

CENTRAL ASIA REGIONAL ECONOMIC COOPERATION
TRADE FACILITATION

CARECCPMM CORRIDOR PERFORMANCE MEASUREMENT & MONITORING

ANNUAL REPORT

2015





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TRADE FACILITATION

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This report is based on trip samples submitted by national transport associations from CAREC member countries that include performance metrics on cargo transport in the region. Using Time-Cost-Distance methodology, the exercise focuses on measuring time and costs incurred in transporting various types of goods across Central Asia. The data are then aggregated to show the relative performance of each CAREC corridor.

For more information, log on to CAREC Federation of Carrier and Forwarder Association (CFCFA) website <http://cfcfa.net/> and visit the CPMM page on <http://cfcfa.net/cpmm/>. To learn more about the CPMM methodology, visit <http://www.adb.org/publications/carec-corridor-performance-measurement-and-monitoring-forward-looking-retrospective>.

NOTE

In this report, "\$" refers to US dollars.

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In preparing any country program or strategy, financing any project, or by making any designation of, or reference to, a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

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Abbreviations

ADB	–	Asian Development Bank
AFG	–	Afghanistan
APTTA	–	Afghanistan-Pakistan Transit Trade Agreement
ASYCUDA	–	Automated SYstem for CUstoms DAta
BCP	–	border crossing point
CAREC	–	Central Asia Regional Economic Cooperation
CBTA	–	Cross Border Transport Agreement
CFCFA	–	CAREC Federation of Carrier and Forwarder Associations
CIQ	–	China inspection and Quarantine services
CPMM	–	Corridor Performance Measurement and Monitoring
CV	–	coefficient of variation
ETA	–	Estimated Time of Arrival
EU	–	European Union
GAI	–	State Automobile Inspectorate
ICBC	–	International Centre for Border Cooperation
ISAF	–	International Security Assistance Force
KAZ	–	Kazakhstan
KDT	–	KedenTrans Service
KGZ	–	Kyrgyz Republic
kph	–	kilometer per hour
KTZ	–	Kazakhstan Temir Zholy
KZT	–	Kazakhstan Tenge
MON	–	Mongolia
PAK	–	Pakistan
PIFFA	–	Pakistan International Freight Forwarders Association
PRC	–	People’s Republic of China
RUS	–	Russia
SWD	–	Speed with delay
SWOD	–	Speed without delay
TAJ	–	Tajikistan
TAPI	–	Turkmenistan-Afghanistan-Pakistan-India
TCD	–	time-cost-distance
TEU	–	twenty-foot equivalent unit
TFI	–	Trade Facilitation Indicator
TIR	–	Transports Internationaux Routiers
TTFS	–	Transport and Trade Facilitation Strategy
UNCTAD	–	United Nations Conference on Trade and Development
US	–	United States
WEBOC	–	Web-Based One Customs system
XUAR	–	Xinjiang Uygur Autonomous Region

Executive Summary

In 2015, Corridor Performance Measurement and Monitoring (CPMM) program collected 2,784 data samples of commercial shipments across Central Asia, through the efforts of 12 national carrier and freight forwarder associations in 8 countries. The samples are comprised of road (75%) and rail (25%) data from across the six CAREC Corridors.

What are the causes of delays in the CAREC corridors? Where do delays occur and what can be done to address those problems? Answers to these questions are of great interest to both policy makers and the private sector operators. Central Asian countries need more assistance and persistent efforts to further integrate with the global trade systems and conform to international best practices in trade facilitation. CPMM data provide empirical evidence that goods transported along the CAREC corridors are not moving efficiently, with major delays occurring at the border crossing points (BCPs). An important message that this report also wishes to convey is that while there are given infrastructure needs, there are also notable policy and operational impediments that obstruct efficient movement of goods.

Trade Facilitation Indicators

TFI1 (Average Border Crossing Time) for road shortened to 9.3 hours, a 6% improvement year-on-year. Corridors 1, 4, 5 and 6 all showed reduced border crossing time. Notably, Corridor 4 reported the biggest time reduction, where average border crossing time at Erenhot dropped to 3.9 hours (74% reduction) and Zamyn Uud dropped to 3.7 hours (58% reduction), between 2014 and 2015. These improvements are attributed to shorter customs formalities at the border crossing points. Likewise, rail showed a positive result, where TFI1 shortened to 27.4 hours, a 16% improvement year on year. With the exception of Erenhot which reported a minor increase of 4%, the other three major rail stations reported a shorter average border crossing time, namely Alashankou (36%), Dostyk (29%) and Zamyn Uud (12%). The improvements were due to shorter 'Restriction Upon Entry' and 'Trans-Load at Gauge Change' activities, two typically time-consuming operations inside the railway terminal.

TFI2 (Average Border Crossing Cost) showed differing patterns between the two transport modes. While road declined by 16%, rail rose by 40%. The former was a result of closer collaboration between Mongolia and PRC customs administrations, where the average cost decreased by 43% year on year in 2015. On the other hand, rail experienced higher cost due to higher fees for transfer of carriage due to need to change railway gauge at Dostyk. The fee jumped from \$135 per container in 2014 to \$300 per container in 2015.

TFI3 (Total Transport Cost standardized over 500 km distance, carrying a load of 20 tons for a truck, or a 20" container for a train) is a sum of TFI2 and the non BCP cost. The latter refers to the vehicle operating cost for trucks, or the rail tariff rates for trains. Total cost for road declined by 1.3% from \$1,359 in 2014 to \$1,359 in 2015. Total cost for rail dropped more remarkably. The cost decreased from \$1,364 in 2014 to \$1,250 in 2015, a 8.3% improvement.

What is interesting yet worrisome is the road/rail cost ratio. Trucking usually has a higher cost base compared to rail. Yet when one computes the ratio of TFI3 using road divided by rail, the value is 1.07. This near parity value implies that there is no significant savings in using rail transport. This further implies either the road cost is unreasonably cheap or the rail cost is exorbitantly expensive. Readers who kept up with CPMM reports over the years would know that CPMM has detected surges in rail tariffs since 2013. **The several and significant tariff increases in Kazakhstan has raised the overall cost of rail shipment.** This was reported in CPMM Annual Report 2013 and 2014. (As a caveat, it is acknowledged that shippers select transport mode based on several factors. Besides pricing, the specifications of the product, availability of capacity and the reliability of service also influence the modal selection. In addition, road transport is more susceptible to unofficial payments, which increases the total shipment cost. For this reason, shippers still prefer rail transport particularly for long haul shipments).

TFI4 measures the speeds of the road and rail transport. Two measures are used. Speed without Delay (SWOD) captures the average speed when the vehicle is in motion. The second

measure is Speed with Delay (SWD) which captures the average speed when the vehicle is in motion AND stationary (i.e. stopped at border crossing). Essentially, comparisons of the two speeds allows one to estimate the impact of border crossing operations and other delays on the total travel time. The speeds revealed that both trucks and trains have the potential to move faster.

Corridor Performance

The first half of the annual report presents a summary of the cost and time it takes to transport goods across Central Asia. The second half presents more detailed data about each CAREC corridor and describes the issues along each route, paying attention to specific BCPs that are deemed more “problematic”.

Rail transport has improved recently. Trains can now pass through Khorgos-Altynkol (PRC-KAZ). Express trains now run regularly between Chongqing and Duisburg, completing in 14-16 days per way. Unfortunately, data still point to long border crossing time at key BCPs, as well as high cost. For example, the average border crossing cost (TFI3) at Dostyk rose from \$235 in 2014 to \$432 in 2015 and average border crossing time had a mean of 42 hours. The important message here is that while Corridor 1 has immense transit potential, current inefficiencies can hamper its fulfillment.

Corridor 1 continues to facilitate faster speed for trucks. Delivery trucks can go beyond 50 kph on well paved roads, but averaged 30 to 40 kph. Khorgos, known as a cumbersome BCP to pass, has its average border crossing time reduced 45% to 10.6 hours in 2015. The need to trans-load cargoes, lengthy customs inspection time and waiting in queue are still encountered by drivers.

With the fertile Fergana Valley at the heart of Corridor 2, this route can serve as an ‘agriculture’ corridor moving fresh

produce to various regional markets. Trucks moved relatively fast at 50 kph. The problem lies at Alat-Farap (UAB-TKM) and Dautota-Tazhen (UZB-KAZ) BCPs where border crossing can be cumbersome. Due to the long waiting time in queue, a driver typically has to spend 6-7 hours to complete border crossing at one side. Here, regulatory and procedural improvement, such as adoption of Authorized Economic Operators program and improved risk management techniques, could greatly contribute to improving the flow of products.

Corridor 3 is also an active corridor. Interestingly, it has been observed that significant impediments to smooth flow of cargoes may be due not only to lack of improvements in infrastructure but mostly due to policies and regulations imposed at the borders. For instance, the non-opening of Karamyk to international transit traffic cause the round-about diversion of trucks from People’s Republic of China going to Tajikistan that have to travel an additional 300 km. Afghan exports cannot be transported by trains across Hairatan, but need to be loaded onto barges and ferried across the Amu Darya River, resulting in delays and higher costs. The formation of Eurasian Economic Union has re-shaped borders between Kazakhstan and Kyrgyz Republic. Performance of corridors 3a and 3b are also compared. CPMM data show that while average border crossing time and cost are higher in 3a, 3b suffered from the high vehicle operating cost. There is no clear winner to determine which route is superior, but the removal of those non-physical barriers described earlier could result in significant improvements in transit trade for the region.

The “Trans-Mongolian” Corridor 4 is the bearer of good news, and demonstrates what effective cooperation between agencies and countries can achieve. Road transport enjoyed a 9.3% reduction in total cost over the past year. SWOD went up to 36 kph, a significant improvement compared to the times recorded before the Zamyn Uud-Choyr road was completed, where SWOD averaged only 20-30 kph. The Mongolian and

the PRC customs administrations are working on joint initiatives such as piloting joint customs control in select border and progressing towards using electronic unified cargo manifests and the simplification of border crossing procedures which now requires less number of documents to be lodged. All these changes have resulted in a fall in the average border crossing times at both Erenhot and Zamyn Uud. Unfortunately, problems remain for rail transport. A train moving from Erenhot to Zamyn Uud averaged 26.8 hours and 24.6 hours at each station respectively. A major cause of time delays is the dwell time in Tianjin seaport for Mongolian bound containers. This problem was closely monitored and the chemical explosion in Q3 2015 has shown to significantly lengthen the delivery time of those containers.

A review of the four TFIs shows that Corridor 5 is consistently the most time-consuming and costly route. Due to the long dwell time at the seaport, security concerns and the prevalence of police checkpoints, as well as the long queuing time and procedures at Peshawar-Torkham and Chaman-Spin Buldak, BCPs considered by drivers to be most challenging. These two locations contributed to the sub-par performance of Corridor 5. The report also compares the efficiency of three sub-corridors – Kashi to Dushanbe, Kashi to Sost and Kashi to Kabul. In addition, Irkeshtan (PRC-KGZ) and Sherkhan Bandar-Nizhni Pianj (AFG-TAJ) were also shown to be difficult crossings; although to a lesser degree relative to the first two BCPs mentioned, but still lengthy overall.

Corridor 6 analyzed the three sub-corridors 6a, 6b and 6c. CPMM results show that 6c records the highest numbers in terms of cost and time. Border crossing time on average was the longest (8 hours) in 6c. Total transport cost averaged \$1,788, which was 4 times higher than 6a, and 2.5 times higher than 6b. Part of the reason for these observations was due to cumbersome crossing at Sherkhan Bandar-Nizhni Pianj (AFG-TAJ). It took close to 10 hours to complete border crossing at Sherkhan Bandar.

In summary, the Trade Facilitation Indicators reported some positive progress although challenges remain. Both transport modes demonstrated shortened averaged border crossing time. However, cost data were mixed. While the average border crossing cost for road was reduced, that of rail increased in 2015. It is also noted that relative to road, the total cost of using rail transport is not economical. Finally, average speeds of road continue to be faster than that of rail. The reason is due to the much longer border delays experienced by trains at major BCPs particularly at Alashankou-Dostyk (PRC-KAZ) and Erenhot-Zamyn Uud (PRC-MON).

I. Introduction

Publication of this **Corridor Performance Measurement and Monitoring (CPMM) Annual Report 2015** coincides with the conduct of a midterm review of CAREC 2020, the Central Asia Regional Economic Cooperation Program’s strategic framework covering 2011–2020.

CPMM findings serve as critical inputs into the midterm review, as it is considered one of the few reliable barometers that systematically demonstrates how CAREC countries pursue the goal of realizing the full benefits of trade facilitation through regional cooperation. CPMM data are based on actual exports, imports, and transit shipments via road and rail along CAREC Corridors. Cumulative time delays and actual cost of shipments are collected from drivers and freight forwarders directly; these data are aggregated and analyzed on quarterly and annual bases.

CPMM highlights the challenges that exist in Central Asia, both at the policy and operational levels. At the *policy* level, the Kyrgyz Republic still maintains its bilateral status thus restricting third country vehicles and goods from crossing at Karamyk—a CAREC Corridor 5 border crossing point. The absence of or restrictive transit trade agreements between countries can result in barriers to regional trade. One example is that Afghan exports and transit goods cannot enter Uzbekistan due to lack of a transit trade agreement between the two countries. Such exports are delivered by Afghan trucks to Hairatan, and then loaded onto Uzbek barges crossing the Amu Darya river, and finally sent on Uzbek trucks to reach foreign markets. The use of rail transport will be more efficient due to less handling and stopovers, as well as higher capacity, but Afghan goods cannot be loaded onto empty wagons returning to Termez. Another example is that the Afghanistan and Pakistan Transit Trade Agreement does not allow Indian goods to be carried on the return journey, resulting in higher cost of exports for Afghan traders since trucks travel empty from Wagah to Torkham. These policies increase the cost of transport (a key measurement of transport efficiency in

CPMM), effectively drive traffic away from CAREC corridors, and demonstrate the challenges of honoring freedom of transit commitments in Central Asia. Moreover, CPMM also identified specific *operational* bottlenecks. Despite serious efforts on policy coordination, express cargo trains from the People’s Republic of China (PRC) to Europe transiting Central Asia still experience lengthy delays on the PRC-Kazakhstan and Belarus-Poland borders.

Realizing CAREC’s potential to serve as a mutually beneficial platform for the formulation of reform policies that are prudent, pragmatic, broad-minded and far-sighted, rests exclusively with CAREC member countries. The value of CPMM is found in documenting, quantifying, and reporting on the success achieved in resolving outstanding issues. Efforts have been made by the CPMM team, in collaboration with the CAREC Institute, to transfer analytical methodology and data to research institutions and think tanks in CAREC member countries to support further in-depth analyses, and engage relevant government agencies in policy formulation.

Sound analyses based on CPMM data can inform effective public-private dialogue with CAREC policymakers. As you read and consider the content of this report, please consider ways in which CAREC member countries can work more productively with one another to overcome common challenges. Your development partners can play a role in recommending courses of action and supporting the implementation of regional reforms. Liberalizing the market for transport and trade logistics services and facilitating trade will create the conditions necessary to catalyze sustained improvement in CAREC corridor performance and extend economic prosperity broadly across CAREC. The CPMM team invites ideas and suggestions on how longstanding challenges identified can be overcome. We look forward to continued collaboration, especially in documenting and reporting on the positive results of genuine regional cooperation.

II. Data Overview

In 2015, 12 partners from 8 countries supported CPMM data collection.¹ CPMM partners are a combination of transport and freight forwarding associations representing international transport operators in the CAREC region. CPMM partners collect data derived from actual commercial shipments. Drivers or freight forwarders report time and cost data to the associations, who then enter this information into a standardized spreadsheet. Each spreadsheet is reviewed by international consultants who verify and validate the data. Following review and acceptance, the Asian Development Bank's CAREC Trade Facilitation Team aggregates the valid data. CPMM findings and conclusions are reported quarterly and annually, and are available at www.cfca.net.

Data Sample

A total of 2,784 samples were collected and analyzed in 2015. Unfortunately, CPMM did not have the benefit of working with partners from Kazakhstan in 2015. This perceived gap in knowledge was filled by increased samples from PRC associations, as well as the addition of THADA (a transport association in Turkmenistan), yielding a slight increase of sample size from 2,714 in 2014.

Data Profile

In 2015, road and rail transport accounted for 2,096 (75.3%) and 685 (24.6%) of the samples respectively.² Of the 2,784 samples, 615 (22.1%) represented perishables. The cargo carried in the remaining 2,169 (77.9%) are dry goods. Most perishable shipments are sent by road transport (1,504 samples, 96.2%). There were 2,682 samples (96.3%) that crossed at least one international border; the remaining 102 (3.7%) samples covered domestic movements of goods.

The data also capture the use of Transports Internationaux Routiers (International Road Transport, or TIR) Carnets. In 2015, 724 shipments utilized TIR. In recent years, the share of road shipments that used TIR remained constant: 34% (2013), 37.8% (2014) and 34.5% (2015).

In CPMM, commodities transported follow the Harmonized System (HS) classification. In 2015, the five most commonly

moved commodity groups are (i) machinery (22.5%), (ii) agricultural products (17.3%), (iii) base metals (10.8%), (iv) industrial materials (8.6%), and (v) textiles (6.3%). Together, these five product groups accounts for 65.5% of all movements.

Cargo Movement

CPMM records time and cost data of actual commercial shipments from origin to destination. It provides insights on trade flows across Central Asia, as well as production and demand. CPMM is also useful in identifying high traffic border crossing points (BCPs). Official statistics report volume and value of trade but seldom provide traffic processed by each BCP. CPMM focuses on the study of border crossing performance as previous literature have identified BCPs as the principal cause of delays.

Using CPMM data, cargo movement in each CAREC member country can be summarized as follows :

- **Afghanistan.** CAREC corridors 2, 3, 5 and 6 cross the country. CPMM records monitor shipments of consumer and industrial goods imports from Karachi, Pakistan to Kandahar or Kabul, crossing Spin Buldak or Torkham along corridors 5 and 6. Transit traffic is also active from Torkham to Sherkhan Bandar and Hairatan, facilitating the flow of goods from Pakistan seaports into Central Asia.
- **Kazakhstan.**³ The road and rail networks of CAREC corridors 1, 2, 3 and 6 serve Kazakhstan. In particular, corridors 1 and 2c can be regarded as 'Trans-Kazakhstan' routes facilitating multimodal transport. The active flow of goods between Kazakhstan and PRC via corridor 1a makes Alashankou-Dostyk (PRC-KAZ) as one of the busiest BCPs in the region: agricultural products and minerals flow from Kazakhstan to PRC, while consumer goods, machinery, and equipment move in the opposite direction. Along corridor 1b, road transport is a more popular choice for sending PRC consumer merchandise, particularly of less than truckload (LTL) size, via Khorgos.

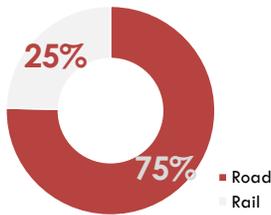
1 Afghanistan, Kyrgyz Republic, Mongolia, Pakistan, People's Republic of China, Tajikistan, Turkmenistan, and Uzbekistan.

2 The 75.3% road and 24.6% rail mix is just an indication of the data sample. It is not to be construed as representative of the actual percentage of road versus rail shipments within the region surveyed.

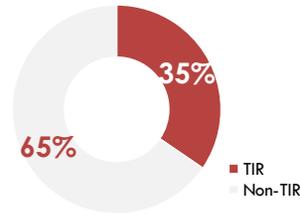
3 Although Kazakhstan did not participate in CPMM in 2015, the country remains important due to its market size and geography. However, data from Kyrgyz Republic, People's Republic of China, and Uzbekistan monitor exports to and transit shipments across the country. Furthermore, Kazakhstan facilitates both road and railway traffic due to its more developed infrastructure and strategic location.

Data Profile

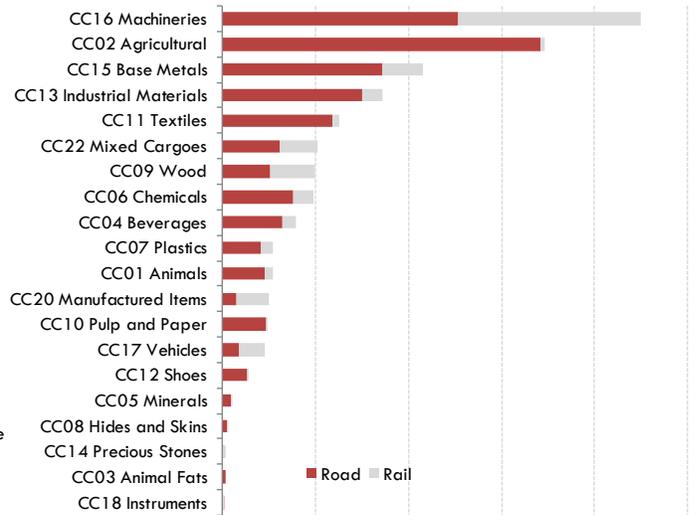
Mode of Transport



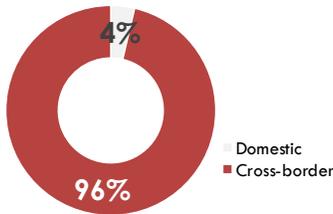
Use of TIR



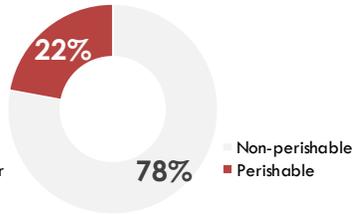
Type of Commodities Transported, by mode of transport



Cross-border Transport

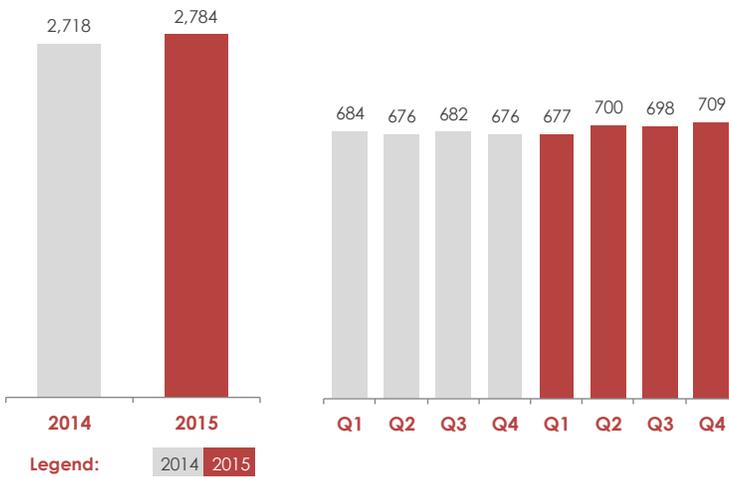


Perishable Cargo



Data Sample

TCD sample

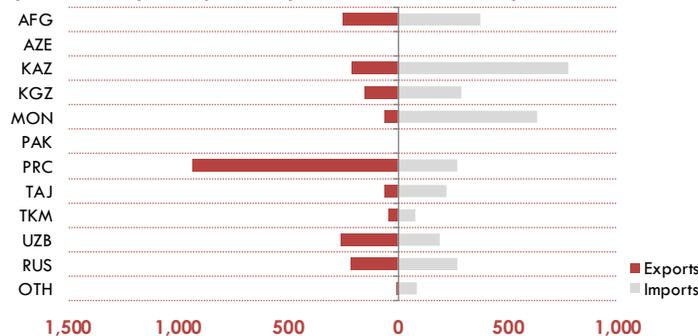


2015 TCD Sample by Association

Country	Association	2015				2014	2014
		Q1	Q2	Q3	Q4		
AFG	AFFCO	60	60	60	60	240	240
KGZ	FOA	60	60	60	60	240	237
MON	NARTAM	60	60	60	60	240	240
	MNCCI	57	55	53	60	225	240
PAK	PIFFA	60	60	60	60	240	240
PRC	CQIFA	60	75	75	75	285	200
	IMAR	60	60	60	60	240	240
	XUAR	80	90	90	90	350	240
TAJ	ABBAT	30	30	30	30	120	120
	AIATT	60	60	60	60	240	240
TKM	THADA				4	4	
UZB	ADBL	90	90	90	90	360	360
Total		677	700	698	709	2,784	2,718

Cargo Movement

Exports and Imports by Country, count based on sample



Origin	Destination												Total
	AFG	AZE	KAZ	KGZ	MON	PAK	PRC	TAJ	TKM	UZB	RUS	OTH	
AFG	30												30
AZE									2				2
KAZ				91						57			148
KGZ			49				9				14		72
MON							45						45
PAK	450												450
PRC	125		192	61	551	22		171	55		42	148	1367
TAJ								72					72
TKM		1	5	13				44		14			77
UZB			154					64	58				276
RUS				62	60		60						182
OTH							63						63
Total	605	1	400	227	611	22	177	351	115	71	56	148	2,784

Meanwhile, machinery and industrial products are transported on trains. Corridor 1c facilitates Kyrgyz Republic exports of fruits and vegetables to Russia via Kazakhstan.

- **Kyrgyz Republic.** With the exception of Corridors 4 and 6, all other CAREC Corridors cross Kyrgyz Republic, establishing the importance of its role as a transit country. Corridor 1c also serves as a common route for PRC merchandise destined for Bishkek through Torugart at the PRC-KGZ border. With its proximity to Kashi (PRC), many transit shipments to Tajikistan and Afghanistan cross Irkeshtam (KGZ) along corridors 2 and 5. Fruits and vegetables are shipped north to Almaty (KAZ) along corridor 3 to meet Kazakhstan's demand for such commodities. One recurring limitation is the country's restriction to international transit shipment via Karamyk, allowing only bilateral trade with Tajikistan through the BCP despite its strategic location and role to trade facilitation along corridors 2, 3 and 5. Hence, transit trade traffic is diverted to a circuitous route via Kyzyl Bel-Guliston (KGZ-TAJ).

Kyrgyz Republic officially acceded to the Eurasian Economic Union (EAEU) on 12 August 2015,⁴ the impact of which is yet to be fully realized. CPMM will monitor and report on observed impacts. Previous CPMM data indicate that Kazakhstan's accession shortened border crossing time with EAEU member countries but added delays to border crossing with non-member countries.

- **Mongolia.** Corridor 4 is a 'Trans-Mongolian' route. Corridor 4a is a transit corridor linking Russia and western PRC. However, due to the remoteness of the region, no shipment samples are collected for this section. CPMM partners have regular access to data covering Corridor 4b movements, where cargoes are moved predominantly on trains. At the PRC border, Erenhot-Zamyn Uud (PRC-MON) serves as a gateway for trade between Mongolia and PRC. PRC exports a variety of consumer and industrial products to Mongolia, while Mongolia exports animal products and minerals (particularly copper, zinc, and molybdenum) to PRC. Moreover, transit shipments of Russian lumber to PRC also cross this BCP. Previous reports of low efficiency of corridor 4b is determined by the railway network in PRC and long border crossing delays at Erenhot-Zamyn Uud (PRC-MON). To divert traffic from this route, corridor 4c is designated as an alternative. CPMM shows that border crossing at Zunn Khatavch-Bichight (PRC-MON) is more efficient, more than likely attributable to the relatively low volume of traffic crossing the border. Currently, 4c serves mainly truck shipments of fuel from PRC to Mongolia. To achieve an ideal multimodal

connection from Ulaanbaatar to Jinzhou seaport, massive investments in railway transport network are essential.

- **Pakistan.** As one of the two CAREC member countries⁵ with deep-water seaport, Pakistan offers the shortest route for landlocked CAREC countries to access international sea-lanes. BCPs along Corridor 5 continue to perform as most time-consuming and most costly due to delays identified at Peshawar-Torkham (PAK-AFG) and Chaman-Spin Buldak (PAK-AFG). An interesting addition to the study is the coverage of traffic via Khunjerab-Sost (PRC-PAK) along 5b (further discussion in the corridor sections). Pakistan truck operations are active along CAREC Corridor 5 and 6.

Pakistan exports pomegranates to Tajikistan and Uzbekistan and serves as a transit country for a variety of consumer goods (mineral water, frozen meat, and consumer electronics) entering Afghanistan.

