



CENTRAL ASIA REGIONAL ECONOMIC COOPERATION
TRADE FACILITATION

CARECCPMM CORRIDOR PERFORMANCE MEASUREMENT & MONITORING

ANNUAL REPORT

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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://cfca.net> and visit the CPMM page on <http://cfca.net/cpmm/>.

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Abbreviations

ADB	–	Asian Development Bank
BCP	–	border crossing point
CAREC	–	Central Asia Regional Economic Cooperation
CPMM	–	Corridor Performance Measurement and Monitoring
CV	–	coefficient of variation
EU	–	European Union
GAI	–	State Automobile Inspectorate
IRU	–	International Road Transport Union
kph	–	kilometer per hour
PRC	–	People's Republic of China
SWD	–	Speed with delay
SWOD	–	Speed without delay
TCD	–	time-cost-distance
TEU	–	twenty-foot equivalent unit
TIR	–	Transports Internationaux Routiers
XUAR	–	Xinjiang Uygur Autonomous Region

NOTE

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

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Executive Summary

The Corridor Performance Monitoring and Measurement (CPMM) annual report for 2013 highlights findings from the capture and analysis of valuable statistical data, applying a process-based methodology to determine the operational efficiency and performance of the six transport corridors of the Central Asia Regional Economic Cooperation (CAREC) program. Now in its fifth year, the CPMM along with its team continue to provide policy makers and the private sector with critical information on the cause of delays and unnecessary cost of moving goods along the six CAREC corridors that span the region. CPMM remains the principal tool for monitoring and evaluating implementation of the CAREC Transport and Trade Facilitation Strategy (TTFS).

This year's report looks beyond measurement and monitoring objectives and also features impacts from new transport and trade-related developments, which are subject to deeper strategic focus following endorsement of the CAREC TTFS 2020 by the CAREC Ministerial Conference in October 2013. Under the refined strategy for the years to 2020, greater attention is given to improving integration in transportation, particularly in railways and in logistics infrastructure. Refinements to CPMM data collection were also introduced in 2013 to help CPMM partners collect more information on rail traffic. CPMM coverage was expanded to include new corridor extensions and alignments introduced in the refined strategy.

The CPMM is able to show that border-crossing patterns have changed significantly since the Kazakhstan–Russia–Belarus Customs Union was formed. The time to cross a border between the three countries has shortened considerably, but lengthened at the borders of neighbouring, non-Customs Union economies. CPMM data also indicate that shipments carrying perishables have been prioritized and these cross borders faster—and at lower cost. Also, the Transports Internationaux Routiers (International Road Transport, or TIR) carnet have expedited border crossing, albeit at a higher cost.

Recent developments such as the Chongqing–Duisburg Container Express Train and the Khorgos Rail Services are also being monitored, and their expected significant contributions will be reported once sufficient data have been gathered. Initial CPMM results show that the start of rail traffic operations in Khorgos relieved some of the congestion at the Alashankou–Dostyk border crossing. Analysis also reveals that the Kyrgyz Republic's decision to close the Karamyk crossing to international transit shipments and third-country vehicles increased the time and cost to travel along that particular corridor.

For the annual CAREC Development Effectiveness Review, CPMM

provides four trade facilitation indicators (TFIs) to evaluate transport and trade flows. TFI1 is the time taken to cross a border-crossing point in hours; TFI2 is the cost of clearing a border crossing, measured in US dollars; TFI3 is the cost of traveling 500 kilometers (km) along a road section, in US dollars per 20 tons of cargo; and TFI4 is the speed of traveling along CAREC corridors in kilometers per hour (kph). Based on 2,202 data samples on road, rail, and multimodal freight shipments collected and analyzed in 2013, CPMM was able to highlight several major trends:

- The five most common shipped product categories were agricultural products (16.6%), machineries (13.0%), industrial materials (12.3%), base metals (11.0%) and textiles (10.4%). These five categories constituted 63.3% of all shipments. The importance of perishables was proven once again, accounting for 19.0% of all shipments.
- Truck speeds were shown to range between 24 kph to 49 kph for Speed without delay (SWOD), and 15 kph to 28 kph for Speed with delay (SWD). Trucks traveling in Corridors 1 and 2 had the highest speed, of 49 kph. With border crossing and other stoppage times considered, Corridors 1 and 6 had the fastest SWD at 28 kph.
- Speeds in sub-corridors 1a and 3a were identified as the fastest. On the other hand, the slowest sub-corridors were 4b, 5, and 3b. When the percentage drop in speed is considered, the sharpest reduction in speed occurred along 1b, 6b, and 2b.
- Train speeds ranged between 18 kph to 45 kph (SWOD) and 8 to 26 kph (SWD). Trains moving along Corridor 1 had the highest speed. Both sub-corridors 4b and 6c exhibited the slowest speed measured in SWOD and SWD. Likewise, the largest decrease in speed was recorded in these two sub-corridors.

TFI1: Time to Clear a Border Crossing (Hours)

TFI1 improved by 8%, showing a general reduction in border-crossing time from 10.9 hours in 2012 to 10.0 hours in 2013 (although this is still higher than average border-crossing times in 2010 and 2011). The improvement can be traced to shorter border-crossing time for all corridors except Corridor 1, where delays surged.

Long waiting times continue to be the main cause of delay at border crossings, especially for Corridor 1. The border crossings at Khorgos and Alashankou–Dostyk averaged 4.6 hours and 31.5 hours, respectively. Trucks passing through Khorgos experienced unpredictable delays due to limited processing capacity on the Kazakhstan side and, following the entry into force of the Customs Union, more stringent inspections of imports from the People’s Republic of China (PRC). Nonetheless, through the joint initiatives of PRC and Kazakhstan, together with assistance from CAREC development partners, better infrastructure and facilities are being put in place. For instance, the development of the International Center for Cross-border Cooperation, construction of a new road from Almaty to Khorgos, and other projects should help shorten border-crossing times on Corridor 1.

TFI2: Costs incurred at a border crossing clearance (\$)

Average border-crossing costs increased 50%, to \$235 from \$157. This negated earlier improvements against the 2010 baseline observed in 2011 and 2012. The overall cost-curve tracked the substantial increases observed in Corridor 1 and Corridor 4.

In Corridor 1, road-transport costs were the cause of the increased burden. Customs clearance fees and loading/unloading charges were the major cost components for trucks crossing the border at Khorgos in Corridor 1. Due to high traffic volumes at this location, truck operators factor long waiting time into their border-crossing costs. Also, truck drivers from PRC and Kyrgyz Republic signaled that unofficial fees at the Kazakh border crossings were high.

In Corridor 4, movement of cargo into Mongolia provided nearly all the samples, reflecting the import-oriented nature of Mongolia’s foreign trade structure. For truck movements, all the samples showed Russia or PRC as the point of origin into Ulaanbaatar. Truckers reported that customs clearance fees at Mongolia’s borders were higher than those at adjacent crossings in neighboring countries. CPMM data showed, for instance, customs clearance fees at Zamyn Uud to be higher than those collected at Erenhot, and customs assessments at Altanbulag cost more than at Khiagt. Data on fees imposed on shipments leaving PRC for Mongolia were not recorded comprehensively by CPMM in 2012, suggesting the 2012 TFI may have been understated, therefore exaggerating the increase from 2012 to 2013.

TFI3: Costs incurred to travel a corridor section (\$)

Average transport costs rose sharply to \$1,482, from \$999 in 2012. That means costs have more than doubled from the \$712 average recorded in 2010, the baseline year for the CPMM indicators. The underlying cause was the higher costs of running vehicles in Corridor 5, and of rail transport in Corridor 4. The TFI3 for Corridor 5 surged to \$2,392 in 2013, from \$1,580 in 2012. The harsh winter made

navigation across the mountainous terrain difficult, especially in sections crossing Tajikistan.

