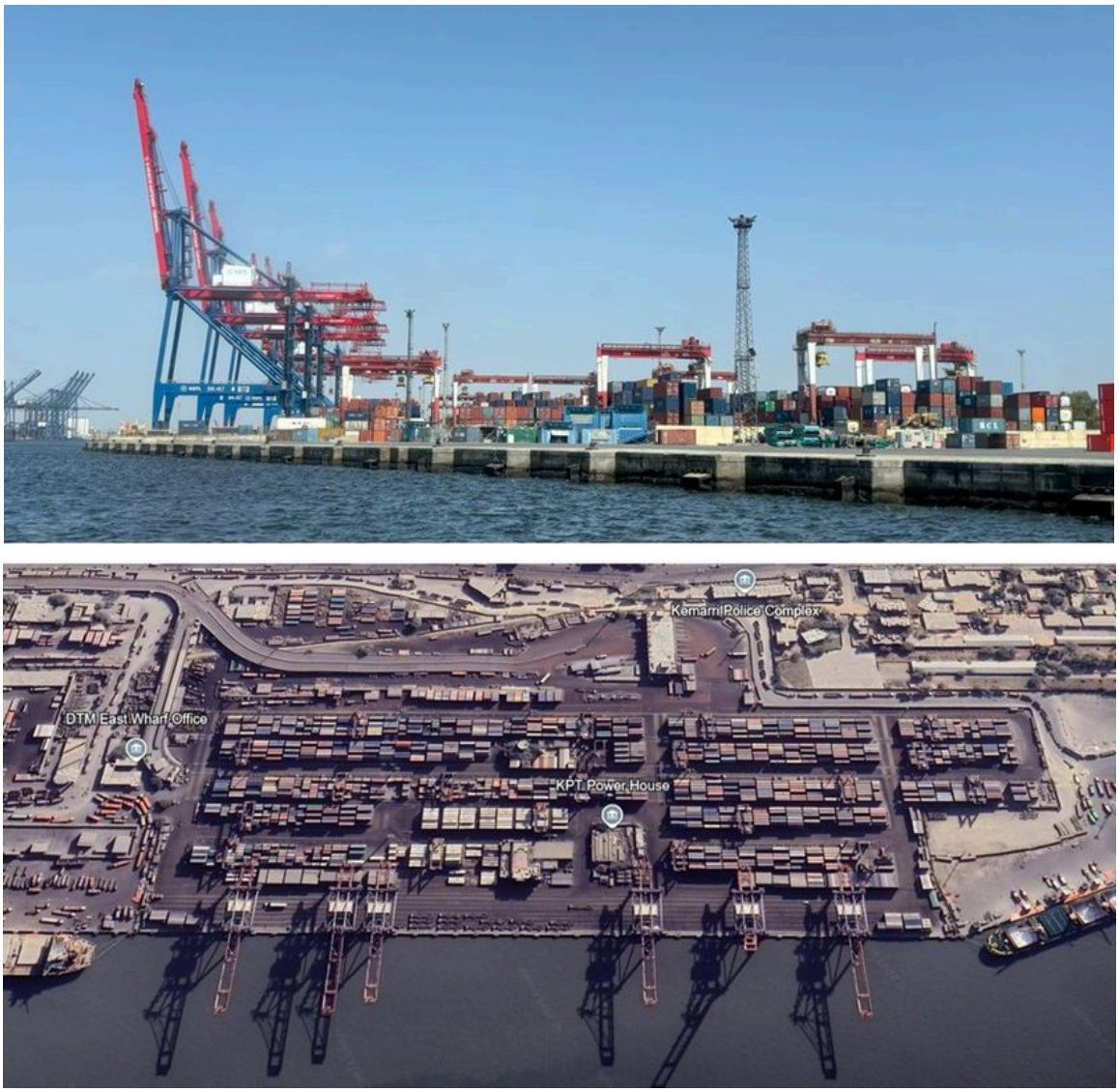
531. On 22 June 2023, AD Ports Group announced taking over PICT with a 50-year concession.[174] The container terminal named KGTL occupies berths 6–10 at Karachi Port East Wharf. AD Ports Group will be investing US$220 million to develop the infrastructure and superstructure to 2033 with the bulk of works commencing from 2026. The redevelopment will increase the container-handling capacity of KGTL from 800,000 TEUs to 1.0 million TEUs per year. AD Ports Group is headquartered in Abu Dhabi of the United Arab Emirates and operates terminals including Khalifa, Fujairah, Sila, and Musaffah in the country.[175]

532. These facilities are organized into those located in the East Wharf, West Wharf and South Wharf. In total, the Port of Karachi is equipped with 34 dry cargo berths (14 of which are dedicated to containers) and 3 oil piers. With reference to the remaining berths, the 13 berths of No. 1 to 5 and berths No. 10 to 17 as well as 2 liquid cargo berths in the East Wharf are operated and managed by KPT. Berths 15, 16 and 17 can also be used to host car carriers. KPT also manages and operates berths No. 18 to 25 which are located on the West Wharf. Note that vessel movements at berths No. 18 to 23 are restricted to daylight only. In

174 Source: AD Ports Group (2023). AD Ports Group signs 50-year concession agreement with Karachi Port Trust for container terminal. *News & Media*, June 22. Available online at: https://www.adportsgroup.com/en/news-and-media/2023/06/22/adpg-signs-50-year-concession-agreement-with-karachi-port.

175 Source: AD Ports Group (n.d.). *Ports & Terminals*. Available online at: https://www.adports.ae/.

Figure 131: Karachi Gateway Terminals Limited (KGTL).



Source: Google Earth.

total, the Port of Karachi has a design capacity to handle 125 million tons of cargo,[176] including 4.65 million TEUs of containers.

533. A key project concerns the redevelopment of the 58.6-hectare TPX site to become a maritime business district which houses commercial and residential developments.[177] The current location is used to store empty containers. The intention is to have the TPX site transformed into a business district and financial hub of Karachi, containing banks, insurance companies, shipping companies, media houses and hotels. Monies received from this integrated real estate development can be deployed to support infrastructure improvements that KPT had wanted to carry out for the port areas.

534. An important concern remains with that of road connectivity. The first key road corridor for freight traffic connects the Port of Karachi via Lyari Expressway to the M9 Motorway, which links up to

176 Source: Karachi Port Trust (n.d.). *Port Traffic Department*. Available online at: https://kpt.gov.pk/pages/17/port-traffic-department.

177 Source: Karachi Port Trust (n.d.). *Port Developments*. Available online at: https://kpt.gov.pk/pages/22/port-developments.

Table 84: Cargo-handling Facilities of Karachi Port (Excluding Container Terminals)

Facility	Cargo-handling Capability	Maximum Draft (meters)
OP – 1 (private)	Crude oil, diesel oil, chemicals	13.0
OP – 2	Chemicals, ethanol, molasses, crude oil, palm oil, diesel oil, aviation fuel, motor gasoline, naphtha, fuel oil	13.0
OP – 3	Chemicals, ethanol, molasses, crude oil, vegetable oil, naphtha, fuel oil, aviation fuel, motor gasoline	12.5
Berth No. 1, 2, 3	Bulk cargo, general cargo, chemicals, ethanol, molasses	10.7
Berth No. 4, 5	Bulk cargo, general cargo, cruise ships, naval ships	10.75
Berth No. 11, 12, 13, 14	Bulk cargo, general cargo, naval ships	13.0
Berth No. 15, 16, 17	Bulk cargo, general cargo, naval ships	10.5
Berth No. 18, 19, 20, 21	General cargo, project cargo, jute, break bulk, containers	9.5
Berth No. 22, 23	General cargo, jute, break bulk, containers	7.5
Berth No. 24, 25	General cargo, project cargo, jute, break bulk, containers, cement	10.0

Source: Karachi Port Trust (n.d.). *Port Parameters*. Available online at: https://kpt.gov.pk/pages/24/port-parameters.

Figure 132: Cargo-handling Facilities of Karachi Port



Source: Using information from Karachi Port Trust, map data from Google Earth.

N55 (i.e., Indus Highway) that goes to Peshawar and Torkham. The M9 Motorway can also be reached via the M10 Motorway (i.e., Northern Bypass) via Mauripur Road. This is the second key corridor for truck traffic. This route allows trucks to reach Quetta and Chaman using the N25 National Highway, as well as Gwadar Port via the N10 National Highway. The third major corridor for freight traffic connects to the N5 National Highway via MT Khan Road, Mai Kolachi Bypass, Sunset Boulevard, and Main Korangi Road. The N5 National Highway connects the Port of Karachi to Port Qasim as well as Hyderabad, Lahore and Rawalpindi in the north.

535. An important feature of road connectivity is the large number of truck stands located at various junctions of the freight corridors. The larger truck stands include those located at Hawksbay Road outside of Port Qasim along the M9 Motorway towards Karachi City, and the junction between N5 National Highway and the Eastern Bypass. Truck stands form a vital component of the near-port logistics chain. They are locations that provide facilities such as parking spaces, hotels and resthouses, petrol pump stations, repair and

Figure 133: Planned Maritime Business District for Karachi Port



Source: Karachi Port Trust.

Figure 134: Truck Stand at Hawksbay Road (Top View)



Source: Field visit.

Figure 135: Truck Stand at Hawksbay Road (Ground View)

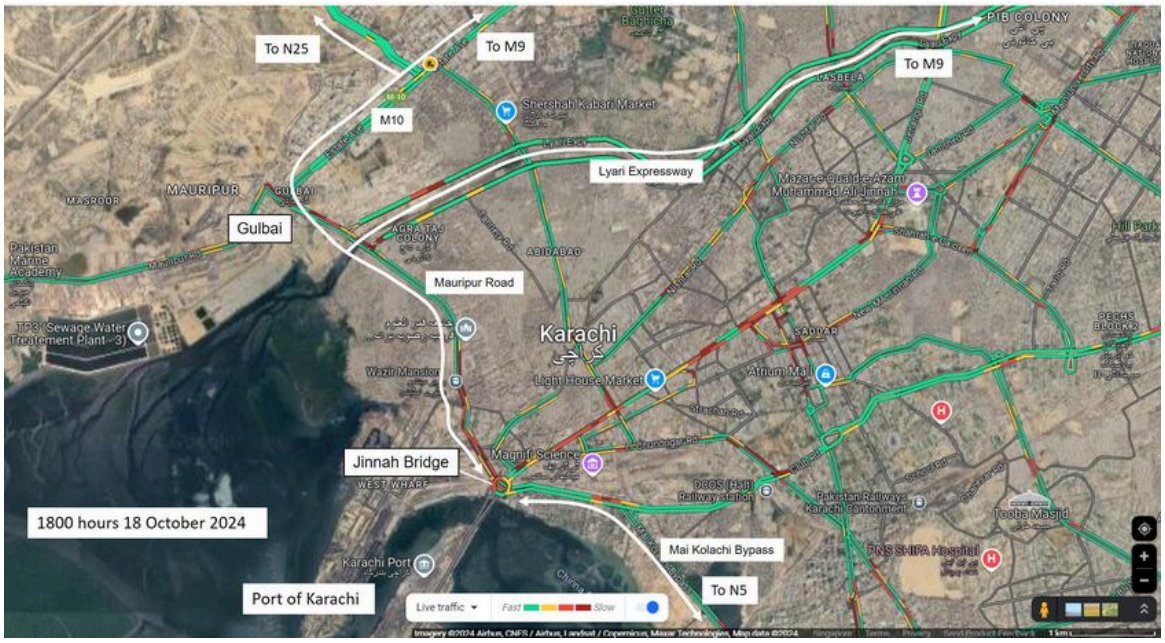


Source: Field visit.

maintenance workshops, markets, cafes and eateries, entertainment services and places for truckers to collect money for upcountry journeys. Nonetheless, truck stands can be a major source of traffic congestion due to indiscriminate and illegal parking, loading and unloading of goods, and carrying out maintenance of heavy vehicles along the road.

536. Approximately 95% of Karachi Port cargo is transported by road.[178] For the case of SAPT, 90% of the containers are transported by trucks to the upcountry.[179] More than 85% of containers for QICT are also moved by trucks.[180] This can create severe congestion, especially at Jinnah Bridge where most of the trucks converge

Figure 136: Traffic Congestion on Freight Corridors Connecting to the Port of Karachi



Source: Field visit.

178 Source: Ahmed, K. (2021). "Potential relocation of Karachi seaport to cost Pakistan $9.6 billion – World Bank". *Arab News*, November 6. Available online at: https://www.arabnews.com/node/1962586/amp.
179 Source: Interview held with SAPT on 4 October 2024.
180 Source: Interview held with Qasim Port Authority and QICT on 4 October 2024.

to access the port. The time stamp of 1800 hours on 18 October 2024 shows heavy traffic at Gulbai (where M10 connects to Mauripur Road), the junction between Lyari Expressway and Mauripur Road, and along the Mauripur Road leading to/from Jinnah Bridge. For the main container terminal of SAPT in Karachi Port, the road which connects to Jinnah Bridge is quite narrow and will have difficulties accommodating an increase in truck traffic. There is another road which connects to Gate 1 that leads to the city that is wider. However, the gate is only operational from 11pm to about 7am.