On 22 July 2015, Pakistan formally sent the Instrument of Accession for the TIR Convention 1975 to the United Nations. After six months of application processing, Pakistan became the latest Contracting Party on 21 January 2016.

- **Peoples Republic of China.** Two regions in PRC are actively participating in CAREC, namely Xinjiang Autonomous Uygur Region (XUAR) and Inner Mongolian Autonomous Region (IMAR). As the origin of transcontinental express container train services destined for Europe and western Asia, Chongqing is paying close attention to supply chain integrity in CAREC. So too is the seaport of Lianyungang, in which Kazakhstan and Lithuanian interests are investing. PRC exports a variety of consumer and industrial goods to Central Asia, while importing energy and minerals from Kazakhstan and Mongolia.

Under the new 'One Belt One Road' strategy, CAREC economies are regarded as vital transit conduits for PRC to access Eurasian markets overland, especially European markets. CPMM continues to track the movement of container express trains (Chongqing-Duisburg) as well as those of conventional trains.

Road and rail networks of CAREC corridors 1, 2, 4 and 5

4 <http://www.eurasiancommission.org/en/nae/news/Pages/12-08-2015-1.aspx>

5 The other country is PRC. Azerbaijan, Kazakhstan and Turkmenistan have inland water ports in the Caspian Sea, but the region is not integrated to main international shipping lanes.

serve PRC. CPMM samples show active movement along corridor 1 (for exports and transit shipments to Central Asia) and corridor 4 (for exports and imports with Mongolia). Corridor 5 is also relevant for shipments to Afghanistan and Tajikistan. However, most truck shipments pass through Kyzyl Bel-Guliston (KGZ-TAJ) and Kulma Pass instead of Karamyk due to the restriction of this BCP node to international transit.

- **Tajikistan.** As a transit economy, goods transported in Tajikistan move in both north-south and east-west directions. Trucks carrying PRC exports to Afghanistan, for instance, would move through Kyzyl Bel-Guliston (KGZ-TAJ) and southwards to Dushanbe and reach Nizhni Pianj-Sherkhan Bandar (TAJ-AFG). Alternatively, goods can also be shipped through Kulma Pass, which navigates through the mountainous Gorno Badakhshan regions. Cargo movements between Tajikistan and Uzbekistan go through Oibek-Tursunzade (UZB-TAJ) at the western region of Tajikistan.

CAREC corridors 2, 3, 5 and 6 pass through Tajikistan. Railway service in Tajikistan is limited in coverage and able to support transit traffic only in a multimodal context. Reliance on Uzbekistan for rail access to broader markets presents a challenge to TAJ shippers.

- **Turkmenistan.** The strategic location of Turkmenistan lends itself to become a major transit country. Major projects such as the TAPI pipeline supported by ADB and the Lapis Lazuli corridor pass through Turkmenistan. Turkmenbashi facilitates multimodal transport (such as the use of Ro-Ro ferries), enabling cargoes to move across the Caspian Sea.

CAREC corridors 2, 3 and 6 pass through Turkmenistan. CPMM data show that there is significant cross-border trade between Turkmenistan and Uzbekistan in both directions. Trucks originating from Uzbekistan move through Turkmenistan to access Iranian seaports, crossing Alat-Farap (UZB-TKM). In addition, CPMM samples reveal rail traffic from PRC to Turkmenistan carrying machinery along the 2,833-km route from Urumqi to Farap. Along this route, trains cross three BCPs: Alashankou-Dostyk (PRC-KAZ), Sarygash-Keles (KAZ-UZB) and Khodzhadavlet-Farap (UZB-TKM).

- **Uzbekistan.** Uzbekistan is keen to promote multimodal logistics centers. The most successful establishment so far is the Free Industrial Economic Zone at Navoi. It is well-documented that Uzbekistan has the most restrictive transit regime in CAREC. It has a differentiated scheme of fees for each of the neighbor countries, and particularly discriminates against Tajikistan. A higher fee is imposed on Tajik trucks, as well as on foreign trucks coming from and going to Tajikistan.

CAREC corridors 2, 3, and 6 serve Uzbekistan. According to CPMM records, containerized cargoes move from Bandar Abbas seaport to Uzbekistan. Exports, such as cotton and aluminum, are sent to Russia via Kazakhstan. In the west-east direction, Uzbekistan ships agricultural produce to Kazakhstan, mainly destined to Almaty for further consolidation and break-bulk before distribution to other cities. In terms of railways, Uzbekistan is an important transit country for Afghanistan. Goods carried in trains pass through Termez and stop at Mazar-e-Sharif terminal in Afghanistan. Counterintuitively, Uzbekistan bans Afghanistan exports from entering Uzbekistan by train. Rather, freight trains are stopped at Hairatan, cargo is off-loaded onto trucks, and ferried across the Amu-Darya. The trains then cross the river, returning empty to Termez.

6 Chongqing is the fourth direct central-controlled city, after Beijing, Shanghai and Tianjin. Once administered as a provincial city in Sichuan, this new status means that Chongqing enjoys greater autonomy and efficiency in development. Chongqing is also the first successful location for container express trains to Europe.

III. Trade Facilitation Indicators

In the private sector, a company manages its performance by using a list of key indicators. Similarly, CPMM applies a specific set of indicators to illustrate the overall annual performance of the six CAREC corridors. This supports time-series comparisons that allow trends to be spotted and improvements to be validated. In CPMM, the four aggregate indicators used to monitor and report the impact of transport and trade facilitation initiatives in the region are:

- Time it takes to cross a border in hours (TFI1)
- Cost incurred at border-crossing clearance in US dollars (\$) (TFI2)
- Cost incurred to travel a corridor section measured in \$ per 500 km per 20-ton of cargo (TFI3)
- Speed to travel along CAREC corridors in kilometers per hour (kph) (TFI4)

The development of a CAREC Program Results Framework to serve as the basis for an annual comprehensive review of “development effectiveness” to track progress and achievements was endorsed by senior officials of CAREC in 2009. Indicators for trade facilitation were discussed and approved at the 2010 Regional Joint Transport and Trade Facilitation Meeting held in Tashkent, Uzbekistan. CPMM provides these indicators to the CAREC Development Effectiveness Review as one means of measuring progress in this priority area for the program.

As TFIs capture the sum of actions by many different entities involved in trade facilitation across CAREC countries, it is not possible to attribute improvement directly to program-related activities. However, CAREC’s contribution to trade facilitation may include: (i) improvement of facilities at border-crossing points by CAREC countries, multilateral institution partners, and other development partners; (ii) adoption of new and/or amended customs codes by a majority of CAREC countries; (iii) investments in the modernization and automation of customs information systems; and (iv) efforts to establish national single windows and upgrade border control risk management systems.

Table 1: Trade Facilitation Indicators

		2014			2015			
		Mean	Median	Margin	Mean	Median	Margin	
TFI1	Time taken to clear a border crossing point (hr)	Overall	14.1	5.8	± 0.5	13.1	5.6	± 0.5
		Road	9.9	4.8	± 0.2	9.3	4.7	± 0.4
		Rail	32.6	24.0	± 1.9	27.4	23.0	± 1.3
TFI2	Cost incurred at border crossing clearance (US\$)		172	125	± 10	161	129	± 3
			177	125	± 12	149	125	± 3
			148	125	± 15	208	140	± 9
TFI3	Cost incurred to travel a corridor section (per 500km, per 20-ton cargo)		1,360	937	± 49	1,323	876	± 37
			1,359	938	± 57	1,341	893	± 42
			1,364	926	± 71	1,250	823	± 79
TFI4	Speed to travel on CAREC Corridors (kph)		20.8	20.6	± 2.2	21.1	19.7	± 1.6
			22.9	21.5	± 2.4	23.2	22.7	± 1.7
			11.4	9.2	± 4.0	14.0	9.1	± 3.5
SWOD	Speed without delay (kph)		40.2	41.4	± 2.8	39.8	41.0	± 1.8
			42.0	42.9	± 2.9	40.2	40.4	± 1.9
			32.2	26.7	± 7.8	38.3	45.0	± 5.0

Note: Margin refers to the 95% confidence interval band around the mean estimate.

Highlights

- Both road and rail reported a decrease in average border-crossing time. The percentage drops were 6% and 16%, respectively.
- For road, shorter customs inspection time for trucks resulted in reduction of 74% and 58% on border crossing times at Erenhot and Zamyn Uud in Corridor 4.
- For rail, shorter border-crossing time was identified in three BCPs; the reduction at Alashankou (36%), Dostyk (29%) and Erenhot (12%) contributed to improvement of the indicator. At Zamyn Uud, a slight increase (4%) was detected.

Road Transport

Average border-crossing time rose in 2014 due to the inclusion of new BCPs with long delays. The addition of Afghanistan-Pakistan BCPs resulted in a 76% surge of average border-crossing time. This new benchmark average was reversed in 2015, where trucks reported an improvement of 6%. Although TFI1 remains relatively high, the trend has stabilized in 2015.

A positive observation is that most CAREC corridors (with the exception of Corridors 2 and 3, which showed minor increase) reported shorter delays. In particular, Corridor 4 showed encouraging signs of improvement; road TFI1 dropped from 7.9 hours in 2014 to 2.8 hours in 2015, a reduction of 64%. A simultaneous drop in average border-crossing time at Erenhot and Zamyn Uud resulted in a marked improvement. Between 2014 and 2015, TFI1 estimates at Erenhot dropped by 74% to 3.9 hours, and by 58% to 3.7 hours at Zamyn Uud. In both locations, shorter customs inspection time largely contributed to the reduced border crossing time.

Delays in Road Transport

In terms of frequency, customs inspection continues to be the most frequently encountered cause of delay during border crossing. Other activities in the list include border security/control, waiting in queues, weight/standard inspection and health/quarantine activities.

In 2015, the average border-crossing time shortened and reversed the trend reported in 2014 (which resulted from the inclusion of AFG-PAK borders in the sample). Border crossing by road and railway reported shorter duration. In 2015, trucks averaged 9.3 hours (6% reduction) and trains averaged 27.4 hours (16% reduction) in border crossing. Hence, the overall TFI1 resulted in a decline by 7% to 13.1 hours.

Figure 1: Time Taken to Cross a Border-crossing point, in hours

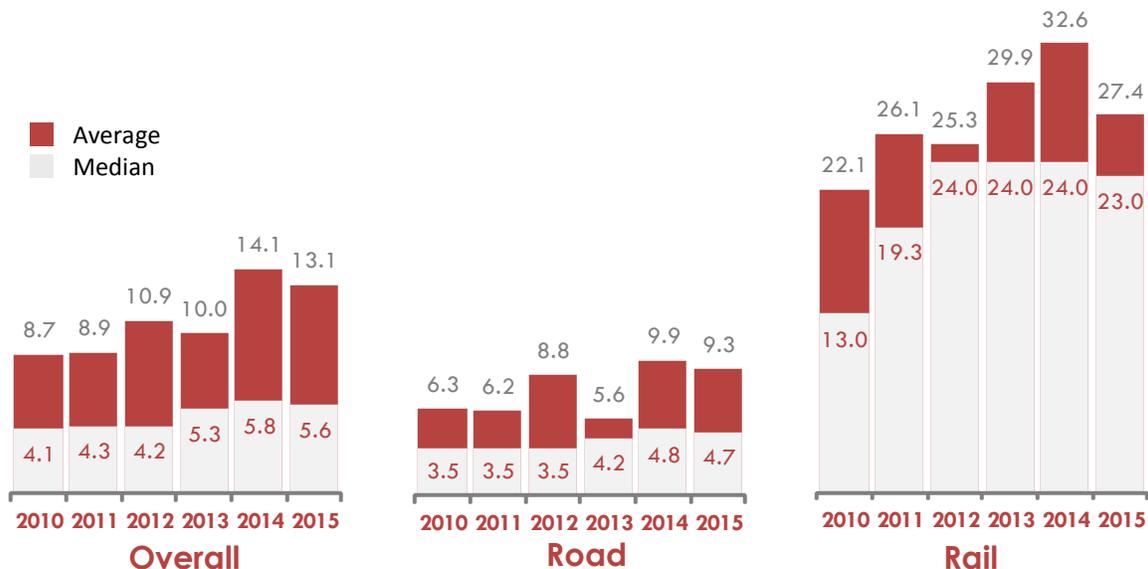


Table 2: Duration of Activities Spent on BCPs, Road and Rail Transport

Road	Count							Average, in hours						
	Overall	Corridors						Overall	Corridors					
		1	2	3	4	5	6		1	2	3	4	5	6
A. Border Security / Control	3,807	688	419	296	936	408	1,060	0.4	0.1	0.7	0.5	0.3	0.6	0.6
B. Customs Clearance	4,226	512	439	234	960	993	1,088	6.4	1.0	1.3	1.4	2.0	20.3	3.5
C. Health / Quarantine	2,101	146	122	68	896	267	602	0.4	1.1	0.4	0.2	0.5	0.3	0.3
D. Phytosanitary	1,881	48	265	175	360	266	767	0.3	0.1	0.4	0.4	0.3	0.3	0.4
E. Veterinary Inspection	771	6	11	48	-	266	440	0.3	0.8	0.3	0.3	-	0.3	0.3
F. Visa/Immigration	1,285	217	100	53	480	137	298	0.2	0.2	0.6	0.2	-	0.4	0.3
G. GAI/Traffic Inspection	540	75	10	12	360	-	83	0.2	0.1	0.2	0.2	0.2	-	0.2
H. Police Checkpoint / Stop	659	96	149	87	-	49	278	0.2	0.1	0.3	0.3	-	0.2	0.3
I. Transport Inspection	821	77	72	91	-	1	580	0.4	0.9	0.4	0.4	-	0.5	0.4
J. Weight/Standard Inspection	2,282	360	376	127	540	274	605	0.4	0.3	0.5	0.5	0.2	0.4	0.5
K. Vehicle Registration	1,544	47	182	13	540	266	496	0.4	1.3	0.4	0.5	0.3	0.4	0.3
L. Emergency Repair	1	-	-	-	-	-	1	1.3	-	-	-	-	-	1.3
M. Escort / Convoy	13	-	-	-	-	-	7	1.0	-	-	-	-	1.0	1.0
N. Loading / Unloading	1,190	73	29	8	398	216	466	2.2	3.8	3.3	3.7	1.2	2.5	2.6
O. Road Toll	504	-	107	5	241	13	138	0.4	-	0.7	0.7	0.2	1.0	0.4
P. Waiting/Queue	2,565	147	409	170	324	747	768	5.0	1.8	2.9	5.1	0.3	10.6	3.3

Rail	Count							Average, in hours							
	Overall	Corridors						Overall	Corridors						
		1	2	3	4	5	6		1	2	3	4	5	6	
A. Load Cargoes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B. Unload Cargoes	55	55	-	-	-	-	-	4.5	4.5	-	-	-	-	-	-
C. Fix Cargo Shift	11	-	-	-	11	-	-	2.1	-	-	-	2.1	-	-	-
D. Remove Excess Cargo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E. Transload at Gauge Change	684	448	-	-	236	-	-	8.6	4.9	-	-	15.7	-	-	-
F. Pick-up and Deliver Wagons	60	-	-	-	60	-	-	1.0	-	-	-	1.0	-	-	-
G. Repair Inoperable Wagon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H. Emergency Repair	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I. Train Classification	242	231	-	-	11	-	-	3.0	3.0	-	-	3.0	-	-	-
J. Document Errors	4	4	-	-	-	-	-	0.5	0.5	-	-	-	-	-	-
K. Reissue Transit Documents	272	58	-	-	214	-	-	1.8	0.9	-	-	2.0	-	-	-
L. Customs Inspection	823	564	-	-	259	-	-	3.3	3.8	-	-	2.4	-	-	-
M. Technical Inspection	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N. Commercial Inspection	11	-	-	-	11	-	-	1.8	-	-	-	1.8	-	-	-
O. Phyto-sanitary Control	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. Busy reloading facilities	917	442	-	-	475	-	-	13.0	11.3	-	-	14.5	-	-	-
Q. Faulty handling equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R. No wagons available	442	431	-	-	11	-	-	23.3	23.3	-	-	20.5	-	-	-
S. Restriction on entry	200	189	-	-	11	-	-	24.5	24.1	-	-	30.4	-	-	-
T. Marshalling	223	212	-	-	11	-	-	8.4	8.6	-	-	4.0	-	-	-
U. Priority trains to pass	55	55	-	-	-	-	-	14.7	14.7	-	-	-	-	-	-
V. For Other Reasons	39	39	-	-	-	-	-	3.5	3.5	-	-	-	-	-	-

Legend:

More than 1 hour

In terms of length of delay, customs inspection ranked as the most time-consuming activity, averaging 6.4 hours (from 7.7 hours in 2014). Other principal causes of delay include waiting in queue, loading/unloading, emergency repair, and escort/convoy. Remaining road activities are completed in less than an hour.

TFI1 for road transport stabilized and slightly improved since the new benchmark in 2014, driven by the sizeable reduction in customs inspection time at Erenhot-Zamyn Uud (PRC-MON). In general, improvements in customs inspection alone, an activity frequently presenting the most severe delay during border crossing, yield substantial improvement in overall trade facilitation at BCPs.

Rail Transport

Rail border crossing improved by 16% in 2015. In Corridor 1a, TFI1 dropped from 42.9 hours to 32.2 hours (25% reduction), while it dropped from 23.8 hours to 20.9 hours (12% reduction) in Corridor 4b.

Specifically, improvements were observed in border crossing duration at Alashankou-Dostyk in 1a and at Erenhot-Zamyn Uud in 4b. Trains from PRC to Kazakhstan crossing Alashankou-Dostyk enjoyed reduction in border crossing time. Average border crossing time at Alashankou and Dostyk declined to 26.9 hours (36% reduction) and 42.3 hours (29% reduction), respectively. Meanwhile, for trains inbound Mongolia, border crossing at Erenhot-Zamyn Uud improved to 26.8 hours (12% reduction) and slightly increased to 24.6 hours (4% increase), respectively.

Delays in Rail Transport

The average duration of major delays in railways are invariably lengthier than those encountered in road transport. Waiting due to reloading remains a major cause of delay. The need to wait for transfer of goods in rail terminals remains a substantial impediment in the border. Waiting is a non-value added time similar to 'dwell time' in seaports, adding to logistics cost and uncertainty in arrival time.

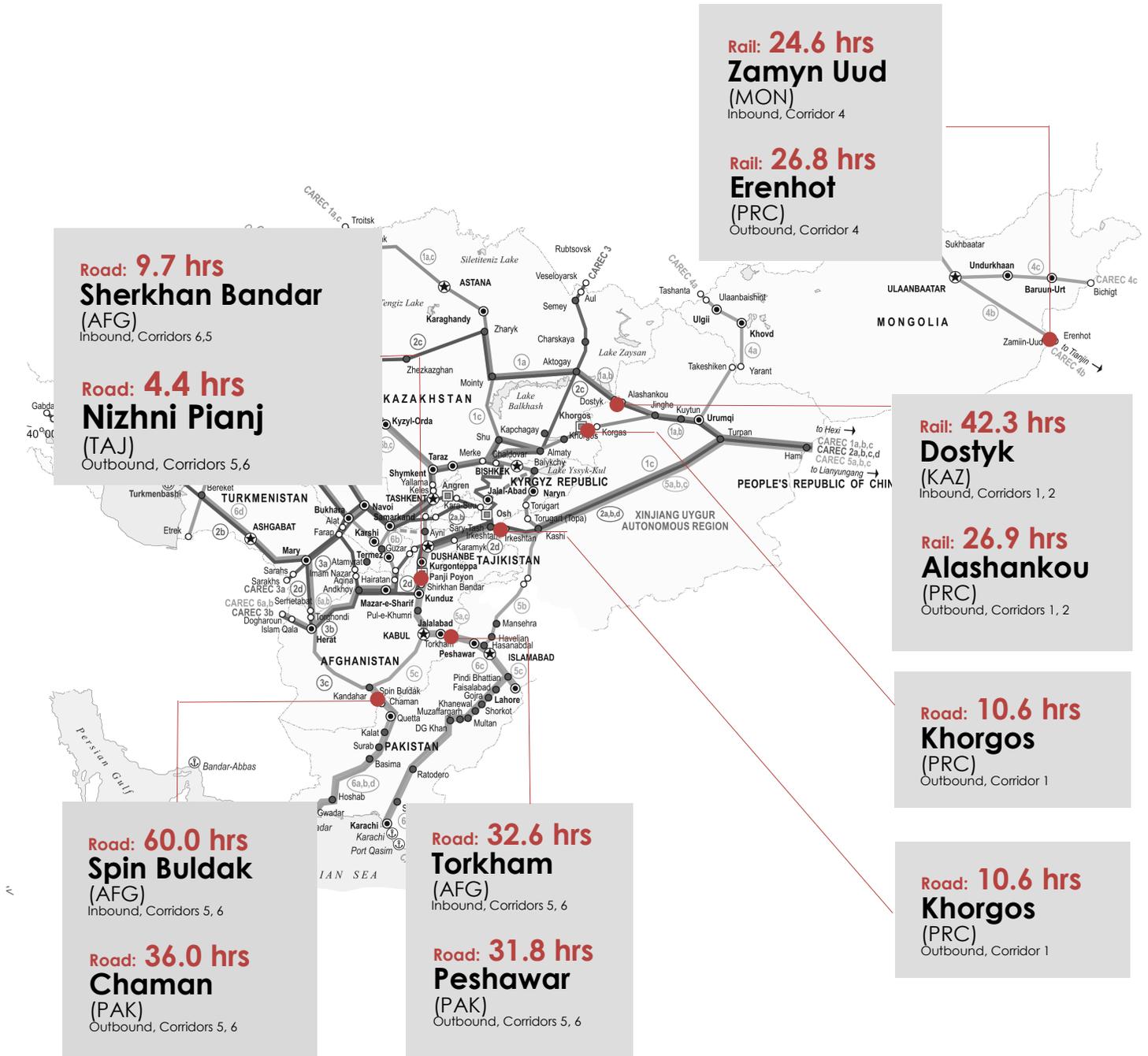
Restriction on entry is not a regular affair, but it imposes the most time-consuming delay, particularly along Corridor 1. When terminals are full and cannot admit additional incoming trains, other trains have to stay put in other terminals. The main difference between 'waiting due to reloading' and

'restriction on entry' is that the goods in the former instance are already inside a BCP terminal, while the goods in the latter are waiting at the connecting railway's terminals prior to crossing the border.

Other time-consuming delays include unavailability of wagons, waiting for priority trains, and trans-load at gauge change. These delays are complicated as they are a result of infrastructure, resources, and scheduling. Normally, national railway transport operators deploy wagons and other rolling stocks to locations with the most pressing need. During harvest season, when there is huge demand to move agricultural products by trains, severe shortages are seriously felt by shippers. Waiting for priority trains to pass normally occurs when shipments of time-sensitive goods, such as passengers, perishables, or energy products, are scheduled to pass. At times, trains carrying disaster relief supplies are also given higher priority. Meanwhile, due to the different standards of gauge in the region,⁷ trains moving between PRC and neighboring countries require a trans-load process at the border.

⁷ Railway gauge in PRC is 1,435 mm while eight of the 10 CAREC countries feature 1,520 mm.

Figure 2: TFI1 Estimates for Select BCPs, 2015



(in \$)

Highlights

- A diverging pattern was observed for road and rail. The former continues to trend downward (16% decline), but rail increased by 40%.
- For road, average border-crossing cost at Corridor 4b dropped 43% in 2015. Closer cooperation between the customs administrations of Mongolia and PRC, such as the implementation of electronic manifests, resulted in a more streamlined border crossing procedure.
- For rail, fees associated with the transfer of goods due to the break in gauge at Dostyk along Corridor 1 caused a surge in border crossing fees. The fee jumped to \$300 per container/\$350 per wagon from an average of \$135 in 2014.
- Corruption remains a problem. The chance of making unofficial payments is calculated to be 20-30% for five activities most likely to harbor rent-seeking behavior: visa/immigration, vehicle registration, weight/standard inspection, customs inspection and border security/control.

Overall TFI2 improved slightly from \$172 in 2014 to \$161 in 2015 (6% decrease). However, road and rail TFI2 indicators exhibited different trends. While the average border-crossing cost for road transport continued to drop, that of railway surged in 2015. Road TFI2 declined from \$177 to \$149 (16% decrease), while rail estimates rose from \$148 to \$208 (40% increase).

Road Transport

In 2015, the average border crossing fees at Corridors 1, 3 and 4 decreased. The decrease was particularly pronounced at Corridor 4, dropping from \$267 to \$151.

First, border cooperation between PRC and Mongolia yielded more efficiency. Focal topics in the 7th Joint Customs Control meeting in July 2015 between the Customs Administrations of both countries include **electronic cargo manifest** and **mutual acceptance of customs controls and inspections**. Erenhot and Zamyn Uud began a trial of electronic data interchange of cargo manifest on 1 November 2015. There are also plans to embrace mutual recognition of weight certificates and X-rays diagrams: this should result in greater border crossing efficiency.