Another pertinent factor contributing to the increase in the TFI3 measure is found at Karamyk. This border-crossing point is designated as bilateral by the Kyrgyz Republic and serves only those cargo movements which originate and end in Kyrgyz Republic and Tajikistan. For direct shipments between the two countries, trucks can go through Karamyk. However, the Kyrgyz authorities do not allow transit shipments to use the crossing. Third-country trucks have to go through Kyzyl Bel–Guliston (Kyrgyz Republic–Tajikistan)—entering Tajikistan from the north—thus making a roundabout journey 700 km longer than through Karamyk. The Ministry of Transport and Communications of Kyrgyz Republic cites Decree 556 (2007), entitled “On Measures for Operations of Checkpoints with State Border of KR Intended for International Transport, Railways Traffic and Automobiles”, as the basis for banning international traffic. This designates Karamyk as a bilateral operating in daytime only, unlike the Kyrgyz border crossing at Kyzyl Bel which is open 24 hours. Furthermore, Karamyk is not equipped to conduct phytosanitary inspections. The efficacy of Corridor 5 can only be realized if Karamyk serves transit shipments, which will require parliamentary approval in Kyrgyz Republic.

For rail transport, the main increase in cost was seen in Corridor 4. TFI3 rose to \$876 in 2013, from \$427 in 2012. An additional surcharge imposed by PRC railways on all transit cargo accounted for much of the increase.

TFI4: Average Travelling Speed (kph)

TFI4 showed a slight deterioration from to 19.9 kph, from 22.9 kph in 2012, a reduction of 13%. This was due to a drop in average speed with delays factored in for both road and rail transport. Although Corridors 1, 2, and 6 showed improvement, the slow speed at Corridor 4 dragged down overall performance. With the completion of 428 km of dual lane, asphalt paved roads linking Choyr and Zamyn Uud, the speed in Corridor 4 should improve.

CPMM also includes the study of container express trains from PRC to Europe. Data samples for the Chongqing–Duisberg express in 2013 showed that the entire journey could be completed in 16 to 20 days, compared with the sea journey between the two cities taking 45 days or more. The third quarter CPMM report for 2013 elaborated on factors that contributed to the success of this container express train. Such services are expected to be more common in 2014, with container express trains set to operate from Chengdu, Wuhan, and Zhengzhou. This should shorten the border-crossing time at Alashankou–Dostyk (PRC–Kazakhstan) and improve speeds.

I. Background

2013 marks the fifth anniversary of conducting Central Asia Regional Economic Cooperation (CAREC) Program Corridor Performance Measurement and Monitoring (CPMM). Since its inception in 2008, CPMM's process-based methodology has successfully captured data on the time and cost of moving goods along the six CAREC corridors that link member countries to each other and to other global markets. It has proved instrumental in identifying bottlenecks – notably those at border crossing points (BCPs) – and supporting policy reform efforts, particularly in formulating concrete, actionable measures to improve the operational efficiency of these corridors and facilitate trade flows in the region.

In October 2013, the CAREC Ministerial Conference endorsed the refined CAREC Transportation and Trade Facilitation Strategy 2020 (TTFS). The refined TTFS, which is aligned with CAREC 20201, calls for greater integration in transportation and logistics infrastructure, as well as closer coordination of transport and trade facilitation investments and technical assistance. Key operational priorities reaffirmed in the TTFS include

- (i) the development of multimodal corridor networks through infrastructure investments,
- (ii) improvement of trade and border crossing services, and
- (iii) improvement of operational and institutional effectiveness.

CPMM was conceived as a tool for monitoring and evaluating the progress of TTFS implementation. The TTFS mandates that the performance of the six priority transport corridors be measured and monitored periodically to: (i) identify causes of delays and unnecessary costs along the links and nodes of each CAREC corridor, including BCPs and intermediate stops; (ii) help authorities determine courses of action to address identified bottlenecks; and (iii) assess the impact of regional cooperation initiatives.

Each year, thousands of samples containing transport and trade-related data are collected at the source – from drivers, carriers and national transport/logistics associations – and analyzed using the CPMM methodology. In relation to this, the CAREC Trade Facilitation team will publish a book in 2014 describing in detail the whole CPMM process from raw data to final analysis. With new corridor extensions and alignments introduced in the refined TTFS, and increased focus given to railways and trade logistics services, CPMM data collection instruments were modified to help CPMM partners capture greater volumes of rail traffic data accurately. A pilot study

to improve and expand railway data collection began in Q4 2013. Efforts are also underway to identify quantitative indicators that support evaluating the performance of trade logistics service providers.

Box 1 provides a brief description of the road and rail networks linking the six CAREC corridors.

Box 1.

Descriptive Summary of CAREC Road and Rail Networks

Corridor 1: Linking Europe and East Asia

CAREC Corridor 1, the most active of the six corridors, links Europe with East Asia. The corridor connects Russia with the People's Republic of China (PRC) via Kazakhstan and the Kyrgyz Republic. It comprises 13,600 km of roads and 12,000 km of railways.

Corridor 2: Linking the Mediterranean and East Asia

CAREC Corridor 2 connects the Caucasus and Mediterranean with East Asia. The route passes through Azerbaijan, Kazakhstan, Turkmenistan, Uzbekistan, Tajikistan, the Kyrgyz Republic, and the PRC. It comprises 9,900 km of roads and 9,700 km of railways.

Corridor 3: Linking Russia with the Middle East and South Asia

CAREC Corridor 3 has 6,900 km of roads and 4,800 km of railways, and runs west and south from Russia through Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, Afghanistan, and Uzbekistan to the Middle East and South Asia.

Corridor 4: Linking Russia and East Asia

CAREC Corridor 4 connects Russia with East Asia via Mongolia and the PRC. The route comprises 2,400 km of roads and 1,100 km of railways.

Corridor 5: Linking East Asia with the Middle East and South Asia

CAREC Corridor 5 connects East Asia with the Arabian Sea through Central Asia. The route covers the PRC, the Kyrgyz Republic, Tajikistan, Afghanistan, and Pakistan. The corridor has 3,700 km of roads and 2,000 km of railways.

Corridor 6: Linking Europe with the Middle East and South Asia

CAREC Corridor 6 includes three routes linking Europe and Russia with the Arabian Sea port of Karachi and with Gwadar, or Bandar Abbas in the Persian Gulf. The route has 10,600 km of roads and 7,200 km of railways.

Figure 1. Six Central Asia Regional Economic Cooperation Corridors



1 CAREC's operations and results-based initiatives are guided by its long term vision and strategy embodied in the Strategic Framework for the Central Asia Regional Economic Cooperation Program 2011-2020 (known as CAREC 2020).

II. Data Description

Through CAREC's partnership with 13 national freight forwarder and road carrier associations, CPMM data are collected directly from drivers and freight forwarders using actual commercial shipments as samples. Detailed time and cost information is recorded and consolidated by national associations enlisted to serve as CPMM partners. Data are then validated and verified by field consultants before being transmitted to the CAREC Trade Facilitation team at the Asian Development Bank (ADB) for aggregation and analysis. ADB serves as the CAREC Program's secretariat.

Data Sample

In 2013, a total of 2,202 samples were collected and analyzed. From 2011–2013, the number of associations and sample size gradually declined. This does not indicate reduced commitment from partners. Rather, it is the result of constant refinements to customize the methodology—incorporating lessons learned and adapting to changing field conditions—and adjustments in arrangements with CPMM partners based on performance evaluations. Refinements and new arrangements have produced a more focused and streamlined approach to collecting quality and accurate transport data. In the coming years, the sample size and the number of associations may increase to cover new routes along the expanded road and rail network. New associations have already been invited to take part in CPMM, including the Kyrgyz Republic Freight Forwarders Association, the PRC Chongqing International Freight Forwarder Association, and the Uzbekistan International Forwarders Association. Together with three associations already contributing data (Xinjiang Uygur Logistics Association, Kazakhstan Freight Forwarders Association and Mongolia's National Chamber of Commerce and Industry), these CPMM partners will focus on rail cargo traffic.

