CAREC
Central Asia Regional Economic Cooperation Program

9th Railway Working Group Meeting

10–12 June 2025 • Bishkek, Kyrgyz Republic

9-е заседание Рабочей группы по железнодорожному транспорту

10–12 июня 2025 года • Бишкек, Кыргызская Республика

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Establishing block-train services: Study on Uzbekistan–Turkmenbashy Block Trains and Ferry Services

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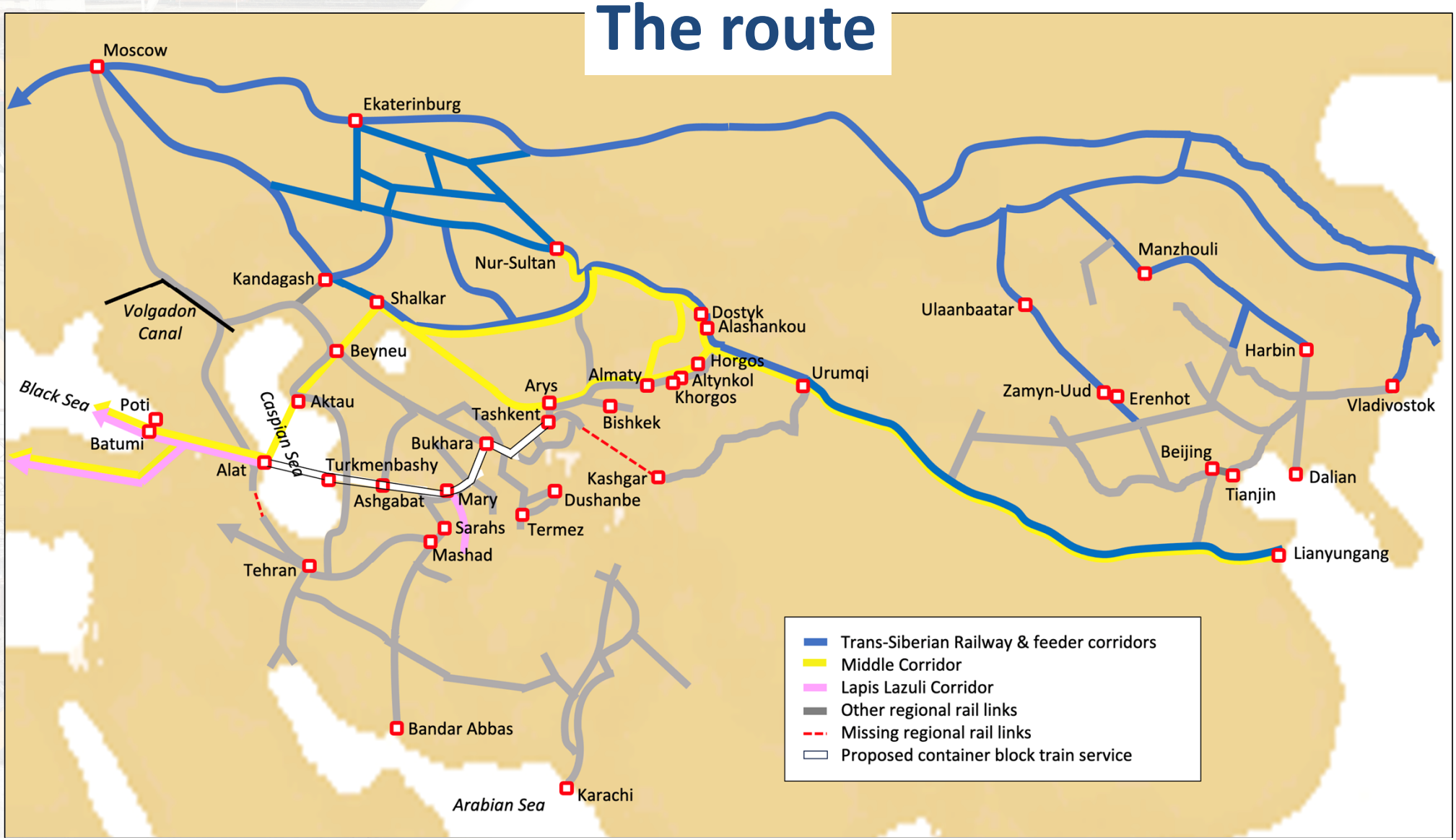
Outline