The addition of Zunn Khatavch–Bichight (PRC-MON) allowed

Figure 3: Cost Incurred at Border Crossing Clearance, in \$

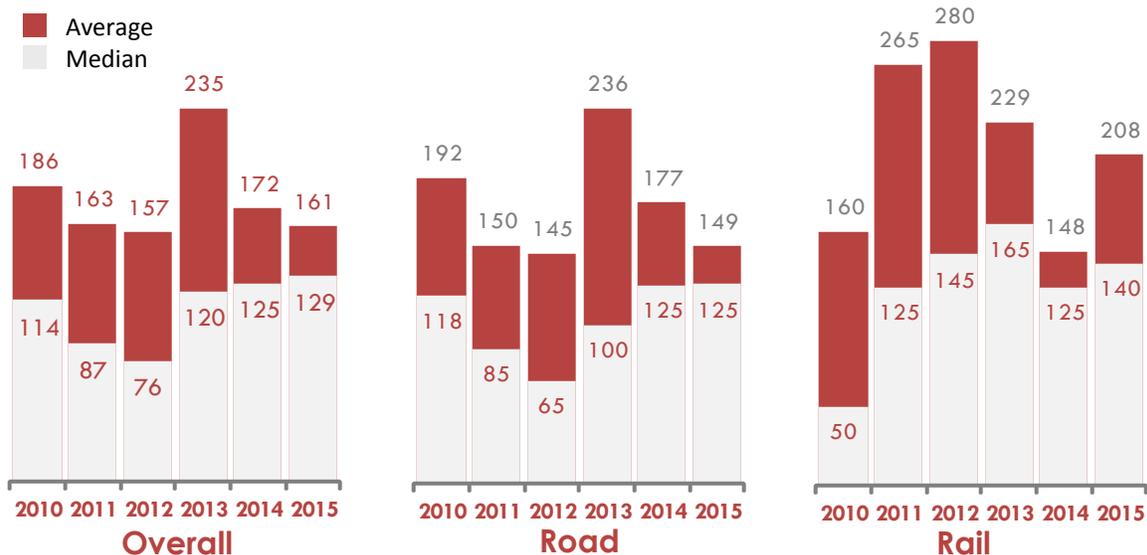


Table 3: Cost of Activities Spent on BCPs, Road and Rail Transport

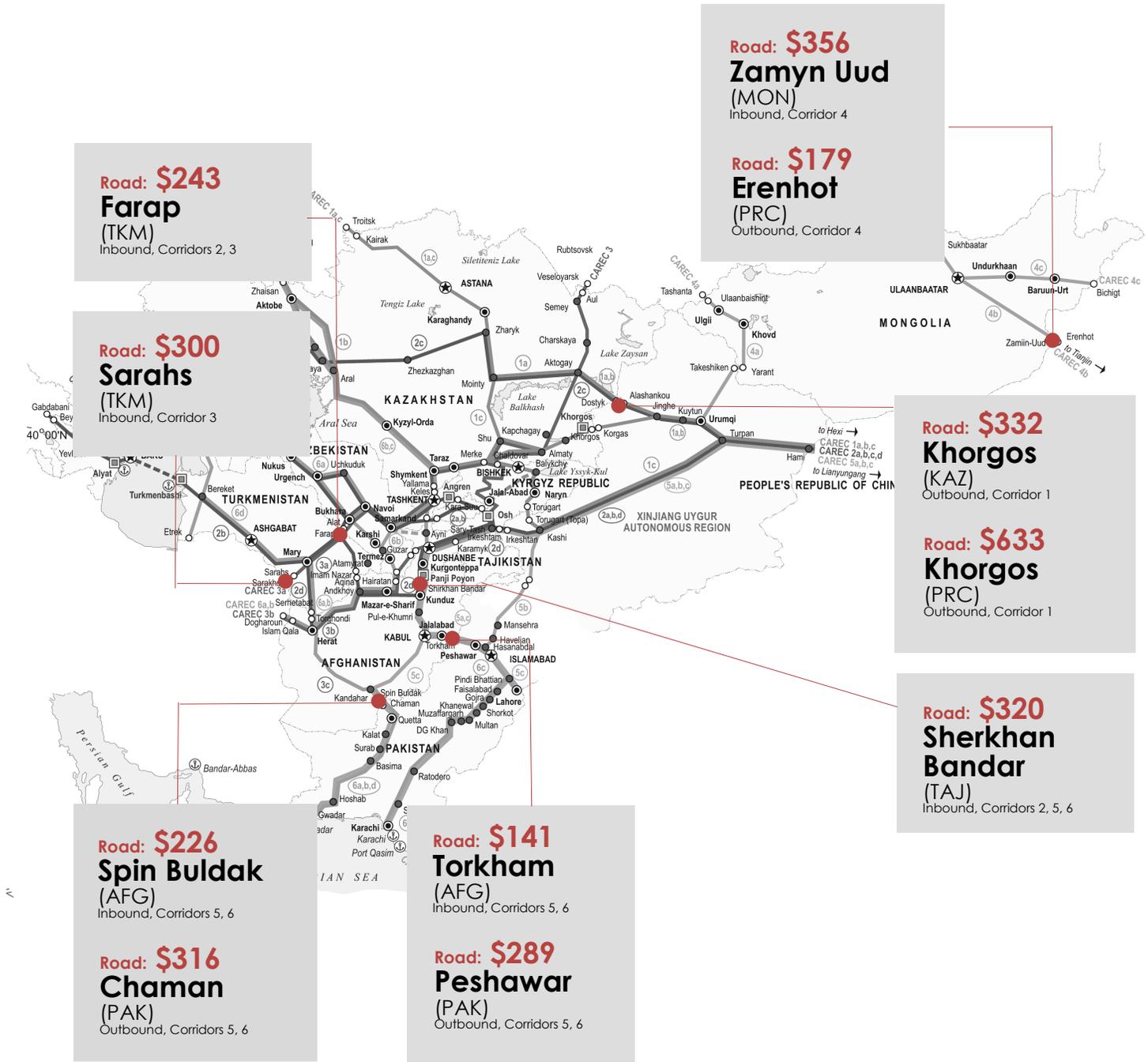
Road	Count								Average, in \$							
	Overall	Corridors							Overall	Corridors						
		1	2	3	4	5	6	1		2	3	4	5	6		
A. Border Security / Control	2,588	433	258	139	480	398	880	20	11	14	19	25	22	22		
B. Customs Clearance	3,579	457	254	135	840	993	900	106	77	24	28	137	165	61		
C. Health / Quarantine	1,731	136	75	58	644	271	547	22	99	11	9	22	8	11		
D. Phytosanitary	1,247	48	141	111	60	266	621	10	10	10	11	3	7	12		
E. Veterinary Inspection	747	6	6	48	-	266	421	9	14	5	10	-	8	10		
F. Visa/Immigration	535	69	103	53	-	132	178	22	18	77	13	-	5	7		
G. GAL/Traffic Inspection	150	75	-	6	-	-	69	7	9	-	9	-	-	5		
H. Police Checkpoint / Stop	472	96	78	50	-	49	199	6	5	5	5	-	6	8		
I. Transport Inspection	812	77	64	91	-	1	579	16	17	33	17	-	20	14		
J. Weight/Standard Inspection	1,620	360	252	40	240	274	454	19	12	13	15	15	26	26		
K. Vehicle Registration	1,011	47	141	61	-	266	496	6	4	8	6	-	4	6		
L. Emergency Repair	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
M. Escort / Convoy	138	-	-	-	-	7	131	51	-	-	-	-	89	49		
N. Loading / Unloading	972	51	3	-	362	216	340	106	323	40	-	141	71	59		
O. Road Toll	864	-	107	5	601	13	138	50	-	169	167	6	92	144		
P. Waiting/ Queue	51	51	-	-	-	-	-	5	5	-	-	-	-	-		

Rail	Count								Average, in \$							
	Overall	Corridors							Overall	Corridors						
		1	2	3	4	5	6	1		2	3	4	5	6		
A. Load Cargoes	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
B. Unload Cargoes	55	55	-	-	-	-	-	102	102	-	-	-	-	-		
C. Fix Cargo Shift	11	-	-	-	11	-	-	15	-	-	15	-	-	-		
D. Remove Excess Cargo	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
E. Transload at Gauge Change	733	448	-	-	285	-	-	217	283	-	-	114	-	-		
F. Pick-up and Deliver Wagons	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
G. Repair Inoperable Wagon	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
H. Emergency Repair	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
I. Train Classification	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
J. Document Errors	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
K. Reissue Transit Documents	60	-	-	-	60	-	-	20	-	-	20	-	-	-		
L. Customs Inspection	706	564	-	-	142	-	-	87	92	-	-	67	-	-		
M. Technical Inspection	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
N. Commercial Inspection	11	-	-	-	11	-	-	97	-	-	97	-	-	-		
O. Phyto-sanitary Control	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
P. Busy reloading facilities	45	-	-	-	45	-	-	100	-	-	-	100	-	-		
Q. Faulty handling equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
R. No wagons available	3	3	-	-	-	-	-	8	8	-	-	-	-	-		
S. Restriction on entry	123	123	-	-	-	-	-	28	28	-	-	-	-	-		
T. Marshalling	3	3	-	-	-	-	-	8	8	-	-	-	-	-		
U. Priority trains to pass	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
V. For Other Reasons	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Legend:

More than US\$100

Figure 4: TFI2 Estimates for Select BCPs, 2015



competition and contributed to lower cost. Customs related border crossing fee for each truck at Zamyn Uud and Khiyagt is \$60, but only \$15 at Bichigt. Since the addition of Bichigt in 2014, border-crossing fees at corridor 4 have been decreasing steadily from a peak value in 2013.

TFI2 estimates in other corridors fluctuate within a smaller range, indicating stable price movement.

Cost Drivers of Border Crossing

Among road activities, customs inspection continues to be time-consuming and costly. This is a deep-rooted problem. The concept of risk management is still relatively new in CAREC countries.⁸ Reducing customs and other border crossing fees is also difficult. At the country level, states rely heavily on tax and revenue collected by customs to finance public expenditure. Unfortunately, high fees can result in rent-seeking behavior where procedures are made cumbersome so that private shippers and operators are compelled to offer unofficial payments to avoid the high cost of transactions. Unofficial fees are also studied in CPMM and shall be reported at the end of this section.

Rail Transport

TFI2 for railway in 2015 spiked by 40% due largely to the increase of border-crossing fees at Dostyk in Corridor 1a.

In 2014, CPMM reported stable TFI2 estimates for other major rail BCPs, except for Dostyk which exhibited volatile costs. At this BCP, the average border-crossing fee peaked in 2012 and declined through 2013 and 2014, which coincided and largely contributed to the overall TFI2 trend.

In 2015, fees associated with trans-load of cargoes at the Dostyk break in gauge increased. The fee of \$300 per container and \$350 per wagon shows a remarkable increase from an average fee of \$135 in 2014. Thus, PRC rail shipments from Urumqi to Almaty had to bear the increased border crossing fees.

Cost Drivers of Border Crossing

The top five costly rail activities remain the same, but the size of fees associated with trans-load cost at the break in gauge increased.

Unofficial Payments

CPMM continues to monitor unofficial payments in the CAREC region. Unofficial payments are defined as excess payments on top of what is stipulated by law, in exchange for benefits. Examples of such benefits include *expedited processing of documents, waiver of penalties, or jumping queues to avoid long waiting time*. By categorizing what are official/ documented and non-official/undocumented payments, CPMM is able to distinguish the two.

How frequent is unofficial payment along CAREC corridors? Unofficial payment is recorded and compared to the total occurrence of a particular activity. The **probability**⁹ of unofficial payment is obtained by taking the ratio. CPMM estimates that a transport operator encounters an incidence of unofficial payment once out of every three cases for visa/ immigration and vehicle registration. A chance of paying unofficial fees is a 26% for weight/standard inspection and customs inspection. For border security/control, the chance is 20%.

What is the expected (average) size of unofficial payments? It bears noting that, by definition, there are no official receipts issued for unofficial payments. Thus, verifying the **size** of unofficial payments is inherently difficult. Also, the magnitude of the unofficial payment depends on a few factors, such as:

- The location of the BCP
- The type of cargo
- The experience of transport operator in dealing with demand for unofficial payments

Based on CPMM data and interviews with transport operators, crossing at PRC borders do not involve any unofficial fees. Such payments occur elsewhere in CAREC. The location also has a bearing on the size of the unofficial fees. Transport operators mentioned that at high traffic BCPs, where queuing time could be excessively long due to congestion, authorities could hint at acceptance of higher 'facilitation fees' or 'tea money' to expedite border crossing.

The type of cargo also determines the rates to be paid.

⁸ Only five CAREC countries, namely Azerbaijan, Kazakhstan, Mongolia, Pakistan and People Republic of China, are contracting parties to Revised Kyoto Convention. (Source: http://www.wcoomd.org/en/topics/facilitation/instrument-and-tools/conventions/pf_revised_kyoto_conv/instruments.aspx)

⁹ The actual probability estimate of unofficial payments can be much higher. Due to the sensitivity of the subject, some drivers might choose not to report it.

Perishables such as agriculture products with limited shelf life, could contribute to higher non-official fees for expeditious processing. On the other hand, shipments of durables such as furniture or machinery are less time-sensitive, and less likely involve non-official payments. Finally, the experience of the management and drivers also affects the payable amount. New and inexperienced transport operators are more easily persuaded and could pay a higher sum. Experienced transport operators know the ‘market rates’ and would negotiate more confidently to pay a lesser sum, or none at all.

CPMM data show that the range of unofficial fees varies widely across the six corridors. Customs related fees at Corridor 5 (Peshawar-Torkham and Chaman-Spin Buldak), and Health/Quarantine fees at Corridor 4 (Erenhot-Zamyn Uud) have the highest average at \$50 per crossing. Customs fees at BCPs along corridor 1 (Khorogos) and weight certificates at BCPs along corridor 6 rank second at an average of \$20.

CPMM collects such unofficial payment data through drivers. Note that this does not capture the scope and scale of unofficial payment made by other parties such as cargo owners. As such, it is possible that the overall unofficial payment is higher than reported.

Table 4: Likelihood of Unofficial Payments

Activity	Count	%	Average
A. Border Security / Control	2,964	20%	19
B. Customs Clearance	4,473	24%	113
C. Health / Quarantine	2,286	16%	24
D. Phytosanitary	1,718	8%	10
E. Veterinary Inspection	1,218	3%	10
F. Visa/Immigration	661	31%	19
G. GAI/Traffic Inspection	1,983	0%	6
H. Police Checkpoint / Stop	2,387	0%	5
I. Transport Inspection	1,919	0%	12
J. Weight/Standard Inspection	2,469	26%	19
K. Vehicle Registration	1,451	31%	5
L. Emergency Repair	41	0%	18
M. Escort / Convoy	314	0%	71
N. Loading / Unloading	1,917	0%	86
O. Road Toll	2,052	8%	34
P. Waiting/ Queue	68	9%	11

TFI3

Cost Incurred to Travel a Corridor Section

(in \$, per 500 km, per 20-ton)

Highlights

- Both modes of transport showed slight reduction in transport cost in 2015, but overall the trend is similar to the previous year.
- The Road/Rail Ratio is calculated to be 1.07 (near parity), implying that rail transport cost could be unreasonably high.
- For road, transport cost dropped in Corridor 3 where price competition between transport operators in Afghanistan, Kyrgyz Republic, and Tajikistan drove down cost of shipment. These transport operators were severely affected by the ISAF withdrawal; the corresponding drop in demand means that the overcapacity of trucks continues to depress prices.
- Rail transport costs were relatively unchanged in 2015 along Corridors 1 and 4.

After converging in 2014, TFI3 remained comparatively stable. The average cost of transport over 500 km reached \$1,341 for road transport, and \$1,250 for rail transport. The calculation normalized the payload to be 20 tons on a truck or a 20-foot container on a train. CPMM uses 500 km as a unit for the distance and a 20 ton load (or a 20-foot container) for weight because transport cost is affected by these two major parameters. By standardizing the distance and weight, one can then compare the transport efficiency across CAREC Corridors accurately.

In 2015, TFI3 for trains has gone below that of a truck, which is normal as railway transport should be more cost efficient. However, the gap between the two TFIs in 2015 is not significant. The TFI3 for road transport is only 1.07 times that of rail transport. Clearly, railways have failed to maintain their comparative advantage over road transport as they compete for long-distance traffic.

To examine the relationship between the two transport modes, the TFI3 (road) is divided by the TFI3 (rail). This gives the Road/Rail Ratio, an estimate of how much more expensive it is to use road transport compared to rail transport, assuming the distance and the payload are identical.

Analysis reveals that the ratio peaked in 2011 and has since steadily moved lower, reaching parity in 2014. In 2011, it cost 3 times more to use a road transport than a rail transport for a shipment. This implies either road transport is becoming cheaper, or/and rail transport has become more expensive.

Looking at the TFI3 chart over the years, one can see that TFI3 for both modes has risen over a 6 year period. However, the TFI3 for rail transport experienced a surge, taking off in 2013 by doubling in value. Over the six year period, TFI3 for road transport increased only 1.8 times, but the TFI3 for railways increased 2.7 times.

The reason for this increase in recent years was well documented in CPMM Annual Reports 2013 and 2014. The increase was due to the rise in railway fee structure in Corridor 1, driven by the revision of tariffs by Kazakhstan Temir Zholy (KTZ). In 2015, the TFI3 eased off the highs experienced in 2014. CPMM will seek to monitor if the average cost continues to move downwards.

Road Transport

In 2015, TFI3 for road was influenced by the diverging dynamics registered in Corridors 3 and 6. Between 2014 and 2015, TFI3 for Corridor 3 decreased 33% while that in Corridor 6 rose 66%. The other corridors showed a stable pattern. Due to the effects of Corridors 3 and 6, which cancelled out each other, TFI3 for road transport in general stayed flat.

On the other hand, Corridor 6c experienced a surge in vehicle operating cost. In fact, the TFI3 for Corridor 6c surged 74%. This can be explained by the expansion of data collection. In 2014, data collection on shipments from Pakistan to Afghanistan commenced at Torkham BCP. In 2015, the data

Figure 5: Ratio of Road to Rail Cost

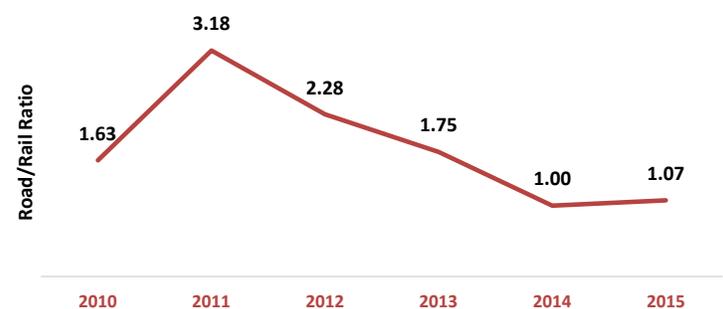
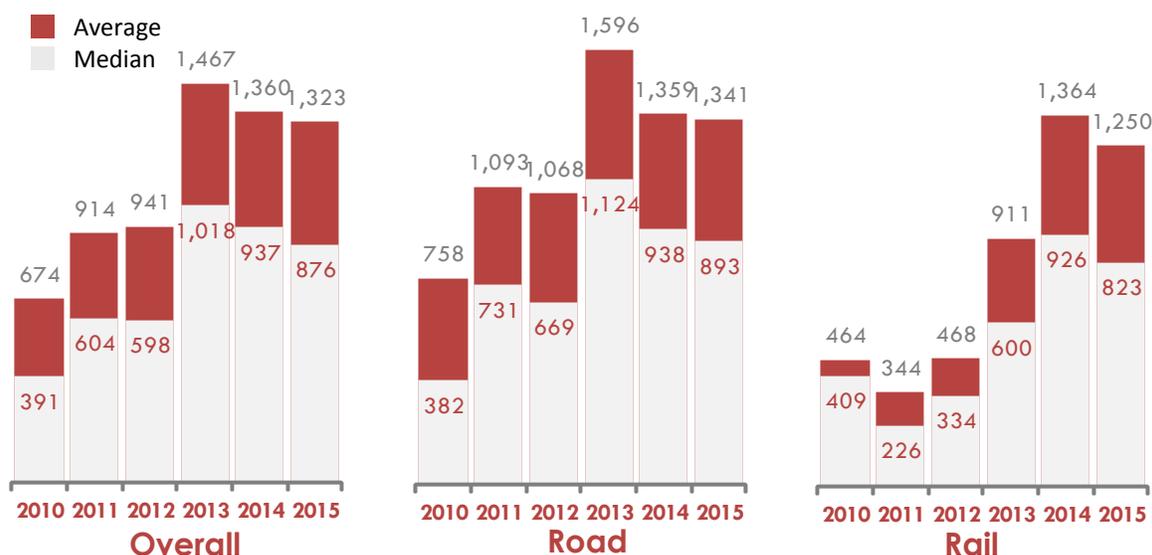


Figure 6: Cost Incurred to Travel a Corridor Section, per 500-km, per 20-ton, in \$



collected had a change and the starting point was extended to Peshawar. This city is a major consolidation and deconsolidation center for Afghan goods and would more correctly reflect the cost of the entire supply chain. Although Peshawar is only 55 km from Torkham, this section is cumbersome to cross: trucks encounter various police checkpoints and inspections. Thus, CPMM is now able to re-assess the entire cost of shipment from Peshawar to Kabul, but this inevitably showed an increase in TFI3 compared to the previous journey from Torkham to Kabul.

Rail Transport

In 2014, railway transport cost jumped substantially along Corridor 1 and 4. This pattern did not continue in 2015, where the railway cost remained relatively unchanged.

CPMM railway samples were mainly restricted to Corridor 1a and Corridor 4b. For Corridor 1a, the shipment of a 40-foot container from Urumqi to Almaty cost \$3,000 over a distance of 1,277 km (crossing Alashankou-Dostyk). For a train carrying a 40-foot container from Urumqi to Farap, it cost \$10,000 over a distance of 2,833 km.

For Corridor 4b, CPMM data collected in both directions between Tianjin to Ulaanbaatar over a distance of 1,692 km. To ship a 40-foot container from Tianjin to Ulaanbaatar, the railways cost \$4,466 while shipping in the reverse direction

cost \$3,256. The price difference is due to the greater amount of goods moving from Tianjin to Ulaanbaatar, driven by Mongolia's import oriented economy. The narrow range of commodities shipped from Ulaanbaatar to Tianjin can use the returning containers and wagons and thus enjoy a discount.

Some readers may question why the cost of transportation does not seem to fall when the price of oil has become so depressed. From mid-2014 to end-2015, the price of oil collapsed to \$30 a barrel. National transport associations shared that while it is true that international price of oil has collapsed, the price of fuel at the pump has not dropped that significantly. Generally, oil companies are wary of the volatility in the price of oil, and profit incentive implies a reluctance to lower oil price. Furthermore, there are other elements in determining cost, such as market structure and competition. In CAREC, sales of refined petroleum products are state-owned and controlled, so there is little price competition. Admittedly, CPMM also does not measure fuel costs specifically, so the study is not equipped to examine the price of oil and its effect on transport cost.

TFI4

Speed to Travel on CAREC Corridors

(in kilometers per hour)

Highlights

- Both transport modes achieved higher speeds (SWD) in 2015.
- Road speed increased 1.3% while train speed increased 20%.
- Corridor 5 remains as the slowest corridor.
- Trucks moving in 1b, 2b, and 3a experienced substantial reduction in speed due to border crossing delays.
- Trains moving on 1a travel three times faster than those moving on 4b, but capacity constraints at Dostyk continued to affect overall efficiency.

duration, encountered in the journey. When computing the SWOD and SWD for a shipment moving from Origin to Destination, SWD is always equal or lower than the SWOD.

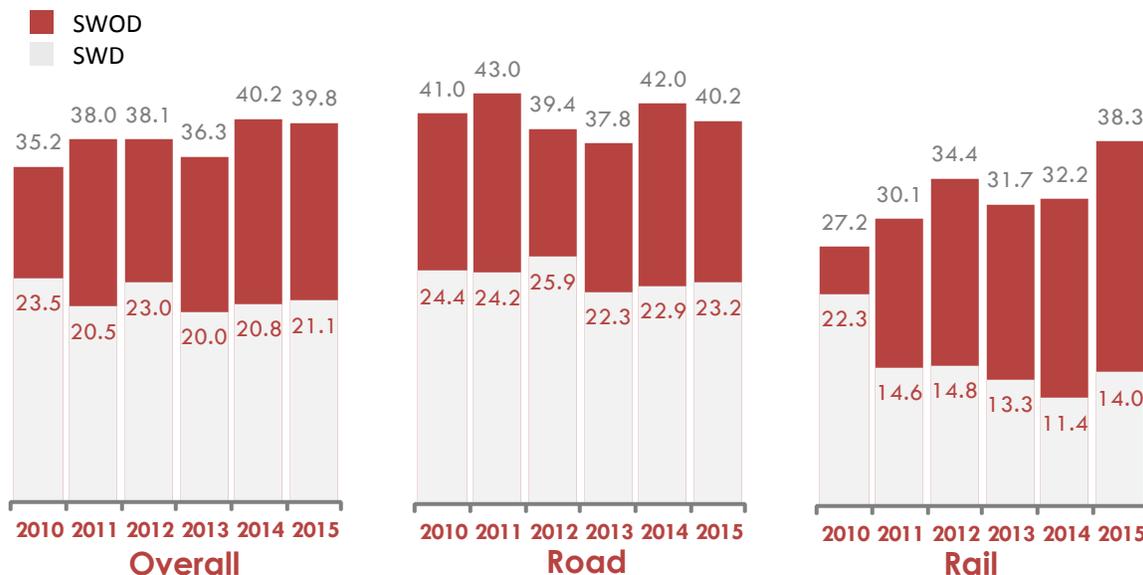
Both transport modes exhibited an improvement. TFI4 (road) changed from 22.9 kph to 23.2 kph from 2014 to 2015. TFI4 (rail) reported a 20% increase, from 11.4 kph to 14.0 kph over the same time period.

Road Transport

In general, TFI4 has shown a stable pattern in recent years. Corridor 2 continued to be the fastest corridor to travel, reaching 49 kph, followed by Corridor 1 (45 kph) and Corridor 3 (40 kph). Corridor 5 remained the slowest corridor, attaining average speed of 36 kph. The routes in these corridors explained the results. Relatively speaking, transport infrastructure in Kazakhstan, PRC, and Uzbekistan are better, accounting for the higher SWOD achieved in Corridor 1, 2, and 6 where these countries play a more substantial role. On the other hand, less developed transport infrastructure in Afghanistan, Kyrgyz Republic, and Tajikistan (all present in Corridor 5), coupled with mountainous terrain and adverse winter conditions pose constraints on the average speed of trucks moving in those countries. Yet Corridor 4 has shown that the presence of a good paved surface road does improve SWOD. The ADB-financed road from Choir to Zamyun Uud resulted in a noticeable jump of SWOD in 2014, and this is sustained in 2015. (Refer to the Speed Maps at the end of this

CPMM measures two types of speeds. The first is Speed Without Delay (SWOD). This measures the speed of the vehicle moving from origin to destination when in motion. This measurement excludes any stoppage time along the journey such as delays at border crossing. Where the transport infrastructure and equipment are excellent, vehicle can move rapidly. Paved roads, electrification of railway lines, and more powerful locomotives facilitate higher speed of travel. The second measurement is called the Speed With Delay (SWD). This speed quantifies the delay time, such as border crossing

Figure 7: Speed to Travel on CAREC Corridors, in kph



section for a visual illustration on the relative SWOD on each CAREC Corridor).

It is noteworthy to highlight that TFI1 and TFI4 are correlated. A corridor that has longer delay time for border crossing (TFI1) will lead to a lower overall speed (TFI4). It is also insightful to examine those corridors where a sizeable drop in speed exists (calculated as the percentage difference between SWOD and SWD).

- 1b: Trucks slow significantly due to crossing Khorgos (PRC-KAZ). While the magnitude of the delay has been reducing over the years, Khorgos still remains a very time-consuming BCP compared to the other BCPs.
- 2b: Alat-Farap (UZB-TKM) has been identified every year where border crossing time is lengthy, so 2015 is no different. Traffic is heavy in both directions. Average border crossing time at each point is 6-7 hours.
- 3a: Kyrgyz trucks carrying agricultural exports to Russia transit Kazakhstan, crossing into Russia at Aul-Veselayarsk (KAZ-RUS). In Q2, the delay at Veselayarsk was alarming. For the entire year, the border crossing time at this location averaged 12.2 hours. Since Kyrgyz Republic joined the Eurasian Economic Union, no significant delays were observed in Q3 and Q4. Trucks only need to go through border security inspection. Thus in 2016, the gap between SWOD and SWD in 3a can be expected to narrow.

Rail Transport

The average railway speed in 2015 increased 20% to 14.0 kph. Corridor 1a was nearly three times faster than Corridor 4b. After accounting for border crossing delay, the former was only moderately faster than the latter. This observation is consistent with past findings. It can be concluded that, while railway infrastructure and facilities were generally in better condition in Kazakhstan, the border crossing suffered from more severe delay. Thus the proposed solution for the Trans-Kazakhstan differs from the Trans-Mongolian route.

Corridor 1a had speeds of 48 kph when travelling (SWOD), and a net effective speed of 17 kph (SWD) only after considering delays at border crossing. A primary reason is due to the limited processing capacity of Dostyk, which restricted

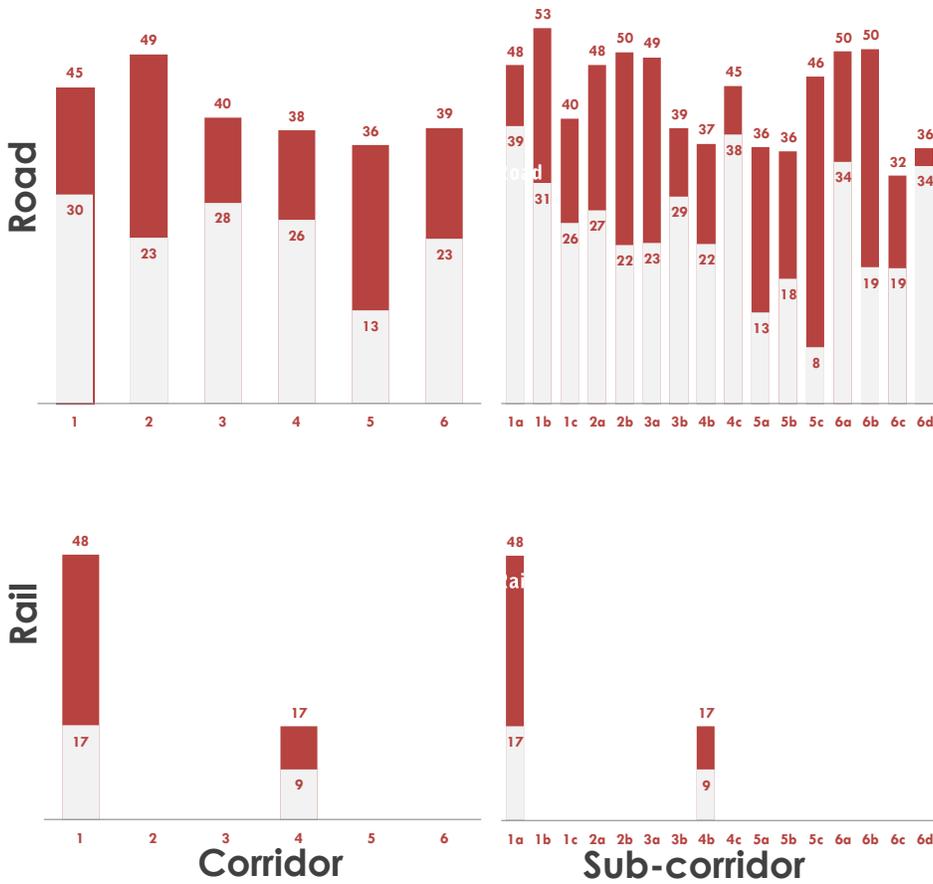


Figure 8: These are the new facilities at Khorgos (Kazakhstan side). The actual name of the BCP is called Zharkent BCP. All trucks carrying PRC goods entering Kazakhstan will pass through this BCP. The BCP is being improved with new facilities and equipment to shorten border crossing time.

throughput throughout the system. The trains in the railway line from Urumqi-Alashankou-Dostyk suffer from long 'Restriction to Entry' time, which happens when Dostyk reaches full capacity and is closed to other incoming trains in the system. In addition, it appears that poor wagon fleet management ('No Wagons Available') is the second most important reason reported by CPMM partners. This lack of rolling stock hampered timely dispatch trains in terminals and yards, suggesting the need to expand wagon fleets or take measures to improve wagon availability.