Data Profile

Based on samples from 2013, road transport continued to be the dominant mode monitored, accounting for 79% of all shipments measured. Rail transport comprised only 19% of shipments measured, but this may change as more rail traffic data are expected to populate the CPMM database from 2014. The remaining 2% covered multimodal transport—a mix of road and rail transport. The 2013 data structure is similar to that of 2012.

CPMM identified the top five commodities transported along CAREC corridors during the year as: agricultural produce (16.6%),

machineries (13.0%), industrial materials (12.3%), base metals (11.0%) and textiles (10.4%). These five categories of goods accounted for 63.3% of the total sample, with perishables at 19%. Furthermore, out of the 1,749 road samples, 34% traveled under coverage of Transports Internationaux Routiers (International Road Transport, or TIR) carnets.

Cargo Movement

CPMM data samples provide a point of reference to assess CAREC trade flows and export/import volumes—both for road and rail transport. A more comprehensive study on cross border trade will lead to better understanding of trade flows in a particular region, but this requires consistent, comparable, and complete annualized border-crossing data from each country, which is not certain to become available. Rail transport should be interpreted with caution until the sample size is expanded in 2014.

However, based on the 2013 results of CPMM, the following can be inferred:

- Afghanistan is reliant on imports. In the samples studied, all cross border movements are transit shipments between Uzbekistan and Tajikistan with Pakistan. Pakistan imports scrap metals from Tajikistan, and also cotton and plywood from Uzbekistan, while exports of cement and fresh fruits are sent to Tajikistan and Uzbekistan.² Afghanistan imports substantial amounts of machinery and industrial materials, and also consumer goods, from the PRC via Tajikistan. For cargo movements, Afghanistan drivers rely heavily on sub-corridor 6c.
- Kazakhstan, rich in energy resources and metals, exports these items to PRC. In return, a variety of merchandise, machinery in particular, is imported. Kazakhstan uses sub-corridor 1a to export bulk commodities by rail, while receiving machinery and containerized cargo of consumer products. For truckers, sub-corridor 1b is especially vital to get consumer goods and fresh produce to market.

² Uzbekistan generally does not encourage imports of goods that are abundantly produced in the country. Yet, although the country is a big fruit producer, it still imports fruit, especially citrus products like oranges, tangerines, grapefruits, and lemons, as well as bananas and kiwi. Most of the imported fruits were grown in Iran, Turkey, Pakistan, Georgia, and PRC.

- Kazakhstan's cross-border trade with its neighbors, Kyrgyz Republic and Uzbekistan, consists of imports of agricultural produce. Fresh fruits and vegetables from these two countries find their way to Kazakhstan's markets. The significant difference in farm-gate prices of fresh produce enables Kyrgyz Republic and Uzbekistan exports to compete in major Kazakhstan markets in Almaty and Shymkent. Moreover, Kazakhstan provides a transit route for Uzbekistan and Kyrgyz Republic exports to Russia, which is also a major market for fresh produce. Kyrgyz Republic drivers rely on sub-corridor 1c, while Uzbekistan drivers use sub-corridor 6a for trade with Russia.
- Besides these trade flows, Uzbek drivers use sub-corridor 3b to move containerized cargo from Bandar Abbas across Turkmenistan. Cotton and textile are exported to destinations further away, such as Istanbul, using road-sea multimodal transport at Bandar Abbas port to transship goods between trucks and vessels. A variety of imports into Uzbekistan follow the same route to major markets like Tashkent, Samarkand, and Bukhara.
- Tajikistan imports large volumes of goods from PRC, especially machinery and manufactured items. The popular route is through Kyrgyz Republic, but the direct route via Kulma Pass is used when the seasonal border crossing is open. Tajikistan is an important transit nation for the

International Security Assistance Force and Afghanistan-bound commercial cargo, and for exports of scrap metal to Pakistan. Goods continue to move on trucks between Pakhtaabad and Saryasia (Tajikistan–Uzbekistan) along sub-corridor 3b, as well as Corridor 5 and 6c.

- Mongolia depends on sub-corridor 4b for international shipments. This is the only trunk line connecting Mongolia to PRC and Russia. The 1,000 km Trans-Mongolian Railway facilitates Russian and PRC exports to import-reliant Mongolia. The mining boom in Mongolia has resulted in substantial metal exports (coal, copper and gold ores), with much of this crossing the Mongolia-PRC border into Inner Mongolia at Gashunn–Sukhait. Russian lumber and logs also move to PRC through sub-corridor 4b, while a variety of PRC manufactured goods are sent in the opposite direction.

These trade patterns, including direction of trade, have remained relatively steady over the past three years.

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 high-level 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

		2012			2013			
		Mean	Median	Margin	Mean	Median	Margin	
TFI1	Time to Clear a Border Crossing Point (hours)	Overall	10.9	4.2	± 0.7	10.0	5.3	± 0.5
		Road	8.9	3.4	± 0.7	5.6	4.2	± 0.2
		Rail	24.7	24.0	± 1.3	29.9	24.0	± 1.9
TFI2	Cost Incurred at Border Crossing Clearance (US\$)		157	76	± 5	235	120	± 10
			146	62	± 5	236	100	± 12
			280	145	± 21	229	165	± 15
TFI3	Cost Incurred to Travel a Corridor Section (US\$, per 500km per 20 tons)		999	621	± 42	1,482	1,003	± 51
			1,068	670	± 50	1,612	1,135	± 58
			638	452	± 46	920	600	± 91
TFI4	Speed to Travel on CAREC Corridors (in kph), SWD		22.9	25.0	± 2.1	19.9	18.2	± 2.2
			25.9	29.4	± 2.0	22.3	20.0	± 2.4
			14.5	10.0	± 4.6	12.8	8.5	± 4.1
SWOD	Speed without Delay (in kph)		37.8	35.5	± 3.4	36.1	34.2	± 2.9
			39.4	35.5	± 3.9	37.8	35.3	± 2.9
			33.5	39.9	± 6.7	30.8	28.4	± 8.1

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

In 2013, the overall average duration for crossing a border of 10.0 hours represents an 8% improvement from the 10.9 hours recorded in 2012. The trend from the 2010 baseline year, however, suggests a drop in performance (though at a decelerated rate) of 15% over the four years since the baseline was established.

Just as in previous years, in 2013 the principal contributor to delays—both in road and rail transport—was waiting in queues due to congestion at popular border-crossing points. The data for 2013 shows that trucks spent an average of 4.6 hours simply waiting to cross the border, while the average delay for trains was 31.5 hours.

Road Transport

Road border-crossing data in 2013 revealed remarkable improvements across all corridors except for along Corridor 4. The overall average time to clear a border decreased to 5.6 hours from 8.9 hours (a 37% improvement). This is mainly because of improvements in crossings along Corridors 1, 2, and 3, where clearance times were reduced by 33%, 38%, and 56% respectively. Substantial improvements in average clearance duration were seen at Irkeshtan (PRC) and Khorgos (PRC) for trucks heading west to Kazakhstan. Although delays at these PRC crossings were still considerably longer than at others, marked improvement was recorded. Drivers continued to encounter long waiting times at some other border-crossing points. In this respect, the detrimental effects of the Customs Union persist: some records reveal trucks waiting at Khorgos for up to 120 hours.