Figure 137: Road that Connects Gate 3 of SAPT to the City



Source: Field visit.

Figure 138: Road Access at Gate 1 of SAPT



Source: Field visit.

537. With the increase in cargo traffic for the Port of Karachi, traffic conditions for these freight corridors are expected to worsen. At the current state, there are no inter-terminal transfers between the container terminals. There is a project to construct a bridge for truck movements between the East Wharf and West Wharf. The bridge is 20% completed and the target for operations is in July 2025, which is before the monsoon. The bridge is expected to move 50% of the truck traffic from the main road.[181] A feasibility study to construct the Lyari Bypass is being conducted with support from Korea Exim Bank.[182] The cost of

181 Source: Interview held with Karachi Port Trust on 3 October 2024.
182 Source: Interview held with Karachi Port Trust on 3 October 2024.

Figure 139: Project to Connect East Wharf and West Wharf at Karachi Port



Source: Karachi Port Trust (2024). *Port Developments*. Available online at: https://kpt.gov.pk/pages/22/port-developments.

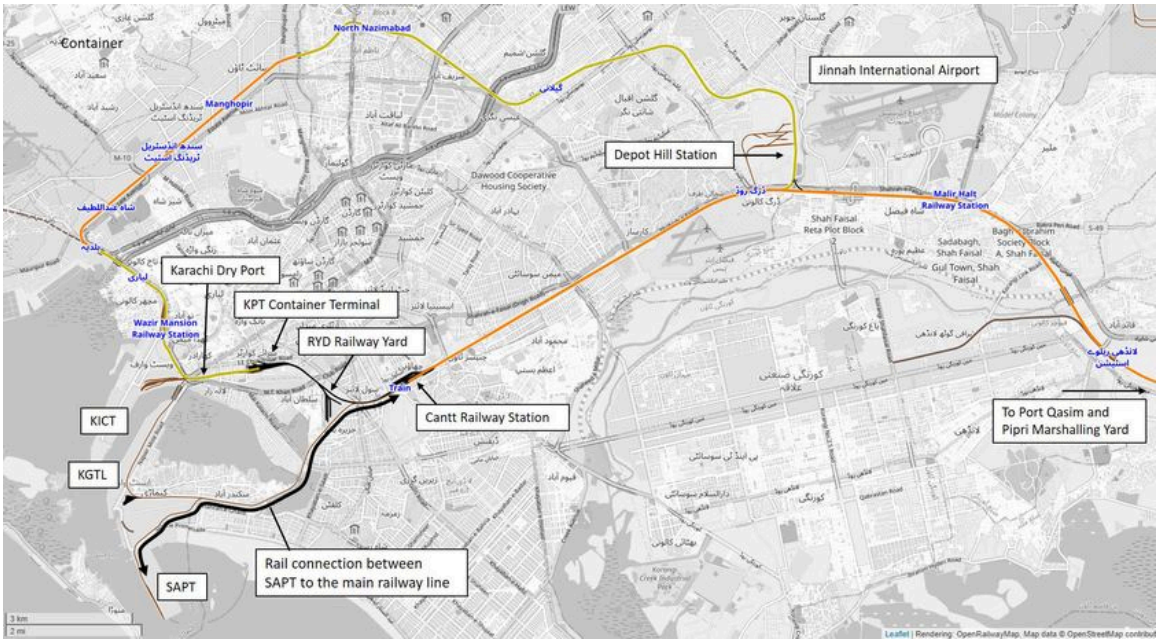
developing the Lyari Bypass is estimated at PKR 25 billion (about US$90 million). The elevated bypass will connect the port from the west to the M9 Motorway.

538. Another initiative to alleviate freight traffic related to Karachi Port is the East Bay Expressway. The expressway which connects the port to the east is estimated to cost PKR 15 billion (about US$55 million). The new Malir Expressway is also expected to alleviate freight traffic moving between Karachi Port and the M9 Motorway.[183] The first phase of the expressway, which is a 15-kilometer stretch from Jam Sadiq Bridge and Shah Faisal Colony, is scheduled to open by the end of October 2024. The expressway is slated for completion by mid-2025. This expressway will offer a third alternative for access to the port. There are also plans to construct a connecting road which leads from the West Wharf through Machar Colony to the Northern Bypass.[184] Nonetheless, reliance on the Jinnah Bridge area for the bulk of truck movements into and out of the port will continue to test the handling capacity of road networks in and around the port areas.

539. Less than 5% of cargo traffic from the Port of Karachi goes by rail.[185] There are no rail connections to KICT in the West Wharf. Although the figure shows rail connections to KGTL in the East Wharf, the state of the railway line does not allow handling of freight trains.[186] However, SAPT has off-dock rail access where containers can be transferred from the berth to the yard, and subsequently to railway wagons in the container terminal. The railway line is connected to the main railway network via Cantt Railway Station. There are over 200 containers handled by this railway line per week. This possibility offers the prospect of moving some of the traffic off the road by using rail shuttles that bypass the Jinnah Bridge area. It was

183 Source: Dawn Report (2024). "Another deadline set for opening of Malir Expressway's first phase". *Dawn*, September 28. Available online at: https://www.dawn.com/news/1861634.
184 Source: Interview held with SAPT on 4 October 2024.
185 Source: Ahmed, K. (2021). "Potential relocation of Karachi seaport to cost Pakistan $9.6 billion – World Bank". *Arab News*, November 6. Available online at: https://www.arabnews.com/node/1962586/amp.
186 Source: Interview held with Karachi Port Trust on 3 October 2024.

Figure 140: Railway Connectivity for the Port of Karachi



Source: Using information including OpenRailwayMap.

Figure 141: Railway Line Connecting to KGTL in East Wharf of Karachi Port



Source: Consultants.

announced in early 2024 that DP World, Pakistan Railways and Port Qasim Authority has reached agreement to invest in the Dedicated Freight Corridor which will run for 50 kilometers from the Port of Karachi to the Pipri Marshalling Yard.[187]

187 Source: Railway Gazette International (2024). "Dubai backs Karachi dedicated freight corridor plan". February 6. Available online at: https://www.railwaygazette.com/freight/dubai-backs-karachi-dedicated-freight-corridor-plan/65844.article.

Figure 142: Railway Line Connecting to SAPT in South Wharf of Karachi Port



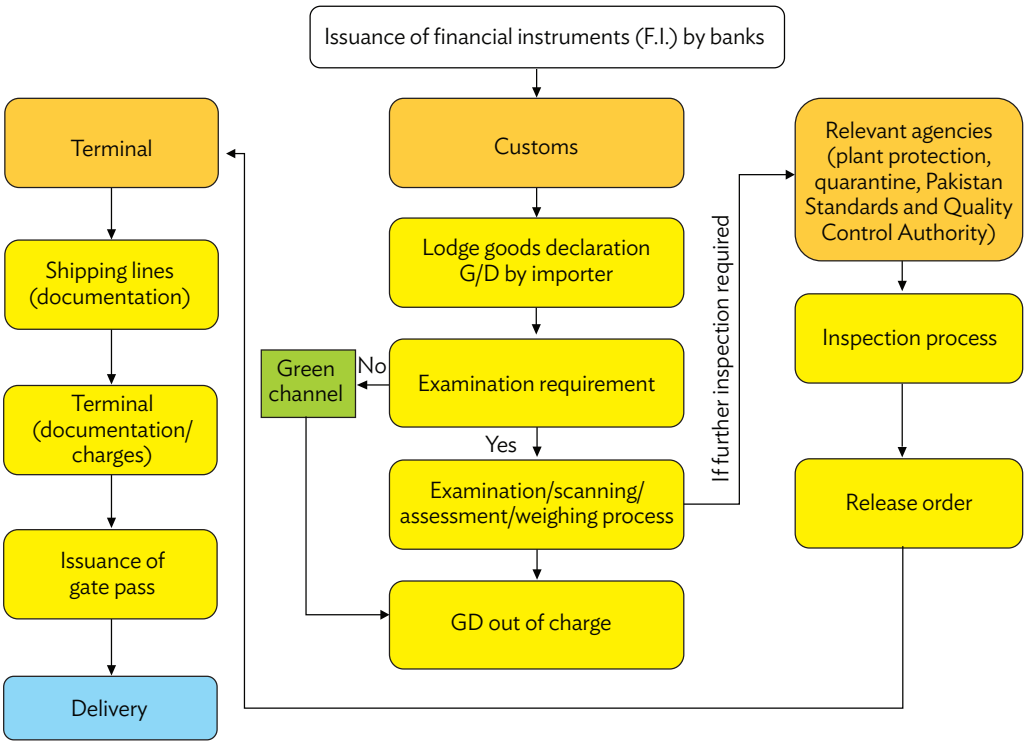
Source: South Asia Pakistan Terminal. Hutchison Ports Pakistan (n.d.). *Connecting Infrastructure*. Available online at: https://www.sapt.com.pk/main/connecting-infrastructure?culture=en.

540. Nonetheless, there remains a pertinent issue which the authorities are trying to resolve. This concerns the long dwell time for containers at the port which can be up to 10 days. It takes only 24 hours to move a container from the port to the M9 Motorway whereas it can take 10 days to release the container from the port.[188] For SAPT, the dwell time for containers is about 8–9 days, whereas the ideal should be 5–6 days.[189] The long dwell time for containers is partly attributed to consignees using the container terminals for storage. Consignees often take advantage of the 5 days of free storage which is given by the port. This can be due to the lack of transport or truckers turning up late at the port. If the vessel calls on a Friday, there will be delays because freight forwarders and agents work only for 5 days a week. Delays can also happen if the agent is careless.

541. The long dwell time for containers is also partly attributed to the long delivery process for a container. The process takes 8–10 days on average. About 60% of the containers (particularly perishables) are cleared in less than 24 hours through the green channel.[190] Fluctuation of the US Dollar can also contribute to the dwell time for containers in the port. Also, while terminals are open 24/7, freight forwarders, shipping lines and customs are not. To address this issue, shipping lines have started to work half-days on Saturdays, and customs is also operating for longer hours. The aim is to reduce the dwell time to 4–5 days.

188 Source: Interview held with Pakistan Ministry of Planning, Development and Special Initiatives on 1 October 2024.
189 Source: Interview held with South Asia Pakistan Terminals on 4 October 2024.
190 Source: Interview held with Karachi Port Trust on 3 October 2024.

Figure 143: Delivery Process for a Container



Source: Interview held with Karachi Port Trust on 3 October 2024.

542. It is further suggested that removing the approximately 1,000 unclaimed or abandoned containers can reduce the dwell time to 6.5 days for SAPT. For KGTL and KICT, the number of aged containers is estimated at 2,000 and 1,800 respectively.[191] A situation of shortage of space for cargo handling in the port results as the container terminals having to allocate sizeable portions of the container yard to accommodate such containers. Container yard space required by the port is projected to more than double by 2040, putting pressure on storage space for containers.[192]

543. There are three important development plans that will affect cargo volumes for Port of Karachi. SAPT occupies Phase 1 of the project. Land has been allocated for the second phase of the project which could see the development of Karachi Port as an energy hub. There are plans to construct an LNG/LPG jetty and power plant cum desalination plant which could address energy, and water needs of the country.[193] Feasibility studies are currently being conducted. The second project, which will enable larger containerships to call at the port, is capital dredging for an 8.5-kilometer channel that connects SAPT from 14 meters to 16 meters.

544. The third development plan is the proposed reclamation and development of the Machhar Colony which is in the western backwaters and marsh land of Karachi Port. The US$3.5 billion Karachi Coastal Comprehensive Development Zone (KCCDZ) spreads over 640 hectares of land.[194] The project which comes under the China–Pakistan Economic Corridor (CPEC), envisages new berths for the port, a new fishery port, with integrated industrial, commercial and residential usage. The KCCDZ could increase the volume of local containers for the Port of Karachi.

191 Based on interviews held earlier with KICT and PICT. PICT was subsequently renamed KGTL after acquired by AD Ports Group in 2023.
192 Based on interview held earlier with Karachi Port Trust.
193 Source: Interview held with Karachi Port Trust on 3 October 2024.
194 Source: Ayub, I. (2021). "CPEC panel okays ambitious Karachi coastline plan". *Dawn*, September 26. Available online at: https://www.dawn.com/news/1648433.

Figure 144: Artist's Impression of South Wharf



Source: Karachi Port Trust.

Figure 145: Capital Dredging Plans for the Port of Karachi



Source: Using information from Karachi Port Trust.

Figure 146: Karachi Coastal Comprehensive Development Zone (KCCDZ)



Source: Ayub (2021).