Corridor 4b had speeds of 17 kph, which dropped to 14 kph when border-crossing time was included. A substantial portion of this delay was due to the dwell time at Tianjin port, made worse by the chemical explosion incident in September 2015. Both Erenhot and Zamyn Uud (PRC-MON) reported relatively lengthy average delays, but the reasons were different. At Erenhot, the trans-load process due to gauge differences averaged 33 hours. At Zamyn Uud, the reloading of cargoes took 16 hours and the waiting time for wagons took 20 hours.

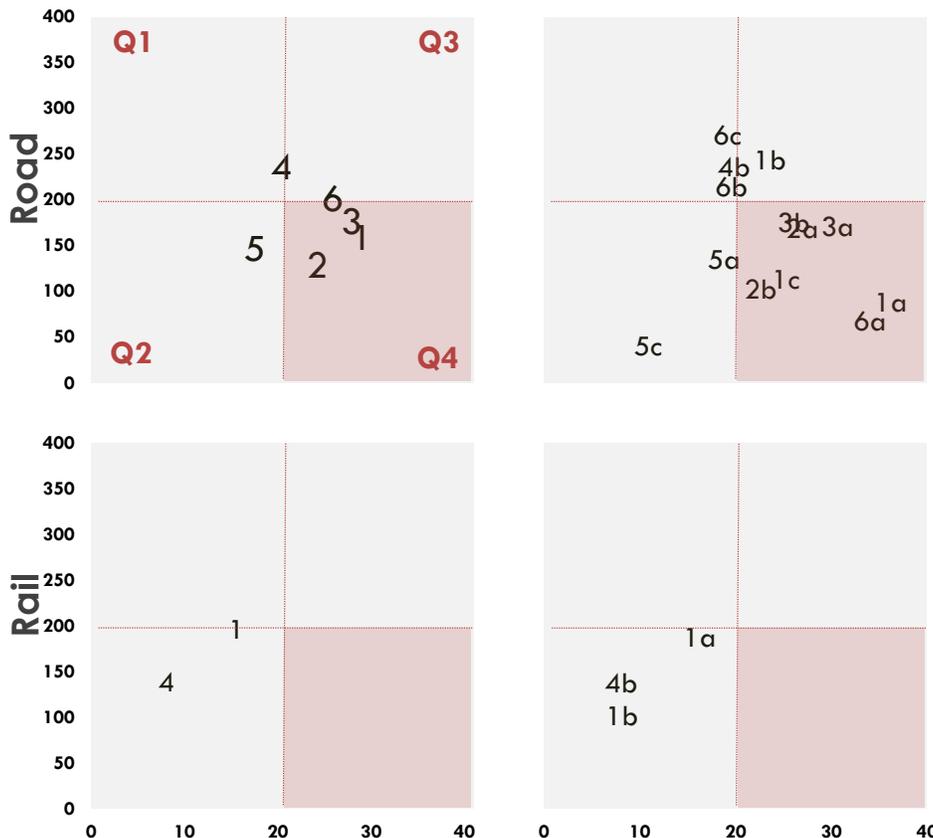
Figure 9: Speed Indicators for Road and Rail Transport



- **Speed Without Delay (SWOD), in kph.** This metric considers travelling speed only, i.e. when the delivery truck moves on the road, or when the train moves on the tracks. When the vehicle is stationary, the time is not counted.
- **Speed With Delay (SWD), in kph.** This SWD considers the total time taken for the entire journey, including stoppage time due to the various reasons.

■ SWOD
■ SWD

Figure 10: Variation in Speed Estimates per Corridor



Speed reliability plot

- **Quadrant 1:** Low Speed, High CV. This is very challenging for shipment because the vehicles move slowly, and uncertainty in lead time is high.
- **Quadrant 2:** Low Speed, Low CV. Shipment moves slowly along this quadrant, although the delivery lead-time is more consistent. The key is to increase the speed (e.g. by constructing a new road).
- **Quadrant 3:** High Speed, High CV. Shipment moves fast in this quadrant. However, the uncertainty in this quadrant is high, which means the actual arrival may be earlier or later than the expected time. The reasons for such outcomes need to be investigated and the variations of the timings need to be reduced. For instance, inconsistent border inspection practices make it hard to predict when goods can be cleared.
- **Quadrant 4:** High Speed, Low CV. This is the ideal situation because goods can move rapidly and reliably. The objective of CPMM is to improve the performance in Quadrants 1, 2 and 3 so that they can move to this quadrant over time.

IV. Performance of CAREC Corridors



C1 Corridor 1

Europe–East Asia

Connecting Europe to East Asia, Corridor 1 is a multimodal route that links three countries (Kazakhstan, Kyrgyz Republic, and PRC). It has 13,600 km of roads and 12,000 km of railways. Corridor 1 supports major trade flows, providing important avenues for exports and imports for all three countries. The corridor features prominently in the significant trade between Kazakhstan and PRC. Kyrgyz operators use Corridor 1c mainly as a transit route to access the Russian market.

Road Transport

Trucks move comparatively fast along Corridor 1, attaining average speeds of more than 40 kph; those travelling along corridor 1b registered an average speed of 53 kph. After accounting for border-crossing delays and intermediate stops, corridor 1b registered the fastest SWD of 39 kph. This 41% reduction in the speed indicators suggests significant border-crossing delays.

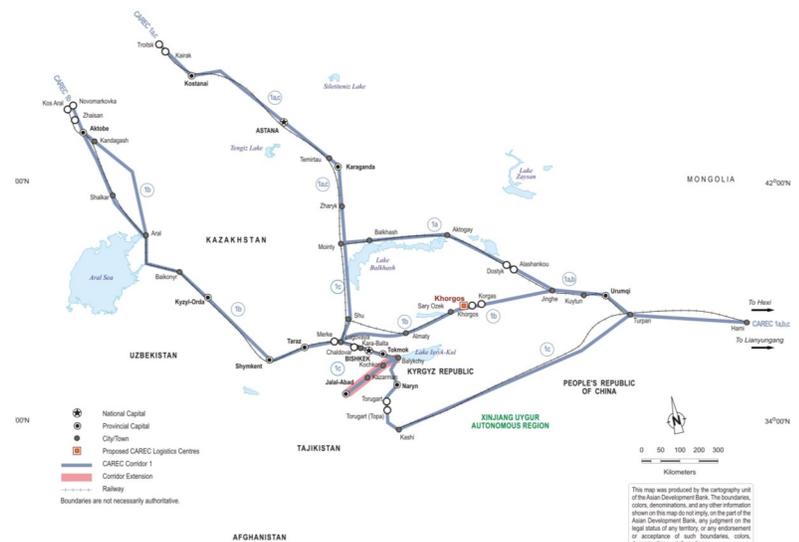
Border-crossing points and Bottlenecks

Khorgos is a high-traffic BCP and the most time-consuming bottleneck along corridor 1. In the recent years, it has demonstrated a steady reduction in border-crossing delay. In 2015, the average border-crossing time at Khorgos (PRC-KAZ) dropped from 19.3 hours to 10.6 hours, a substantial reduction of 45%, which helped reduce the overall average border crossing time for corridor 1.

Corridor 1 facilitates road traffic from east to west along corridor 1b, and south to north along corridor 1c. Trucks, carrying PRC merchandise, move from Urumqi to Khorgos, from where goods are collected by Kazakh trucks and then return to Almaty.¹⁰

At Khorgos (PRC), drivers have to go through a series of queue and inspections. The three most time-consuming activities are identified to be loading/unloading (3.6 hours), customs inspection (2.4 hours) and waiting in queue (2.2 hours). In

Figure 11: CAREC Corridor 1



practice, however, goods remained stored in bonded warehouses at Khorgos for a few days. This is because bonded carriers between PRC and Kazakhstan are expensive and most PRC trucks do not have the permit to carry goods from the border to Almaty. As such, many transport operators move goods from Urumqi to a bonded warehouse in Khorgos, from which goods are collected later by Kazakh transport operators. Hence, actual loading/unloading time could reach days instead of only 3.6 hours.¹¹

A major breakthrough would be to arrange permission for bonded carriers to move goods from Urumqi (customs office of origin) to Almaty (customs office of destination) without the need to trans-load goods between trucks, or without the need to dwell in bonded warehouses at Khorgos BCP. However, due largely to the different customs regimes between Kazakhstan and PRC, the implementation of such a pragmatic approach is unlikely. That said, mutual recognition of Authorized Economic Operators (AEOs) in each country, buttressed by legislation

¹⁰For more information on the entire supply chain, please refer to CPMM Annual Report 2014.

¹¹This waiting time in storage is difficult to capture as bonded warehouse operators do not yet participate in CPMM.



Figure 12: Part of the road section in CAREC Corridor 1b connecting Almaty and Khorgos. This section is a segment of the ‘Western China-Western Europe’ corridor. It is a well-constructed section that facilitates heavy movement of traffic in both directions, thus permitting vehicles to move at speeds greater than 50 kph.

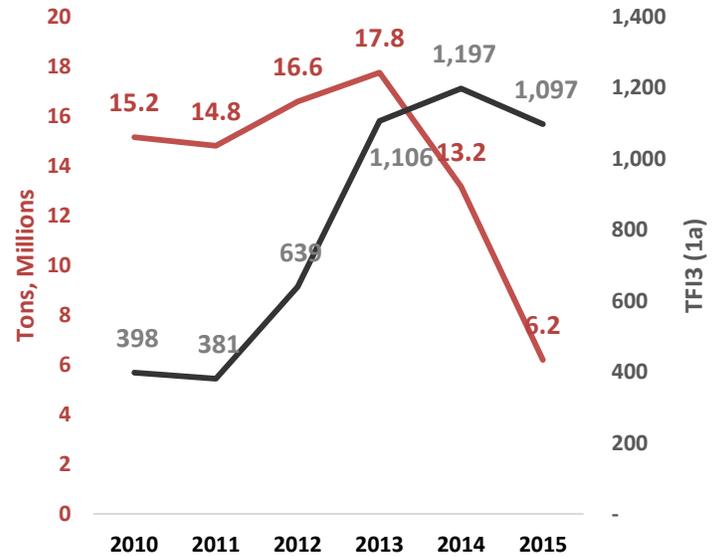
allowing only AEOs to provide this bonded carriage, may provide one means to achieve this breakthrough.

Although difficult in practice, both countries should consider deepening border cooperation at this opportune moment. The cross-border volume of trade has declined significantly due to global economic downturn, affording both countries room to test new trade facilitation measures. Such measures could also reduce cost, a decisive factor for small and medium businesses on both sides of the border. Moreover, the Urumqi Customs Administration has just recently concluded agreements with the Customs General Administrations in Tajikistan and the Kyrgyz Republic. The agreements aim to improve efficiency on the cross border shipment of perishables. Interestingly, PRC shipment of fruits and vegetables to Kazakhstan through Khorgos increased 6.9 % in 2015, reaching 115,000 tons at a value of RMB 850 million (\$131 million). Expediting cross-border shipment directly from Urumqi to Almaty, with minimal interference at Khorgos BCP, would yield sizeable trade benefits for both countries.

Rail Transport

The tonnage throughput at Alashankou halved in 2015. Initially, it was suspected that the new railway service in Khorgos cannibalized the business from Alashankou. This claim proved to be unfounded as the rail throughput at Khorgos

Figure 13: Alashankou: Annual Tonnage Handled by Railways vs TFI3 of sub-corridor 1a



Source: Alashankou Inspection and Quarantine Bureau, Urumqi Customs

registered a 46% reduction in the same year, suggesting substantial drops in cargo volume in both locations. The drop in tonnage notwithstanding, 2015 witnessed an increase in traffic (which explains the persistent congestion experienced in this corridor) driven by the proliferation of westbound express container services. In 2015, monthly departures averaged 38 trains. Forecasts for 2016 envisage an increase in monthly departures to 45.

In general, shipments from Urumqi to Almaty continue to use Alashankou-Dostyk (1a) even though the route is 200-km longer than through Khorgos-Altyntkol (1b). Freight forwarders claim that Altyntkol is still not fully equipped to handle trans-load of trains at the break in gauge. Dostyk is more established and can handle the process more efficiently than in Altyntkol.

Due to inadequate facilities in Altyntkol, trans-loading of train cargo are at time done at Khorgos (PRC side). In principle, the importing country bears the responsibility of completing the trans-load of cargoes on trains if there is a break in gauge, as is the case on PRC’s borders. Thus, for trains carrying PRC goods from Urumqi to Almaty, the trans-load should be conducted in Altyntkol. However, both railways operators reached an agreement that, at times of congestion, the trans-load for such trains can be done at the PRC side using the just emptied wagon on broad tracks. The loaded trains then return to

Almaty with the goods. Although this is neither the ideal nor the recommended practice, this helps manage border-crossing time for trains more effectively.

In terms of cost, figure 14 shows that the average cost incurred to travel a 500-km rail section (TFI3) along corridor 1a declined in 2015 despite a marked increase in the average rail border-crossing cost at BCPs along the same corridor. Since the overall cost (TFI3) is a sum of rail tariff and border crossing fees (TFI2), this divergent pattern implies that the rail tariff component must have moved in the opposite direction relative to the border-crossing fees. The same pattern, but in reverse, was also observed the previous year. In 2014, border-crossing fees reached a low of \$128, yet overall cost peaked at \$1,197. This suggests that rail tariff must have increased and have driven the overall cost up.

Conversely, in 2015, border-crossing fees rebounded to \$241, while the overall cost trended slightly downward. The increase in border-crossing fees is largely attributable to the increase in trans-loading cost at the break in gauge, particularly at Dostyk (see figure 15), which surged to \$432 in 2015 compared to \$235 the previous year. Meanwhile, the average border-crossing fees at Alashankou continue to trend downwards. While Alashankou attained some cost efficiency, border-crossing cost at Dostyk showed rather volatile patterns.

Although Altynkol suffers from capacity constraints at present, it offers a potential long-term solution to freight forwarders. Its location affords trains a shorter route, by more than 200 km, when moving goods from Urumqi to Almaty. Moreover, the adverse weather in Alashankou results in, at times, suspension of operation to ensure work safety. Furthermore, PRC trains entering Kazakhstan via Dostyk still suffer long border-crossing times of 42 hours, on average. Should Khorgos-Altynkol provide predictable and efficient operations, more rail traffic would be diverted to corridor 1b.

Figure 14: TFI2 and TFI3 estimates, Corridor 1a

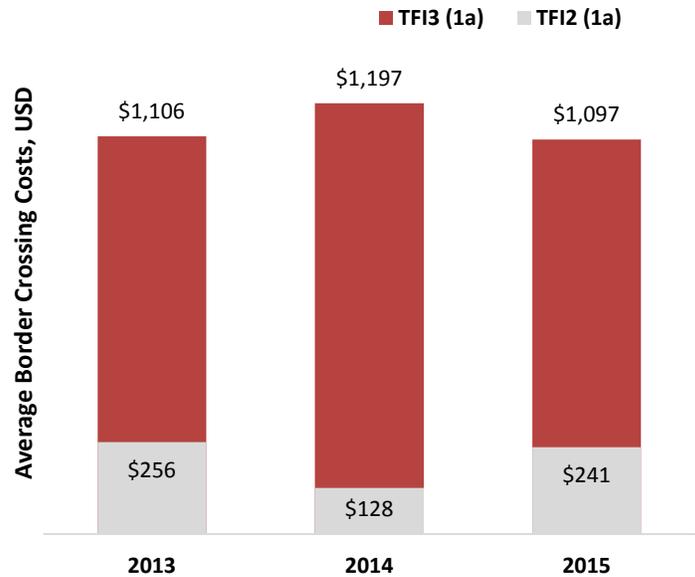
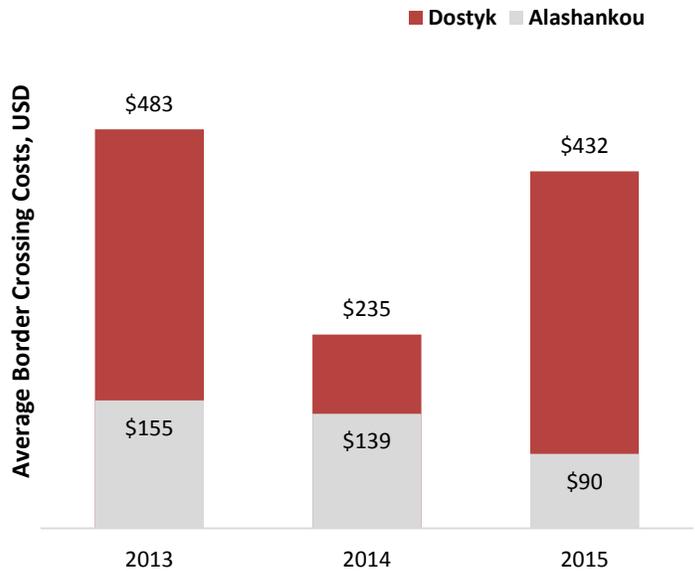


Figure 15: Average Border-crossing Costs for Major Railway Stations



Box 1 Express Container Train—Connecting the Eurasian Continent

PRC has a grand plan to revitalize the ancient silk-road. One key instrument to realize this objective is to use rapid train service that can send goods faster than the sea, yet cheaper than air. The result is (heavily subsidized) scheduled express container trains. Since its inauguration by Chongqing, other PRC cities such as Zhengzhou, Xi'an and Chengdu have launched similar services. Yet Chongqing remains the most robust and most recognized instance.

The backhaul cargo volume has improved: return trips from Europe to PRC totaled 101 (compared to 156 from PRC to Europe) in 2015, according to Chongqing International Forwarders Association. This is critical as the cost of railway transport could be lowered effectively if the volume of eastbound traffic approaches that of westbound traffic. Empty backhauls were a principal reason for the high cost of this service initially, but recent increases in backhaul cargoes enable the train service to operate with reduced subsidies. As cargo volumes increase, it is expected that this service can become more viable, thus creating a virtuous cycle. CPMM will continue to monitor the cost effectiveness of this service.

With increased cargo and more effective pricing, Chongqing now embarks on a new multi-modal strategy called 'Chongqing +4'. This is a new concept that relies on rail-air multi-modal transport to link Southeast and East Asian economies to the European market. According to this strategy, cargoes can be sent via trains from Duisburg to Chongqing, and then loaded onto planes that fly to an airport within 4 hours of flying time. The 4 hours' flight time enables Chongqing to reach many Southeast Asian cities such as Bangkok, Jakarta, Kuala Lumpur and Singapore, as well as Incheon in South Korea. Estimates by Chongqing authorities conclude that such multi-modal service is cheaper when compared with direct air shipments from these cities to Germany. Thus Chongqing can position as a transport hub that connects Southeast Asia to

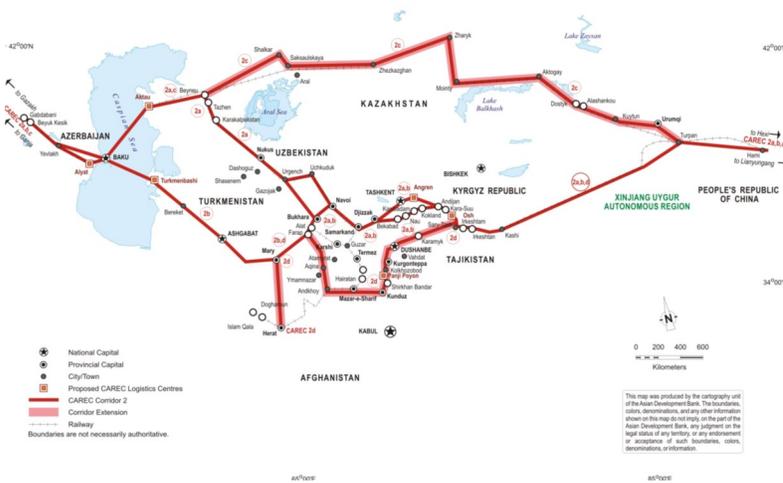


Figure 16: Chongqing is rapidly positioning the city as a transit hub, connecting cargo flows between PRC and the European markets. Besides the container express train service, Chongqing also ships cargoes such as building materials, automobile and spare parts to Central Asia, Russia and Mongolia.

C2 Corridor 2

Mediterranean–East Asia

Figure 17: CAREC Corridor 2



Corridor 2 is a multimodal corridor featuring roads (9,900 km) and railways (9,700 km), and one of the two corridors that feature maritime transport across the Caspian Sea.¹² The two corridors 2a and 2b are east-west routes connecting East Asia to the Caucasus, where cargoes move on roads, railways, and ferries across the Caspian Sea. These two are also important ‘energy corridors’ facilitating transport in Azerbaijan, Kazakhstan, and Turkmenistan: all energy producing countries. The northern route 2c facilitates a road-rail corridor connecting the eastern and western regions of Kazakhstan. In the south, corridor 2d offers a transit route connecting Afghanistan, Tajikistan, and Turkmenistan.

Road Transport

Corridor 2 remains the fastest road corridor with an average SWOD of 49 kph. However, trucks travelling predominantly in Uzbekistan, crossing Kazakhstan and Turkmenistan for transit, suffer from long border crossing: hence a significantly lower SWD of 23 kph (53% reduction).

¹²The other is Corridor 6, which also features the Trans-Caspian segment.

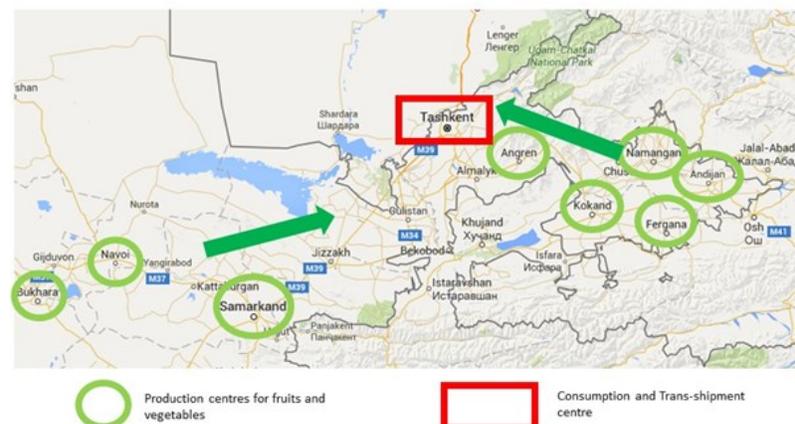
Corridor 2 can also be described as an ‘agriculture corridor’, supporting the domestic and international shipment of fruits and vegetables. Two major production centers for agriculture products lie in both eastern and western regions of Uzbekistan.

The Fergana Valley lies to the east of Tashkent, where Angren is also a proposed site for logistics center for cold chain facilities. Uzbekistan is actively developing proposals to operate a nationwide cold chain network to increase exports of agriculture products and reduce spoilage rate.

Southwest of Tashkent lies the populous cities of Samarkand and Bukhara, as well as the Free Industrial Economic Zone in Navoi. Agricultural produce from these regions is dispatched from Tashkent to Yallama-Konysbaeva (UZB-KAZ) for shipments bound to Almaty, or to Dautota-Tazhen (UZB-KAZ) for goods destined for Russian cities.

Figure 18 illustrates the flow of commodities in Uzbekistan, which coincides with corridors 2a and 2b. Trucks travel relatively fast, averaging 50 kph, due to the well-developed transport network and infrastructure in Uzbekistan. The country has 4-lane highways to serve delivery trucks, as well as

Figure 18: Flow of Commodities in Uzbekistan



roadside services such as hotels and fuel stations. However, border crossing delays at BCPs along these corridors diminish the transport efficiency afforded by good roads.

Border-crossing points and Bottlenecks

Major bottlenecks in Corridor 2 include the following BCP pairs:

- **Alat-Farap (UZB-TKM):** Due to its strategic location between Iran's Bandar Abbas seaport and Tashkent, Alat is the busiest road BCP in Uzbekistan. Containerized cargo to and from the seaport passing through Alat suffer long delays at the border: an average of 6.2 hours and 7.1 hours at Alat and Farap, respectively, for TKM-bound trucks, and 5.4 hours and 5.6 hours at Alat and Farap, respectively, for UZB-bound trucks.
- **Dautota-Tazhen (UZB-KAZ):** Similarly, delays are as lengthy in either direction. Exporting UZB trucks face an average border-crossing time of 6.8 hours at Dautota and 7.8 hours at Tazhen. For imports, trucks undergo an average delay of 5.9 hours at Dautota and 7.2 hours at Tazhen. Waiting time in queues largely contributed to these delays, averaging 3-4 hours on both sides of the border.

The Regional Improvement in Border Services (2012) report of the ADB, reveals that most BCPs in Uzbekistan are operating below full capacity, with the exception of Alat. These BCPs tend to be located in remote areas and, thus, have large space for expansion. Most BCPs already have 3 to 4 lanes, suggest the potential capacity to handle more traffic without problems. Waiting time can also be reduced at these BCPs either by improving the infrastructure, or shortening processing time.

Moreover, border performance efficiency may also rely on procedural improvement:

- There is currently no green channel for AEOs or TIR carnet holders. These transporters join in the same queue as all other operators.
- The Customs Code has no provision to apply risk management at BCPs.
- There is an excessive reliance on customs inspection for a wide list of goods. This is mandated by resolution of the Cabinet of Ministers (Resolution No. 75 of 4th May 2007). The appendix, which consists of 113 pages, requires an extensive list of imported and

exported items to be inspected.

Efforts to improve the present performance are in place. The Government of Uzbekistan has decreed that all exports must be cleared within a day. In spite of such policy, Uzbekistan is perceived to have the most burdensome customs regime, making it unfavorable for foreign truck operators to transit the country, hence the limited samples of transit traffic from Kyrgyz Republic and Tajikistan along Corridor 2. This limits the appeal of Corridor 2 as a regional transit corridor.

Rail Transport

There is no CPMM data collection on railway transport in Corridor 2. The reasons are:

- Corridor 2c is a new Trans-Kazakhstan rail corridor, linking Zhezkazgan – Saksaulskaya – Shalkar – Beyneu over 1,202 km of railway. This service just commenced operation in August 2015.
- Corridor 2d railway potential hinges on the trilateral partnership between Afghanistan, Tajikistan, and Turkmenistan. The concept is still in discussion. In a way, this is also conceived to bypass Uzbekistan, which has restrictive policies against Afghanistan and Tajikistan in using its territory for transit.

The new rail service along Corridor 2c is expected to handle 8.2 million tons of traffic, including 2.3 million tons of transit goods. According to Kazakhstan Temir Zholy (KTZ), the new line is expected to improve the following performance indicators:

- Reduce transport cost by railway by 10% to 30%
- Reduce cargo delivery time by 1-3 days

Currently, moving goods from the east to west of Kazakhstan means utilizing CAREC Corridor 1a or 1b. The new route 2c is expected to reduce distance by 350 km, a sizeable shortening of distance. CPMM shall continue to monitor this development and engage transport operators to measure the efficiency of this new corridor.