- Route
- Potential
- The proposed service
- Adequacy of infrastructure and facilities
- Investment needed
- Traffic studies
- Economic and financial analysis
- Next steps

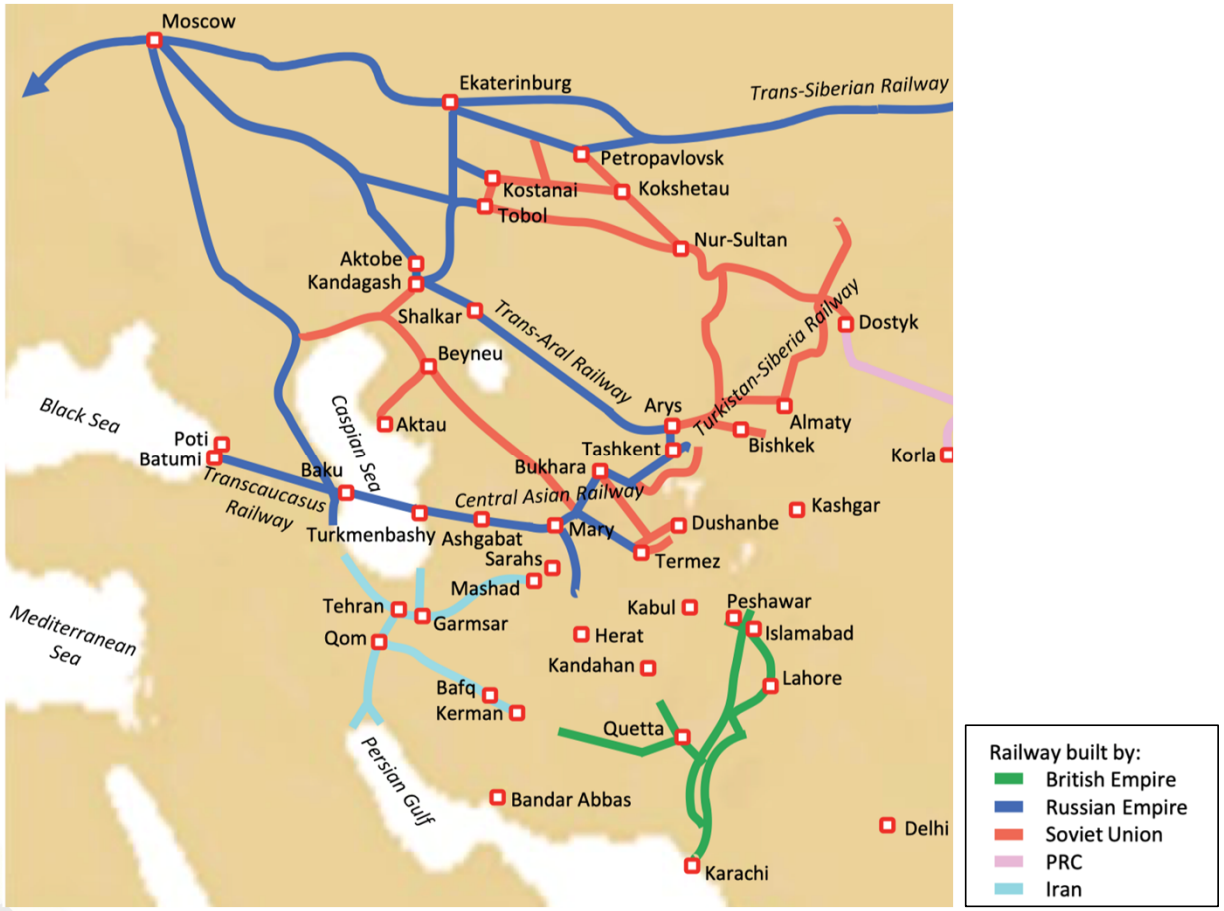
Background

- Central Asian Railway was once a major long-distance corridor between Tashkent, Bukhara, Mary, Ashgabat and Turkmenbashy
- Since 1991, the lines in Turkmenistan and Uzbekistan were rehabilitated
- Both countries want to expand trade and develop improved long-distance transport routes
- Present limitations for east–west container traffic due to limited capacity of Middle Corridor and problems using Trans Siberian Railway