545. Turning to Port Qasim, there are two other container terminals in the port. These are QICT 1 and QICT 3. Both terminals are majority owned by DP World who holds a 75% stake. DP World was ranked as the 5th largest container terminal operator in the world in 2022.[195] DP World is owned 80.45% by the Government of Dubai, and the remaining 19.55% of DP World is listed on NASDAQ Dubai.[196] The remaining 25% share is held by International Terminal Holding Limited, which is owned by a Pakistan-based entrepreneur. QICT 1 began operations in 1997 with 4 berths totaling 600 meters. The maximum depth alongside is 12.5 meters. The facility sits on 24 hectares of land and is capable of handling up to 850,000 TEUs of containers a year. The concession for the terminal will expire in 2025. For QICT 2, the terminal began operations in 2010 with the concession running until 2036. The facility is equipped with 2 berths totaling 600 meters and maximum depth alongside 13.0 meters. The 35-hectare facility can handle up to 1.175 million TEUs per year. Hence, both container terminals have a combined berth length of 1,200 meters and design container-handling capacity exceeding 2.0 million TEUs per year.

546. Port Qasim has a design cargo-handling capacity of 89 million tons a year.[197] There are 18 berths of which 15 are operated by the private sector. They consist mainly of using the Build–Operate–Transfer (BOT) model for a duration of 30 years. The exception being the Port Qasim Electric Power Company Private Limited (PQEPT) Coal Terminal which is operated under a Build–Operate–Own (BOO) model. Concessions for these facilities are shown in the figure with the earliest expected to expire in 2025 (for FOTCO Oil Terminal) and the longest running until 2047 for PGPCL LNG Terminal.

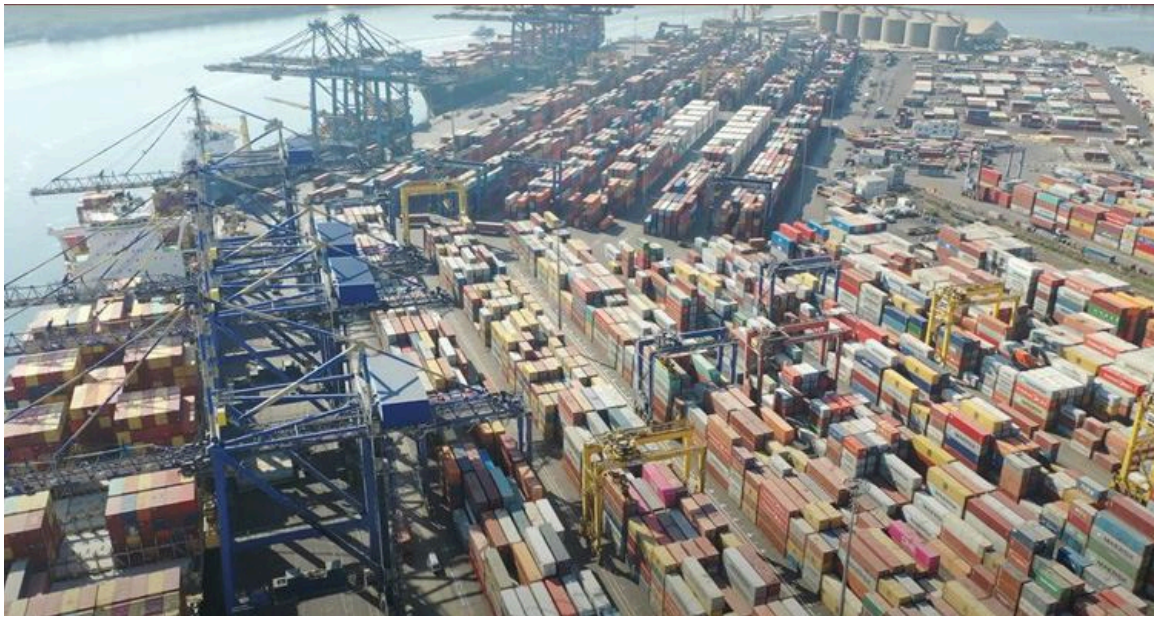
547. Port Qasim comprises various terminals that enable the port to handle both dry and liquid cargo. The facilities are located along a stretch of more than 9 kilometers on the north bank of Kadiro Creek. The resulting

195 Source: Lloyd's List (2023). *Top 10 box operators 2023*. Available online at: https://www.lloydslist.com/LL1147252/Top-10-box-port-operators-2023.

196 Source: International Finance Corporation (n.d.). IFC Project Information & Data Portal. Available online at: https://disclosures.ifc.org/project-detail/ESRS/27930/qict-project (see also) https://visionno1.com/group_structure.html.

197 Source: Port Qasim Authority (n.d.). *Introduction*. Available online at: https://www.pqa.gov.pk/en/about-us/introduction.

Figure 147: View of Port Qasim



Source: DPW Karachi (n.d.). *An aerial view of our port*. Available online at: https://www.dpworld.com/en/pakistan.

Table 85: Cargo-handling Facilities of Port Qasim (Exclude Container Terminals)[a]

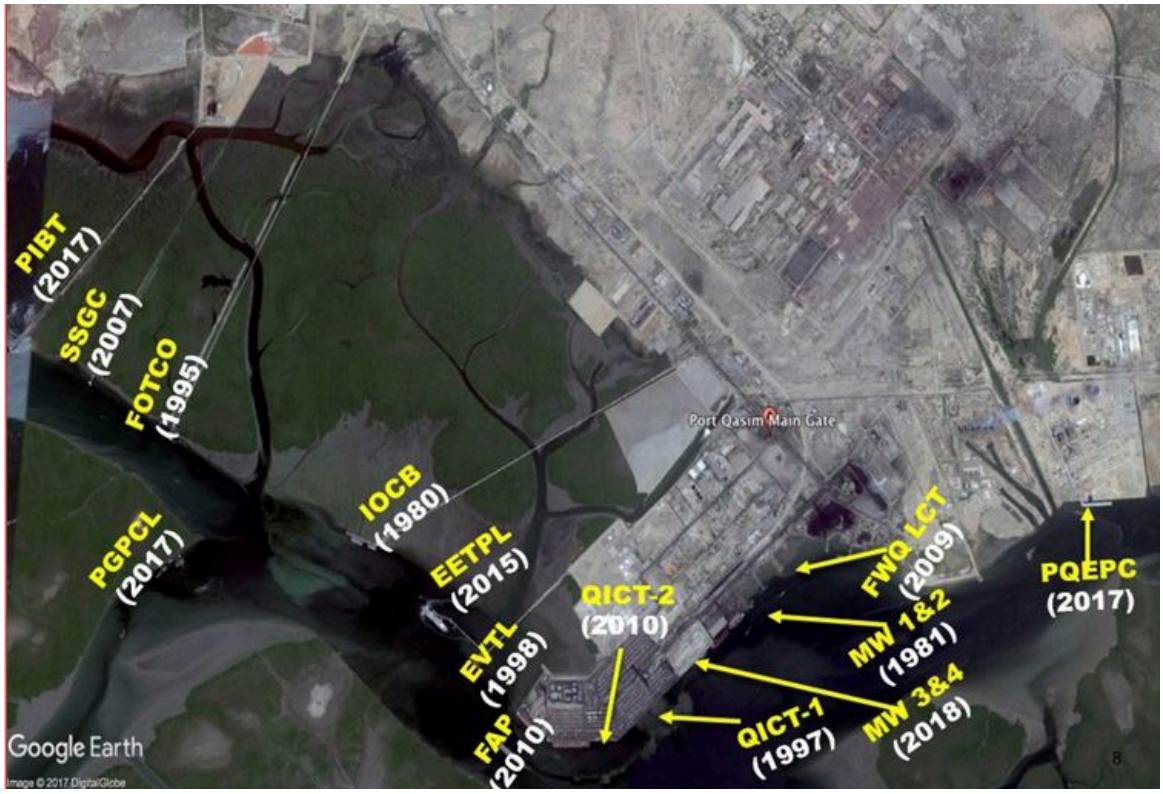
Facility	Berth	Berth Length; Draft (meters)	Capacity (million tons)	Year of Operation	Lease (ending)	Cargo
Marginal Wharf 1 and 2	2	400; 10–10.5	3.0 to 4.0	1981	Port Qasim Authority	General bulk cargo, vehicles, project cargo
Marginal Wharf 3 and 4 (Huaneng Fuyun Port and Shipping)	2	400; 10.0	4.0	2017	30 years BOT (2046)	Coal
Iron Ore and Coal Berth (IOCB)	1	279; 12.0	3.0	1980	Exclusive use by Pakistan Steel Mills	Coal, coke, iron ore
FOTCO Oil Terminal	1	280; 13.0	9.0	1995	30 years BOO (2025)	furnace oil, diesel, motor gasoline,
Engro Vopak Liquid Chemicals Terminals (EVTL)	1	325; 11.0	4.0	1998	30 years BOT (2026)	Chemicals (e.g., phosphoric and acetic acid)
Liquid Cargo Terminal	1	230; 10.0	4.0	2009	30 years BOT (2034)	Edible oil
FAP Grain and Fertilizer Terminal	1	300; 13.0	4.0	2010	30 years BOT (2037)	Soya bean, canola, wheat, rice, corn, fertilizer
SSGC LPG Terminal	1	230; 10.0	2.0	2007	30 years BOT (2034)	LPG
EEPTL LNG Terminal	1	390; 11.0	4.5	2015	30 years BOT (2044)	LNG
PIBT Coal and Clinker and Cement Terminal	1	460; 13.0	8.0	2017	30 years BOT (2040)	Coal, clinker, cement
PGPCL LNG Terminal	1	400; 12.0	4.5	2017	30 years BOT (2047)	LNG
PQEPC Coal Terminal	1	280; 12.0	4.0	2017	Build, operate, own	Coal

[a] FOTCO – Fauji Oil Terminal and Distribution Company; FAP – Fauji Akbar Portia Marine Terminal Limited; SSGC – Sui Southern Gas Company; EETPL – Engro Energy Pakistan Terminal Limited; PIBT – Pakistan International Bulk Terminal; PGPCL – Pakistan Gas Port LNG Terminal Limited; PQEPC – Port Qasim Electric Power Company Private Limited.

Source: Using information from Port Qasim Authority (n.d.). *Port Operational Complex*. Available online at: https://www.pqa.gov.pk/en/port-operations/port-operational-complex.

governance structure seen in Port Qasim can be attributed in part to the desire to have the private sector taking a bigger role of being directly involved in port operations to ensure that port efficiency and productivity standards are up to international standards. The three berths which are under public management are Marginal Wharf Berths 1 and 2, which is operated by Port Qasim Authority, and the Iron Ore and Coal Berth (IOCB), which is under exclusive use by Pakistan Steel Mills. The Marginal Wharf is designed to handle general bulk cargo, vehicles and project cargo while IOCB is dedicated to handling coal, coke and iron ore.

Figure 148: Cargo-handling Facilities of Port Qasim



Source: Port Qasim Authority.

548. Port Qasim is located some 30 kilometers to the east of Karachi City Center and is seen as part of Karachi City.[198] The port has the advantage where land use zoning has allocated large tracts of land for industrial development. Unlike the Port of Karachi which faces traffic congestion and encroaching expansion of Karachi City, Port Qasim can benefit from the industrial production capacity of surrounding industrial areas, and road and rail connectivity to access manufacturing plants situated in these industrial estates.

549. Road connectivity of Port Qasim is mainly through Qasim Port Road). The road connects the port to the N5 National Highway. Through the national highway, containers can be moved to Karachi City, including the Port of Karachi, as well as to the upcountry regions via Hyderabad. The Eastern Bypass also connects Port Qasim to the M9 Motorway, which is linked to the N55 National Highway. The national highway can be used to reach Peshawar and Torkham at the Pakistan–Afghanistan border.

550. As for rail connectivity, Port Qasim has off-dock rail access which is connected to the main railway network. Containers can be transferred from the berth to the container yard, and onto railway wagons within

198 Source: Urban Resource Center (n.d.). *Karachi All Districts Map URC*. Available online at: https://urckarachi.org/2020/12/15/karachi-all-districts-map/.

the port. The port is also located less than 20 kilometers by railway distance from the Pipri Marshalling Yard. The railway network around the port concurrently serves various industrial zones as well as Pakistan Steel. Through the railway network, containers from Port Qasim can be moved to Karachi, which is located to the west of the port, or to the upcountry region. Some 5–10% of containers handled by QICT go by rail each year.[199] Most of these containers are sent to the Lahore area. For Port Qasim, the total number of containers that are moved by rail annually can reach about 150,000 TEUs.