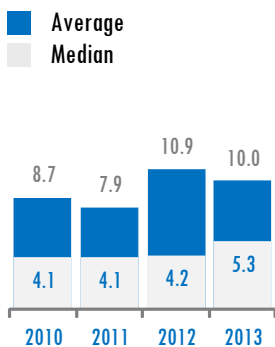
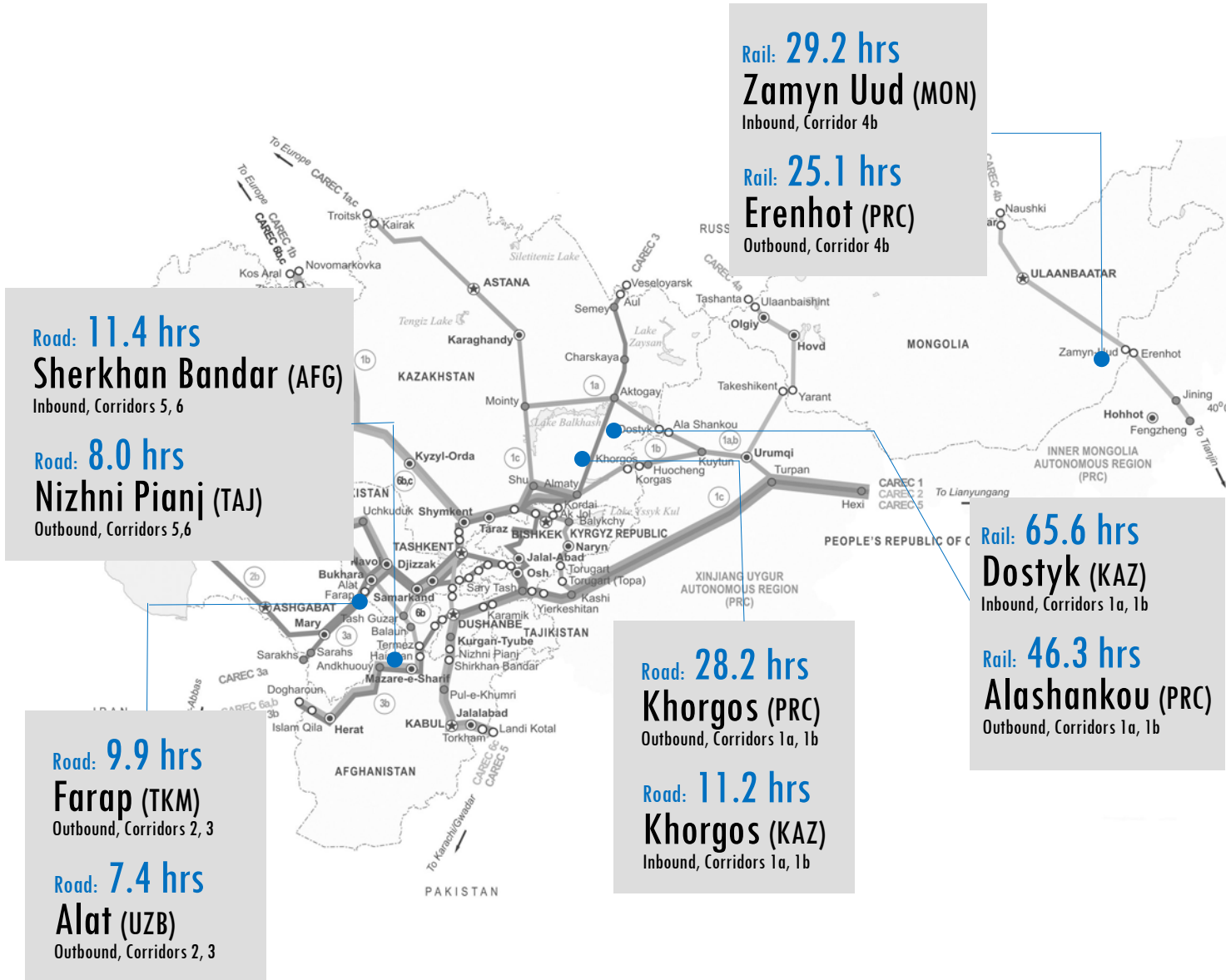
Moreover, while complaints about the complexity of road shipment are still being noted, they seem to have got less severe. Border-crossing duration figures also showed varied improvement at the following points: Tazhen (Kazakhstan), Torugart (PRC), Ayraton (Uzbekistan), and Karamyk (Kyrgyz Republic).

Rail Transport

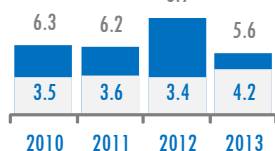
Border-crossing times for rail transport, on the other hand, continued to worsen in 2013. The average clearing time of 24.7 hours in 2012 increased to 29.9 hours. This is largely because border-crossing times lengthened along Corridor 1, particularly at Dostyk (Kazakhstan) and Alashankou (PRC) for westbound shipments. Reasons for this included delays due to terminal congestion, lack of available wagons, and marshalling activities. The transloading of cargo from one wagon to another due to differences in railway gauges between countries is a key factor. The opening of Khorgos for (almost exclusively containerized) rail traffic along sub-corridor 1b relieved congestion at Alashankou–Dostyk in sub-corridor 1a. Also, delays at the Zamyn Uud (Mongolia) and Erenhot (PRC) border-crossing points on Corridor 4 were reduced notably.

Table 2:
Time to Clear a Border Crossing Point, Hours

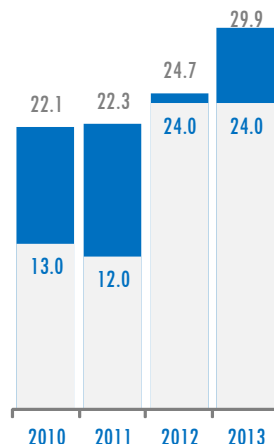
	BCP	Country	Direction	Duration
Road	Khorgos	PRC	Outbound	28.2
	Sherkhan Bandar	AFG	Inbound	11.4
	Khorgos	KAZ	Inbound	11.2
	Farap	TKM	Outbound	9.9
	Yallama	UZB	Outbound	9.7
	Dautota	UZB	Outbound	9.7
	Sarahs	TKM	Inbound	8.8
	Sarahs	TKM	Outbound	8.7
	Tazhen	KAZ	Inbound	8.7
	Tazhen	KAZ	Outbound	8.4
	Irkeshtan	PRC	Inbound	8.2
	Nizhni Pianj	TAJ	Outbound	8.0
	Alat	UZB	Outbound	7.4
	Zamyn Uud	MON	Inbound	7.2
	Irkeshtan	KGZ	Inbound	7.1
	Konysbayeva	KAZ	Inbound	6.9
	Sarasiya	UZB	Outbound	6.9
	Keles	UZB	Inbound	6.9
	Yallama	UZB	Outbound	6.8
	Oibek	UZB	Outbound	6.6
	Chaldovar	KGZ	Inbound	6.6
	Farap	TKM	Inbound	6.6
	Merke	KAZ	Outbound	6.5
Irkeshtan	PRC	Outbound	6.3	
Dautota	UZB	Inbound	6.1	
Erenhot	PRC	Outbound	5.9	
Keles	UZB	Outbound	5.7	
Kurmangazy	KAZ	Outbound	5.4	
Dusti	TAJ	Inbound	5.3	
Fotehobod	TAJ	Inbound	5.1	
Rail	Dostyk	KAZ	Inbound	65.6
	Ala Shankou	PRC	Outbound	46.3
	Erenhot	PRC	Inbound	30.6
	Zamyn Uud	MON	Inbound	29.2
	Erenhot	PRC	Outbound	25.1
	Sukhbaatar	MON	Inbound	19.0
	Naushki	RUS	Outbound	17.6
	Farap	TKM	Inbound	14.5
Zamyn Uud	MON	Outbound	12.7	



Overall



Road



Rail

- Overall: 8% improvement from the 10.9 hours recorded in 2012
- The overall average duration to clear a road BCP decreased from 8.9 hours to 5.6 hours (or 37% improvement)
- Border crossing in rail transport continued to worsen.

Road Transport

Average cost incurred at a border-crossing point in 2013 increased in nominal terms by 50% to \$235. The steady decline in cost since the baseline of \$186 was established in 2010 was abruptly reversed. CPMM data indicated increased costs at border crossings along Corridor 4 and, to a lesser extent, along Corridor 1. The standout figure for this indicator was a rise from \$172 to \$433 (or 152 %) for Corridor 4. While changes in the average cost incurred at crossings along other corridors were statistically insignificant, a localized escalation of fees on truck shipments affected the overall performance of the indicator. Further analysis reveals that industrial and consumer goods imported from Russia and PRC were charged relatively higher customs clearance fees at the Mongolian border. At Khiagt–Altanbulag in the north, Mongolia’s customs clearance fees for imported goods ranged from \$450 to \$650. At the southern Erenhot–Zamyn Uud crossing, customs clearance fees on goods exiting PRC ranged from \$300 to \$400 in Erenhot, and Mongolian customs charged higher customs fees, ranging from \$350 to \$650, on goods entering the country at Zamyn Uud. Samples indicate some customs clearance fees in Zamyn Uud were twice those charged at Erenhot. Along Corridor 6, Kyrgyz Republic-bound shipments from PRC also encountered high customs fees at Irkeshtan on the Kyrgyz Republic side of the border.