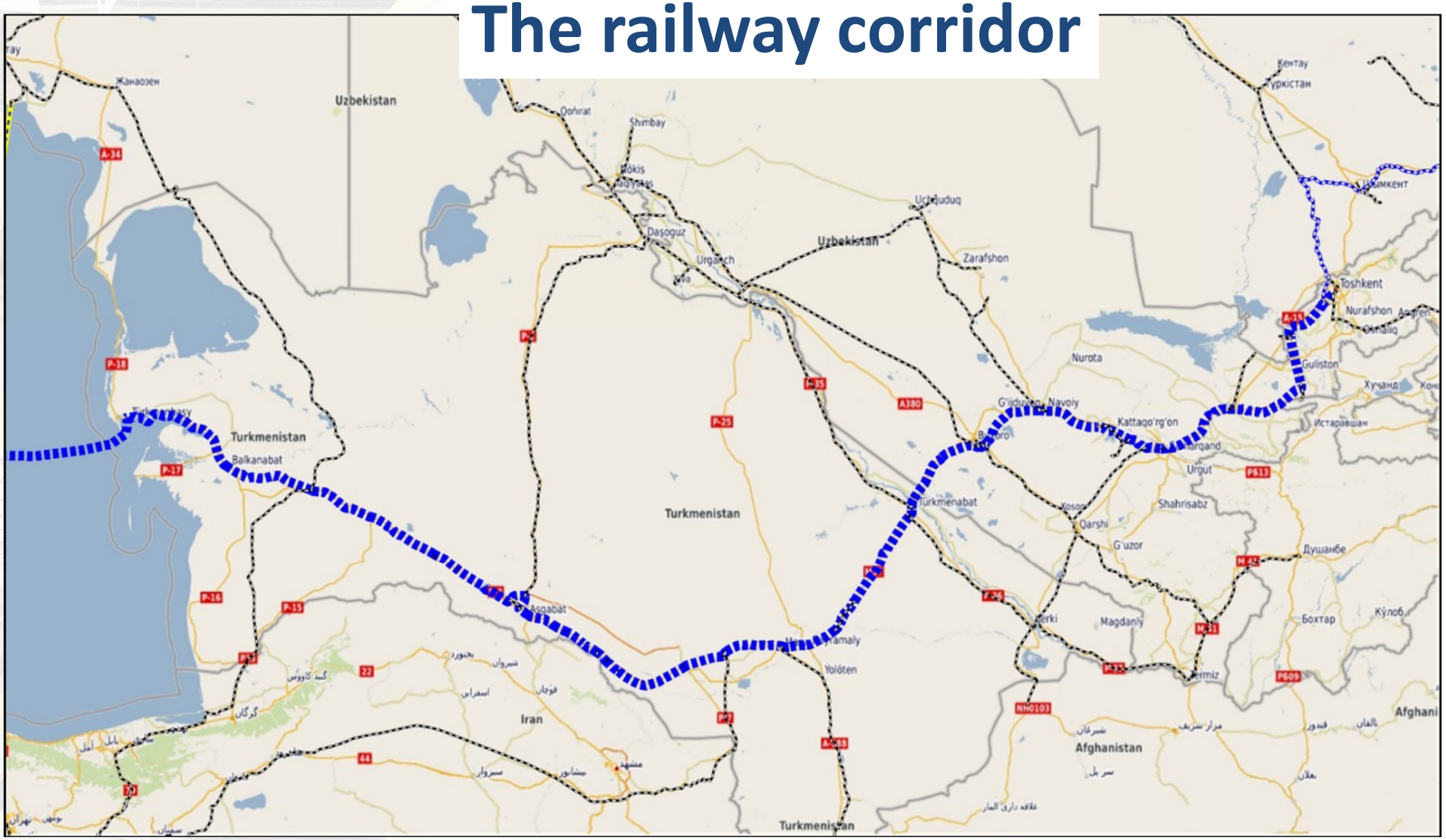
The route


Moscow
Ekaterinburg
Nur-Sultan
Kandagash
Shalkar
Volgadon Canal
Beyneu
Aktau
Black Sea
Poti
Batumi
Caspian Sea
Alat
Turkmenbashy
Ashgabat
Mary
Bukhara
Tashkent
Arys
Almaty
Dostyk
Alashankou
Horgos
Altynkol
Khorgos
Bishkek
Urumqi
Kashgar
Dushanbe
Termez
Sarahs
Mashad
Tehran
Bandar Abbas
Arabian Sea
Karachi
Ulaanbaatar
Manzhouli
Harbin
Zamyn-Uud
Erenhot
Vladivostok
Beijing
Tianjin
Dalian
Lianyungang
Trans-Siberian Railway & feeder corridors
Middle Corridor
Lapis Lazuli Corridor
Other regional rail links
Missing regional rail links
Proposed container block train service

Central Asia's Cross-border Railways, 1990



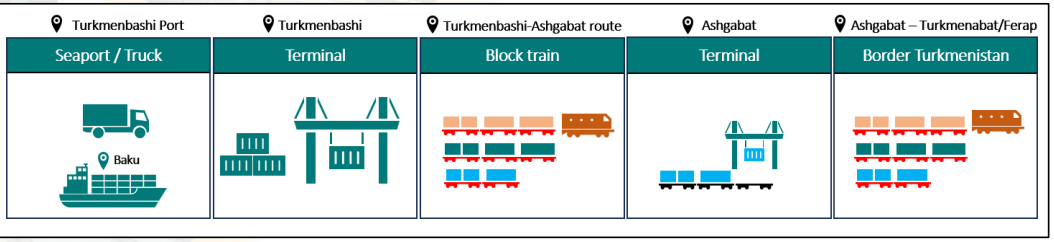
The railway corridor

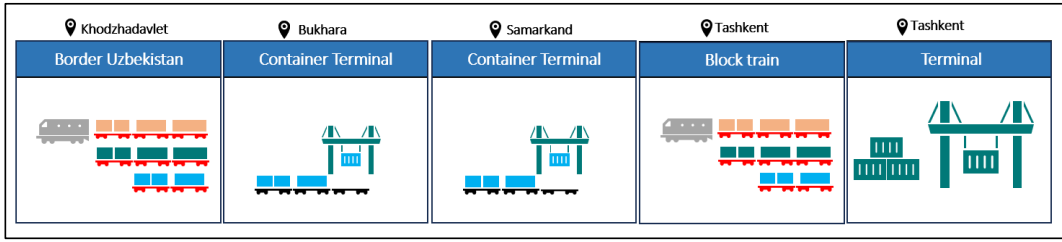


The potential

- Scheduled railway container block train service between Uzbekistan and Turkmenbashy port with onward shipping and rail to Europe.
- TRA and UTY have sufficient railway infrastructure and capacity to operate such services, and Turkmenbashy port offers high quality, high capacity port and shipping services
- There are many international examples of successful long-distance container block train services, including
  - Chongqing–Xinjiang–Duisburg (Yuxinou) service between PRC and Europe
  - Port of Hamburg Intermodal Network Europe
  - containerized railway freight services of Kazakh Railways
- Scheduled block trains are faster, more efficient and more reliable
- Container transport over long distances is profitable for railways
- CAREC railway model identified this project as likely to be feasible