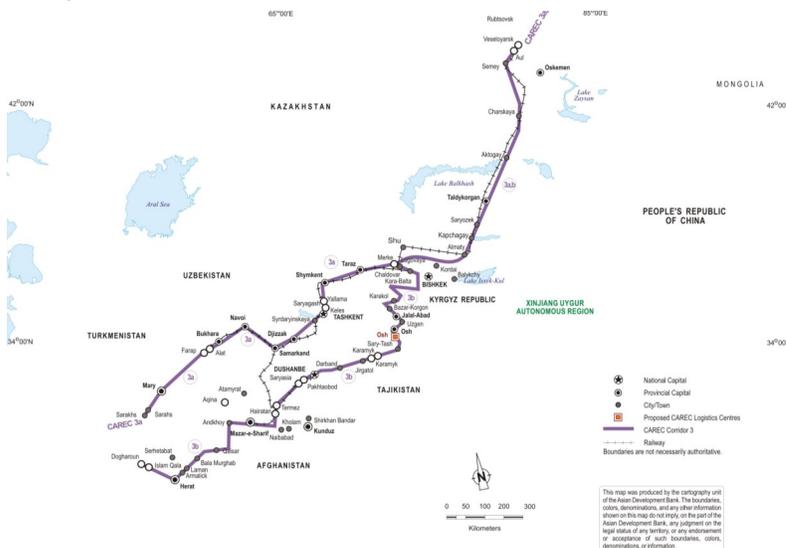
Uzbekistan moves a substantial volume of exports by railway. However, data collection is very challenging.

C3

Corridor 3

Russian Federation–Middle East and South Asia

Figure 19: CAREC Corridor 3



sent using non-containerized delivery trucks to Almaty, crossing into Kazakhstan at Yallama-Konysbaeva (UZB-KAZ).

Corridor 3b is active but samples traversing the entire section are difficult to obtain due to the following challenges:

- Long and winding road: The road section from Bishkek to Osh goes through a mountainous terrain. By ADB estimates, 33% of the roads in the country 'are in poor condition and need rehabilitation and reconstruction'.¹⁴ This applies to the trunk road connecting Bishkek to Osh. Despite the relatively recent rehabilitated roads, climate-induced impacts require constant maintenance of the road surface. ADB's assessment notes a high incidence of road traffic accidents; there were 4,248 road crashes in 2009 and 4,813 in 2013, resulting in 1,022 deaths.
- Karamyk: The road section from Karamyk to Dushanbe is relatively flat with undulating terrain and supports faster vehicle movement. This road BCP, however, is closed to international transit traffic, and serves only bilateral movement between Kyrgyz Republic and Tajikistan. Thus, international transit traffic is diverted to Batken province and crosses at Kyzyl Bel-Guliston (KGZ-TAJ), adding 250-300 km to the route.
- Uzbekistan-Tajikistan border: Due to tense bilateral relations between the two neighboring countries, BCPs could be closed without formal notice. Uzbekistan also imposed higher fees to transit cargoes carried by Tajikistan-registered trucks or transport operators.
- Uzbekistan-Afghanistan border: Virtually no trucks cross Hairatan, a key road BCP at the border. Uzbekistan restricts truck movement of Afghan exports into its territory, mandating that such goods have to be ferried by Uzbek-operated barges across the Amu Darya River. The barges do not operate on a

This north-south corridor connects the eastern region of Russia to the Middle East. Corridor 3 features 6,900 km of roads and 4,800 km of railways. The region in Kazakhstan from Aul to Merke forms the trunk section of Corridor 3, which splits into two at Merke-Chaldovar (KAZ-KGZ). Corridor 3a passes through Uzbekistan and Turkmenistan, ending at Sarahs-Sarakhs (TKM-IRN). Corridor 3b crosses Kyrgyz Republic, Tajikistan, and Afghanistan and terminates at Islam Qala-Dogharoun (AFG-IRN).

Road Transport

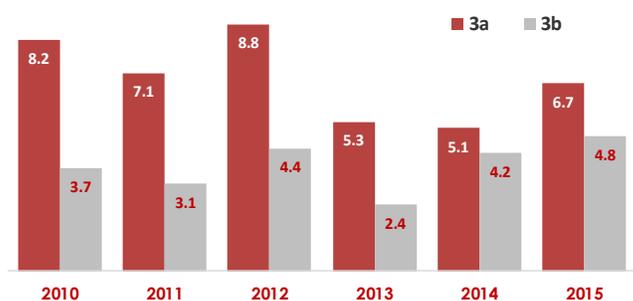
Corridor 3 is actively utilized by road transport operators to move agricultural products. Similar to corridor 2, this corridor can be described as an 'agricultural corridor'.¹³ Uzbek drivers move exports and imports in containers along 3a from Bandar Abbas seaport, crossing Alat-Farap (UZB-TKM) and Sarahs-Sarakhs (TKM-IRN). To the north, fruits and vegetables are

¹³ Refer to CPMM Annual Report 2014 for a discussion on the transit potential of Corridor 3 for movement of agricultural products.

¹⁴ Source: ADB Country Partnership Strategy for Kyrgyz Republic (<http://www.adb.org/sites/default/files/linked-documents/cps-kgz-2013-2017-ssa-03.pdf>)

Figure 20: Corridor 3 Trade Facilitation Indicators

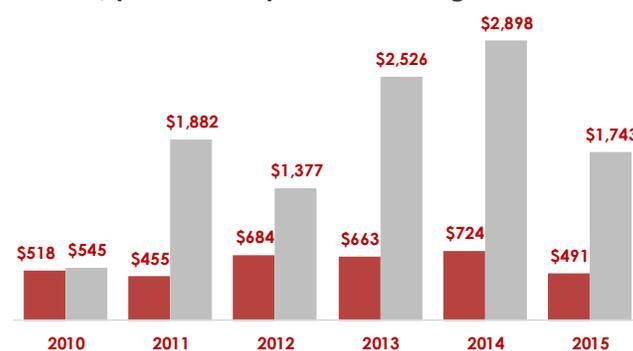
TFI1: Time taken to clear a border crossing point, hr



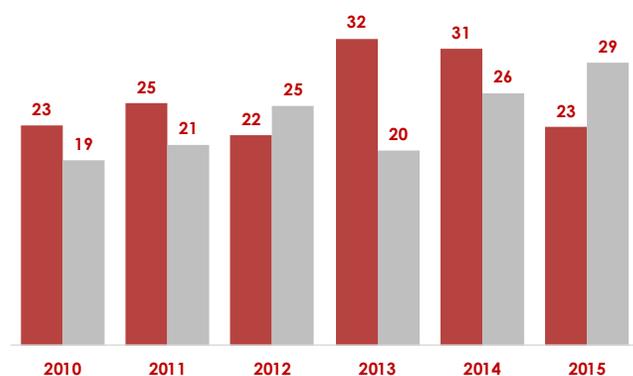
TFI2: Cost incurred at border crossing clearance, \$



TFI3: Cost incurred to travel a corridor section, \$ per 500km, per 20-ton cargo



TFI4: Speed to travel on CAREC Corridors, kph



Box 2:

Railway Shipment from PRC to Turkmenistan

A particularly interesting route studied in CPMM is the railway shipment of building and industrial materials (e.g. steel pipes) from Urumqi to Farap. The shipment crosses three BCPs, namely:

- Alashankou-Dostyk (PRC-KAZ)
- Saryagash-Keles (KAZ-UZB)
- Khodzhadavlet-Farap (UZB-TKM)

The data are summarized below:

Indicator	Data
Distance	2,833 km
Average Days	16 days
Average Cost	\$ 11,517
Average SWOD	45 kph
Average SWD	7.5 kph

In terms of time, readers may find that the average SWD of 7.5 kph is extremely slow. This is because a large portion of time is spent on non-value added activities where the train is not moving. Out of the entire 16-day duration, 83% of the time in transit was reported as stationary. Much of the dwell time was imposed by border crossing procedures.

Further data analysis revealed that trains were compelled to wait in terminals at BCPs due to restriction on moving. The problem was most serious at Alashankou, where waiting time could be as long as 22 hours. At other BCPs, the waiting time in hours was of a double-digit magnitude. The next most time-consuming activity involved customs formalities.

regular schedule, especially during winter. In addition, Afghan goods are not allowed to be loaded onto empty rail wagons and return to Termez. Only Uzbek exports are permitted to use trains and enter Mazar-e-Sharif.

The average border crossing time in 3b increased to 4.8 hours. This was largely driven by delays encountered by Kyrgyz operators crossing Aul-Veselyarsk (KAZ-RUS) in their return journey to Bishkek. The waiting time at Aul could be as long as 5 days, pulling up the average border crossing time in the 2nd quarter of 2015. However, this appears to be an isolated incident as no such major delays were reported in other quarters.

Generally, trucks travelling along corridor 3a register higher SWD, but this was not the case in 2015. Delays reported at Aul affected SWD estimates, which declined to an average of 23 kph.

Both 3a and 3b offer relatively low overall shipment cost driven by price competition between transport operators. Enterprises cut shipment prices to attract a dwindling volume of business. Transport operators with shipment routes along corridor 3b, particularly hard-hit Tajikistan transport operators, resorted to such price competition. Transport operators also reported over-capacity of trucks that used to serve ISAF cargo movement from Manas to Kabul. The ISAF withdrawal from Afghanistan forced companies to find alternative demand.

Border-crossing points and Bottlenecks

Major bottlenecks along Corridor 3 include:

■ Alat-Farap (UZB-TKM)

Uzbek transport operators, carrying cotton and yard bound to Iran and Turkey, spend an average of 6 to 7 hours of border crossing time at each node. Containerized cargoes were sent in the backhaul.

■ Yallama-Konysbaeva (UZB-KAZ)

Uzbek transport operators spend an average of 6 to 7 hours to cross each side of the BCP. Fruits and vegetables, as well as dried food, are carried on trucks crossing at this BCP.

■ Aul-Veseloyarsk (KAZ-RUS)

Isolated incidents of excessive waiting time in queue in Aul in Q2 were a cause for concern. Waiting time reached 5 days in some cases. However, such observation did not resurface and presumed to be resolved. Since Kyrgyz Republic formally acceded to the Eurasian Economic Union in August 2015, it is expected that transit shipments of Kyrgyz operators along 3b should enjoy shortened average border-crossing time.

C4

Corridor 4 Russia–East Asia

Corridor 4 has 2,400 km of roads and 1,100 km of railways. This “Trans-Mongolia” corridor features three sub-corridors. The first, route 4a, lies at the west and provides a transit corridor connecting Russia and PRC (Xinjiang). The region is susceptible to harsh winter and has very under-developed infrastructure. CPMM focuses its data collection on 4b and 4c. The second route, 4b, is the principal transit corridor, as well as the trunk corridor that moves the exports and imports of the country. This is also the only section in Corridor 4 supported by road and rail modes of transport. Finally, 4c is a recent addition that connects Ulaanbaatar to Bichigt-Zunn Khataavch (MON-PRC). This is to plan for developing a new alternative for road-rail traffic to the PRC seaport of Jinzhou so that Mongolia can reduce its sole reliance on Tianjin seaport.

Road Transport

CPMM calculations show that road transport continued to demonstrate improvement in speed and shipment cost along 4b. In terms of cost, Trade Facilitation Indicator 3, a holistic measure of shipment cost per truck, dropped to \$1,088 per 500 km – an improvement of 9.3% over the previous year. To measure speed, SWOD (Speed Without Delay) is used. It is shown that the travelling speed maintained 36 kph in both 2014 and 2015. Before 2014, trains mainly moved in between Altanbulag and Zamyn Uud. Transit by truck was not possible.

The improvements can be attributed to the completion of a two lane road with asphalt paved surface, financed by the Asian Development Bank. Completed in 2014, this 432 km road passes through Zamyn Uud – Sainshand – Choir. It is possible now to carry cargo by truck from Altanbulag to Zamyn Uud, using road transport for the entire journey.

Goods such as oil and diesel fuel as well as industrial materials are carried from PRC to Mongolia, crossing Zunn Khataavch-Bichight (PRC-MON). The truck then moves to Ulaanbaatar, spanning a distance of 842 km. Due to the low traffic, border crossing could be completed within one hour at each location. Shipment cost for this section was calculated to be \$1,650. The whole journey took 20 hours. It was observed that the truck travelled at relatively high SWOD of 47 kph, and a SWD

Figure 21: CAREC Corridor 4

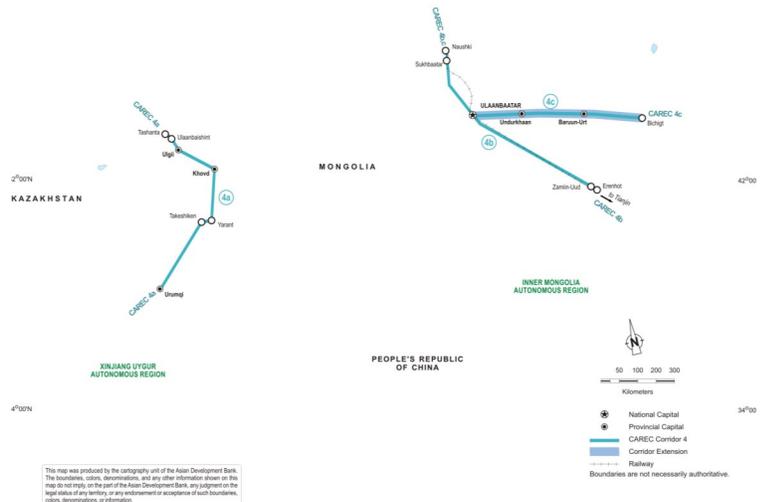
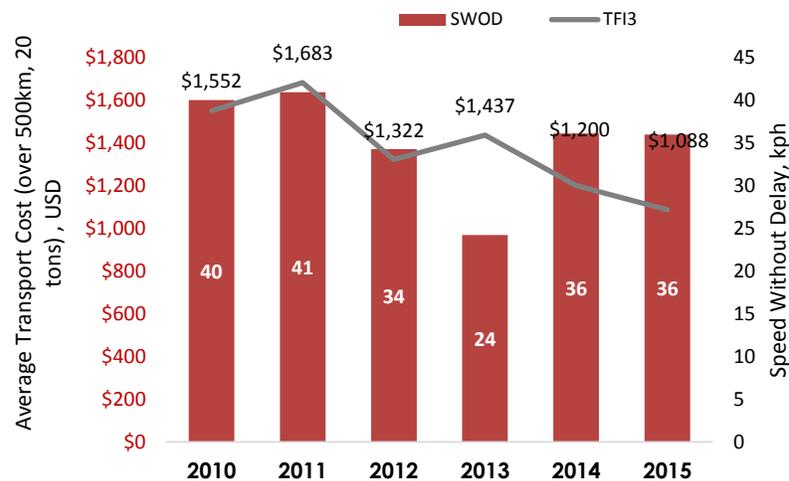


Figure 22: Speed and Cost Estimates, corridor 4b



of 40 kph. No problems were reported in 4c.

Border-crossing points and Bottlenecks

In 2014, Erenhot-Zamyn Uud was identified to be a very time-consuming road BCP, averaging 12 hours to complete border crossing at each point. In 2015, average border-crossing time took less than four hours at each location. Similarly, cost improvements were observed at both BCPs.

The joint customs controls initiative taken by the customs administrations of PRC and Mongolia facilitated these improvements. Both customs administrations have intensified efforts to finalize the mutual recognition of customs controls. Plans for electronic manifest are underway. According to the revised Customs Law in Mongolia,¹⁵ transport operators can utilize simplified customs inspection procedures provided certain conditions are met. For instance, the driver needs to lodge less number of documents at the BCP now.

Rail Transport

In 2015, CPMM railway data studies focused on collecting data on four routes along 4b:

■ Trains from Tianjin to Ulaanbaatar

This route has the heaviest traffic. Containerized cargoes are discharged from vessels to trains, and cross Erenhot-Zamyn Uud. The journey spans 1,692 km. The estimated cost and time were \$5,000 and 10-14 days to move a 40-foot container.

This route has a rather high unpredictability. This is because the dwell time for inbound containers destined for Ulaanbaatar could take a long time to be trans-loaded from port to trains. There are no green lanes for Mongolian containers and no specialized facilities at the port to store and handle such containers. Moreover, PRC seaports do not feature direct rail access to ship berths. Mongolian freight forwarders complain that their containers are treated as secondary priorities when the port is congested.

In Q3 and Q4, the dwell time at Tianjin worsened, reaching 11 days in some instances. This is because the port operation is still recovering from the

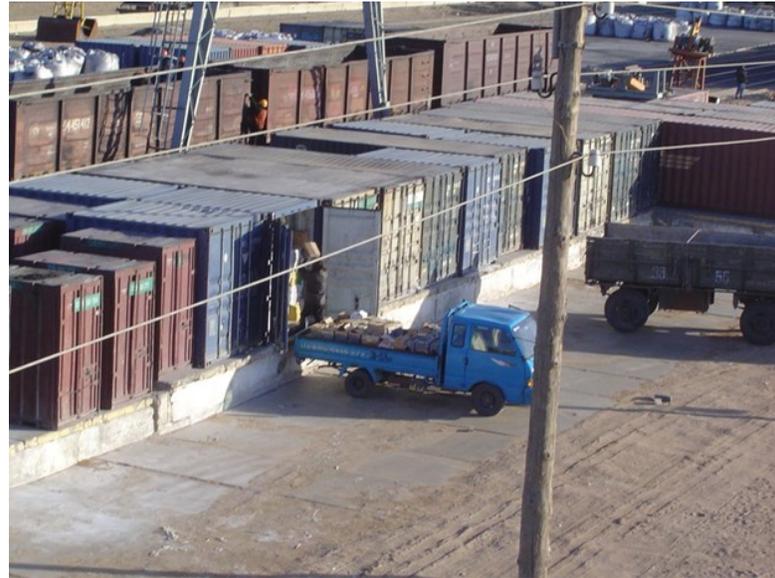


Figure 23: Manual loading and unloading operation at Zamyn Uud. The use of mechanized way to transfer cargoes, such as forklifts, is usually uncommon in most BCPs.

chemical explosion incident in September 2015. This disrupted the traffic particularly for inbound containers.

The explosion did not affect the performance for road transport because CPMM only captures the truck's data from Mongolian points of origin to Erenhot. Mongolian trucks are not permitted to enter further in PRC, so goods tend to be trans-loaded at that point onto trains. However, for rail traffic, CPMM captures data covering time and cost between Tianjin and Ulaanbaatar.

■ Trains from Ulaanbaatar to Tianjin

These are Mongolian exports to PRC. The product composition of cargo transported on this route has changed significantly. In the past, copper or zinc concentrates were sent. In 2014, the samples did not contain such commodities. Instead, the containers are used to consolidate general cargoes that are then sent to PRC. This reflected the declining demand from PRC for raw materials.

■ Trains from Russia to China

This is a transit shipment to send Russian timber to PRC. The distance covered was 1,113 km, costing \$1,400 and 7 days to move 60 tons of timber.

¹⁵Refer to official website of the Mongolia Customs General Administration (MCGA) http://www.customs.gov.mn/en/images/publishers/Customs_law_and_Customs_Tariff_and_Tax_law.pdf

■ Trains from Chongqing to Ulaanbaatar

Glass bottles were sent in this direction, spanning 3,297 km. The whole journey required 20 days, of which an estimated 90% of the time was non-value added (trains stationary in a terminal). The estimate cost was \$5,000 to send a 40-foot container this way.

Border-crossing points and Bottlenecks

Similar to road transport, Erenhot-Zamyn Uud (PRC-MON) was identified as the sole major bottleneck in Corridor 4.

Table 5: Delays in MON-PRC border

TFI1, in hours	Zamyn	
	Erenhot	Uud
China to Mongolia	26.8	24.6
Mongolia to China	34.6	4.3

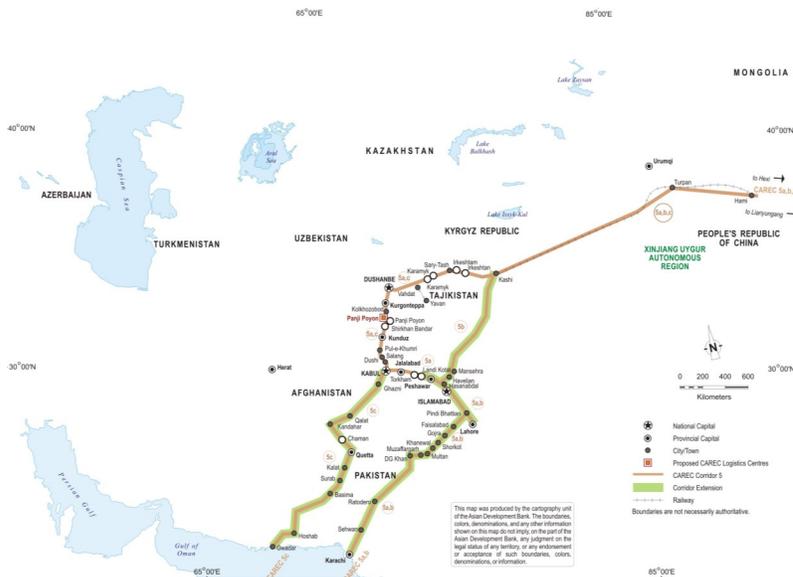
The reasons for delays at the two BCPs were different. When handling PRC exports or transit cargoes to Mongolia, Erenhot suffered from ‘Restriction on Entry’, which is another term for trains unable to move on tracks due to other trains being held up at terminals or on the railway track itself. Customs inspection at this BCP also contributed to the delay. At Zamyn Uud, the need to trans-load cargoes at the break in gauge was the principal delay factor. There is limited trans-loading equipment (cranes, etc.) at the three stations in Zamyn Uud. The lack of wagons also constrained operations at Zamyn Uud.

In summary, commendable improvements were detected in Corridor 4. A key problem still lies in the long and unpredictable dwell time at Tianjin. Before 2012, Mongolia’s railway authorities were concerned as the single 1,000km long railway system is operating near full capacity. The need to upgrade or expand its gross capacity is somewhat less pressing now due to the economic downturn, causing a fall in the demand for transporting goods. In the short-to-medium term, cooperation between the customs administrations of Mongolia and PRC will be helpful in reducing the time and cost of cross-border trade. In the long term, an alternative corridor (4c) has to be developed to diversify supply chain risks and improve shipping time.

C5 Corridor 5

Europe–East Asia–Middle East and South Asia

Figure 24: CAREC Corridor 5



consuming and costly. In 2014, Corridor 5 performance continued to suffer.

TFIs for 2014 are compared against those for 2015: the results showed little change. In 2015, the TFIs of Corridor 5 are also identified to be the poorest ranking relative to the other CAREC Corridors. This corridor is the most time-consuming to complete border crossing, as well as the most costly. Vehicle speeds are the slowest in both SWOD and SWD.

Traffic in Corridor 5 has very diverse characteristics. Instead of examination by 5a, 5b, and 5c, discussions shall focus on the following routes for greater clarity.

- Route 1: Kashi to Dushanbe (PRC to Tajikistan)
- Route 2: Kashi to Sost (PRC to Pakistan)
- Route 3: Karachi to Kabul (Pakistan to Afghanistan)

Analysis on Route 1: Kashi to Dushanbe

This is an active corridor along Corridor 5a where PRC merchandise enters Tajikistan market. The origin is Kashi and ends at Dushanbe. There are two ways to complete this journey. These are summarized in table 7.

CPMM analysis validates the advantage of crossing at Karamyk, as the transport time and cost are lower.

Table 6: Corridor 5 TFIs

		2014	2015
TFI1	Time taken to clear a border crossing point (hr)	28.9	26.2
	Cost incurred at border crossing clearance (US\$)	171	175
TFI3	Cost incurred to travel a corridor section (per 500km, per 20-ton)	2,050	1,937
TFI4	Speed to travel on CAREC Corridors (kph)	17	13
SWOD	Speed without delay (kph)	36	36

Corridor 5 features 3,700 km of roads and 2,000 km of railways. In principle, this offers a direct route for landlocked CAREC countries to access Pakistan’s Karachi seaport. This corridor passes through five countries, namely PRC, Kyrgyz Republic, Tajikistan, Afghanistan, and Pakistan. CPMM showed that trucks moving on highways in Pakistan and PRC achieved speeds above 50 kph, but the trucks moved more slowly in other corridor sections due to the higher altitude, windy passes, and less developed infrastructure. Goods moving through Corridor 5 are carried on trucks. Rail networks are not integrated in Kyrgyz Republic and Tajikistan, and Afghanistan only has a 75 km railway connecting Mazar-e-Sharif to Termez. PRC sections of Corridor 5 are served by both modes, but rail transport serves only domestic needs. As such, Corridor 5 does not benefit from an international railway transport option. CPMM focus is on road transport.

Road Transport

Corridor 5 continues to be the most challenging CAREC corridor. Since 2010, corridor TFIs show it to be the most time-

Table 7: Cost of Shipping a 40-foot Container, from Kashi to Dushanbe

	Via Karamyk	Via Batken
Distance	995 km	1,469 km
Number of Days	4.0	5.0
Total Cost, \$	8,612	9,200

Unfortunately, Kyrgyz Republic does not agree to open this BCP for international traffic. Only trucks registered in Kyrgyz Republic or in Tajikistan can pass through this BCP designed for bilateral traffic. This restriction applies also to goods produced or manufactured in a third country. PRC shippers favor the use of Kyrgyz Republic trucks for this shipment due to three advantages. Firstly, Kyrgyz operator can collect the goods at Kashi directly and send to Dushanbe providing an end to end solution without the need to change the trucks at BCPs. Secondly, trucks carrying cargo from PRC cannot pass through Karamyk and must travel through Batken province and cross Kyzyl Bel-Guliston (KGZ-TAJ), 'Route B' in the table above. Thirdly, PRC truck operators have to pay a border-crossing fee of \$900 per truck at Irkeshtam, which is very expensive. This is waived for Kyrgyz or Tajik trucks. However, Tajik trucks cannot enter Kashi as there is no bilateral agreement, and thus they can only stop at Irkeshtam to collect the goods.

Analysis on Route 2: Kashi to Sost

This is a new study in CPMM on Corridor 5b that began in 2015. Pakistan and PRC have concluded an agreement named China-Pakistan Economic Corridor (CPEC). A major outcome of this agreement is for PRC to develop the seaport Gwadar, especially designed to handle energy and bulk commodities. This implies the Karakorum Highway connecting PRC to Pakistan must be rehabilitated and reconstructed so that trucks can move on this corridor.

In 2015, CPMM samples are collected based on PRC shipment of building and construction materials (such as reinforced steel rods and cement) from Kashi to Sost, a distance of 513 km. The trucks crossed at Khunjerab-Sost (PRC-PAK). The truck took 1.5 days and the shipment cost \$1,200. There are no major problems observed at border crossing. At origin and destination, loading and unloading took 3 hours. Before the truck reaches Khunjerab on the PRC side, the truck has to go through a weigh station, which required some waiting (3.5 hours) and a fee of \$63.

Analysis on Route 3: Karachi to Kabul

This is a transit trade corridor connecting Pakistan and Afghanistan. The latter relies on Karachi for much of its

inbound goods. As an import-reliant economy, Afghanistan depends heavily on Pakistan. Furthermore, India is a big market for Afghanistan's fruits and vegetables. Both Afghanistan and Pakistan are revising the Afghanistan-Pakistan Transit Trade Agreement (APTTA) in 2016.

Under 5a, Karachi to Kabul spans a distance of 1,654 km. This route is problematic due to:

- Long dwell time at Karachi: Shipments are sent in 40-foot containers. It is not uncommon for a container to be held within the seaport for 4 to 6 days before it can be trucked out. Common reasons for delays are the high rate of inspection and examination, as well as the cumbersome paperwork to clear the cargoes. The delay is aggravated when an X-ray machine breaks down.
- Border Crossing: A truck spends a day at Peshawar and Torkham each for customs inspection.