Figure 149: Qasim Port Road

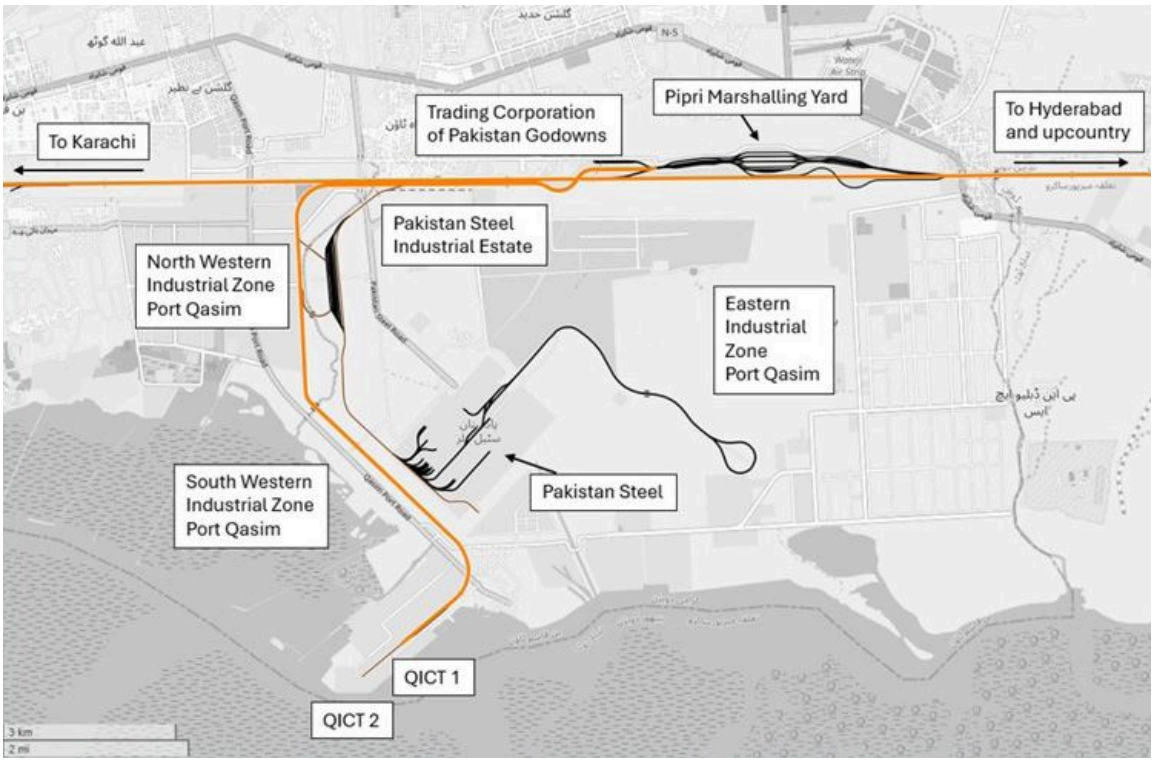


Source: Field visit.

551. To generate sustainable containerized cargo for the port, the master plan of Port Qasim Authority allocated 15,474 acres of land (about 2,215 hectares) for the creation of the largest industrial zone in Pakistan.[200] There are more than 400 industrial and commercial units in operation. Industries can enjoy proximity of port which allows easy access to importations of raw materials as well as facilitating exports of manufactures or semimanufactures to help address the trade imbalance of Pakistan.

199 Source: Interview held with Qasim Port Authority and DP World Karachi on 4 October 2024.
200 Source: Port Qasim Authority (n.d.). *Introduction*. Available online at: https://www.pqa.gov.pk/en/about-us/introduction.

Figure 150: Railway Connectivity for Port Qasim



Source: Using information including OpenRailwayMap.

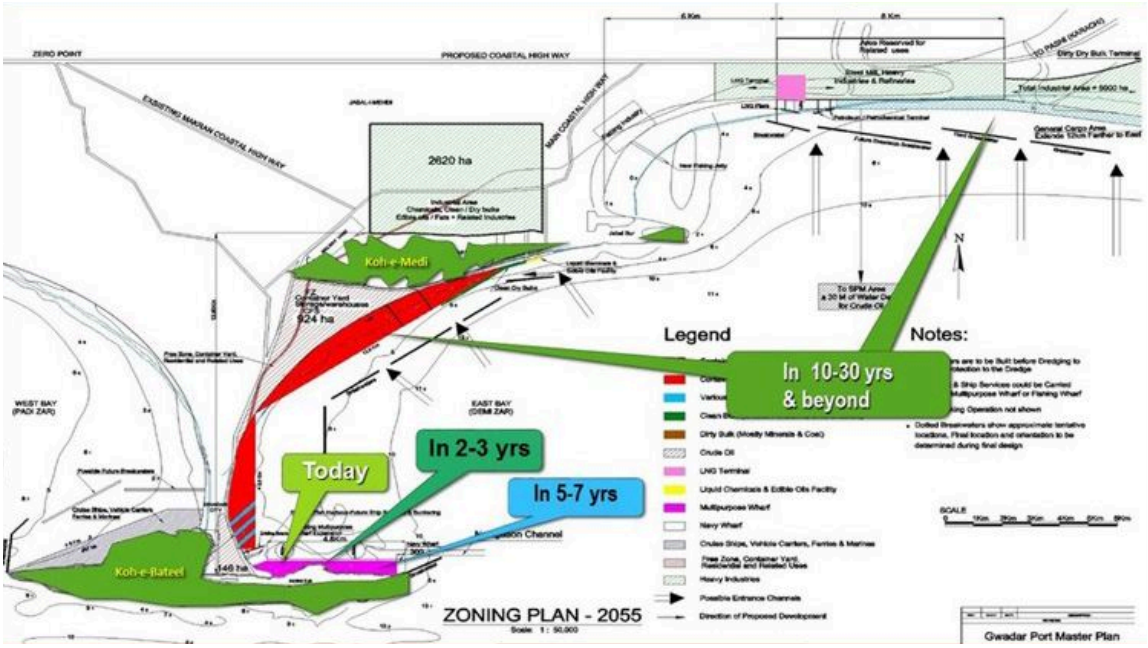
Figure 151: Berth of Port Qasim



Source: GLOBALink (2023). "Gwadar port under CPEC transformed from old wharf to modern port". *New China TV*, 13 October. Available online at: https://www.youtube.com/watch?app=desktop&v=2Hq_LBbToJ4.

552. There are three main industrial zones around Port Qasim. The Northwestern Industrial Zone is located closest to Karachi City and is well-served by Qasim Port Road which connects to N5 National Highway. Qasim Port Road also connects to the Mehran Highway, which is linked directly to industrial areas in Korangi and Landhi. The Mehran Highway connects to the Main Korangi Road and Sunset Boulevard Road where truckers use to transport cargo between Port Qasim and Karachi. The smallest of the industrial zones is the South Western Industrial Zone. It also is located closest to the port. Many of the entities that are operating in the zone are cargo-handling companies with direct access to the sea. The largest of the industrial areas is the Eastern Industrial Zone. Major companies found in the Port Qasim industrial zones include Procter & Gamble, Agility, Indus Motor Company, Lotte, Total Atlas, National Foods, Nestle, Engro Asahi, Astro Plastic, Agha Steel and Master Motors among others.[201]

Figure 152: Master Plan of Gwadar Port Development to 2055



Source: Gwadar Port Authority (n.d.). *Gwadar Port Master Plan*. Available online at: https://gwadarport.gov.pk/masterplan.aspx.

553. The bulk of container traffic in Pakistan is handled by the ports of Karachi and Qasim. However, the Port of Karachi is seen to face significant physical limitations for road access while Port Qasim is situated at an upstream location that is more than 40 kilometers from the open sea. As such, Gwadar Port is envisioned to become the third deep-sea port for the country.[202] Container-handling operations at Gwadar Port are conducted by China Overseas Ports Holding Company (COPHC) who has a concession to operate Gwadar Port and Gwadar free Zone for 40 years, lasting until 2053.[203] COPHC is headquartered in Hong Kong SAR. The company has three subsidiaries to fulfil its concession obligations in Gwadar. These are Gwadar International Terminals Ltd, Gwadar Marine Services Ltd, and Gwadar Free Zone Company Ltd.

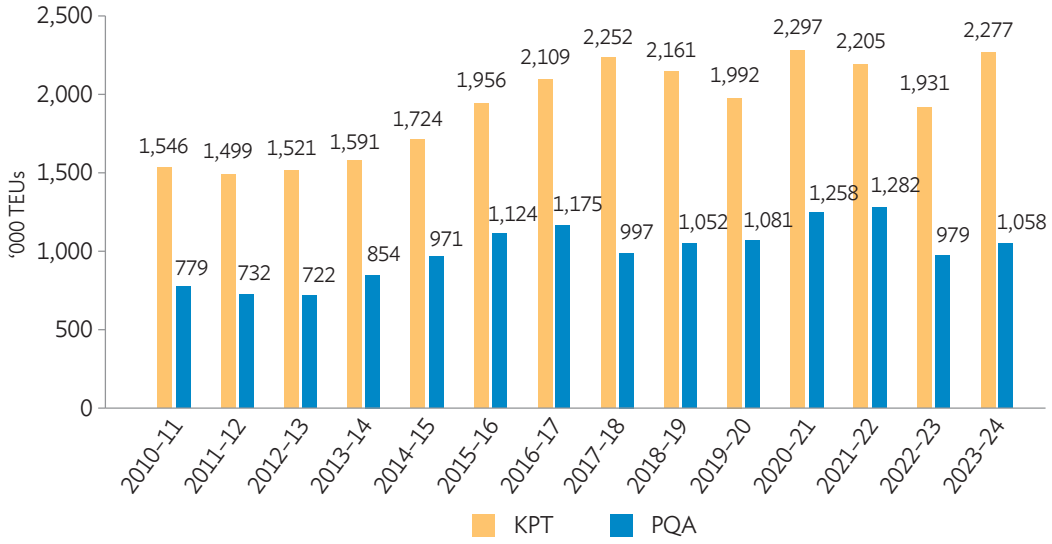
201 Source: Port Qasim Authority (n.d.). *Major Industries*. Available online at: https://www.pqa.gov.pk/en/industrial-zone/industrial-complex.
202 Source: Gwadar Port Authority (n.d.). *About Gwadar Port*. Available online at: https://gwadarport.gov.pk/aboutport.aspx.
203 Source: China Overseas Ports Holding Company Pakistan (n.d.). *About Us*. Available online at: https://www.cophcgwadar.com/about.aspx.

554. The port comprises three multipurpose berths with a berth length of 600 meters. Container-handling capacity of these berths is put at 137,000 TEUs per year.[204] Design handling capacities for general cargo and bulk cargo are 304,000 tons and 564,000 tons per year respectively. In 2024, the federal government is mandating that 60% of wheat, fertilizer and sugar imports be routed through Gwadar Port.[205] The facility can handle vessels with maximum draft of 12.5 meters. There is also a container stacking area of 4.9 hectares with 400 reefer points. The port offers the shortest route for countries in Central Asia. Located on the Arabian Sea that faces the entrance to the Arabian Gulf region also allows the port to serve as a transshipment for the Middle East. As such, Gwadar Port has the potential to become a transit hub for container trade for these regions. A free zone planned for the port is also meant to host indigenous manufacturing activities where a substantial portion would be aimed at the export market. In the masterplan for Gwadar Port, it is envisioned for the port to host several other port and shipping-related activities. With reference to **Figure 153**, planned facilities include those that cater to containers, general cargo, crude oil, bulk cargo, LNG and LPG shipments. There will also be an area allocated for cruise ships and marinas. In total, the masterplan for Gwadar Port has planned for more than 20 kilometers of quay line.

15.3. Container-handling Performance

555. Containers are handled mostly at the ports of Karachi and Qasim. The two ports handled 3.3 million TEUs of containers in 2023–24.[206] Very few containers are handled at Gwadar Port. The port processed only 1,162 TEUs of containers in the first half of 2023.[207] The Port of Karachi handled 2.3 million TEUs of containers in 2023–24 on a growth of 17.9% from 1.9 million TEUs in 2022–23. The Port of Karachi would be ranked as the 83rd busiest container port in the world for 2023 by volume of containers handled.[208] This would

Figure 153: Container Throughput for the Ports of Karachi and Qasim



Source: Using information from Karachi Port Trust and Port Qasim.

204 Source: Ministry of Ports and Shipping and Gwadar Port Authority (2015). "A Presentation to Parliamentary Committee on CPEC". *National Assembly of Pakistan*. Available online at: https://www.na.gov.pk/cpec/sites/default/files/presentations/Parliamentary%20Committee%20on%20CPECNew.pdf.

205 Source: Profit (2024). "Govt mandates 60% of public sector imports through Gwadar Port". September 30. Available online at: https://profit.pakistantoday.com.pk/2024/09/30/govt-mandates-60-of-public-sector-imports-through-gwadar-port/.

206 Source: Interviews held with Karachi Port Trust on 3 October 2024 and with Qasim Port Authority on 4 October 2024.

207 Source: Wu, S. (2023). "Gwadar being the future trade hub of Pakistan: report". *Chine Economic Net*. Available online at: http://en.ce.cn/Insight/202310/12/t20231012_38747315.shtml.

208 Source: Lloyd's List (2024). *Lloyd's List One Hundred Ports 2024*. Available online at: https://www.lloydslist.com/one-hundred-container-ports-2024.

Figure 154: Container Yard in KGTL



Source: Field visit.

Figure 155: Container Yard in SAPT



Source: Field visit.

be an improvement of 10 positions from the 93rd position in 2022.[209] In terms of Container Port Performance Index (CPPI), which is based on the time containerships spent in port, the Port of Karachi also saw its ranking rise from the 84th position for 2022[210] to the 61st position in 2023.[211]

209 Source: Lloyd's List (2023). *Lloyd's List One Hundred Ports 2023*. Available online at: https://www.lloydslist.com/one-hundred-container-ports-2023.