The proposed service

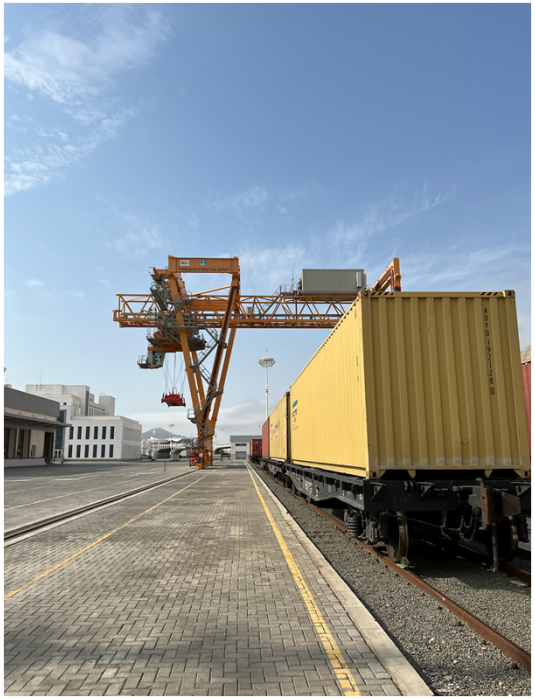


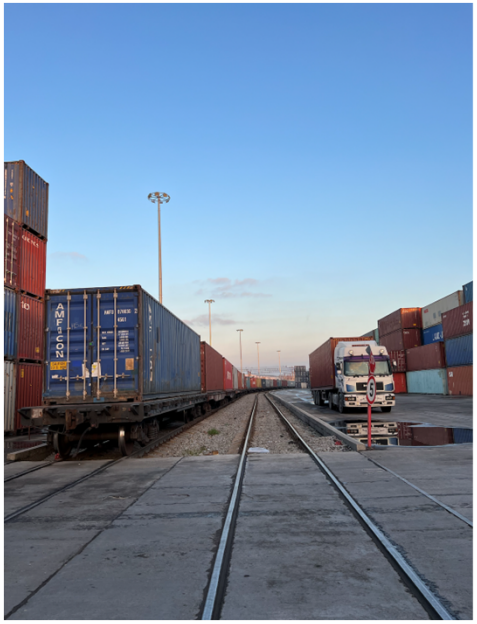


- **Multimodal service**
  - Rail: Tashkent–Bukhara–Ashgabat–Turkmenbashy
  - Shipping: Turkmenbashy–Alat
  - Rail or rail/shipping: Alat–Europe/Türkiye
- **Scheduled block trains**. Operated as continuous shuttles that retain their rolling stock, stopping only at large container terminals
- **Weekly service in each direction**. TRA and UTY to initially run one train set each, completing round trip within two weeks, with one weekly departure per direction

Service parameters

Transit time. Initially 4.5 days @ 1,150 km at av. speed of 30 kph
Depart Tashkent Friday 20h, arrive Turkmenbashy on Wednesday 10h
Depart Turkmenbashy Friday 20h local time, arrive Tashkent on Wednesday 10h
Maximum train length. About 700 m
Wagons. Dedicated wagon set unchanged during trip, then used for return trip. Each country to provide one dedicated wagon set e.g. 50 x 40-foot wagons or a lower number of 60-foot wagons
For operational flexibility, 10–15% of wagons stationed at each end of the trip
Locomotives. Follow operational rules of each country. In future, within each country block trains to be operated by a single locomotive rather than changing locomotive on route
Shunting. Except at Turkmenbashy, limited shunting operations needed at terminals with tracks less than full train-length.
Terminals. Efficient (direct) entry and exit from the mainline
Main line locomotive can directly move the train into the terminal and under the crane
Handling. Use reliable, safe equipment (gantry cranes, reach stackers)
Exchange advance information on containers to be moved—avoids waiting times at terminals
Border crossing. Minimize physical inspections at border, e.g. notify customs officials in advance, use x-ray scanners to inspect containers
Suspicious containers to be removed from block train using a mobile crane, allowing remainder of train to proceed without detention.