Furthermore, the border crossing cost at Khorgos (PRC) remained high due to strong throughput volumes, especially in peak seasons, straining parking capacity and procedures for crossing borders. This cost is compounded by unofficial payments in exchange for expedient processing.

PRC exports bound for Central Asia increasingly cross Khorgos, which is situated on the most direct route to markets such as Almaty. However, variations in truck standards (weight restrictions, axle loads, vehicle profile, pallet and container dimensions, and the like) and limited vehicle licenses suggest that most PRC truck drivers only carry goods to PRC Khorgos and unload them into a ‘bonded’ warehouse, with Kazakh carriers handling movement beyond that point.³ Drivers from Kazakhstan can pick up goods at PRC Khorgos, then clear customs at the border and transport them all the way to Almaty.

Data reveal no significant change in custom clearance fees during 2013, but charges incurred in the entire process of loading and unloading cargo resulted in a marked increase in total border-crossing fees from \$250 to \$450 in 2013.

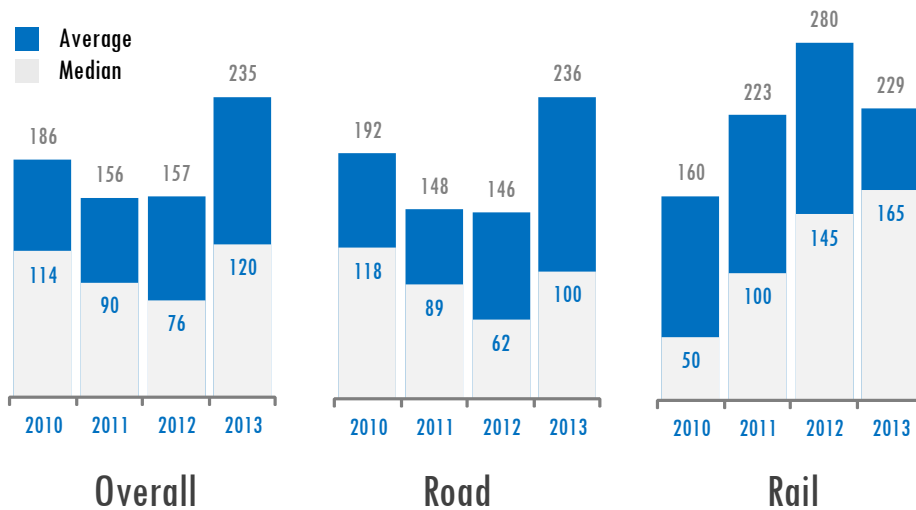
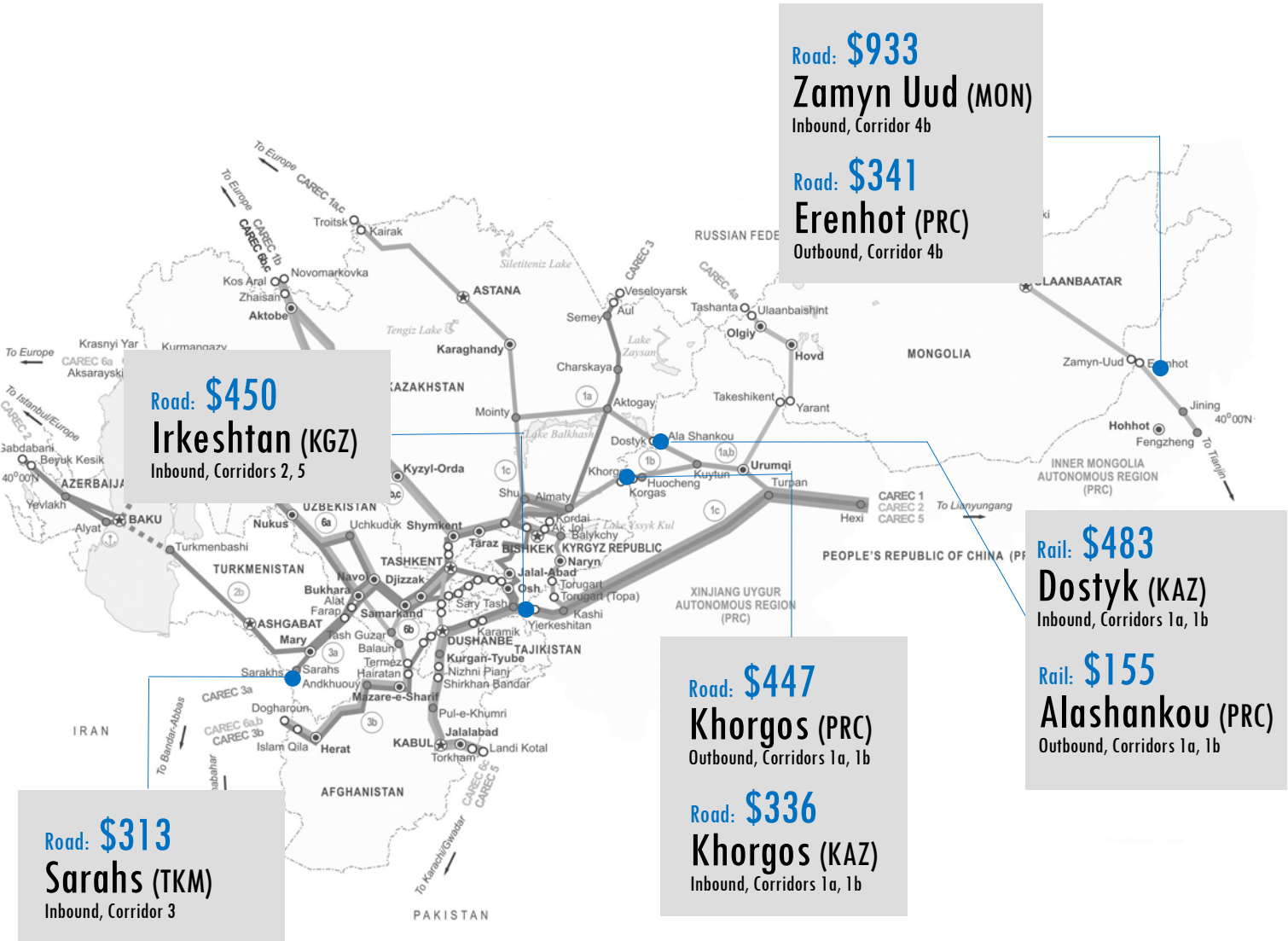
³ Temporary storage facilities have yet to be built in Kazakhstan at Khorgos, so PRC trucks cannot unload anything there. To go to Almaty, they need a permit which is very difficult to obtain and its availability is subject to a quota system. Kazakhstan border authorities are aware of this matter and developing storage facilities.

Rail Transport

Indicators for rail border-crossing costs suggest improvements. Fees imposed at Dostyk (Kazakhstan) dropped significantly, affecting the performance of the cost indicator for Corridor 1. However, with road samples outnumbering those of rail by four to one, the overall cost indicator outcome remains negative.