210 Source: World Bank Group (2023). "The Container Port Performance Index 2022: A Comparable Assessment of Performance based on Vessel Time in Port". Transport Global Practice. Available online at: https://documents1.worldbank.org/curated/en/099051723134019182/pdf/P1758330d05f3607f09690076fedcf4e71a.pdf.

211 Source: World Bank Group (2024). "The Container Port Performance Index 2023: A Comparable Assessment of Performance based on Vessel Time in Port". Open Knowledge Repository. Available online at: https://documents1.worldbank.org/curated/en/099051723134019182/pdf/P1758330d05f3607f09690076fedcf4e71a.pdf.

Figure 156: Container-handling at Port Qasim



Source: Field visit.

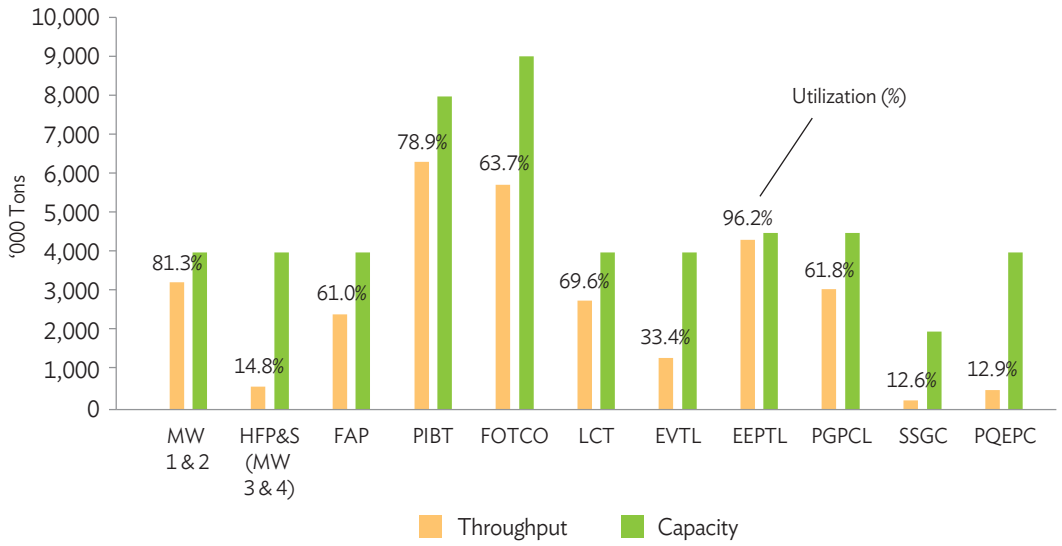
556. With the design capacity for container-handling at 4.65 million TEUs, capacity utilization for the port is at 48.8%. However, there are significant differences observed between the three container terminals in the port. For KICT, which achieved a container throughput of 681.000 TEUs for 2023–24,[212] the design capacity of 750,000 TEUs per year would put capacity utilization for the container terminal at 90.8%. For KGTL which has a design capacity of 800,000 TEUs per year, the container terminal handling 415,000 TEUs for the same period would put its capacity utilization considerably lower at 51.9%. For the case of SAPT, which has a design capacity of 3.1 million TEUs, the container terminal handling 1.2 million TEUs in 2023–24 would put capacity utilization even lower at only 37.8%.

557. SAPT remains the largest container terminal by container throughput. The container terminal revealed that 40% of its containers are for Karachi, 40% for the upcountry, 10% for Central Asia, and 10% for Baluchistan and Sindh provinces.[213] For the upcountry containers, 90% of these are transported by trucks. Only 10% of the containers go by rail and these are mostly sent to Lahore and Faisalabad.

558. For Port Qasim, the container terminal QICT handled 1.1 million TEUs of containers in 2023–24 on a growth of 8.1% from 979,000 TEUs in 2022–23. Based on the latest CPPI for 2023, the port was ranked in the 146th position. Based on this throughput and design capacity for container-handling at 2.025 million TEUs, capacity utilization of QICT is at 52.2%, which is slightly higher than the utilization level of Karachi Port. The figure shows a variation in capacity utilization, ranging from 12.6% for Sui Southern Gas Company (SSGC)

212 Source: Karachi Port Trust (n.d.). *Port Statistics*. Available online at: https://kpt.gov.pk/pages/21/port-statistics.
213 Source: Interview held with South Asia Pakistan Terminals on 4 October 2024.

Figure 157: Capacity Utilization for Cargo-handling Facilities at Port Qasim

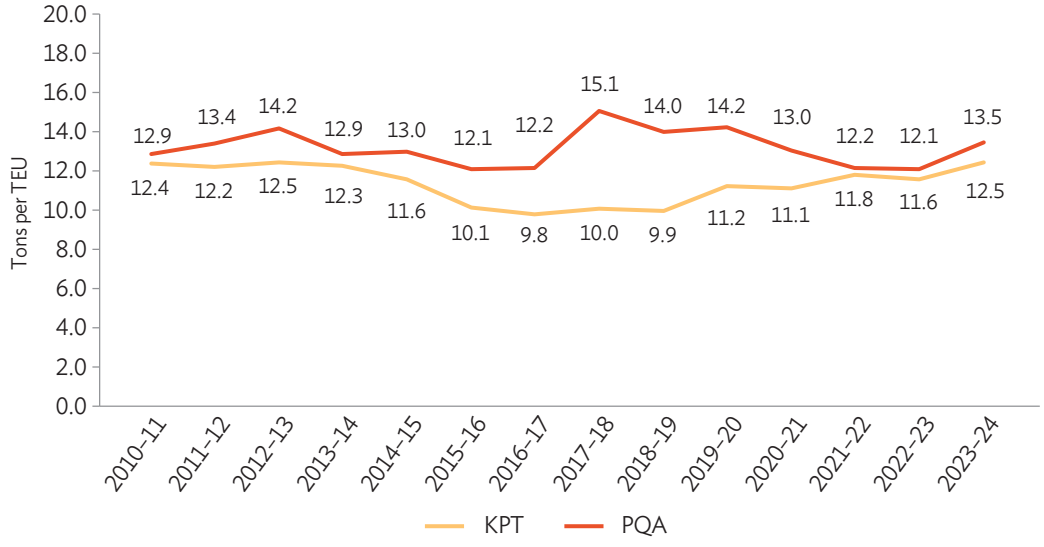


Source: Using information from Port Qasim.

and 12.9% for Port Qasim Electric Power Company (PQEPC) Coal Terminal to as high as 81.3% of Marginal Wharf 1 and 2 and even 96.2% for Engro Energy Pakistan Terminal Limited (EEPTL) LNG Terminal.

559. The Port of Karachi experienced a rising trend for container throughput until around 2017–18 when the subsequent period saw volumes fluctuating between 1.9 and 2.3 million TEUs. The same pattern for container handling can be seen in Port Qasim when containers experienced a rising trend until around 2016–17, whence the numbers fluctuated around 1.0 to 1.3 million TEUs.

Figure 158: Tons per TEU of Container Handled at the Ports of Karachi and Qasim[a]



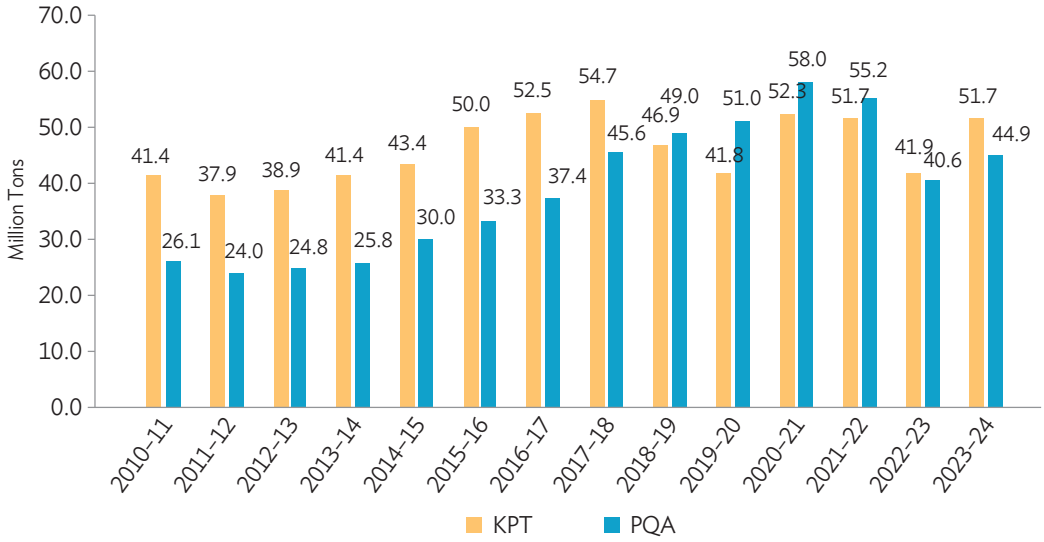
Source: Using information from Karachi Port Trust and Port Qasim.

[a] Figures for the Port of Karachi are estimated for the years 2016–17, 2017–18 and 2020–21 onwards.

560. The average weight of containers handled by Port Qasim is heavier than those processed by the Port of Karachi. For 2023–24, the average weight of containers handled by Port Qasim is 13.5 tons per TEU while the average weight of containers handled at the Port of Karachi is 12.5 tons per TEU. This is based on the figure of 14.2 million tons of containerized cargo handled by Port Qasim[214] and 28.4 million tons of containerized cargo handled by the Port of Karachi.[215]

561. Total cargo handled by the Port of Karachi for 2023–24 stood at 51.7 million tons. With a cargo-handling capacity of 125 million tons, capacity utilization of the port is at 41.3%. The figure shows the Port of Karachi to dominate port cargo handling for Pakistan for most of the years, except for the brief period of 2018–19 to 2021–22 where it lost the position to Port Qasim. The pattern of growth corresponds to the trend seen for container throughput. Specifically, cargo volumes rose to reach 54.7 million tons in 2017–18 and fluctuated between 41 and 52 million tons thereafter. The COVID-19 pandemic saw cargo throughput rising briefly above 50 million tons. While there was a sharp decline by 19.1% to 41.9 million tons in 2022–23, cargo volume recovered to reach 51.7 million tons in 2023–24 and helped the Port of Karachi to overtake volumes handled in Port Qasim once again.

Figure 159: Cargo Throughput for the Ports of Karachi and Qasim



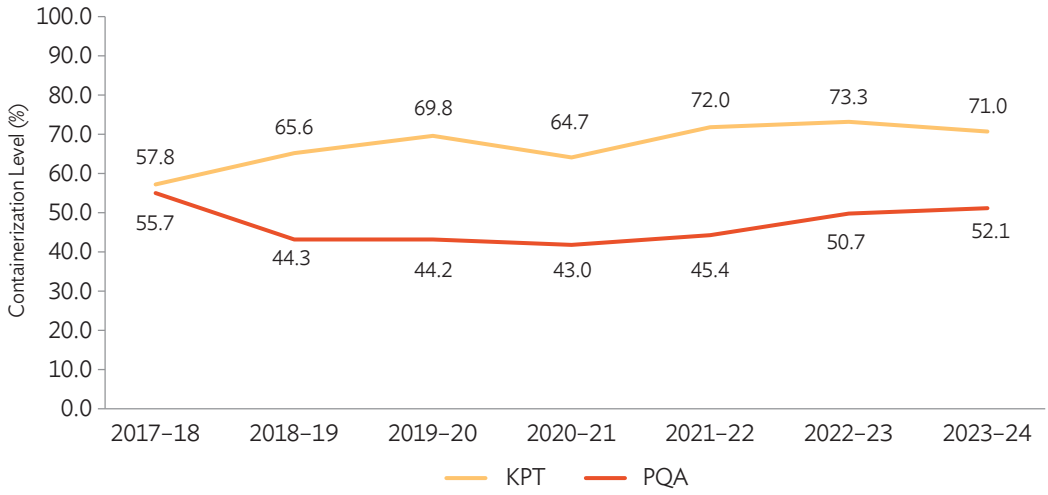
Source: Using information from Karachi Port Trust and Port Qasim.

562. Unlike the Port of Karachi, the governance structure of Port Qasim saw about 95% of its cargo-handling performed in the hands of the private sector. The trend of growth for the port also saw a steady rising pattern of expansion, reaching 58.0 million tons of cargo handled in 2020–21. The years of 2014–15 to 2017–18 were particularly significant where strong double-digit growth ranging from 11.0% in 2015–16 to 22.1% in 2017–18 enabled Port Qasim to overtake Karachi Port as the busiest maritime center in Pakistan in 2018–19. The port continued to see cargo volumes expand until 2020–21, where cargo throughput began to decline, reaching 44.9 million tons in 2023–24. As of 2023–24, with the design capacity for cargo-handling of Port Qasim at 89 million tons, capacity utilization is at 50.4%.