The existing railway facilities

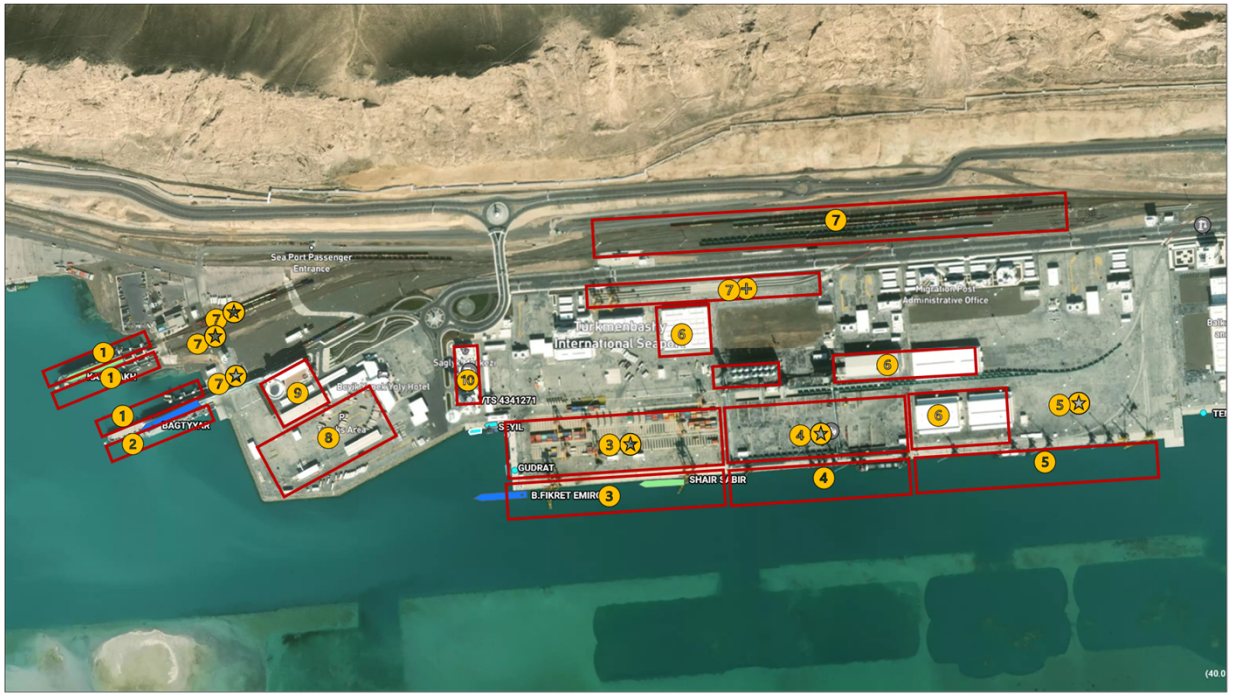
- Most of the railway infrastructure is in good condition, with enough capacity to introduce block train services immediately
- No investment needed in infrastructure and facilities in Uzbekistan
  - Tashkent–Bukhara already doubletracked, Khodzhadavlet–Bukhara is single track with enough capacity
  - adequate terminals and handling at Tashkent, Bukhara and Samarkand
- Turkmanbashy port has extensive modern facilities and equipment
- Need to upgrade congested single track sections and handling equipment in Turkmenistan
  - Need to equip Turkmenabat/Farap BCP to offload suspicious containers
  - Doubletracking needed at busy locations in future
  - Possible future electrification

Port facilities and shipping services

- Turkmenbashy International Seaport (TIS) is the dedicate facility for all non-petroleum bulk liquid products
- The port zone has a total area of 150 hectares with capacity to handle 17 million tonnes of freight per year including;
  - 300,000 passengers,
  - 75,000 trucks,
  - 400,000 containers,
  - 3 million tons of bulk and
  - 4 million tons of general cargo.
- Turkmenbashy port has a quay line of 1.8 km and is capable of simultaneously receiving 17 vessels of 5,000 max deadweight tons.
- The terminal area has covered warehouses with a total area of 90,000 square meters

Turkmenbashy port

- 1 - Rail Ferry Berth
- 2 - Roll on Roll off Truck berth
- 3 - Container berths
- 4 - Bulk terminal berths
- 5 - General cargo berths
- 6 - Bulk and general warehouses
- 7 - Rail marshalling yards
- 7+ - Rail spur to container yard
- 7* - Rail spurs to rail ferry berths
- 8 - Truck and vehicle terminal
- 9 - Immigration and passenger terminal
- 10 - Port administration and harbour control