A positive development in 2015 was the waiver of customs escort. Previously, a truck moving from DG Khan to Torkham required customs escort, a time-consuming practice susceptible to rent-seeking behavior as drivers try to shorten the waiting time in car parks. The Federal Bureau of Revenue (FBR) removed the need for such practice in 2015 if the shipment is conducted by approved, bonded carriers. This has reduced the shipment time by 6 hours and saved an average of \$150 per truck for transport operators.

Border-crossing points and Bottlenecks

The major bottlenecks in Corridor 5 are:

- **Peshawar-Torkham (PAK-AFG)**
At each location, an average of 32 hours was required to complete border crossing. The principal delays were due to customs formalities and waiting time in queue.
- **Chaman-Spin Buldak (PAK-AFG)**
This is another bottleneck detected in Corridor 5. Average border-crossing time at Chaman was 36 hours, while it averaged 60 hours at Spin Buldak. Customs controls and waiting time were the main contributing factors. The customs escort requirement, previously required at Quetta, was removed in 2015.
- **Nizhni Panj-Shirkhan Bandar (TAJ-AFG)**
Average border-crossing times were similar to those recorded in 2014. At Nizhni Pianj, the average time was 4 hours, and at Sherkhan Bandar it took 10 hours. The delay

was caused by the need to trans-load goods between trucks at Sherkhan Bandar, as well as waiting time in queue.

■ Yierkeshitan-Irkeshtan (PRC-KGZ)

After a brief improvement in 2014, this BCP surfaced again as an area of concern. For trucks bound to the Kyrgyz Republic, average border crossing time at the PRC side of Irkeshtan spiked to 17 hours, while that at Irkeshtan was 5 hours. All samples are based on shipment originating in Kashi carrying PRC goods to the final destination at Bishkek in the Kyrgyz Republic.

The increase in border crossing time at Irkeshtan was due to the substantial waiting time in queue. Interestingly, this waiting time ranged between 4 to 8 hours before August 2015, which was the month when Kyrgyz Republic acceded to the Eurasian Economic Union. After August, the waiting time ranged to 16 to 22 hours per truck.

Figure 25: Shipment from Lahore, Pakistan to Almaty, Kazakhstan



Box 3 First TIR Shipment Commenced in Afghanistan – Obstacles in Progress

TIR was re-activated in Afghanistan beginning September 2013 after three decades of suspension due to conflicts in the country. After initial preparation, the first TIR shipment by a local transport operator completed a delivery in April 2015. The 14-Vouchers TIR Carnet (number XK74660752) is used. The shipment is a delivery of sports equipment (8 tons) from Lahore, Pakistan to Almaty, Kazakhstan, over a distance of more than 2,300 km.

The entire journey took two months and cost the company USD 9,000. Comparatively speaking, this is very time-consuming and costly. The reasons for the inefficiencies were:

- **Incorrect Seal used:** The Afghan transport operator collected the goods at Torkham where the sports equipment was transferred from a Pakistan truck to an Afghan truck (approved for TIR). The customs officers at Torkham applied a non-compliant seal without a seal ID. When the truck reached Sherkhan Bandar, the customs officer did not accept the seal. This problem was only resolved after a few days following various interventions by the TIR association.
- **Foreign Driver:** A Tajik driver was employed to drive the Afghan truck. This was because Afghan drivers cannot obtain visas easily in other countries. The cost of hiring the driver was USD 3,000 over a period of three months, which raised the cost significantly.
- **Road Pass:** Afghan trucks require a road pass to transit other countries. Due to various concerns such as narcotics and smuggling, obtaining a road pass is quite a cumbersome process.
- **Certificate of Approval:** Each TIR truck has to have a valid Certificate of Approval. As this document was issued in Dari (a local language used in Afghanistan), the border personnel in Kyrgyz Republic and Kazakhstan did not understand the contents, causing delays in letting the truck through the border.

This case study showed that regional trade meets substantial barriers, particularly for trade between Central and South Asia. If the trade volume between these two neighboring trading blocs is to increase, barriers must be lowered or removed, particularly where road passes and visas are concerned.

C6

Corridor 6

Europe–Middle East and South Asia

In Corridor 6, CAREC economies provide transit routes connecting Europe with the Middle East and South Asia. This corridor features 10,600 km of roads and 7,200 km of railways. There are four sub-corridors. The first, 6a, links Gwadar to the Caspian Sea region. The two routes 6b and 6c connect Russia to Pakistan, ending at Gwadar and Karachi, respectively. The latest addition is 6d, linking Herat in Afghanistan to Turkmenbashi in Turkmenistan and Aktau in Kazakhstan, facilitating a Trans-Caspian movement of cargoes.

Road Transport

CPMM data focus on 6a, 6b, and 6c, with sole emphasis on road transport. In general, Uzbek transport operators actively move cargoes using 6a when exporting agricultural products to Russia, and in return, import machinery and consumer goods. Another active sub-corridor is 6c, which supports transit shipment between Pakistan, Afghanistan, Tajikistan, and Uzbekistan. Sections of 6b overlap with some sections of 6c.

There are currently no CPMM data on 6d. Although Afghanistan has two BCPs at the border with Turkmenistan (Aqina and Towraghondi), no trucks are permitted to cross the border. The two countries do not have a comprehensive bilateral transport agreement, although they are contracting parties to international agreements such as the TAPI pipeline project and the Lapis Lazuli corridor.

Average border crossing time in Corridors 6a and 6b remained stable. Corridor 6c showed a reduction to 8 hours, but still remains as one of the more time-consuming places to cross border. The spike in border crossing time on 6c in 2014 was due to the addition of BCPs at the Afghanistan-Pakistan border. There was a reduction of border crossing time due to the waiver of customs convoy and escort at Peshawar and Chaman in 2015. This activity was negative for transport operators because trucks need to wait in the parking lot. If the trucks arrive in late afternoon, it has to wait until the next day before it can move out. There is no movement at night due to security reasons. During such convoy movements, the speed is naturally slow as the trucks need to stay in formation. By

Figure 26: CAREC Corridor 6



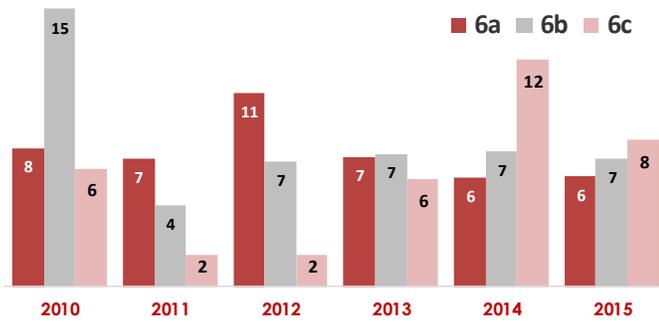
removing the need for escort and convoy, the average border crossing time as measured by CPMM immediately registered an improvement.

Another reason for the longer delay at 6c was due to the need to trans-load goods at the Afghanistan-Uzbekistan border. At the BCP Hairatan, Afghan transport operators have to unload exports such as fruits and vegetables at the border. The goods will be temporarily stored until Uzbek-operated ferries come to the border by Amu Darya River and load the goods to enter Ayratan on the Uzbekistan side. CPMM found out that in winter, the delay could be as long as 3 days before the goods are trans-loaded to the barges. Although such occurrences are not frequent, the samples still have the effect of increasing the mean border crossing time. It also highlights the problem that the barge service is not highly reliable. If the goods can flow with less restriction between Afghanistan and Uzbekistan, the former can achieve a significantly higher level of trade.

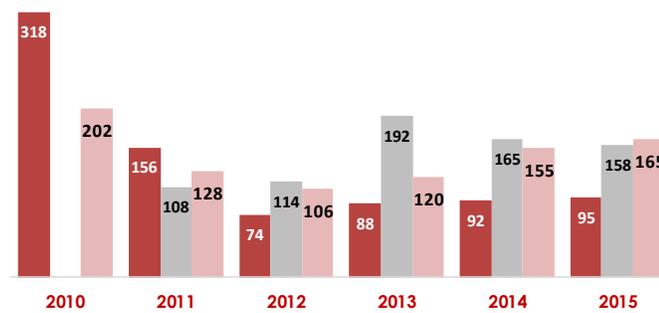
In recent years, the Speed With Delay (SWD) has shown consistency. Corridor 6a is ranked as the fastest, while the other two corridors exhibited similar speeds. The data on 6a

Figure 27: Corridor 6 Road TFIs

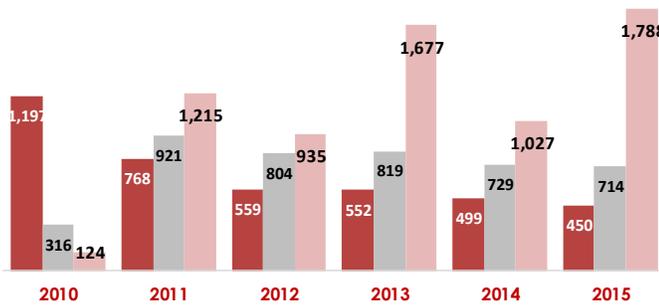
TFI1: Time taken to clear a border crossing point, hr



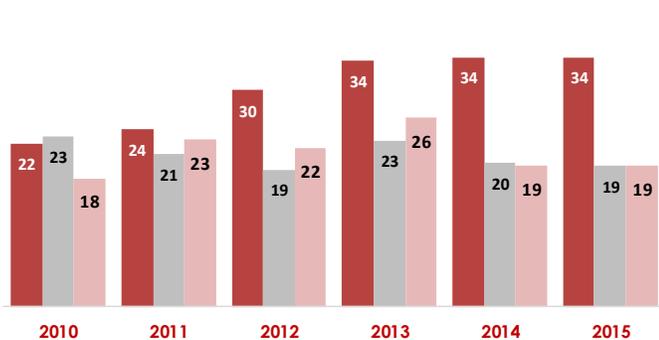
TFI2: Cost incurred at border crossing clearance, \$



TFI3: Cost incurred to travel a corridor section, \$ per 500km, per 20-ton cargo



TFI4: Speed to travel on CAREC Corridors, kph



are primarily a reflection of Uzbekistan’s better road infrastructure that facilitates higher speed. The main bottleneck lies at Chaman-Spin Buldak (PAK-AFG), which pulled the overall speed lower, but the sample size was not large enough to affect the speeds significantly. The high traffic volume flow in CPMM samples at Nizhni Panj-Sherkhan Bandar (TAJ-AFG) and Peshawar-Spin Buldak (PAK-AFG) lowered the overall speed in 6b and 6c.

Based on CPMM data which identified time-consuming BCPs, ADB has taken action. In December 2015, ADB approved a loan of \$250 million to upgrade the border crossing facilities at Torkham, Chaman, and Wagah. Two of these BCPs lie at the Afghanistan-Pakistan BCPs; Wagah is shared by Pakistan and India. The objective of this improvement program is to reduce the average border crossing time to only one hour, from the current 1-2 days. This is to be achieved by electronic data interchange of customs information, better infrastructure, and segregation of cargo and passenger traffic.¹⁶

The average border crossing cost extended the patterns established in 2014 into 2015. Corridor 6a maintains its position as the most cost-efficient route for border crossing, while Corridor 6c edged past 6b to become the most expensive. To understand why this is so, table 8 can be useful.

Based on CAREC Corridor classifications, BCPs in Kazakhstan and Uzbekistan are situated along 6a. BCPs in Afghanistan, Pakistan, and Afghanistan serve 6b and 6c. Looking at the table, it is apparent that border crossing at the BCPs grouped under 6a have a lower average border crossing cost. On the other hand, those BCPs listed in the table under 6b and 6c are high traffic and have relative higher border crossing cost, resulting in a sustained higher cost of border crossing.

In 2015, the overall transport cost increased significantly for 6c. This is due to the addition of PRC shipments from Kashi-Dushanbe, crossing Kyrgyz Republic and Tajikistan at Kyzyl Bel-Guliston. This route is classified under 6c.

Table 8: TFI2 at Selected BCPs in Corridor 6

BCPs, 6a	Cost, \$	BCPs, 6b, 6c	Cost, \$
Tazhen (KAZ)	125	Chaman (PAK)	316
Dautota (UZB)	96	Peshawar (PAK)	289
Yallama (UZB)	Not Available	Spin Buldak (AFG)	226
Konysbaeva (KAZ)	164	Torkham (AFG)	141
Oibek (UZB)	81	Sherkhan Bandar (AFG)	320
Fotehobod (TAJ)	81	Nizhni Panj (TAJ)	118

¹⁶<http://www.adb.org/print/node/177236>

CAREC Corridor alignments do not include this route as, at the time of their definition, shipment could be more efficiently completed by crossing the border at Karamyk (Corridor 2). In fact, this was the case in the first few years of CPMM, when trucks could cross this BCP even for international traffic. However as monitored by CPMM and reported in the Annual Report 2012, only late in 2012 did Kyrgyz Republic began to enforce the status accorded Karamyk (in 2007) as a bilateral BCP only. International transit cargoes are diverted to cross at Kyzyl Bel-Guliston (KGZ-TAJ). This is a longer roundabout way and more expensive than through Karamyk.

In 2015, CPMM captured such transit traffic through Kyzyl Bel-Guliston. This had the effect of increasing the overall transport cost for shipments from Kashi to Dushanbe. Since CAREC Corridor does not contain this BCP, traffic data for this section from Kyzyl Bel to Dushanbe is classified under 6c. Thus, the average transport cost in 6c shot up.

Border-crossing points and Bottlenecks

The major bottlenecks in Corridor 6 were:

■ Hairatan-Ayraton (AFG-UZB)

On the Afghanistan side, a truck could complete formalities within 2 hours. However, the problem is for the goods to cross the border into Uzbekistan. Afghan truck operators are not allowed to cross into Ayraton. Thus, there is a breakage in the supply chain, because the goods have to be unloaded and ferried across Amu Darya River by Uzbek-flagged vessels.

■ Nizhni Pianj-Sherkhan Bandar (AFG-UZB):

Active traffic occurs in both directions. PRC exports consumer and industrial goods to Afghanistan, transiting Kyrgyz Republic and Tajikistan. In return, Afghanistan sends agricultural products to Tajikistan and serves as a transit country for Pakistan exports (fresh fruits and vegetables) to both Tajikistan and Uzbekistan.

In 2015, the problem here is when goods enter Sherkhan Bandar, the delay is estimated to be 9.7 hours, unchanged from 2014. Despite the countries' similarity in culture and language, and the fact that Afghanistan is able to utilize the TIR system, border crossing remains a huge challenge. It is usually a requirement that the goods have to be trans-loaded at the border.

The supply chain connecting Dushanbe to Kabul along this corridor 6c was temporarily disrupted in September 2015,

when there was fighting at Kunduz, a key city in northern Afghanistan. Government eventually reestablished control over the city and surrounding territory, and the flow of traffic resumed.

These two BCPs have important potential and can greatly facilitate intra-regional trade between Central and South Asia. Pakistan is particularly interested to export more goods to Tajikistan and Uzbekistan, in which the goods must cross these two BCPs. At this moment, Pakistan truck operators cannot deliver the goods directly into the two countries, so Afghanistan truck operators can play a role to deliver the goods from Peshawar to the BCPs.

There are two positive developments that might improve the border crossing performance. First, Pakistan in 2016 is a formal Contracting Party to the TIR Convention 1975. This, in principle, means greater alignment with other CAREC countries, which rely on the system to waive customs guarantee. Secondly, Afghanistan, Pakistan, and Tajikistan are actively negotiating a new trilateral transit trade agreement. If this is successful, then trade between Central and South Asia should enjoy a boost, as well as smoother flow of cargo traffic at the BCPs in Corridor 6c.

V. Detailed Country Analyses:

Transit Considerations and Key Border Crossing Points

AFGHANISTAN

Key Border Crossing Points

Afghanistan has 12 border crossing points. CPMM focuses on traffic from Karachi to Afghanistan (which crosses Torkham and Spin Buldak) and transit traffic from Pakistan to Central Asia (through Sherkhan Bandar and Hairatan). Border crossing times at Torkham and Spin Buldak have been shown to be consistently lengthy.

Transit in Afghanistan

There are two transit systems in Afghanistan, namely international and internal. For international transit, trucks have to queue and apply for the 'T2' Form, which is the official document for international transit. The transit fee applies to each truck in transit and varies depending on the tonnage carried.

This transit fee includes documentation and processing fees as well as the cost of sealing the truck. For trucks carrying merchandise for sale and distribution in Afghanistan, the shipment is classified as internal transit and a fee of USD 18.95 is payable. The country is the recipient of many aid efforts from international donor organizations. Through these efforts, the Afghanistan Customs Department attempts to modernize the infrastructure, system, and procedures, such as adoption of risk management and electronic payment. This is the only CAREC member country that, at the moment, utilizes ASYCUDA World.¹⁷ Thus, actual customs formalities time can be short but the problem is the queuing time, particularly at the above-mentioned border crossing points which serve high volumes of traffic.

Looking forward, the following events can impact TFIs for Afghanistan: (1) Afghanistan-Pakistan-Tajikistan Transit Trade Agreement, (2) Discussion of new bilateral transit agreement with Turkmenistan, Kyrgyz Republic, and Kazakhstan, (3) Implementation of TIR Green Lanes at the BCPs.

¹⁷Kazakhstan and Turkmenistan have stated their intent to introduce ASYCUDA.

AZERBAIJAN

The Baku/Alyat seaport is an important transit hub for Trans-Caspian ferry movement of goods to and from landlocked CAREC countries. Goods can enter Kazakhstan through Aktau or enter Turkmenistan through Turkmenbashi.

At present, CPMM is not conducted in Azerbaijan as previous partners lost interest in continuing their involvement. Predominantly, the traffic is oriented towards to Caucasus and Turkey. Based on feedback from Kazakhstan transport operators, there is a new traffic trend. Bilateral relations between Russia and Turkey experienced a downturn in 2015. As such, Turkey's exports have actually diverted to enter the Eurasian Economic Union through Kazakhstan via Baku-Aktau (AZE-KAZ). Also, Azerbaijan transport operators handle a substantial amount of transit cargoes between Russia and Georgia. Bilateral relations between these two countries are not positive, so Azerbaijan is able to facilitate this role as Azerbaijan enjoys friendly relations with Russia and Georgia alike.

KAZAKHSTAN

Key Border Crossing Points

Due to its vast territory and strategic location, Kazakhstan is both a market and transit country. It is not self-sufficient in food, thus importing substantially from Kyrgyz Republic and Uzbekistan. As a transit country, the railway and road networks provide essential international connectivity, particularly linking neighboring countries to Russia.

Khorgos is a high traffic BCP. Border crossing used to be very time-consuming. In 2014 and 2015, a more favorable trend has begun to emerge. New infrastructure is being developed, particularly at the International Centre of Border Cooperation.

¹⁸Source : Bloomberg (<http://www.bloomberg.com/news/articles/2016-05-03/putin-s-spat-with-erdogan-could-help-eurasia-bank-s-new-purchase>)

Table 9: Average Border Crossing Time, hrs, Road Transport

	Direction	Country	Corridor	2010	2011	2012	2013	2014	2015
AFGHANISTAN									
Sherkhan Bandar	Inbound	AFG	2,5,6		1.3	3.2	8.2	10.6	9.7
Spin Buldak	Inbound	AFG	5,6			49.1	60.0	60.0	60.0
Torkham	Inbound	AFG	5,6	2.7	2.9	25.0	32.9	36.9	32.6
Sherkhan Bandar	Outbound	AFG	2,5,6	1.2	1.5	2.9	3.5	1.1	1.0
Hairatan	Outbound	AFG	3,6	1.2	1.3	1.5	1.0	1.1	2.0
KAZAKHSTAN									
Khorgos	Inbound	KAZ	1	16.0	12.7	17.3	11.2	6.8	5.8
Tazhen	Inbound	KAZ	2,6	9.7	10.3	12.5	8.6	7.8	7.8
Konysbayeva	Inbound	KAZ	3,6	8.2	8.7	7.8	6.8	7.5	7.5
Tazhen	Outbound	KAZ	2,6	9.3	11.0	35.3	8.4	7.3	7.2
KYRGYZ REPUBLIC									
Chaldovar	Inbound	KGZ	1,3	36.9	5.1	4.9	6.6	6.5	6.5
Irkeshtam	Inbound	KGZ	2,5	4.5	12.0	9.9	7.2	6.1	5.2
Karamyk	Outbound	KGZ	2,3,5	1.2	7.9	3.2	2.2		4.8
MONGOLIA									
Zamyn Uud	Inbound	MON	4	5.0	7.6	8.2	7.2	8.8	3.7
Altanbulag	Inbound	MON	4	3.8	2.5	2.3	3.5	4.8	2.2
PAKISTAN									
Chaman	Outbound	PAK	5,6			42.1	36.0	36.0	36.0
Peshawar	Outbound	PAK	5,6			37.2	36.2	33.9	31.8
PRC									
Khorgos	Outbound	PRC	1	45.3	27.2	73.6	28.2	19.3	10.6
Torugart	Outbound	PRC	1	7.0	4.4	4.5	0.8	1.8	1.3
Erenhot	Outbound	PRC	4	6.2	7.6	6.7	5.9	15.3	3.9
Zunn Khatavch	Outbound	PRC	4					1.7	1.7
Irkeshtan	Outbound	PRC	2,5	8.2	12.4	51.1	5.2	2.1	16.8
TAJIKISTAN									
Dusti	Inbound	TAJ	3	8.7	5.4	4.6	5.3	5.8	5.8
Karamyk	Inbound	TAJ	2,3,5		3.9	3.6	1.9	2.3	4.7
Fotehobod	Inbound	TAJ	2,3,6	8.0	4.8	4.4	5.1	6.6	7.1
Nizhni Pianj	Outbound	TAJ	2,5,6		1.2	1.1	4.1	4.5	4.4
TURKMENISTAN									
Sarah	Inbound	TKM	3	6.4	6.5	10.5	8.8	6.1	6.1
Farap	Inbound	TKM	2,3	8.6	7.8	8.5	6.6	7.3	7.1
Farap	Outbound	TKM	2,3	12.7	8.9	9.6	7.1	5.5	5.6
UZBEKISTAN									
Alat	Inbound	UZB	2,3	3.7	5.3	5.8	4.6	5.3	5.4
Dautota	Inbound	UZB	2,6	3.9	4.8	12.8	6.1	5.8	5.9
Sarasiya	Outbound	UZB	3	5.7	5.9	6.8	6.9	5.7	5.6
Alat	Outbound	UZB	2,3	9.4	8.2	10.3	7.4	6.2	6.2
Oibek	Outbound	UZB	2,3,6	4.5	6.5	5.9	6.6	4.2	3.9
Dautota	Outbound	UZB	2,6	4.7	5.5	17.1	9.6	6.9	6.8
Yallama	Outbound	UZB	3,6	4.3	6.8	9.5	8.0	6.4	6.4

Table 10: Average Border Crossing Time, hrs, Rail Transport

	Direction	Country	Corridor	2010	2011	2012	2013	2014	2015
KAZAKHSTAN									
Altynkol	Inbound	KAZ	1				4.5	37.4	0.0
Dostyk	Inbound	KAZ	1,2	34.5	43.6	28.3	64.8	59.7	42.3
MONGOLIA									
Zamyn Uud	Inbound	MON	4	36.0	30.5	33.5	29.8	23.7	24.6
Sukhbaatar	Inbound	MON	4	19.8	21.8	22.3	19.0	15.0	14.2
Zamyn Uud	Outbound	MON	4	11.7	11.8	9.3	12.7	3.1	4.3
PRC									
Erenhot	Inbound	PRC	4	23.5	44.3	40.2	29.6	44.4	34.6
Erenhot	Outbound	PRC	4	31.3	33.6	30.7	24.7	30.7	26.8
Alashankou	Outbound	PRC	1,2	12.9	18.3	30.4	46.3	42.4	26.9
TURKMENISTAN									
Farap	Inbound	TKM	2,3				14.5	14.9	4.7
Farap	Outbound	TKM	2,3				12.1	8.9	
UZBEKISTAN									
Keles	Inbound	UZB	3,6				4.9	0.8	5.7

Visitors can enter this 5-hectare special economic zone visa-free and buy duty free items (limited to 1,500 Euros or 8,000 RMB). Modern facilities are being built to serve trucks crossing the border. A World Bank-financed highway from Almaty to Khorgos is nearing completion; new border crossing facilities are being developed adjacent to the railway border crossing facilities at Altynkol to link this new road with the PRC road network.

Uzbekistan is an important trade partner, thus explaining the active traffic at Tazhen and Konysbaeva. These BCPs exhibited above average border crossing time, although the pattern has remained quite steady over the years.

Dostyk proved to be a problematic railway BCP, as the border crossing time has consistently ranked it one of the most time-consuming location. This location has limited capacity to handle incoming trains compared to Alashankou, thus affecting the PRC BCP. Dostyk will notify Alashankou to stop sending incoming trains when the capacity to transfer cargoes (the receiving country is responsible for trans-loading freight at the break in gauge) is full.

Transit in Kazakhstan

According to the Head of KTZ, Kazakhstan handled 18 million tons of transit cargo in 2014, generating revenue in excess of USD 1 billion.¹⁹ The United Nations estimates that volume of

trade in the Eurasian continent will increase 1.5 times to USD 1.2 trillion by 2020. This presents both opportunities and challenges for Kazakhstan.

In general, some important conclusions based on CPMM that influences the transit potential in Kazakhstan are:

■ Container Express Trains

A key strategy in realizing Kazakhstan's transit potential is the development of container express train services. Traffic volumes generated by these services have been increasing steadily. With more return goods from Europe to PRC, the unit cost of transportation should continue to lower, yet attracting more cargo volume. This service is in a 'sweet spot' as it is lower than air transport, but faster than sea transport. As it takes 16 days for goods to move from China to Germany, the service can attract time-sensitive cargoes where inventory-carrying cost is high.

■ Cost-Competitiveness of Railway

While the container express trains provide strong value to time-sensitive shipments, conventional railway service is identified as cost-inefficient. By calculating the ratio of road cost versus rail cost for similar shipment using TFI 3 (see section E of the main report), the Road/Rail cost ratio implies the train service is costly.

Specifically, the Urumqi-Almaty route presents a good comparison of the modal cost efficiency as this is a trunk

¹⁹Source: <https://primeminister.kz/news/show/21/novyj-sheikovyj-put-otkroet-dlja-kazahstana-unikalnye-vozmozhnosti-dostupa-na-mirovnye-rynki-/04-08-2015?lang=en>

route for transit cargoes. A 26-ton shipment on a truck from Urumqi-Khorgos-Almaty cost USD 3,161 and took 2 days. Another shipment of similar tonnage on a train in a 40-foot container from Urumqi-Dostyk-Almaty cost USD 3,156 and took 7 days. The two costs were very similar but the train service was 3.5 times more time-consuming. These data suggest that the railway is not competitive versus road transport. If this continues to happen, then road transport is likely to take more market share from railways. The main reason this is unlikely is that railway is still the principal mode of transport for transit shipment as using truck is difficult for multiple border crossings.

■ Trans-Caspian Movement and the Aktau Seaport

CPMM focused on Corridor 1 in Kazakhstan. In 2016-2017, coverage will be extended to Corridor 2, along 2a and 2c, where both sub-corridors converge at Aktau. The First Deputy Minister of Finance visited Aktau in early 2016 and personally monitored the customs procedures, observing the arrival and departures timings of vessels. The entire multi-modal transport was cumbersome (sea-land) as the cargo movement involved multiple and disparate agencies such as the Seaport Administration and Inland BCP. After he instituted changes, the total clearance time dropped from 15 hours to 2.5 hours for cargo release (including loading and unloading time).

CPMM may initiate data collection for the Trans-Caspian route, highlighted as a priority in the President's vision and strategic plan 'Kazakhstan 2050'. This corridor is recognized as strategically important as it offers a connection to the Middle East market as well as serving as an energy corridor. The main reform needed is to ensure that the multi-modal transport lead time is competitive and efficient so that cargoes do not spend sizeable dwell time in the seaport.