563. The calculation measures the tonnage of containerized cargo against total dry cargo handled by the port. The figure suggests a steady rise in the level of containerization for the Port of Karachi while the numbers for Port Qasim remained largely stable, generally hovering between 43% and 52% for the period after 2017–18.

214 Source: Interview held with Port Qasim Authority on 4 October 2024.
215 Containerized cargo tonnage for the Port of Karachi is estimated using the assumption of approximately 10% for share of non-containerized general cargo tonnage handled at the port.

Figure 160: Level of Containerization at the Ports of Karachi and Qasim[a]



[a] Figures for the Port of Karachi are estimated.
Source: Using information from Karachi Port Trust and Port Qasim.

For Port Qasim, the decline in level of containerization for the period 2018–19 to 2021–22 could be attributed to the increase in tonnage of dry bulk cargo handled at the port. The biggest contributor was coal handled by Pakistan International Bulk Terminal (PIBT) and Port Qasim Electric Power Company Private Limited (PQEPC). However, coal volumes declined thereafter. This enabled the share to rise for containerized cargo.

564. For the Port of Karachi, the port saw the level of containerization rise steadily from 57.8% in 2017–18 to reach 71.0% in 2023–24. This development could be attributed in part to the decline for liquid and dry bulk cargo handled by the port, and in part to the growth in containerized cargo handled for the same period. Liquid bulk cargo handled at the Port of Karachi fell from 15.5 million tons in 2017–18 to 11.5 million tons in 2023–24. Similarly, dry bulk cargo handled by the port also declined from 11.0 million tons in 2017–18 to 8.5 million tons in 2023–24. By comparison, the amount of containerized cargo handled by the Port of Karachi grew from less than 25 million tons in 2017–18 to reach almost 30 million tons in 2023–24. With the inauguration of SAPT and new investments in container-handling capacity by KGTL, the volume of containerized cargo is expected to grow further for the port, raising the level of containerization seen for KPT.

15.4. Regional Connectivity

565. Port of Karachi received calls from 27 shipping lines which operated 138 vessels in 26 regular shipping services. It is interesting to note that the top two shipping lines, which are CMA CGM and MSC, deployed almost the same number of vessel capacity to call at Karachi Port. CMA CGM deployed 19 vessels in 4 container shipping services which a total of 171,542 TEUs in vessel capacity, For MSC, the shipping line operated 2 services with 16 vessels which also totaled about the same amount of vessel capacity. As such, both shipping lines had a similar market share of 18.3% for shipping capacity that called at the Port of Karachi. Hapag-Lloyd and COSCO are ranked in the third and fourth positions with 14.9% and 12.6% of vessel capacity deployed. It is worth noting that COSCO was involved in eight container shipping services as many of these are operated in partnership with other shipping lines such as CMA CGM, Hapag-Lloyd, ONE, Evergreen, Emirates Shipping, Wan Hai, KMTC and X-Press Feeders. Together, the four largest shipping lines for the port are CMA CGM, MSC, Hapag-Lloyd and COSCO. These shipping lines account for 600,183 TEUs of vessel capacity or 64.0% of the market share.

Table 86: Estimated Capacity by Shipping Lines Calling at Karachi Port (as of March 2024)

Shipping Line	Services	Vessels	Vessel Capacity (TEUs)	% share
CMA CGM	4	19	171,542	18.3
MSC	2	16	171,345	18.3
Hapag-Lloyd	3	17	139,396	14.9
COSCO	8	16	117,900	12.6
X-Press Feeders	4	8	46,664	5.0
HMM	1	6	41,968	4.5
ONE	3	6	39,266	4.2
Evergreen	4	5	28,940	3.1
Maersk	1	4	23,594	2.5
KMTC	2	4	21,884	2.3
Others	8	37	135,764	14.5
Total	**26**	**138**	**938,263**	**100.0**

Source: Using information from various shipping lines.

566. The figure showed that many of the container shipping services are regional in nature. The strongest connectivity is for Karachi Port is with ports in India where there are 21 container shipping services with 126 vessels deployed. The largest shipping line operators for this trade are CMA CGM, MSC, Hapag-Lloyd and COSCO. This is followed by maritime connectivity to ports in Southeast Asia with Singapore and Port Klang in Malaysia being the most prominent. There are 14 shipping services providing connectivity between the Port of Karachi and ports in Southeast Asia with 86 vessels deployed. The biggest shipping lines are also MSC, CMA CGM, and COSCO.

567. The figure also shows the UAE to have good maritime connectivity with Karachi Port. There are 61 vessels deployed in 13 services that are operated by shipping lines, with the most active being Hapag-Lloyd, CMA CGM and COSCO. The most prominent port-of-call in the UAE being Jebel Ali. China came in as the fourth largest market that is connected to the Port of Karachi with 11 services and 72 vessels operating. Shipping lines MSC, CMA CGM and COSCO are the most active for this trade. In fact, all the 11 services also called at ports in Southeast Asia and India. The nature of these services are intra-Asia routes with the Port of Karachi generally serving as a turnaround port in South Asia before the services return to China. One of the China–South Asia service which is operated by MSC saw the largest containerships calling at the port. This is the MSC Shikra service that connects the ports of Qingdao, Shanghai, Ningbo and Shekou in China to Karachi, Colombo and Mundra in South Asia. The service saw deployment of the 19,462-TEU MSC *Anna*, which is the largest vessel to call at the port to date. SAPT is the container terminal which receives the containership. The service also double calls at Singapore which serves as a key transshipment hub for the headhaul and backhaul sailings.

568. Other regional markets that are connected to the Port of Karachi include Sri Lanka, South Korea, Kenya and Tanzania. Except for maritime connectivity to Colombo in Sri Lanka, there are fewer container shipping services operating on these trade routes. The Port of Karachi is also connected to ports in North Europe and the Mediterranean regions. Ports-of-call in North Europe include Rotterdam, Antwerp, Hamburg, Bremerhaven, Southampton, Dunkirk and Le Harve, while ports-of-call in the Mediterranean region include Valencia, Algeciras and Barcelona in Spain, Piraeus in Greece, Gioia Tauro and Genoa in Italy, Marsaxlokk in Malta, Fos in France, and Damietta and Alexandria in Egypt.

569. The Port of Karachi and Port Qasim seem to view each other as competitors. From the perspective of maritime access, the Port of Karachi has an advantage compared to Port Qasim. Vessels using Karachi

Figure 161: MSC Anna (IMO 9777204)



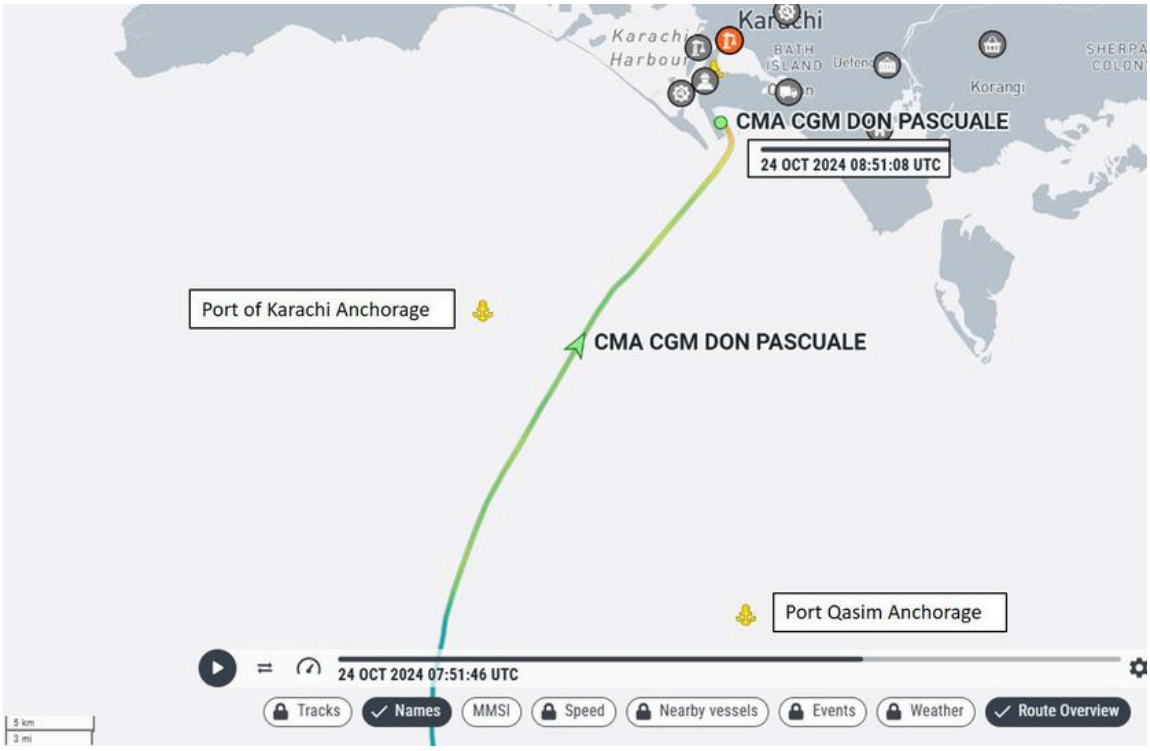
Source: Vessel Tracking (2024). "MSC Anna (IMO 9777204) – Container Ship". Available online at: https://www.vesseltracking.net/ship/9777204.

Port requires sailing time of about one hour to reach the berth from the anchorage. This is especially with the availability of SAPT, which offers the shortest distance from the main sailing route compared to other container terminals in Karachi Port and Port Qasim. Based on the sailing time stamp received from the vessel on 24 October 2024, it took about an hour for the vessel to reach the container terminal from the anchorage area. Development of berths with draft alongside reaching 16 meters will allow the Port of Karachi to handle some of the largest containerships currently in service at full container loads. Comparable terminal efficiency improvements achieved in land-side operations and near-port hinterland connectivity will add to the attraction of the port to the international shipping community.

570. The profile of shipping lines calling at Port Qasim is given in **Table 87**. The port received calls from 8 shipping lines which operated 84 vessels in 11 regular shipping services. These vessels totaled more than 600,000 TEUs in vessel capacity. The shipping MSC alone accounted for 260,303 TEUs or 43.4% of total vessel capacity that the port receives. Altogether, MSC has 31 vessels deployed in 3 container shipping services that call at Port Qasim. Maersk and CMA CGM are also major customers of the port, with each shipping line operating 3 services that deployed more than 100,000 TEUs in vessel capacity. Hapag-Lloyd is ranked in fourth position with 2 shipping services with 9 vessels deployed, totaling 70,729 TEUs in vessel capacity. The four shipping lines account for almost 550,000 TEUs in vessel capacity or 91.3% of market share.

571. As with Karachi Port, the strongest maritime connectivity for Port Qasim is with India with 8 services and 73 vessels deployed. This is followed by shipping connections to the East Coast of the US with 4 shipping services operating 45 vessels, mainly by MSC and CMA CGM. These services turnaround in the port of Nhava Sheva in India or Colombo in Sri Lanka before returning to the US. There is also relatively good maritime connectivity between Port Qasim and the UAE through 5 services which deployed 39 vessels that call mainly at Jebel Ali in the country. Another port with good connectivity to Port Qasim is Colombo in Sri Lanka with 3 services and 32 vessels deployed. Port Qasim also have one service operated by CMA CGM that calls at China and another service operated by MSC that calls at North Europe. The MSC IPAK service that provides direct connection between North Europe and South Asia also operates the largest vessel, i.e., the 13,798-TEU MSC *Irene*, to call at Port Qasim. Other ports connected to Port Qasim also include Singapore, Port Klang and Laem Chabang of Thailand for Southeast Asia, and Dar Es Salaam of Tanzania and Mombasa of Kenya in East Africa.

Figure 162: Sailing Time for *CMA CGM Don Pascuale* (IMO 9318101) to Karachi Port



Source:Using information from MarineTraffic.com.

Table 87: Estimated Capacity by Shipping Lines Calling at Port Qasim (as of March 2024)

Shipping Line	Services	Vessels	Vessel Capacity (TEUs)	% share
MSC	3	31	260,303	43.4
Maersk	3	22	115,904	19.3
CMA CGM	3	13	101,032	16.8
Hapag-Lloyd	2	9	70,729	11.8
ONE	2	5	34,004	5.7
COSCO	2	2	11,760	2.0
X-Press Feeders	1	2	6,707	1.1
Total	**11**	**84**	**600,439**	**100.0**

Source: Using information from various shipping lines.

572. A key advantage held by Port Qasim is being situated at a closer distance to the N5 National Highway that connects to major consumption and production centers located upcountry. This includes the major cities of Lahore, Faisalabad, Multan, Hyderabad, Rawalpindi and Islamabad among others. Proximity to reach the M9 Motorway also affords ease of reaching Central Asia countries through the port. Nonetheless, the port is served by only one channel. A typical containership can take more than 2 hours to reach the container terminal in Port Qasim from its anchorage. The example given is the Hapag-Lloyd vessel *Torrente* (IMO 9447914). Nonetheless, there are plans to create a second channel to improve maritime access to the port with a view to accommodating more vessel traffic.