Table 3:
Cost Incurred at Border Crossing, \$

	BCP	Country	Direction	Cost
Road	Zamyn Uud	MON	Inbound	933
	Altanbulag	MON	Inbound	543
	Irkeshtan	KGZ	Inbound	450
	Khorgos	PRC	Outbound	447
	Erenhot	PRC	Outbound	341
	Khorgos	KAZ	Inbound	336
	Sarabs	TKM	Inbound	313
	Farap	TKM	Inbound	300
	Tazhen	KAZ	Inbound	248
	Konysbayeva	KAZ	Inbound	233
	Karamik	TAJ	Outbound	221
	Torkham	AFG	Inbound	198
	Sherkhan Bandar	AFG	Inbound	179
	Sherkhan Bandar	AFG	Outbound	166
	Hairaton	AFG	Inbound	160
	Karasu	KAZ	Outbound	153
	Chaldovar	KGZ	Inbound	140
	Tazhen	KAZ	Outbound	127
	Merke	KAZ	Outbound	112
	Karamik	TAJ	Inbound	105
Rail	Dostyk	KAZ	Inbound	483
	Zamyn Uud	MON	Outbound	240
	Erenhot	PRC	Inbound	166
	Ala Shankou	PRC	Outbound	155
	Farap	TKM	Inbound	151
	Zamyn Uud	MON	Inbound	114



- Overall: Average costs incurred at a border crossing point increased in nominal terms by 50% to \$235.
- Indicators for rail border crossing cost suggest improvements.

Road Transport

TFI3 (measured in \$ per 500 km per 20-ton of cargo) has risen from \$712 in 2010 to \$1,482 in 2013, more than doubling in 4 years. The primary reason for the jump is variation in the underlying samples, especially along Corridors 2, 3, and 6. In 2011 and 2012, the cost to travel a corridor section did not change significantly. However, costs escalated in 2013, so much so that the measure TFI3 was 48% higher than in 2012. Increases in transport costs for road and rail data samples collected in 2013 are responsible; for road, higher vehicle operating costs in Corridor 5; for rail, it was increased transaction costs in Corridor 4.

TFI3 for road increased to \$1,612 in 2013, from \$1,067 in 2012, representing a 51% increase. TFI3 for railways rose 44% to \$920 in 2013, from \$638 in 2012. Taken together, these caused TFI3 to spike by nearly 50%.

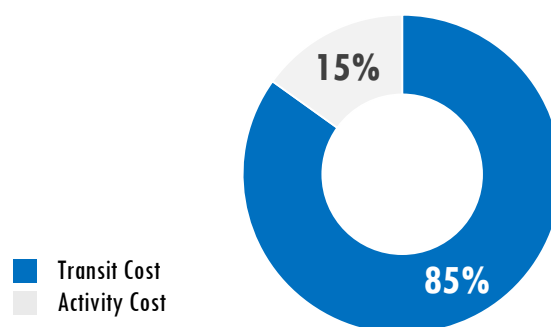
TFI3 for Corridor 5 reported travel costs rose to \$2,393, from \$1,580 in 2012—an 81% increase. Goods travel on the corridor from Kashi-Irkeshtan to Dushanbe or, for Kabul-bound cargo, to Nizhni Panj. Vehicle operating costs on these routes rose sharply to an average of \$2,305 per 500 km in 2013, from \$1,379 in 2012. Typically, PRC drivers will move the goods to Kashi and unload. Kyrgyz drivers will pick up the goods and take them further west. Tajik drivers can only go to Irkeshtan and collect goods there. In addition, the samples revealed that Tajik quotations for transportation services are rather volatile, depending on the season and business volumes. When demand is strong, carriers can quote rather high prices. In 2013, CPMM coverage was expanded to capture data on a direct route linking PRC to Tajikistan through the Kulma Pass. Vehicle operating costs averaged \$2,294 per 500 km on this route, similar to those incurred on the route through Irkeshtan.

Rail Transport

For rail transport, the main increase in costs came from Corridor 4. TFI3 rose to \$876 in 2013, from \$427 in 2012. An additional surcharge imposed by PRC railways on all transit cargo accounted for much of the increase. The surcharge depends on the type of container (\$300 per twenty-foot-equivalent unit container and \$600 per forty-foot equivalent unit container). The transport cost of shipments of Russian lumber to PRC via Mongolia remains unchanged.

Table 4:
Cost Incurred to Travel a 500-km Corridor Section, \$

	Average			Percentage	
	Total	Transit	Activity	Transit	Activity
Overall	1,482	1,278	227	85%	15%
1	1,344	1,138	240	83%	17%
2	616	510	220	70%	30%
3	2,167	2,079	98	95%	5%
4	1,156	894	263	77%	23%
5	2,393	2,131	262	89%	11%
6	1,149	937	224	81%	19%
Road Transport					
Overall	1,612	1,384	248	85%	15%
1	1,538	1,290	249	84%	16%
2	616	510	220	70%	30%
3	2,245	2,153	98	96%	4%
4	1,437	982	454	68%	32%
5	2,393	2,131	262	89%	11%
6	1,153	941	224	81%	19%
Rail Transport					
Overall	920	822	123	87%	13%
1	1,009	874	216	80%	20%
2	-	-	-		
3	403	403	-	100%	0%
4	876	805	71	92%	8%
5	-	-	-		
6	93	93	-	100%	0%

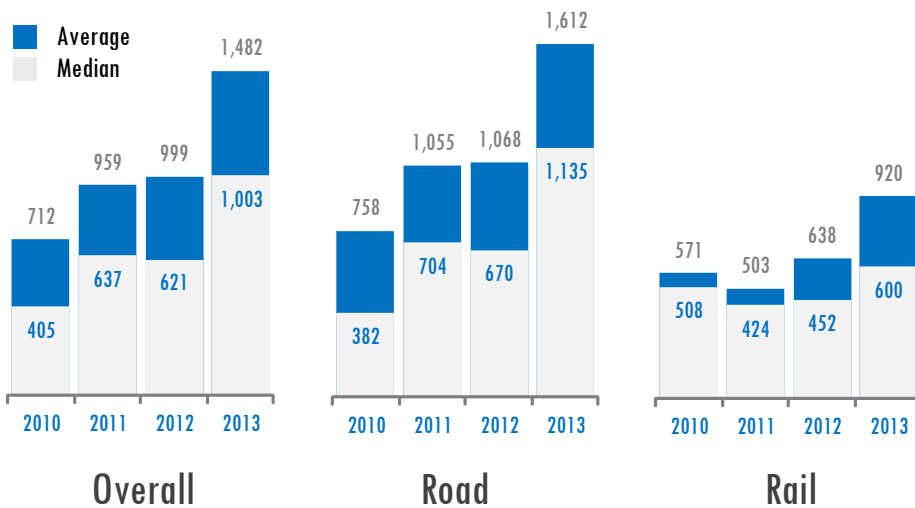
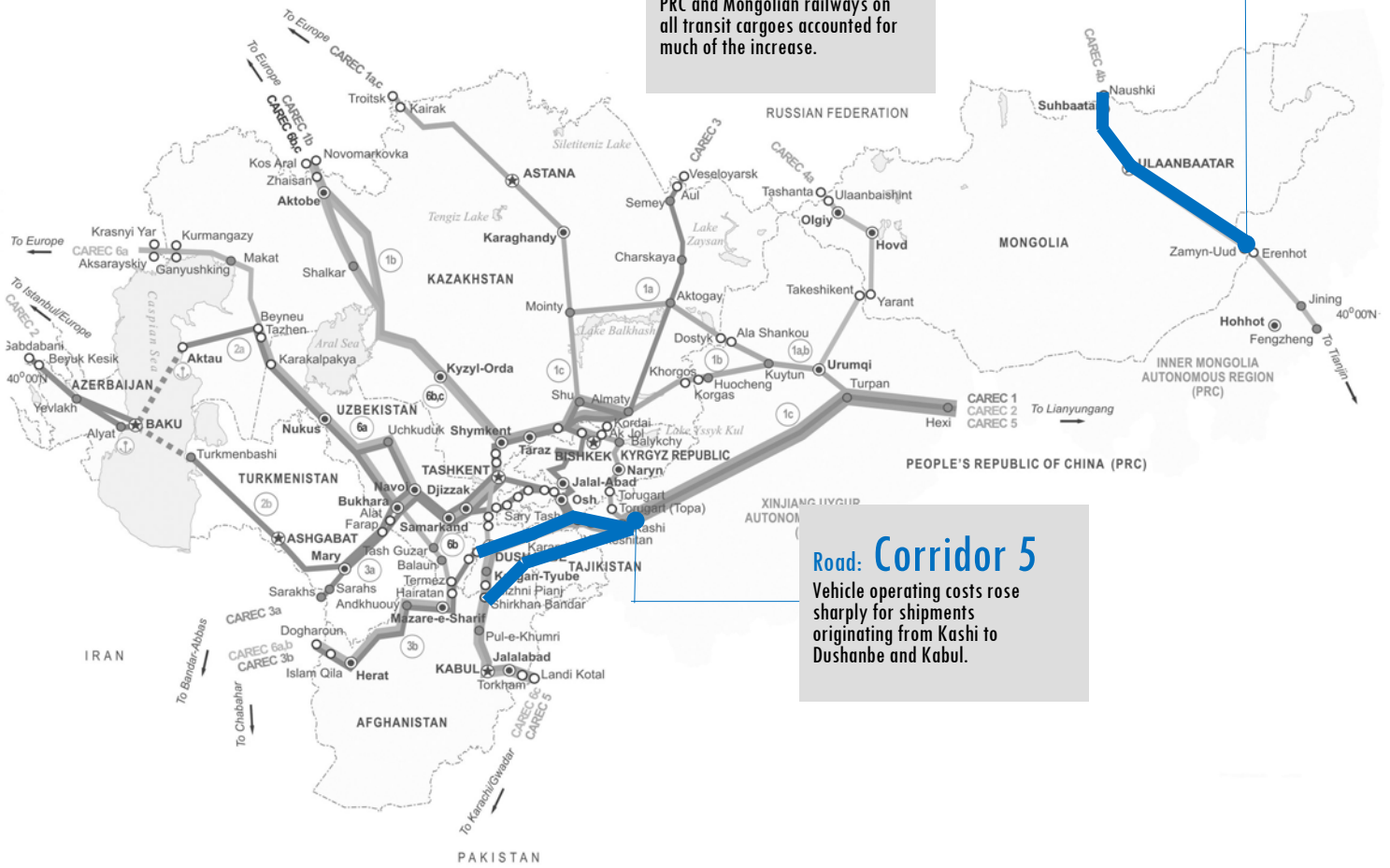