Despite the challenges described above, Kazakhstan has also made important progress through reforms. At BCPs such as Khorgos, different functions such as phytosanitary and veterinary inspections are consolidated under customs administration. In Astana, a Working Group called 'Astana ONE' has been established to formulate policies and oversee implementation of new trade facilitation measures to shorten border crossing time. A particular interesting aspect is the launch of ASYCUDA to replace the disparate legacy systems used by customs, which can integrate different databases into one platform. Customs is also interested in moving from a 100% examination mechanism now for imports to a post-clearance audit (PCA) system in future. Hopefully, CPMM will be able to track and monitor such initiatives and appraise if they generate measurable improvements.

KYRGYZ REPUBLIC

Key Border Crossing Points

Kyrgyz Republic has many border crossing points, and over the years some have remained busy while others have experienced changes. One such BCP is Akzhol-Kordai (KGZ-KAZ). Due to heavy traffic, this BCP now serves only passenger traffic, while a new BCP at nearly Ak Tilek-Karasuu (KGZ-KAZ) handles cargo traffic. After acceding to the Eurasian Economic Union (EEU), the elimination of customs formalities at the internal border has resulted in more simplified and faster crossing of the border.

Irkeshtam and Karamyk are key BCPs for transit movement. Their importance is highlighted in Corridor 5. Over the years, Irkeshtam – which used to be time-consuming – has shown reduced border crossing time due to reduced traffic volumes prompted by enforcement of the bilateral status accorded Karamyk by the Kyrgyz Republic. Karamyk, although serving CAREC Corridor 5, is classified by the Kyrgyz Republic (but not by Tajikistan) as a bilateral BCP, limited to serving trade traffic between Tajikistan and Kyrgyz Republic only.

Transit in Kyrgyz Republic

Kyrgyz Republic exports agricultural products and a limited range of minerals to Kazakhstan and Russia. The garment trade is particularly active: raw materials are sourced from PRC, stitched and sewn in Kyrgyz Republic, and re-exported regionally and to Russia. This re-export trade follows Corridor 1c closely.

In terms of transit potential, Kyrgyz Republic can play a vital role, especially in the movement of goods along Corridor 5. ADB is facilitating a Cross Border Transport Agreement involving Afghanistan, Kyrgyz Republic, and Tajikistan. Kyrgyz Republic has been reviewing the formal accession to Cross Border Transport Agreement (CBTA) for several years. The different ministries are reviewing the terms and a decision is expected in Quarter 2 of 2016.²⁰

EEU accession presents new challenges for the Kyrgyz Republic. These challenges manifest in both outward and inward transits. For Kyrgyz transport operators that shipped goods in the EEU, a major point of contention is the amount of security for transit goods. Currently, the security is 1 million soums or about USD 13,000. However, Russia is proposing to raise the amount to be Euro 1 million for all EEU member

²⁰Interview with Ministry of Transport and Communications.

countries. This high amount can put many Kyrgyz truck operators (which are smaller in size compared to Russian operators) out of business. This matter is still being discussed in the EEU.

Another problem relates to incoming Russian and Kazakh goods entering the Kyrgyz Republic. Although the removal of customs border formalities implies the withdrawal of customs duties and import taxes, there are still other fees payable. They include:

- Import duties on Sensitive Items that include petrol, alcohol, and tobacco.
- Value Added Taxes or VAT (this amount is not standardized within EEU)

Traditionally, Customs is responsible for controlling such transactions. After accession, control has weakened due to the absence of customs border. Thus, foreign imports may enter the domestic market without import duties or VAT, resulting in greater price competition for local producers, reduced state revenue, and less accurate trade statistics.

Perhaps the greatest issue in transit trade is the withdrawal of ISAF and the US military from Manas and Afghanistan. Before this withdrawal, transport operators enjoyed a brisk volume of business moving goods from Kyrgyz Republic-Tajikistan-Afghanistan. After the withdrawal, there is no replacement demand and many transport operators face economic hardship. Traders are exploring further markets such as Turkey and Iran. A major obstacle is the difficulty of transit shipment through Uzbekistan and Turkmenistan. Kyrgyz operators transiting Kazakhstan move heavily along Corridor 1c due to less restrictions. Unfortunately, this is only useful to serve the current Russian market. To tap new markets in Turkey and Iran, Corridor 1c is not the most direct way and Kyrgyz operators have to move through other CAREC countries on its western border. If transit trade through Uzbekistan or Turkmenistan continues to be restrictive, then perhaps a Kyrgyz Republic-Tajikistan-Afghanistan route is the only option, giving the aforementioned Cross Border Transport Agreement real value for the country.

MONGOLIA

Key Border Crossing Points

For road transport, trucks cross Khiyagt-Altanbulag (RUS-MON) in the north, and Erenhot-Zamyn Uud (PRC-MON) in the south. Altanbulag and Zamyn Uud are also designated Free Economic Zones. Transit traffic used to be carried by railway alone, but the new road linking Choir to Zamyn Uud has

opened up new transit possibilities. Automobiles from PRC, for instance, are now transported on trains, off-loaded at Zamyn Uud, and driven to Ulaanbaatar. Small samples on road traffic between Zunn Khatavch-Bichight (PRC-MON) were collected monthly and showed no significant delays.

For railway transport, trains cross Naushki-Sukhbaatar (RUS-MON) in the north and Erenhot-Zamyn Uud (PRC-MON) in the south. Railway transport showed Zamyn Uud BCP as a main point of delay, with dwell time averaging 24.6 hours in 2015.

Transit in Mongolia

Corridor 4b serves as the main corridor for import, export, and transit. CPMM focuses on inbound containerized shipments by rail from Tianjin-Ulaanbaatar. A shipment averages 10 to 14 days in total. The principal delays occur at two locations:

■ Tianjin

Average dwell time in port is 5 to 7 days. This value is erratic depending on the congestion level in the port. This means that the dwell time could account for close to 50% of the total transport lead-time.

This delay was exacerbated in August when there was an explosion in the Tianjin port due to the storage and handling of chemicals. The incident disrupted normal port operations and the information system, resulting in additional delays in August and September. Instead of the normal 10-14 days of transport time, some samples recorded a total of 22 days to dispatch a container from Tianjin to Ulaanbaatar in that two months. The situation returned to normal in October 2015.

■ Border crossing

Trains carrying containerized cargoes pass through Erenhot-Zamyn Uud (PRC-MON). The break in gauge necessitates the transfer of materials from PRC trains to Mongolian trains. This is accomplished in Zamyn Uud. The actual transfer is 1 to 2 hours, but the waiting time could take more than 10 hours in the terminal. When Zamyn Uud is congested, this also delay the arrival of inbound trains from Erenhot. The duration is rather erratic: waiting times can be as low as 3 hours to as long as 20 hours.

CPMM also collected samples of Russian timber crossing Mongolia into PRC on conventional trains. Moving along 4b, the trains moved relatively quickly in Mongolia territory. The major delay occurred at Erenhot due to the waiting and transfer time of materials at gauge change. (See PRC country section).

PAKISTAN

Key Border Crossing Points

CPMM focused on Karachi-Kabul and Karachi-Kandahar routes in Pakistan, as well as Pakistan exports of fruits and vegetables to Tajikistan and Uzbekistan. These shipments move along CAREC Corridor 6. The study showed that border crossing at Peshawar and Chaman consumes a great deal of time. This is due to the large volume of traffic congregating at these BCPs which are gateways for Afghanistan imports, where the infrastructure is operating under full capacity. Time spent undergoing customs formalities and waiting in queue can be long, as shown by the data. Priority is also assigned to movement of energy products.

In 2015, the Federal Bureau of Revenue (FBR) waived the need for customs convoy and escort. Previously, trucks moving to Peshawar and Chaman had to stop and be escorted at DG Khan and Quetta. With this waiver, a trucker reduced delivery time by 6 hours or more and saved USD 150 per truck. The condition is that the shipper must assign a bonded carrier for the shipment.

CPMM started to collect data on Corridor 5b based on shipment of construction materials from Kashi to Khunjerab-Sost (PRC-PAK). The sample size is still small and did not highlight any significant delays. This is due to the limited traffic on this route. With an altitude of over 5,000 m above sea level, the route is nearly impassible during winter.

Transit in Pakistan

The deep-water Karachi seaport means Pakistan has immense potential to be an economic corridor for landlocked CAREC countries. Currently, there is active containerized movement from Karachi into Afghanistan. However, CPMM data indicates that the preferred route seems to be from Bandar Abbas seaport in Iran, crossing Turkmenistan and then into Uzbekistan. This is particularly the case for Indian exports to Afghanistan, which Pakistan refuses to allow to transit its territory. Moreover, Afghanistan shippers also identified many problems on the Karachi-Kabul route and are exploring alternative options such as Bandar Abbas and Chabahar seaports, the latter actively promoted by India.

Karachi is 1,654 km from Kabul. Assuming the truck moves at 50 kph, the container can reach Kabul in 2 days. However, CPMM data showed that the total delivery time is 11-13 days. The problems identified are:

■ Delays in Karachi seaport

A longstanding problem is the lengthy dwell time at Karachi seaport for Afghan bound containers. The reason is the high rate of inspection and examination. If the X-ray machine in the seaport malfunctions, the delay becomes longer.

■ Border Crossing

A transport operator needs 2-3 days to cross either side of the border. This is due to the customs formalities and long queuing time. Perishables shipments are given priority, but most commercial shipments have to wait. There are also a number of police checkpoints from Peshawar to Torkham.

Afghanistan and Pakistan are reviewing and revising the Afghanistan-Pakistan Transit Trade Agreement (APTTA). Both contracting parties are keen to extend market access. For Afghanistan, the access to India markets is critical. Thus, the revised APTTA may permit greater efficiency for Afghan truck operators to carry exports from Torkham to Wagah border, although – as noted above – Indian products are not permitted to be loaded on the return journey. Pakistan is seeking to carry goods to Tajikistan, thus hoping to have APTTA permitting Pakistan truck operators to carry goods from Torkham to Sherkhan Bandar. If the APTTA is successfully concluded, this can imply less trans-loading of goods at the border, resulting in higher overall efficiency in the supply chain.

Pakistan is also a signatory of QATT (Quadrilateral Agreement on Transit Trade), which also includes Kazakhstan, Kyrgyz Republic, and PRC. This agreement is not actively used due to the different truck standards and more importantly, the difficulty to use Corridor 5b. Nonetheless, PRC is investing USD 46 billion to develop the China-Pakistan Economic Corridor.²¹ As such, it is expected that more traffic will pass through Khunjerab-Sost (PRC-PAK).

Finally, an important development in 2015 was Pakistan's accession to the TIR Convention 1975. The Instrument of Accession was formally submitted to United Nations on 22 July 2015, and TIR is effective beginning 21 January 2016. With TIR, this will enable Pakistani operators to access landlocked CAREC markets with greater convenience. Previously, Turkmenistan and Tajikistan buyers have considered sourcing from Pakistan. One example was the procurement of halal meat from Lahore. Unfortunately, no transport operators were able or interested to deliver the shipment due to the absence of TIR, which requires a high customs guarantee for

²¹Source: <http://www.wsj.com/articles/china-to-unveil-billions-of-dollars-in-pakistan-investment-1429214705> and <http://www.bbc.com/news/world-asia-32377088>

shipping into those markets.

Thus, CPMM could be utilized as a methodology to monitor the impacts of the above-mentioned developments and evaluate if cross border shipment becomes more efficient.

PEOPLE'S REPUBLIC OF CHINA

Key Border Crossing Points

CPMM focused on trade flows from two regions in PRC. These are the Inner Mongolia Autonomous Region (IMAR) and Xinjiang Uygur Autonomous Region (XUAR). For the former, road and railway traffic are studied which crosses Erenhot-Zamyn Uud (PRC-MON) and Zunn Khatavch-Bichight (PRC-MON) on CAREC Corridor 4. At XUAR, road and rail shipments crossing Khorgos, Alashankou-Dostyk (PRC-KAZ), Torugart, and Irkeshtam are studied under CAREC Corridors 1, 2, and 5.

In general, Khorgos showed longer border crossing time but it must be noted that this delay has been declining in recent years. To be fair, Khorgos is also the busiest road BCP in the region, so the queuing time is understandably longer. Irkeshtam emerges to be an erratic and time-consuming BCP.

Railway border crossing time is much higher. Restriction upon entry has shown to be a major delay that compels trains to wait in terminals due to congestion at Alashankou-Dostyk (PRC-KAZ). Waiting for higher priority cargoes (such as food, energy, and disaster relief supplies) and passenger trains can also result in delay for normal commercial cargo. The break in gauge that requires transfer of cargoes is another problem: this is widely reported by other studies.

Transit in PRC

Robust trade takes place between XUAR and other parts of CAREC. The former is a sourcing hub for many traders due to the low cost and variety of consumer and industrial goods. Typically, buyers from other CAREC countries will procure items in Urumqi or Kashi (or route the goods purchased elsewhere to Urumqi or Kashi) and from there arrange for goods to be sent via trucks to their final destination.

Goods bound for landlocked CAREC countries will first be customs cleared at Class II Temporary Warehouses. These are inland warehouses that allow traders to benefit from export rebates (even though they have not officially crossed the border). Then the goods are trucked to the Class I warehouse at the border (mainly in Khorgos, but some operate in Alashankou). The goods are unloaded and stay in the warehouse until a Kazakh transport operator comes to collect the goods. The trucks go through Khorgos but are inspected at

Zharkent in Kazakhstan before heading to Almaty. Only bonded carriers are allowed to carry goods from PRC cities into Kazakhstan, but their transport services are expensive. Thus, there is a need for trans-loading at Khorgos.

One common challenge for road transport is that the customs formalities for clearing goods can be cumbersome both at the border and at inland customs houses. For instance, Kazakhstan requires 100% examination of all trucks carrying goods from PRC upon their arrival at Almaty. This invariably affects the cargo release time. If both sides can reach a level of institutional trust that allows more risk management to be adopted, then less 'friction' in the cross border supply chain can lead to lower cost and higher trade volume.

For rail transport, trains can have the option to pass through Dostyk or Khorgos. The former is still preferred due to its matured operation and infrastructure. To balance the load at both stations, PRC railway authorities vary the charges to encourage traffic via Khorgos. In XUAR, there are many railway stations, but only the bigger ones serve international traffic. Goods that are loaded onto trains use a local Waybill, which requires a Waybill switch to the SMGS Waybill at major terminals such as Urumqi. This switching can sometime cause manual errors and result in delays when trains enter Kazakhstan. PRC uses 1,435 mm standard gauge while Kazakhstan uses 1,520 mm broad gauge. According to OSJD convention, the railway receiving incoming trains conducts the transfer of cargoes. Due to limited capacity at Dostyk, trains coming from China must wait until the transloading of earlier trains is completed – a key reason for the long border delay. The scarcity of flat wagons on the Kazakh side of the border also contributes to the delay.

On Corridor 4, it is observed that the processing of inbound trains from Mongolia to Erenhot is consistently more time-consuming than outbound shipments. This is due to waiting time for cargo transfer in Erenhot terminal. In 2015, the average delay for inbound traffic was 34.6 hours; outbound shipments were delayed by an average of 26.8 hours.

TAJIKISTAN

Key Border Crossing Points

CPMM focuses on road transport. Broadly speaking, cargo moves in north-south direction or east-west direction. In earlier years, active traffic was seen in the east-west direction where goods originating in PRC cross at Karamyk. From 2012 onwards, CPMM samples at Karamyk were reduced year after year, as Kyrgyz authorities imposed stricter checks and diverted international transit traffic to other BCPs, such as Kyzyl Bel-Guliston (KGZ-TAJ). Another active BCP is Nizhni

Pianj-Sherkhan Bandar (TAJ-AFG), where PRC and Tajikistan goods enter Afghanistan. Nizhni Pianj is also the busiest BCP: an average of 100 trucks are processed daily.

There are two BCPs that do not appear on the CAREC map. CPMM revealed that a substantial amount of PRC goods flows through Karasuu-Kulma (PRC-TAJ), bypassing Kyrgyz Republic. This is an increasing popular route for PRC goods sold to Tajikistan and Afghanistan markets. The second BCP is Fotehobod-Chanak (TAJ-UZB), located at the northern tip of Tajikistan. Approximately 30-50 trucks pass through this location daily.

Transit in Tajikistan

Tajikistan is present in CAREC Corridors 2,3,5 and 6. On closer examination, one can see that those sections in corridor facilitate only road transport. The railway system is separated into three sections in the country, and this disparate system makes it more challenging for transit.

Turning back to road transport, CPMM data showed active border crossings at four borders, with Afghanistan, Kyrgyz Republic, PRC and Uzbekistan. Some common challenges of transit shipments at these border crossing include:

■ Low level of automation

The physical infrastructure and systems at a number of BCPs are under-developed. For instance at Guliston, there is no computer system to process declarations, although that may change as ADB's Regional Improvement of Border Services project funds renovations to border crossing facilities at Guliston. At the moment, controls are based on paper and manual process. This impedes the smooth flow of international transit traffic across the KGZ-TAJ border.

■ High Cost of Transport

Trucking cost estimates are consistently high in Tajikistan. For instance, the average trucking cost from Tursunzade to Nizhni Pianj was USD 1,017 over 262 km. This translates to approximately USD 2,000 over 500km, relatively high compared to other CAREC corridors.

■ Dependency on Other Countries for Transit

The location of the country implies that it relies heavily on neighboring countries for transit goods. To the east, goods coming from PRC transit Kyrgyz Republic. To the west, goods to destinations such as Iran and Turkey transit Uzbekistan. Relations between these countries are not always harmonious, and at times, borders are closed without notice. Truck operators have tried alternatives.

For instance, shipments from PRC now go through the Kulma Pass (PRC-TAJ). Although this is a direct route, the terrain is mountainous and difficult to navigate in winter. Tajikistan is also working with Afghanistan and Turkmenistan to reach a trilateral agreement for a new road and rail transit agreement.

Challenges notwithstanding, Tajikistan continues to work on various trade facilitation initiatives. For instance, Tajikistan, with EU and ADB assistance, has developed a single window facility to expedite the processing of trade transactions. Another initiative is to adapt a cargo monitoring system for transit shipment so that customs can reduce the need for customs escort. Currently, it costs USD 2 per 10 km of escort. In the event a revised Afghanistan-Pakistan Transit Trade Agreement (APTTA) is adopted, this may increase Pakistan exports to Tajikistan and Central Asia, making Nizhni Pianj a key transit hub. CPMM could be a useful instrument to monitor such developments and quantify actual improvements.

TURKMENISTAN

Key Border Crossing Points

CPMM road samples came mainly from Uzbek operators crossing Turkmenistan's borders with Iran (Sarah-Sarakhs) and Uzbekistan (Alat-Farap). Railway data were collected by PRC freight forwarders that sent goods to Turkmenistan, crossing at Farap.

Transit in Turkmenistan

Turkmenistan is a key transit country linking other landlocked CAREC countries with Iran and Turkey. Trucks from Kazakhstan, the Kyrgyz Republic, and Uzbekistan travel through Turkmenistan to reach Istanbul and Ankara in Turkey and the Iranian seaport of Bandar Abbas. In 2015, the President issued a decree to promote Turkmenistan as a transit corridor and improve trade facilitation. The Ministry of Transport is working on new laws to realize these objectives. In addition, the government plans to build a modern highway between Ashgabat and Turkmenbashi Port to preserve its competitive advantage as a key link to Baku.

For road transport, CPMM samples showed Uzbek operators actively pass through Turkmenistan in both directions. These movements represent transit traffic carrying goods from and to Bandar Abbas seaport: trucks cross the border at Alat-Farap (UZB-TKM). Border crossing at Farap averaged 6 to 7 hours. At the Iranian border, trucks crossing Artik required longer average border crossing time at 8 hours. In both BCPs, the principal delays were due to waiting time in queue. In terms of

costs, truck operators are required to pay a \$160 toll for using Turkmen roads. In addition, there is a \$90 bridge toll for the Chardzhou pontoon bridge. Gasoline within Turkmenistan is much cheaper than neighboring countries, so trucks tend to fuel up in Turkmenistan.

Turkmen Railways (Türkmen demiryollary) has developed a direct interchange with KTZ, OTY, and Iranian Railways (the latter featuring a break in gauge). CPMM samples include data for shipments from PRC via Kazakhstan and Uzbekistan to Turkmenistan.

UZBEKISTAN

Key Border Crossing Points

CAREC Corridors 2, 3, and 6 pass through Uzbekistan's territory. The Uzbek truck operators are generally active in using these corridors for two main types of shipments. The first is the export of cotton and aluminum to Kazakhstan and Russia. Trucks cross Yallama-Konysbaeva (UZB-KAZ) to reach Almaty and Dautota-Tazhen (UZB-KAZ) en route to Russia. Shipments are typically non-containerized. The second border crossing occurs at Alat-Farap (UZB-TKM), where trucks carry exports and imports to and from Bandar Abbas seaport. Unlike the first type of shipment, goods move in 40-foot containers along these routes. CPMM also includes samples of truck shipments crossing Oibek-Fotehobod (UZB-TAJ) and Sariasiya-Pakhtaabad, although the quantity appears to be smaller compared to the first two instances.

CPMM railway samples derive from PRC exporters sending goods to Turkmenistan, crossing at Saryagash-Keles (KAZ-UZB). Building and industrial materials are sent along this route.

Transit in Uzbekistan

Uzbekistan has a good road network with links to Turkmenistan, Kyrgyzstan, Kazakhstan, and Afghanistan. The average truck border crossing time has been stable, with some decline in certain BCPs over the last three years. It also has a significant trucking industry hauling goods not just within the CAREC region and Russia but also serving Western Europe, Turkey, and Iran. With assistance from the Republic of Korea, Uzbekistan is positioning Navoi into a key logistics hub for the region.

With all these advantages, one would expect Uzbekistan to be a vibrant transit corridor for the region. On the contrary, it is viewed as a very challenging transit country. Evidently, ISAF cargo movements from Manas to Afghanistan transited Kyrgyz Republic and Tajikistan, despite Uzbekistan having a larger fleet of truck operators and flatter terrain. The reason is that

the policies and procedures for transit in the country are generally perceived to be very cumbersome. In particular, relations with Kyrgyz Republic and Tajikistan are sometimes tense and thus, borders are closed to these foreign truck operators.

In 2015, the Cabinet of Ministers passed a resolution 'Measures on Further Improvement of Mechanism for regulating the Exports of Fruits, Vegetables, Potatoes, Melons and Grapes'. Effective September 1, 2015, the state banned the export of specific agricultural products by trucks. This was designed to combat non-transparent export of such products by truckers.²² Subsequently, on April 1, 2016, the government decided that effective July 1 2016, authorized truck operators who possess the license to export these goods are permitted to conduct international transport of such goods for export.²³

Uzbekistan Railways ('O'zbekiston Temir Yo'llari'), with 3950 track km, has one of the largest rail networks in CAREC. Steadily, Uzbekistan Railways are augmenting their system so movements between two domestic points will not require connection via the rail tracks of a foreign railway.

²²For more background on this ban, please refer to CPMM Annual Report 2015, Quarter 3.

²³Source: <http://adbl.uz/index.php/ru/novosti/503-s-1-iyulya-2016-goda-eksportirovat-ovoshchi-i-frukty-avtotransportom-mozhno-budet-s-litsenziej-na-mezhdunarodnye-gruzoperevozki>

VI. Summary and Conclusion

CAREC transport corridor performance in 2015 saw marginal improvements in some modes and sections, while other modes and sections saw prior progress reversed. On the policy front, Kazakhstan acceded to the World Trade Organization, the Kyrgyz Republic joined the Eurasian Economic Union, and Pakistan acceded to the TIR Convention. CAREC adopted a Common Agenda for Reform and Modernization of Sanitary and Phytosanitary Measures. Operationally, while absolute tonnage transported via the key PRC-Kazakhstan railway border crossing point at Alashankou-Dostyk declined, the volume of traffic continued to increase, fueled by the inauguration of additional transcontinental express train services departing PRC industrial centers for points west.

There were disruptions to traffic and trade: the August landslides in Tajikistan closed traffic temporarily on the Kulma-Khorog-Dushanbe road, the explosion in Tianjin has been noted above, as has Uzbekistan's decision to ban exports of agricultural products. Positive developments such as the completion of a bypass around the lake on the Karakorum Highway contributed to traffic restoration.

As a measurement and monitoring tool, CPMM tracks the performance of border crossing and transport efficiency on a monthly basis, and reports the findings on a quarterly and annual basis. Based on the analysis presented above, it is possible to attribute the principal challenges facing transit and transport in CAREC to the following **five** reasons.

Unharmonized Transit Trade Procedures

Many delays happen at border crossing points due to unharmonized procedures. This is particularly so between the core Central Asian economies with Afghanistan, Pakistan and PRC. For instance, vehicle standards are different, leading to the need for trans-loading of cargoes to locally registered vehicles. Non or limited recognition of weight certificates, as well as phyto-sanitary and veterinary certificates mean that duplicate certification is required when the shipment passes through different countries.

Disparate Border Crossing Activities

At BCPs, a truck driver has to go through each activity sequentially. Typically, the sequence will be to complete phytosanitary and veterinary inspections, immigration and quarantine, transport and weight inspection, and then finally customs controls. Sometimes these functions are located in different buildings, prolonging the processing time. Some countries have set up one-stop shop service centers which physically house all functions in one area to expedite the process, but this remains a rarity. Such lengthy formalities thus result in less than optimal throughput practices and procedures at each BCP, thus creating long waiting time in queue. Many countries have expressed interest in developing national single window facilities to integrate and streamline trade procedures, including border-crossing operations, but progress to date is limited.

Lack of Effective Inter-Agency Cooperation

An extension of the above problem was the lack of inter-agency cooperation. A cross border shipment typically requires obtaining approvals from different agencies such as border security, sanitary and phytosanitary inspections, transport, and customs. Yet, border visits and interviews conducted by the CPMM team showed that effective cooperation is lacking.

For instance, the CPMM team observed that information received by one party is not shared with other parties. Meetings on trade facilitation or reforms initiated by one party are not attended by other agencies.

In this aspect, National Transport and Trade Facilitation Committees (NTTFC) have important roles to play. These interagency committees, encouraged by the WTO's Trade Facilitation Agreement, ideally involving traders, transport operators, and chambers of commerce, can facilitate coordination among border management agencies and provide a forum for operators and regulators to exchange views. The problem is that such committees, where they happen to exist, do not meet regularly; when there is a frequent change of leadership, their effectiveness can be compromised.

Low Adoption of Advanced Risk Management Techniques

Despite best efforts, risk management adoption remains low in CAREC countries. Incoming goods are subject to high levels of scrutiny. For instance, containers bound for Afghanistan are subject to physical inspection and examination. PRC cargoes delivered to Almaty are subject to 100% examination before being released to cargo owners.

One key improvement that can significantly reduce border-crossing time is providing an advance manifest. The present border crossing is inefficient in part because customs officers have to spend much time in assessing each shipment. Sometimes, the truck arrives at a BCP but there is no manifest information, requiring customs officers to spend more time in reviewing the shipment based on paper documents.

Developed economies have already adopted risk management using advance manifest so that more than 90% of shipments can be pre-cleared. Customs officers then spend the bulk of their time working on intelligence and focus on the remaining 10% of the shipment that requires more time (e.g. sensitive list items or dangerous goods transport). The Georgian experience, shared with CAREC national focal points in 2013, replicates this approach and has led to an increase in the discovery of illicit trade.

A way to realize such risk management is to offer 'green channels' for Authorized Economic Operators (AEO). There is no reason why such AEOs should wait in queue as with other trucks if they qualify for such a scheme. Yet many BCPs do not have a green lane to expedite pre-approved shipments.

Unofficial Payment Persists

Central Asian border agencies are trained in detecting and reporting inconsistencies in the procedures or documentation, which then penalize the shippers. With the complexity in the present procedures and the onerous penalties, this can result in bribing by traders to seek favorable treatment, which in turn creates an environment for rent-seeking by personnel of border agencies behavior. CPMM detected the presence of such unofficial behavior. Ultimately this adds to the overall supply chain cost.

From the five points mentioned above, it is evident that none are related to infrastructure or investment. This does not imply lesser significance. The five points are all related to **institutional factors** (policy and procedure), which can be the most challenging to change. CAREC and its development partners work well with member country governments on infrastructure and investment, yet cannot realize in full the anticipated benefits with infrastructure investments alone. The key message is that genuine cross-border regional cooperation is necessary, and coordinated border management through intensified interagency cooperation is also essential. Only when infrastructure, investment, and institutional factors are all present can corridor performance be improved and sustained.