Figure 163: MSC Irene (IMO 9399040)



Source: Vessel Tracking (2024). "MSC Irene (IMO 9399040) – Container Ship". Available online at: https://www.vesseltracking.net/ship/9399040.

Figure 164: Sailing Time for *Torrente* (IMO 9447914) to Karachi Port

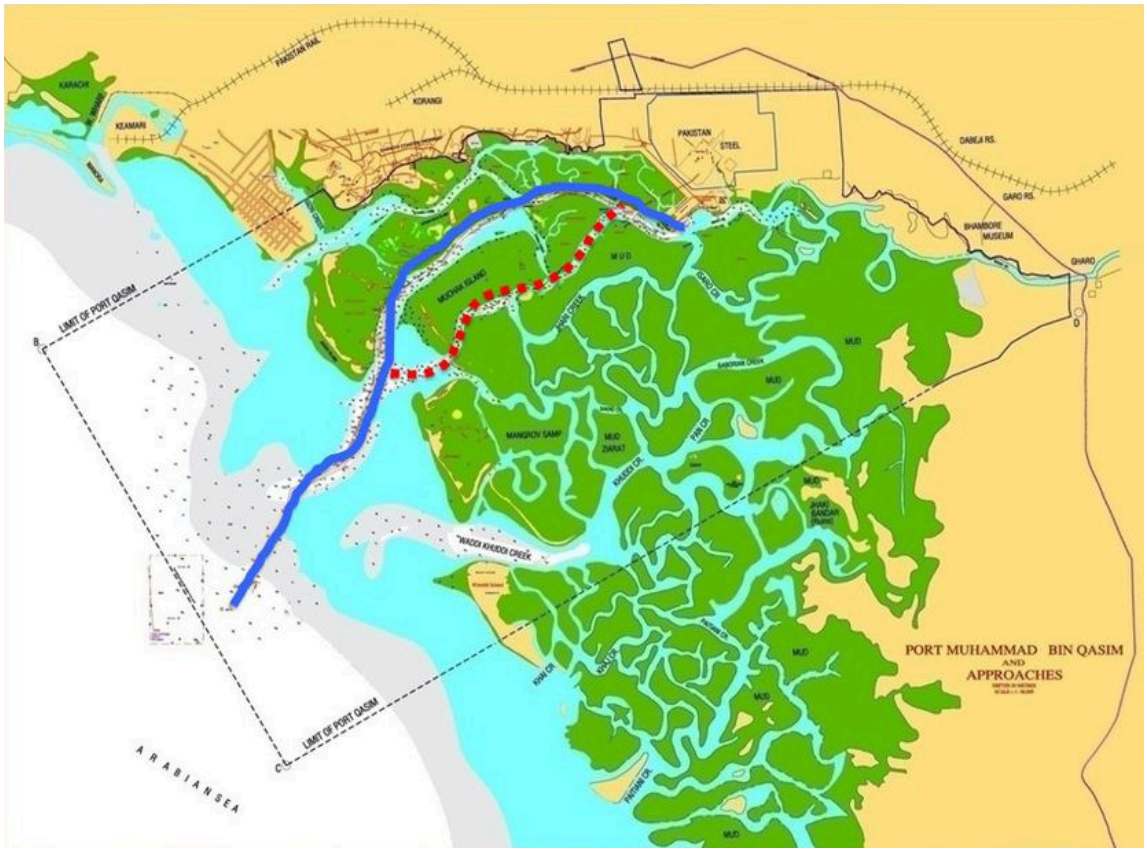


Source: Using information from MarineTraffic.com.

573. Maritime access is a key concern facing port performance and development prospects for Port Qasim. The port can be accessed day and night through a 49-kilometer long navigation channel which is marked by channel buoys for up to 13 meters draft vessels. The outer channel is 15.3 meters deep while the inner channel is 14.0 meters deep. Sailing time ranges from 2.5–3.0 hours for container vessels, 3.0–3.5 hours for tankers, and 3.5–4.0 hours for LNG vessels. Note that the channel is restricted to ship movements in a single direction

at any one time. Night movement accounts for approximately 10% of total vessel movements. Port Qasim began to allow night navigation in 2019.[216] In view of accommodating potential growth in imports and exports, this will help to alleviate congestion at the port. Port Qasim is planning to have a second navigation channel which is shown by the red dotted line. For this project, there will be a requirement to compensate for loss of mangrove habitat which can take 3–4 years to rehabilitate. Completion of the second channel is expected to bring a significant boost to the ship reception capability of the port.

Figure 165: Maritime Access for Port Qasim



Source: Port Qasim Authority.

574. Maintenance dredging of the channel is done around the year. Port Qasim is also undertaking capital dredging to straighten certain segments of the channel. The port has plans to deepen the navigation channel to be accessible under all weather conditions for vessels up to 14 meters draft. The cost is estimated at US$200 million.[217]

575. With regards to maritime access and port development for Port Qasim, it appears that some of the latest additions to the port are located to the east of QICT which is further upstream from the coast. For the longer-term development of the port, there should be consideration given to expansion in the direction of the sea, as was the case for SAPT for the Port of Karachi. As such, in view of capitalizing on deeper drafts and shortening sailing time to/from the anchorage, Port Qasim and relevant authorities should evaluate the possibility to take this course of port development which is towards the direction of the sea.

216 Source: Malik, M. (2019). "Port Qasim starts night navigation – Move to increase vessel berthing round the clock". *The Nation*, February 19. Available online at: https://nation.com.pk/19-Feb-2019/port-qasim-starts-night-navigation.
217 Source: Interview held earlier with Port Qasim Authority.

Figure 166: Capital Dredging to Straighten Parts of the Navigation Channel for Port Qasim



Source: Port Qasim Authority.

576. There is a shuttle service operated by COSCO which connects Gwadar Port to Jebel Ali. Known as the Karachi Gwadar Gulf Service (KGS), the vessel deployed in this service also calls at the Port of Karachi and Port Qasim.

Further Research and Intervention

16

16.1. Data Observatory for Containers Freight Traffic

577. Many CAREC members do not track container freight flows, but as containerized freight traffic increases, the importance of data and information becomes apparent. The estimation of containerization levels show that while container traffic on rail are available, container on road are absent in some CAREC members. Tracking these numbers are important to monitor the containerization levels and assess the state of transport, so that investment and initiatives can be directed at the right place.

578. Indicators such as the gross tonnage in containers on road and rail respectively can be listed as the key indicators, decomposed by direction of trade (import, export, transit or domestic). Further breakdown by BCPs is also useful so that bottlenecks can be identified. These performance indicators can be published on websites such as the CPMM portal.

16.2. Innovations in Container Technology

579. Most CAREC members are used to non-containerized shipping goods. Using containers is actually a relatively new experience, which requires understanding the product and the service, how to quote and evaluate the rates on such movements, how to use the correct documentation, and the right type of materials handling equipment. Businesses in the dry cargo business that use conventional wagons to ship bulk commodities, or logistics companies that handle transshipment, will need to install new equipment and implement new workflow to handle containers.

580. ADB and CAREC Institute can organize capacity building events and seminars to raise awareness on containerization. In particular, new technological innovations can be useful for shippers and logistics companies in CAREC region. Kazakhstan is experimenting the use of double stack container technology in selected routes in the country. Another example is the use of a rotainer, which is deployed at Port of Poti. The rotainer empties the contents when rotated by a standard harbor crane, making it ideal for transporting bulk commodities.

16.3. Development of National Containerization Strategy

581. Presently, Kazakhstan has conceptualized a national containerization strategy and investing in multimodal facilities at the ports and inland to support the movements of containerized freight. Other countries have not developed a national containerization strategy. Given that the role of containerization strategy is different in each country, it may not be useful for all the CAREC members to do so. The consultants opine that the following countries will benefit from one, or at least the consideration of containers in the national transport or transit strategy. They are Azerbaijan, Geogia, Kazakhstan, Pakistan, PRC and Turkmenistan.

Figure 167: A Rotainer in Use at Port of Poti



Source: APM Terminals Poti, Corporate Slide Deck 2023.

16.4. Collaboration

582. To minimize duplication of resources due to overlapping work, it is useful for international development partners to collaborate, share information and resources, and formulate joint actions tackling the same issues. The topic of CAREC Corridor 2 was analyzed in depth by virtually all the international organizations, as evident in the publications by World Bank, European Bank for Reconstruction and Development, Eurasian Development Bank, USAID and ADB.

583. This report has identified the issues that impede greater container adoption. For example, Zamiin-Uud requires extensive modernization to increase its capacity to handle incoming container freight traffic. Ironically, this BCP is also the topic of many research and publications. It is time to focus on getting tangible and concrete results, instead of commissioning more studies.

584. A final remark is given here to close the discussion. This report, being the first study focusing on containerized freight traffic in CAREC region, shows the rapid rise in the use of containers across CAREC. Nonetheless, the truth is that the fast growth rate is achieved due to a very small denominator. The current number of TEUs that pass through CAREC Corridor 2 for instance, is insignificant compared to the maritime routes or other alternatives. Containers is useful in cases when multimodal transport and logistics is required, but they are not a solution for all types of routes and products. Conventional transport on road and railway is still going to dominate freight traffic. Thus, policymakers must be judicious in prioritizing resources and attention. Having said that, the external events in the past few years have created a unique tailwind to capitalize on the rise in containerized shipments, which would be a wasted opportunity if nothing is taken to use that opportunity and improve the country's infrastructure, policies and information systems. Hopefully, this study can spark more dialogue and attention to the use of containers.

APPENDIX 1

List of Stakeholders Interviewed

Azerbaijan

No	Organization	Name	Title
1	ADY Express (Azerbaijan Railways CJSC)	Akbar Madati	CEO
2	ADY Express (Azerbaijan Railways CJSC)	Seymur Ismayil	Deputy Director
3	ADY Express (Azerbaijan Railways CJSC)	Yusif Ramazanov	Head of Commercial Department
4	Baku International Sea Trade Port	Azad Khurshudzada	Senior Specialist of General Cargo Terminal
5	Baku International Sea Trade Port	Eugene Sah	Chief Operating Officer
6	Baku International Sea Trade Port	Operations Specialist	Turkan Hasanli
7	Baku International Sea Trade Port	Program Manager	Gurban Karimbayli
8	Baku International Sea Trade Port	Siraj Talibov	Senior Specialist Port Control Room
9	Ministry of Digital Development and Transport	Head of Transport Policy Department	Fariz Aliyev

Georgia

No	Organization	Name	Title
1	APM Terminals	Ian Rawlinson	Chief Commercial Director
2	APM Terminals Poti	Nino Pataraia	Sales Representative
3	Association of Freight Forwarders of Georgia	Dr Zurab Shengelia	Secretary General
4	Batumi International Container Terminal LLC	Ketevan Oragvelidze	Marketing Manager
5	Georgian Railway	Mikheil Ukleba	Head of Business Development and International Relations Department
6	Georgian Railway	Paata Rukhaia	Head of Freight Transport Department
7	Georgian Railway	Inga Kvachantiradze	Deputy Head of Operations Department, GR Logistics & Terminals
8	Georgia International Road Carriers Association	Gia Tsipuria	President
9	Georgian Trans Expedition	Rauli Antadze	Director
10	Ministry of Economy and Sustainable Development	Aleksandra Suladze	Deputy Head, Transport and Logistics Development Policy Department
11	Transford Group	Vasil Maziashvii	CEO
12	USAID CAREC Corridor 2 Transportation and Logistics Program	Geoff Wright	Chief of Party
13	USAID CAREC Corridor 2 Transportation and Logistics Program	Rati Devadze	Cargo Transportation
14	USAID CAREC Corridor 2 Transportation and Logistics Program	Shalva Uraidmkopeli	Road Transport Advisor

Kazakhstan

No	Organization	Name	Title
1	JSC National Company Sea Port of Aktau	Abay Turikpenbayev	Chairman of the Board (President)
2	JSC National Company Sea Port of Aktau	Talgat Nagumanov	Leading Logistics Specialist
3	KTZ Express	Abdigali Suleimen	Marketing Department
4	Kuryk Port	Serik Akhmetov	General Director
5	Maksat K. Kalakparov	Vice Minister	Ministry of Transport
6	Robert Voetsch	Chief of Party	USAID Trade Central Asia

Kyrgyz Republic

No	Organization	Name	Title
1	Ministry of Transport and Communications	Elena Nalobina,	Head of International Relations Department
2	Ministry of Transport and Communications	Daniar Akbaruuly	Transport Department Specialist

Mongolia

No	Organization	Name	Title
1	Mongolian Customs General Administration (MCGA)	Davaasuren Bataa	Director of Customs Control and Clearance
2	Mongolian Railway	Batzorig Tuvshin	Chief Engineer
3	Mongolian Railway	Rentsenbyamba Damdinsuren	Head of Administration and Marketing Department
4	Mongolian Railway	Tsolmonbayar Ganlkhagva	Head of Transportation and Logistics Department
5	Monlogistics Group	Oyunbat Bold	Chief Financial Officer
6	Monlogistics Group	Tsogbayar Idertsogt	CEO
7	Prime Minister Office	Batbaatar Bayangerel	Advisor
8	Tuushin LLC	Enkhriimaa N.	Vice President
9	Ulaanbaatar Railway (UBTZ)	Batbold Ariunbold	Deputy Chair in charge of social issue
10	Ulaanbaatar Railway (UBTZ)	Gantumur Baldorj	Chairman, Zamiin-Uud Freight Transshipment Center