Rail: **Corridor 4**

Additional surcharge imposed by PRC and Mongolian railways on all transit cargoes accounted for much of the increase.

Road: **Corridor 5**

Vehicle operating costs rose sharply for shipments originating from Kashi to Dushanbe and Kabul.



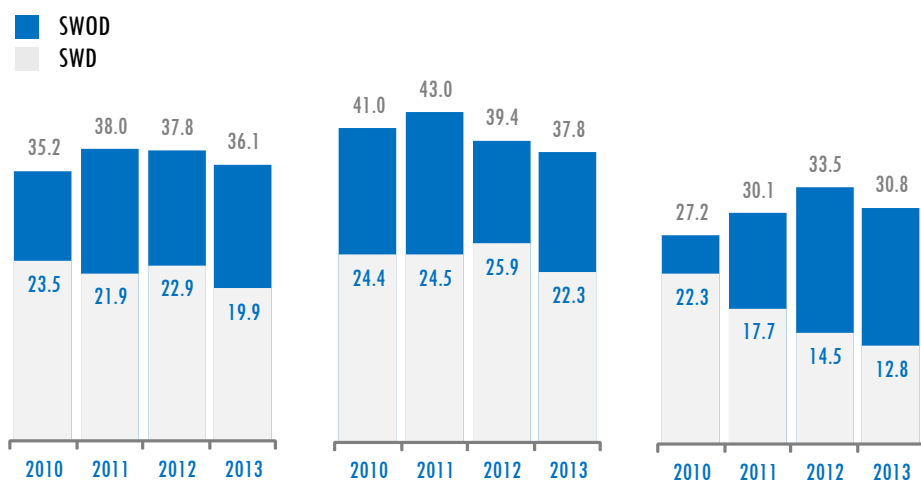
- Overall TFI3 rose from \$712 in 2010 to \$1,482 in 2013, doubling in a period of four years.
- TFI3 for road increased from \$1,068 in 2012 to \$1,612 in 2013, representing an increase of 51%.
- TFI3 for railways increased by 44%.

In 2013, both road and rail Speed with delay (SWD) indicators worsened. SWD is computed as the average traveling speed on a section of 500 km along a CAREC corridor, including delays at border crossings and intermediate stops. The average SWD in 2013 decreased to 19.9 kph from 22.9 kph in 2012, a 13% fall. Corridors 1, 2, and 6 benefited from improved road conditions during the year, but transit times along Corridor 4 increased notably, hurting the overall performance of road transport. While trucks along Corridor 4 consistently registered the slowest speed estimates, the situation worsened in Mongolia as road and traffic conditions continued to deteriorate. With the completion of the trans-Mongolian highway (Corridor 4b) in late 2013, improved performance is anticipated. Meanwhile, rail conditions remained challenging. Freight trains traveling from Russia to PRC via Mongolia registered an average SWD of 18.3 kph, substantially below the CAREC average of 38–45 kph. Proposed investments, if realized, may improve performance.

Due to marked improvements in the duration of crossings at road border points along Corridors 1, 2, 3, and 5, dips in SWD estimates were somehow alleviated, but all the same delays at borders

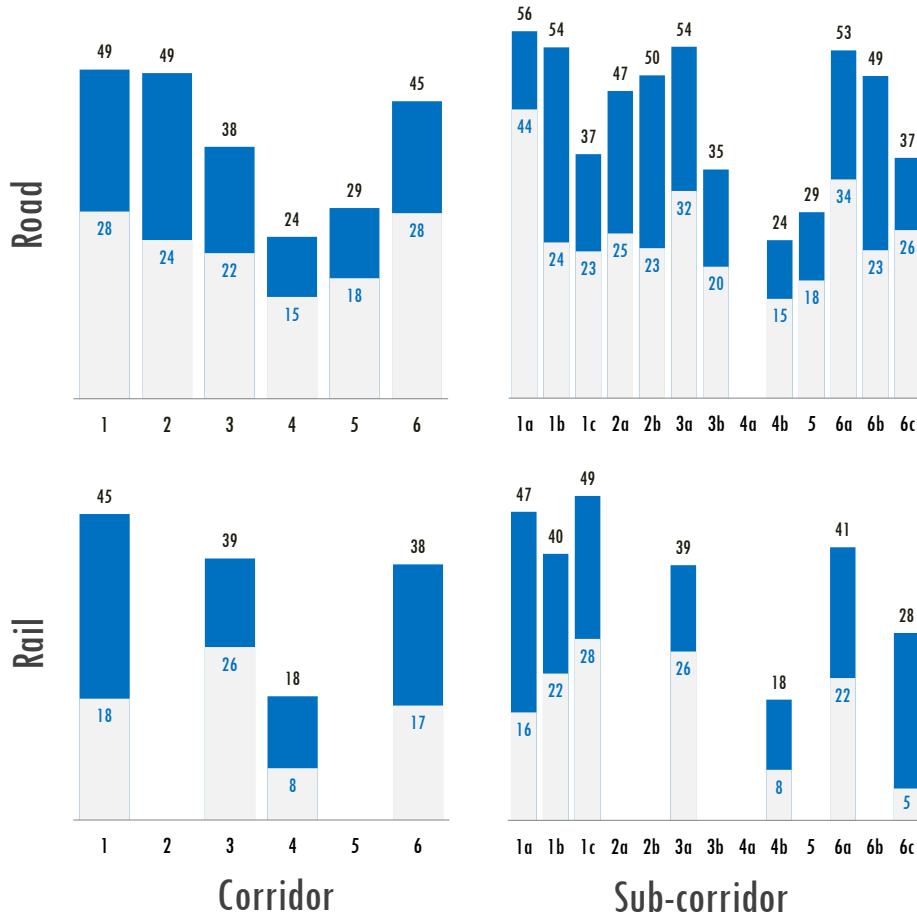
contributed to the overall decline in speed. While varying levels of improvement were observed for some road and rail corridors, statistical tests revealed that these fluctuations did not deviate significantly from trends observed in 2012. Corridor 4 remains the exception. Deteriorating road and rail conditions in Mongolia, coupled with the serious, though improved, delays at Zamyn Uud (Mongolia) and Erenhot (PRC), contributed greatly to buck an otherwise stable trend in the overall speed of CAREC road and rail transport.