Turkmenbashy shipping services

Vessel Type	Vessel Flag Arrivals 2023	Annual est. Vessel Arrivals 2023	Annual Est. Shipping Capacity Load Turkmenbashy 2023
Rail Ferry	AZE 100%	365	18,250 Rail Wagons 14,600 Road Trucks 36,500 Passengers
RoPax Ferry	TKM 90% AZE 10%	200	6,000 - Euro Trucks 16.5 m 7,800 - Trailers 13.5 m 12,000 Passengers
General Cargo Liner	TKM 50% AZE 28% RUS 22%	60 (ADY Containers) 420 Other nominal	9,870 TEU 72,600 TEU
Petroleum Tankers	TKM 62% AZE 25% KAZ 13%	770	4.24 million tonnes

Turkmenbashy shipping services

Service operator	Vessel type	Transit time (hours)	Frequency (days)[a]
Turkmenistan Merchant Fleet	2 x RoPax	17–23.5	4–5 days
Azerbaijan Caspian Shipping (ASCO)	4 x rail ferries	17–23.5	2 days
Azerbaijan Caspian Shipping (ASCO)	2 x RoPax	17–23.5	21–28 days
ADY Container/Turkmen Transport and Logistics Center	2 x container/ general cargo ships	26–36	7–14 days

Note 'a' Marine traffic subscription defining arrival/departure dates by vessel/voyage between Turkmenbashy and Alat
Sources: Marine Merchant Fleet 2024; ASCO 2024; Trend News Agency 2022.

Investments needed

Option	Description	TKM ($m)	UZB ($m)	Total ($m)
Option 1: Immediate start	Handling at Turkmanabat/ Farap	4		4
	1 x dedicated train set per country	7.5	7.5	15
	Subtotal	**11.5**	**7.5**	**19**
Option 2: Doubletrack congested locations	Ashgabat–Dushak (171 km)	305		305
	Dushak–Turkmenabat (416 km	609		609
	Turkmenbashy–Ashgabat (581 km)	850		850
	Subtotal	**1,764**		**1,764**
Option 3: Full improvement	Upgrading to doubletrack	1,764		1,764
	Civil structures	157		157
	Electrification	629		629
	Command control system	300		300
	Subtotal	**2,850**		**2,850**

Traffic modeling

- Traffic model was developed to forecast traffic over 20-year period
- Fare options considered:
  - high fare cost case assuming existing port and shipping costs and assuming railways would charge a 75% markup on costs;
  - medium fare cost case assuming the railway markup is reduced to 25%

- In 2030, both-directions containerized freight volume of 320,000 net tons is forecast for the medium fare cost and 280,000 net tons for the high fare cost case. Although forecast eastbound traffic would be roughly double westbound traffic, demand would substantially exceed service capacity in both directions by 2030
- Service frequency could be doubled to two trains per direction by 2030 for the medium fare cost option, and by 2033 for the high fare cost option

Economic and financial analysis

- Prefeasibility analysis examined immediate service introduction (Option 1) and considered both the medium and high fare cost cases. Findings depend substantially on the assumptions for costs and revenues
- In the **medium fare** cost case, the estimated **FIRR is 0.84%** and the **EIRR is 23.5%**
- In the **high fa**re cost case, the estimated **FIRR is 9.81%** and the estimated **EIRR is 16.7%**
- In the high fare cost case, the FIRR and EIRR both exceed discount rate (9%), so the project would earn revenues in excess of investment and operating costs, and produce net economic benefits for society.
- In the medium fare cost case, the net economic benefits for society would be even higher but the project would not be financially viable (as some traffic would be deterred by the higher fare) and would depend on public subsidies

Next steps

Begin by jointly introducing services on a pilot basis for 6–12 months operations:

- provide dedicated train sets and improved handling facilities at Turkmenabat/Farap
- introduce the service to the freight market and build up traffic
- establish technical and operational standards and protocols for railway services and related port and shipping services to ensure efficiency and meet the requirements of customers
- agree commercial aspects to ensure services are attractive to customers
- develop marketing and pricing strategies to optimize utilization and revenue generation
- establish operational coordination arrangements both between TRA and UTY, and with other key stakeholders including Turkmenbashy port, border agencies, shipping companies, freight terminals and private shippers and freight forwarders.

Upon successful conclusion of the pilot service, expand services in line with demand, both by operating additional trains and eventually by reducing service duration per direction from one week to half-a-week when Turkmenistan upgrades its mainline.

Thank you!