Pakistan

No	Organization	Name	Title
1	Federal Board of Revenue	Rizwan Mahmood	Secretary (Chairman's Strategy) Implementation Unit
2	Federal Board of Revenue	Wajid Ali	Director General, Transit Trade
3	Karachi Port Trust	Rear Admiral Rizwan Ahmad	S(IM), GM (Operations)
4	Karachi Port Trust	Ikram Ullah Khan	Secretary
5	Karachi Port Trust	Raghib-Ul- Khair	General Manager (P&D)
6	Karachi Port Trust	Azam Memon	Traffic Manager
7	Manzil Pakistan	Dr Manzoor H. Memon	Head of Research
8	Ministry of Communications	B.A. Nasir	Additional Secretary
9	Ministry of Communications	Shahbaz Latif Mirza	Director of Road Transport

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Appendix 1 *table continued*

No	Organization	Name	Title
10	Ministry of Maritime Affairs	Mian Aftab Ali Shah	Chief Finance and Accounts Officer
11	Ministry of Railways	Abdul Malik	Secretary Railway Board
12	Ministry of Railways	Syed Abil Kakakhel	Deputy Chief of Planning
13	Ministry of Railways	Syed Imtiaz Hussain Farooq	Director
14	National Logistics Corporation	Shoaib Ahmad Khan	General Manager, Project Logistics
15	Pakistan Intermodal Limited	Asad Rafi Chandna	Executive Director
16	Pakistan Intermodal Limited	Jawaid A. Siddiqui	Chief Operating Officer
17	Pakistan Single Window	Adnan Rafiq	Domain Officer
18	Pakistan Single Window	Faisal Hussain	Assistant Manager – Change Management
19	Pakistan Single Window	Naveed Abbas Memon	Chief Domain Officer
20	Port Qasim Authority	Shahid Ahmed	Director General, Operations
21	South Asia Pakistan Terminal Limited	Aziz Malik	Manager , Commercial
22	South Asia Pakistan Terminal Limited	Faraz Zuberi	Manager, Customer Service Center
23	South Asia Pakistan Terminal Limited	Zeeshan Ghani	Head of Commercial

People Republic of China (PRC)

No	Organization	Name	Title
1	Fengji International Supply Chain Management (Jiangsu) Company Limited	Liu Yue	General Manager
2	Jiangsu Jindao Supply Chain Management Company Limited	Wang Shuming	Chairman
3	Jiangsu Jindao Supply Chain Management Company Limited	Zhang Lukun	Assistant General Manager
4	Lianyungang Port Holdings Group Company Limited	Yin Zhenwei	Chief Economist
5	Lianyungang Port Holdings Group Company Limited	Zhu Jiang	Director of Container Business
6	LYG-PSA Container Termial Company Limited	Manager Assistant	Jun Chen
7	Qin Jiang Holdings	Xie Jiujiang	Chairman
8	Sinotrans Landbridge Transportation Company	Mark Xia	Deputy Branch Manager
9	Sinotrans Landbridge Transportation Company Limited	Chen Yunzhong	Union President
10	Sinotrans Landbridge Transportation Company Limited	Jimmy Zhang	General Manager Assistant
11	Sinotrans Landbridge Transportation Company Limited	Wang Jie	Deputy Branch Manager
12	Sinotrans Landbridge Transportation Company Limited	Xiao Faliang	General Manager
13	Tianjin Dongjiang International Train Operation Management Company Limited	Lv You	Deputy General Manager
14	Tianjin Dongjiang International Train Operation Management Company Limited	Wang Huan	General Manager
15	Tianjin Logistics Development Company Limited	Deng Changzhi	Deputy Manager

Tajikistan

No	Organization	Name	Title
1	Tajik Association of Road Transport Operators (ABBAT)	Siyovush Shokirov	Vice President
2	Sughd Oblast Administration	Sharifjon Akhmedov	Head, Main Department of Investment and State Property Management
3	Transport and Logistics Partnership Central Asia	Larisa Kislyakova	Chairperson, Central Asian Transport and Logistics Partnership

Turkmenistan

No	Organization	Name	Title
1	Turkmen Association of International Road Carriers (THADA)	Bekmurad Eyeberdiyev	Chairman
2	Turkmen Association of International Road Carriers (THADA)	Resul Artykov	Chief specialist, TIR Department

Uzbekistan

No	Organization	Name	Title
1	AG Mentors Group	Alisher Sharipov	Consultant, Logistic officer (former Chief specialist of Ministry of Transport of the Republic ofUzbekistan)

APPENDIX 2

Technical Note on Estimation of Containerization Levels

This estimation comprises of three steps,

- Step 1: Determine the gross freight tons on rail and rail
- Step 2: Estimate the freight tons in containers transported on road and rail, and sum the two values to obtain the total freight tons on road and rail that use containers
- Step 3: Divide the value in step 2 by the value in step 1 and express it in percentage

The values are selected from the year 2023, which is the most current complete year at the time of study.

The freight tons transported in containers on rail are well documented. This information are available publicly and even if it is not, the national railway company could provide this information. Estimating the freight tons in containers sent on road transport was challenging, because these information are mostly unavailable as the sector comprises of many individual companies, unlike railway where there is a single and centralized entity that keeps track of such data. In some countries where freight tons in containers on road transport are unavailable, the containerization levels are estimated based on rail sector alone.

A second indicator "Container terminal utilization" is used to estimate the utilization level of a port in handling containers. This uses the total TEUs handled by a port in 2023 and divided by the annual container capacity of the port. This indicator reveals if a port is over-utilized or under-utilized. It is an important indicator to decide on expansion plan.

$$\text{Containerization level (land)} = \frac{\text{total freight tons in containers on road and rail}}{\text{Gross freight tons on road and rail}} \times 100$$

$$\text{Container terminal utilization (port)} = \frac{\text{total TEUs handled by the port}}{\text{Annual container design capacity of the port}} \times 100$$

Azerbaijan

In 2023, total freight tonnage in Azerbaijan was 152.4 million tons (Road 134.2 million tons and rail 18.2 million tons). Freight transported in containers on road and rail accounted for 5.6 million tons. The containerization level for the country is estimated to be 3.67%.

Data source:
The State Statistical Committee, https://www.stat.gov.az/source/transport

Georgia

In 2023, total freight tonnage in Georgia was 28.9 million tons (Road 15.3 million tons and rail 13.6 million tons). Freight transported in containers accounted for 2.4 million tons, and rail accounted for 1.4 million tons, representing 15.69% and 10.29% containerization levels by transport modes. Therefore, the total freight tons in containers transported on road and rail was 3.8 million tons. The containerization level for the country is estimated to be 13.15%.

Data sources:
National Statistics Office of Georgia (https://www.geostat.ge/en),
Georgia International Road Carriers Association (GIRCA),
Georgia Railway Annual Report 2023, (https://cdn2.grmedia.com.ge/app/uploads/sites/5/2024/09/Annual-Report-_-2023.pdf)

Kazakhstan

In 2023, total freight tonnage in Kazakhstan was 714.8 million tons (road 299.9 million tons and rail 414.9 million tons). Total freight transported in containers accounted for 1.28 million TEUs or 18.7 million tons, representing 2.62% containerization level by these transport modes. Unfortunately, it is not possible to distinguish between containers transported by rail and road, only the total volume transported is available.

Data sources:
Bureau of National Statistics,
https://stat.gov.kz/en/industries/business-statistics/stat-transport/dynamic-tables/

Kyrgyz Republic

In 2023, total freight tonnage in Kyrgyz Republic was 50.6 million tons (road 41.2 million tons and rail 9.4 million tons). There was no information on the freight tons sent in containers on road or rail. The estimation on containerization level was based on CAREC report and could be outdated.

Data sources:
The road and rail freight tonnage in 2023 was obtained from the National Statistical Committee of the Kyrgyz Republic.
The 7.1% estimation of containerization on rail was based on ADB report "Situation of Railways in CAREC Countries", https://www.carecprogram.org/uploads/Situation-of-Railways-in-CAREC_8th_2022-9-19_WEB.pdf

Mongolia

In 2023, total freight tonnage in Mongolia was 102.2 million tons (road 69.9 million tons and rail 32.3 million tons). Freight transported in containers on rail accounted for 6.0 million tons, representing 18.7% containerization level. Freight transported in containers on road accounted for 151,395 tons, representing 0.2% containerization level. Total container tons moved on road and rail in 2023 was 6.15 million tons.

Data sources:
These data are not publicly available.
Rail data was obtained from Ulaanbaatar Railways (UBTZ)
Road data was obtained from Mongolian Customs General Administration (MCGA).
Both organizations were only able to record the number of laden TEUs and did not track the weight per container. Thus it is assumed that the payload of each TEU was 15 tons.

Pakistan

In 2023, total freight tonnage in Pakistan was 877.8 million tons (road 869.9 million tons and rail 7.9 million tons). Freight transported in containers was 502.2million tons (road 500.3 million tons and rail .86 million tons), representing 57.5% and 23.7% containerization level by transport modes. Containerization level for the country is estimated to be 57.2%

Data sources:
These data are not publicly available.
Rail data was obtained from the Ministry of Railways.
Road data was obtained from the National Transport Research Centre (NTRC).
The container data for road and rail were obtained from the Federal Board of Revenue (FBR).

People Republic of China (PRC)

In 2023, total freight tonnage in PRC was 5,005 million tons by rail. Total freight transported in containers on rail accounted for 791 million tons, representing 15.81% containerization level by rail only. Road transport was excluded from the estimation since the freight tons in containers on road was not available.

Data sources:
Road freight tons obtained from National Bureau of Statistics
(https://www.stats.gov.cn/english/PressRelease/202402/t20240228_1947918.html).
Rail freight tons and the containerized freight on railways are obtained from China Railway Container Transport Corp. Ltd.

Tajikistan

In 2023, total freight tonnage in Tajikistan was 120.6 million tons (road 114.1 million tons and rail 6.5 million tons). Freight transported in containers was 3.8 million tons (road 0.04 million tons and rail 0.21 million tons), representing 0.03% and 3.2% containerization level by transport modes. Containerization level for the country is estimated to be 0.2%.

Data sources:
Road and rail data obtained from Statistical Agency on Statistics under the President of the Republic of Tajikistan 2024, https://www.stat.tj/.
The data are reviewed and verified by Association of International Automobile Carriers of the Republic of Tajikistan (ABBAT)

Turkmenistan

In 2023, total freight tonnage in Turkmenistan was 523.5 million tons (road 498.9 million tons and rail 24.63 million tons). Total number of TEUs transported for first nine months in 2023 was 75507 TEUs. This is estimated to be 100,676 TEUs for full year 2023. Assuming 20 tons per TEU, the freight tons for container would be 2,013,520 tons or 0.2 million tons.

Data source:
Sustainable Development Goals, Turkmenistan. https://sdg.stat.gov.tm/en/indicator/9-1-2

Uzbekistan

In 2023, total freight tonnage in Uzbekistan was 48.5 million tons (rail only). Total number of TEUs transported for 2023 was 383,351 TEUs and 4,426,287 tons. The containerization level for the country is estimated to be 9.1%. The road freight tons for 2023 was not available. However, this is estimated from the Ministry of Investment, Industry and Trade which stated road transport accounted for 3 million tons in quarter 1 of 2023. By multiplying four quarters, the estimated total road tonnage was 12 million tons. The freight tons in containers on road transport was unavailable. As such, the freight tons for road transport was excluded from the estimation.

Data sources:
Rail data was obtained from Uzbekistan Railway, Uzbekistan Temir Yo'llari (UTY).
Road tonnage estimation was taken from Ministry of Investment, Industry and Trade, https://www.linkedin.com/posts/farkhodjon-israilov-66b363151_in-the-first-three-months-of-2024-activity-7200212692769378305--BLh.

Estimation of Containers Terminals Utilization by Countries (Ports)

The estimation of the container terminal utilization was obtained by collecting the port annual design capacity for containers (publicly available) and the container throughput (2023), which were not publicly available. The utilization rate was then calculated.

Countries	Ports	Source
Azerbaijan	Baku	Field mission, Baku International Sea Trade Port
Georgia	Batumi	Field mission, Batumi International Container Terminal
	Poti	Field mission, APM Terminals Poti
Kazakhstan	Aktau	Field mission, Joint Stock Company "National Company "Aktau Sea Trade Port"
	Kuryk	Field mission, Port Kuryk LLP
Pakistan	Karachi	Field mission, Karachi Port Trust
	Qasim	Field mission, Port Qasim Authority
PRC	Lianyungang	Field mission, Lianyungang Port Holding Group Co., Ltd
	Tianjin	Field mission, Tianjin Port (Group) Co. Limited

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