Appendixes



Appendix 1: CPMM Partner Associations

CPMM partners are essential to the success of CPMM. These organizations are the local associations, which represent the transport and logistics industry. They are specially selected and trained to carry out data collection. The key responsibilities of CPMM partners are to:

- Act as a local point of contact for ADB to conduct the CPMM exercise
- Understand the CPMM methodology
- Organize drivers to use customized drivers' forms for data collection
- Review the completed drivers' forms to ensure data completeness and correctness
- Input the raw data from the drivers' forms into a specially designed CAREC CPMM file (created using Microsoft Office Excel)
- Send completed CPMM files to CAREC

In 2015, the 12 CPMM partners working closely with CAREC include the following:

	Country	Association	
1	AFG	Association of Afghanistan Freight Forwarding Companies	AAFFCO
2	KGZ	Freight Operators Association of Kyrgyzstan	FOA
3	MON	Mongolia Chamber of Commerce and Industry	MNCCI
4	MON	National Road Transport Association of Mongolia	NARTAM
5	PAK	Pakistan International Freight Forwarders Association	PIFFA
6	PRC	Chongqing International Freight Forwarders Association	CQIFA
7	PRC	Inner Mongolia Autonomous Region Logistics Association	IMARLA
8	PRC	Xinjiang Uygur Autonomous Region Logistics Association	XUARLA
9	TAJ	Association of International Automobile Carriers of Tajikistan	ABBAT
10	TAJ	Association of International Automobile Transport of Tajikistan	AIATT
11	TKM	Turkmen Association of International Road Carriers	THADA
12	UZB	Business Logistics Development Association	ADBL

Appendix 2:

CPMM Methodology

The CPMM methodology is based on a Time-Cost-Distance framework and involves four major stakeholders: namely the (1) drivers, (2) CPMM partners/coordinators, (3) field consultants and (4) ADB as the CAREC secretariat.

Time-Cost-Distance Framework

This framework seeks to track the changes in time (measured in hours or days) and cost (measured in US Dollars) over distance (measured in kilometers). Common transport corridors are selected and data on the three metrics are collected by the driver or a consultant along the route. As the data are entered in a Microsoft Excel spreadsheet, a chart will display the changes of time or cost over distance. Distance occupies the horizontal axis, while time or cost occupies the vertical axis.

Drivers

To ensure that analysis reflects reality, raw data should be collected as close to the source as possible. As such, drivers are the ones targeted to record how long (time) or how much (cost) it takes them to move from origin to destination. The drivers use a localized driver's form to record the data and submit to the CPMM partners.

CPMM Partners/Coordinators

CPMM partners are the organizations selected to implement the project. A specific person is assigned by each partner to learn about CPMM, train the drivers, customize the drivers' form, and enter the data into a customized Microsoft Office Excel spreadsheet.

Field Consultants

Two international consultants are involved in the CPMM project. They work with ADB's CAREC Trade Facilitation team to develop the CPMM methodology, and then travel to the eight CAREC member countries to standardize the implementation. They also analyze the aggregated data and draft the quarterly and annual reports.

ADB CAREC Secretariat

Residing in Manila, ADB's CAREC Trade Facilitation team is responsible for collecting and aggregating all the completed

Excel files. Using specialized statistical software, the team constructs the charts and tables for the field consultants to analyze.

Sampling Methodology and Estimation Procedures

Each month, coordinators of each partner association randomly select drivers to transport cargoes passing through the six CAREC priority corridors to fill up the drivers' forms. The data from the drivers' forms are entered into time-cost-distance (TCD) Excel sheets by the coordinators. Each partner association completes about 20-30 TCD forms a month, which are submitted to the international consultants and are then screened for consistency, accuracy and completeness.

The TCD data submitted by partner associations need to be normalized so each TCD sheet can be summed up and analyzed at the sub-corridor, corridor, and aggregate level of reporting.

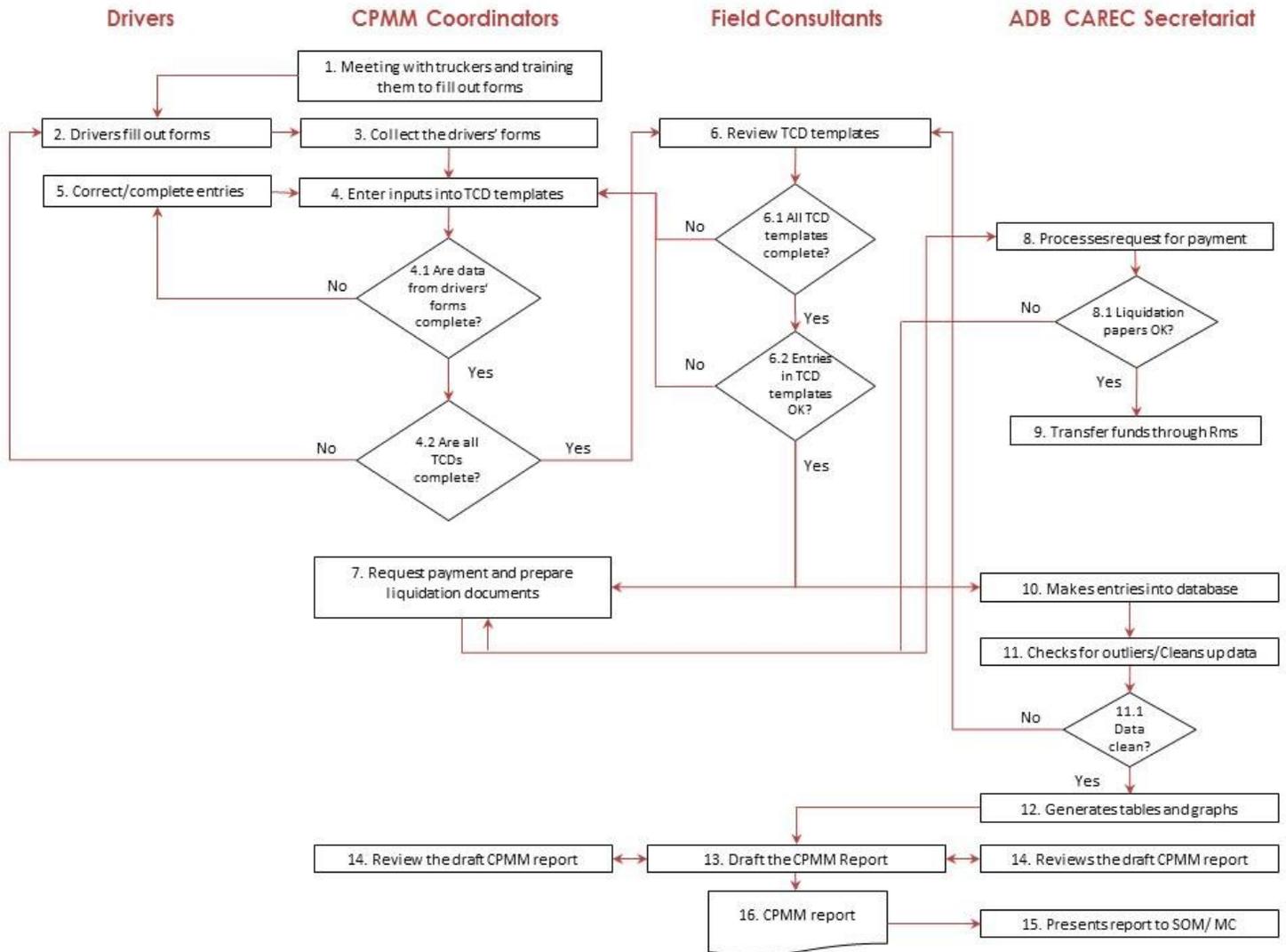
Normalization is done in terms of a 20-ton truck in the case of road transport or in terms of a twenty-foot equivalent unit (TEU) in the case of rail traveling 500 kilometers (km). The number of border crossing points (BCPs) for sub-corridors is also normalized for each 500 km segment.

The following are the steps taken for normalization of each TCD sheet:

1. Each TCD is split between non-BCP portion and BCP portion in case the shipment crossed borders.
2. The time and cost figures for the non-BCP portion are normalized to 500 km by multiplying the ratio of 500 km by the actual distance traveled.
3. The time and cost figures for the BCP portion are normalized based on the ratio of pre-determined number of BCPs for each 500 KM segment over actual number of BCP crossed.
4. The TCD is reconstituted by combining the normalized non-BCP portion and the normalized BCP portion.

To measure the average speed and cost of transport for trade, the cargo tonnage or number of TEU containers are used as weights (normalized at 20 tons) in calculating the weighted averages of speed and cost for sub-corridors, corridors and for the data overall, based on normalized TCD samples.

Appendix 3: Overview of CPMM Methodology



Appendix 4:

CAREC Border Crossing Points

Corridor	BCP 1	BCP 2
1 1a, 2c	PRC Alashankou	KAZ Dostyk
2 1a, 1c	KAZ Kairak	RUS Troitsk
3 1b	PRC Khorgos	KAZ Korgas
4 1b, 6b, 6c	KAZ Zhaisan	RUS Kos Aral / Novomarkovka (Sagarchin)
5 1c	PRC Torugart / Topa	KGZ Torugart
6 1c, 3b	KAZ Merke	KGZ Chaldovar
7 2a, 2b, 2d, 5a, 5c	PRC Yierkeshitan	KGZ Irkeshitam
8 2a, 2b	KGZ Kara-Suu (Dostuk)	UZB Kara-Suu / Savay (Dustlik)
9 2a, 2b	TAJ Kanibadam	UZB Kokland
10 2a, 2b	TAJ Nau	UZB Bekabad
11 2a, 6a	KAZ Beyneu (rail) / Tazhen (road)	UZB Karakalpakstan (Daut-Ata)
12 2a, 2c	AZE Baku	KAZ Aktau
13 2a, 2b, 2c	AZE Red Bridge (road) - Beyuk Kesik (rail)	GEO Red Bridge (road) - Gabdabani (rail)
14 2b, 3a	UZB Alat	TKM Farap
15 2b	AZE Baku	TKM Turkmenbashi
16 2d, 3b, 5a, 5c	KGZ Karamyk	TAJ Karamyk
17 2d, 5a, 5c, 6c	AFG Shirkhan Bandar	TAJ Panji Poyon / Nizhni Pianj
18 3a, 3b	KAZ Aul	RUS Veseloyarsk
19 3a, 6b, 6c	KAZ Zhibek Zholy - Saryagash/Yallama	UZB Gisht Kuprik - Keles
20 3a	TKM Sarahs	IRN Sarakhs
21 3b	TAJ Pakhtaabad	UZB Saryasia
22 3a, 6a, 6b	AFG Hairatan	UZB Termez / Airatom
23 3b, 6b, 6d	AFG Islam Qala	IRN Dogharoun
24 4a	MON Ulaanbaishint / Tsagaanur	RUS Tashanta
25 4a	PRC Takeshikent	MON Yarant
26 4b, 4c	MON Sukhbaatar	RUS Naushki
27 4b	PRC Erenhot	MON Zamiin-Uud
28 6a, 6d	KAZ Kurmangazy (road) / Ganyushking (rail)	RUS Krasnyi Yar (road) / Aksaraskaya (rail)
29 6c	TAJ Istaravshan	UZB Khavast
30 6d	KAZ Bolashak	TKM Serkhetyaka
31 2d	AFG Aqina	TKM Imam Nazar
32 2d, 6d	AFG Torghondi	TKM Serkhet Abad
33 5b	PRC Khunjerab	PAK Sost
34 5c, 6a, 6b, 6d	AFG Chaman	PAK Spin Buldak
35 5a, 6c	AFG Torkham	PAK Peshawar
36 4c	PRC Zuun Khatavch	MON Bichigt

Appendix 5: Trade Facilitation Indicators

Trade Facilitation Indicators

Corridor	Overall						Road						Rail					
	2014			2015			2014			2015			2014			2015		
	Mean	Median	Margin	Mean	Median	Margin	Mean	Median	Margin	Mean	Median	Margin	Mean	Median	Margin	Mean	Median	Margin
TFI1	Time taken to clear a border crossing point, hr																	
Overall	14.1	5.8	± 0.5	13.1	5.6	± 0.5	9.9	4.8	± 0.4	9.3	4.7	± 0.4	32.6	24.0	± 1.7	27.4	23.0	± 1.3
1	16.8	2.7	± 1.4	18.0	5.0	± 1.1	2.7	0.5	± 0.3	1.8	0.4	± 0.2	42.9	39.0	± 2.9	32.2	32.5	± 1.4
2	6.1	5.9	± 0.1	6.3	5.9	± 0.3	6.1	5.9	± 0.1	6.3	5.9	± 0.3	-	-	-	-	-	-
3	4.4	3.4	± 0.9	5.3	5.4	± 1.3	4.4	3.4	± 0.9	5.3	5.4	± 1.3	-	-	-	-	-	-
4	13.0	5.5	± 0.8	8.4	3.4	± 0.8	7.9	3.9	± 0.7	2.8	2.1	± 0.1	23.8	23.0	± 1.6	20.9	12.0	± 2.4
5	28.9	36.0	± 1.6	26.2	28.0	± 1.3	28.9	36.0	± 1.6	26.2	28.0	± 1.3	-	-	-	-	-	-
6	9.6	6.8	± 0.8	7.4	6.4	± 0.4	9.6	6.8	± 0.8	7.4	6.4	± 0.4	-	-	-	-	-	-
TFI2	Cost incurred at border crossing clearance, \$																	
Overall	172	125	± 5	161	129	± 3	177	125	± 6	149	125	± 3	148	125	± 6	208	140	± 9
1	128	81	± 8	175	84	± 9	110	40	± 12	99	33	± 13	158	125	± 6	241	300	± 10
2	169	87	± 15	173	87	± 16	169	87	± 15	173	87	± 16	-	-	-	-	-	-
3	112	48	± 27	89	81	± 9	112	48	± 27	89	81	± 9	-	-	-	-	-	-
4	236	145	± 11	148	161	± 5	267	166	± 14	151	171	± 4	134	128	± 9	138	125	± 16
5	171	196	± 6	184	175	± 6	171	196	± 6	184	175	± 6	-	-	-	-	-	-
6	138	120	± 5	145	115	± 6	138	120	± 5	145	115	± 6	-	-	-	-	-	-
TFI3	Cost incurred to travel a corridor section, \$ per 500km, per 20-ton cargo																	
Overall	1,360	937	± 46	1,323	876	± 37	1,359	938	± 51	1,341	893	± 42	1,364	926	± 105	1,250	823	± 79
1	1,180	939	± 62	1,083	900	± 44	1,123	954	± 73	1,069	997	± 53	1,278	819	± 113	1,097	790	± 70
2	513	481	± 15	522	482	± 17	513	481	± 15	522	482	± 17	-	-	-	-	-	-
3	2,348	1,162	± 301	1,559	899	± 141	2,348	1,162	± 301	1,559	899	± 141	-	-	-	-	-	-
4	1,269	1,031	± 86	1,217	811	± 87	1,126	1,031	± 54	992	768	± 65	1,478	1,075	± 193	1,565	1,117	± 188
5	2,050	1,882	± 96	2,008	1,938	± 92	2,050	1,882	± 96	2,008	1,938	± 92	-	-	-	-	-	-
6	769	517	± 60	1,276	662	± 95	769	517	± 60	1,276	662	± 95	-	-	-	-	-	-
TFI4	Speed to travel on CAREC Corridors, kph																	
Overall	20.8	20.6	± 1.7	21.1	19.7	± 1.6	22.9	21.5	± 1.8	23.2	22.7	± 1.7	11.4	9.2	± 2.4	14.0	9.1	± 3.5
1	24.1	24.5	± 3.2	22.5	23.4	± 3.6	28.3	27.5	± 3.8	29.5	28.1	± 4.0	15.6	10.9	± 3.4	16.9	9.3	± 4.8
2	23.6	22.1	± 3.7	23.4	22.0	± 3.5	23.6	22.1	± 3.7	23.4	22.0	± 3.5	-	-	-	-	-	-
3	27.2	23.7	± 5.9	28.3	27.7	± 4.9	27.2	23.7	± 5.9	28.3	27.7	± 4.9	-	-	-	-	-	-
4	15.9	12.4	± 3.8	20.2	20.7	± 4.6	19.9	20.5	± 5.0	25.8	25.5	± 4.9	8.1	7.7	± 1.4	9.1	8.6	± 1.8
5	17.1	18.0	± 2.0	13.1	13.1	± 1.1	17.1	18.0	± 2.0	13.1	13.1	± 1.1	-	-	-	-	-	-
6	25.3	30.6	± 4.7	23.2	24.8	± 3.2	25.3	30.6	± 4.7	23.2	24.8	± 3.2	-	-	-	-	-	-
SWOD	Speed Without Delay																	
Overall	40.2	41.4	± 2.1	39.8	41.0	± 1.8	42.0	42.9	± 2.1	40.2	40.4	± 1.8	32.2	26.7	± 5.8	38.3	45.0	± 5.0
1	44.7	47.7	± 3.1	46.2	48.6	± 2.1	44.5	47.7	± 4.0	44.6	48.4	± 3.5	45.1	48.3	± 5.1	47.5	48.9	± 2.1
2	49.1	49.5	± 2.1	49.2	49.6	± 2.4	49.1	49.5	± 2.1	49.2	49.6	± 2.4	-	-	-	-	-	-
3	48.1	47.5	± 5.1	40.3	39.5	± 5.4	48.1	47.5	± 5.1	40.3	39.5	± 5.4	-	-	-	-	-	-
4	32.0	32.8	± 5.8	33.2	38.1	± 4.8	37.2	37.9	± 7.1	38.4	40.3	± 4.1	22.0	20.4	± 6.5	23.1	22.1	± 6.5
5	36.1	29.2	± 4.6	36.4	31.1	± 4.1	36.1	29.2	± 4.6	36.4	31.1	± 4.1	-	-	-	-	-	-
6	46.1	47.0	± 2.7	38.9	38.4	± 4.0	46.1	47.0	± 2.7	38.9	38.4	± 4.0	-	-	-	-	-	-

- Better than same period last year, significant at 5% level
- Worse than same period last year, significant at 5% level
- Insignificant change

Note: Margin refers to the 95% confidence interval band around the mean estimate.

Appendix 6:

Cost Structure of TFI3

Corridor	Overall						Road						Rail					
	2014			2015			2014			2015			2014			2015		
	Total	Transit	Activity	Total	Transit	Activity	Total	Transit	Activity	Total	Transit	Activity	Total	Transit	Activity	Total	Transit	Activity
TFI3	Cost incurred to travel a corridor section, \$ per 500km, per 20-ton cargo																	
Overall	1,360	1,130	230	1,323	1,105	218	1,359	1,129	230	1,341	1,119	223	1,364	1,136	228	1,250	1,050	200
1	1,180	977	203	1,083	890	193	1,123	944	179	1,069	885	185	1,278	1,034	244	1,097	896	201
2	513	390	123	522	377	144	513	390	123	522	377	144	-	-	-	-	-	-
3	2,348	2,138	210	1,559	1,489	70	2,348	2,138	210	1,559	1,489	70	-	-	-	-	-	-
4	1,269	942	327	1,217	958	260	1,126	715	410	992	692	300	1,478	1,272	206	1,565	1,368	197
5	2,050	1,845	205	2,008	1,681	327	2,050	1,845	205	2,008	1,681	327	-	-	-	-	-	-
6	769	503	266	1,276	1,065	211	769	503	266	1,276	1,065	211	-	-	-	-	-	-
%	Percent to Total																	
Overall		83%	17%		84%	16%		83%	17%		83%	17%		83%	17%		84%	16%
1		83%	17%		82%	18%		84%	16%		83%	17%		81%	19%		82%	18%
2		76%	24%		72%	28%		76%	24%		72%	28%						
3		91%	9%		96%	4%		91%	9%		96%	4%						
4		74%	26%		79%	21%		64%	36%		70%	30%		86%	14%		87%	13%
5		90%	10%		84%	16%		90%	10%		84%	16%						
6		65%	35%		83%	17%		65%	35%		83%	17%						

Appendix 7: Q4 2015 Indicators

In 2015, the quarterly TFIs are reflected in the four charts, giving readers a picture of the quarterly trend over the entire year. Noteworthy improvements are observed for railway in TFI1, and both road and railway showed increase speed in TFI4. An increasing cost was observed for road transport in TFI3, which had a 19% jump.

TFI1: Time taken to clear a border crossing point, in hours

In 2015, road reported a stable trend in TFI1, ranging from 9.0 to 9.5 hours of border crossing time on average. Crossing Peshawar-Torkham (PAK-AFG) and Chaman-Spin Buldak (PAK-AFG) continued to be time-consuming affair for truckers. On the other hand, railways showed an encouraging trend, where the average border crossing time dropped 34% from beginning to the end of the year. All four major railway BCPs reported less average border crossing time. These four stations are Alashankou-Dostyk (PRC-KAZ) and Erenhot-Zamyn Uud (PRC-MON). A major reason was the substantially shorter waiting time within all four stations in spite of reports that traffic volume increased on account of more frequent departures of transcontinental express container trains from PRC.

TFI2: Cost incurred at border crossing clearance, in \$

The TFI2 for both road and railways moved in a tight range. While railways showed a flat trend over the four quarters, road moved lower from a peak achieved in Q2. TFI2 dropped from USD 161 (Q2) to USD 143 (Q4), a reduction of 11%.

The most costly border crossing operation occurred at BCPs in Corridor 5. Besides Peshawar-Torkham (PAK-AFG) and Chaman-Spin Buldak (PAK-AFG), the other costly BCPs to cross are Khorgos (PRC-KAZ) as well as Nizhni Pianj-Sherkhan Bandar (TAJ-AFG).

Railway movements reflected a stable trend in Q4. Generally, two operations are identified to be costlier. They are (1) Transload at the Break in Gauge and (2) Customs Inspection.

Figure 29: 2015 TFI1 Quarterly Trend, hrs

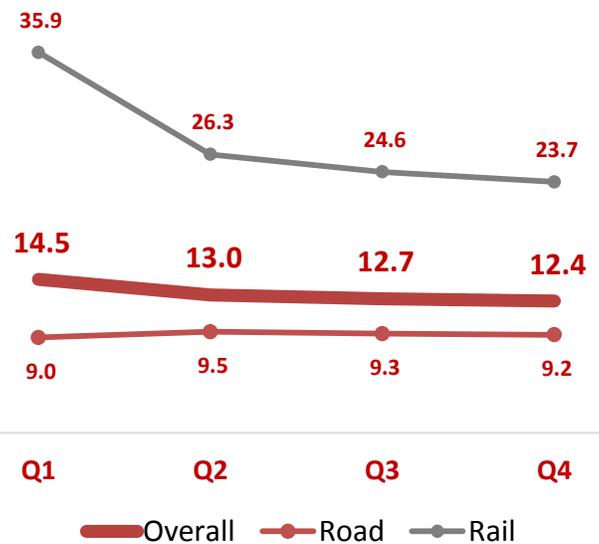


Figure 30: 2015 TFI2 Quarterly Trend, \$

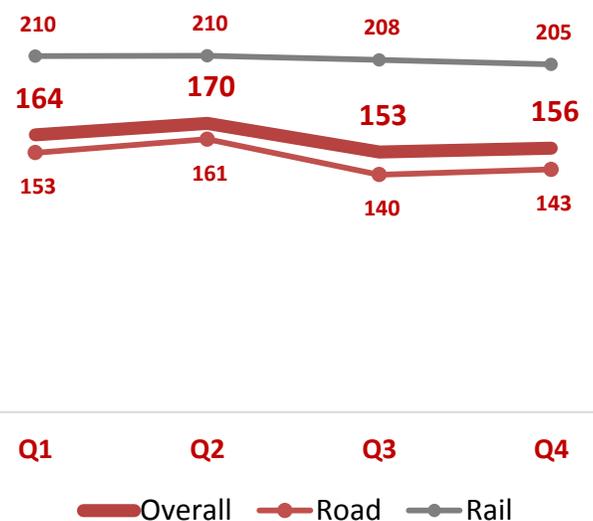
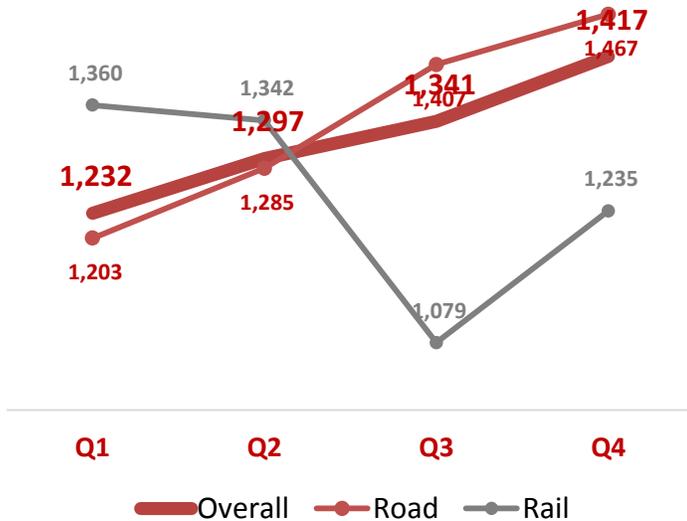


Figure 31: 2014 TFI3 Trend, \$/500km/20-ton

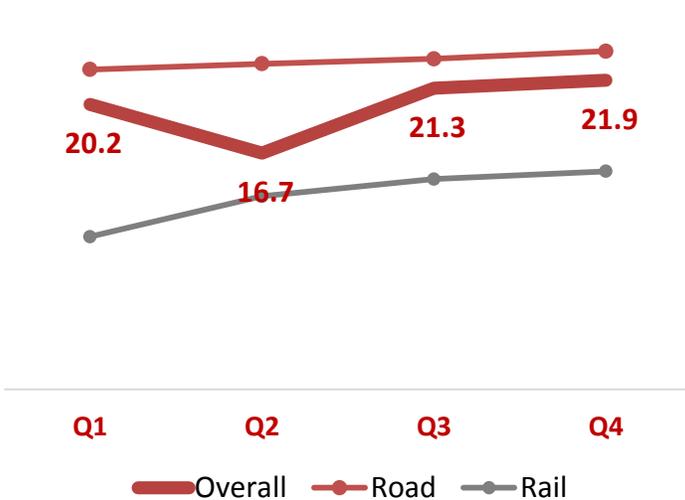


TFI3: Cost incurred to travel a corridor section, in \$ per 500km, per 20-ton cargo

In 2015, road and rail displayed a diverging trend. While rail moved in a narrow range, road signaled an increasing trend and ended at USD 1,467 in Q4, the highest TFI3 in all quarters in 2015. This represents an increase of 20% from the beginning to the end of the year. On further examination, it was understood that the types of containers used affected the cost increase. There was a shift towards more use of 20' containers on trucks. Although the absolute cost of shipping a 40-foot container is more expensive than a 20' container, the former is actually cheaper on a per ton-km basis. Essentially, CPMM normalizes transport cost to a unit of 500 km per 20 tons cargo (a representation of ton-km), so the higher proportion of 20' containers, particularly in Corridors 3 and 6, increased the cost.

Corridor 5 was the most expensive corridor to travel, in particular sub-corridors 5a and 5c. Customs inspection and loading/unloading drove costs higher.

Figure 32: 2014 TFI4 Quarterly Trend, kph



TFI4: Speed to travel on CAREC Corridors, kph

Both modes of transport reported a steady improvement throughout 2015. In Q4, TFI4 for road and rail registered 23.9 kph and 15.4 kph, respectively. Both of these values were the highest in all quarters. Road transport showed an increase from 22.6 kph in Q1 to 23.9 kph in Q4. Rail demonstrated an even more impressive jump from 10.8 kph in Q1 to 15.4 kph in Q4. These could be explained by data from TFI1. The substantial shortening of the average border crossing time (TFI1) attained by rail transport resulted in the higher average speed (TFI4), because TFI4 considers both the travelling time and the border crossing stoppage time.

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