⁴ TFI4 measures speed with delay (SWD) and speed without delay (SWOD) on CAREC corridors. SWD computations take account of border-crossing times.



■ The average SWD decreased by 13%, i.e., 22.9 kilometers per hour (kph) in 2012 to 19.9 kph in 2013

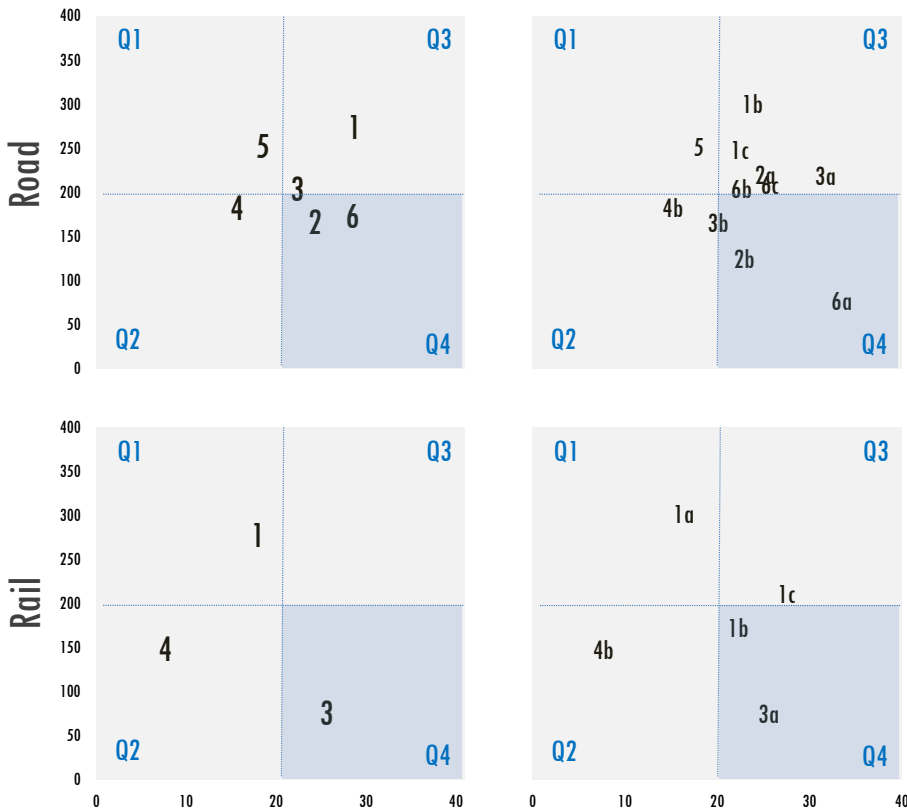
Speed Indicators for Road and Rail Transport



- 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

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. CPMM Results

This section describes the speed, time, and cost indicators measured and monitored in CPMM, as well as key impediments to transit identified at border-crossing points. Descriptive statistics such as average, median, and variability measures are also provided.

A. Speed/Travel Time

Road Transport

In 2013, speed indicators varied widely across corridors. In terms of the Speed without delay measure, SWOD, Corridors 1 and 2 consistently ranked among the fastest, both averaging at 49 kph, followed closely by Corridor 6. Patterns for the Speed with delay, SWD, indicator were also consistent, with Corridors 1 and 6 averaging at 28 kph, while Corridor 2 indicated average travel speeds of 24 kph. Records for the sub-corridors reveal that trucks on 1a moved slightly faster than in 1b and 3b.

Corridor 1, despite slower speeds along 1c, continued to be the fastest route among the CAREC corridors. At the other end of the spectrum, Corridors 4b and 5 remained the slowest. This can be largely attributed to weak transportation infrastructure and difficult terrain. The situation is aggravated by tough weather conditions, seasonal traffic spikes, and impediments at border crossings.

Taking into account delays at borders and stops at key cities, sub-corridors 1b and 6b continued to show a substantial drop in speed indicators. Further examination shows that busy border-crossing points with inefficient procedures contributed largely to the delay. At 1b, delays occurred at Khorgos, which is known for being the most difficult point to cross and has the largest vehicle throughput. Completion of a new road from Almaty to Khorgos in 2016 may help reduce the delays, complemented by new border-crossing facilities. A new road crossing to be developed roughly adjacent to the recently inaugurated rail facility will allow multimodal capacity in the expanded area. These improvements, together with the International Cross-Border Center at Khorgos, developed jointly by Kazakhstan and PRC, should reduce the border-crossing time and allow more traffic to be processed. At 6b, trucks crossing Yallama–Konysbaeva (Uzbekistan–Kazakhstan) continue to experience congestion and long queues.

⁵ CPMM uses Coefficient of Variation (CV) values to evaluate corridor transport reliability. CV is derived by dividing the standard deviation over the average of any given indicator. By definition, a high CV is undesirable as it indicates that arrival times are more unpredictable.

Rail Transport

CAREC railway data, while substantial, is not readily shared by railway operators in the region. Due to limited availability of data, the reporting of railway performance presents a challenge. At present, only four corridors (1, 3, 4, and 6) support railway operations. CPMM has refocused its attention on railway transport, prompted by the introduction of Designated Rail Corridors in the refined TTFS 2020, and starting in 2014 a more concerted effort is underway to collect and analyze railway data.

Compared to roads, rail transport has a lower range for SWOD and SWD indicators. Trains usually spend longer than trucks waiting to cross borders and are delayed at major railway terminals. Different track gauges necessitate cargo transloading, the management and availability of rolling stock presents a challenge, and the priority track access accorded to passenger trains introduces another stoppage. These helped result in a larger decline in indicators for train speeds compared to trucks. In 2013, speed indicators for road transport dropped 41% on average, while those for railways deteriorated 53%.

Among the poorly performing sub-corridors, two rail routes— sub-corridors 4b and 6c—again stood out for constant inefficiencies. For 4b, as described in previous annual reports, primary causes continued to be: (i) port delays at Tianjin of as much as 4–5 days of dwell time for cargo from and bound for Mongolia, as priority is given to PRC cargo; (ii) the break in gauge at Erenhot–Zamyn Uud (PRC–Mongolia); and (iii) a shortage of locomotives and rolling stock in Mongolia that affects the efficiency of yard operations. Consequently, dwell times in Choyr and Sainshand lengthened in 2013.

Variation in Sample

As discussed above, trucks traveling along Corridors 1 and 6 registered the fastest Speed with delay. However, a lower Coefficient of Variation (CV)⁵ estimate revealed Corridor 6 is the more reliable of the two corridors. Sub-corridor 6a in particular performed very well when both speed and reliability were considered. Conversely, trucks moved along Corridor 5 at a slow rate with very high variability, making transit times along the corridor difficult to predict. For railways, trains along sub-corridor 3a moved with high speed and greater reliability, while those along sub-corridor 1a registered the slowest speed and greater uncertainty about transit times. Section B describes factors influencing the Coefficient of Variation for the CAREC corridors.

B. Delays and Time Factors in CAREC Corridors

The previous sections of this report describe inefficiencies experienced in cargo movement in Central Asia. CPMM data, collected over the years, provides a solid database for determining the root causes of those inefficiencies and of corresponding variations in travel times and delays, particularly at border crossings along CAREC corridors. These differences are often the result of complex and repetitive clearance procedures by customs and other agencies on both sides of the border, and exacerbated by inadequate infrastructure. In addition, inefficiencies due to policies, regulations, and procedures can be identified and (eventually) reduced. It is hoped that harmonization, standardization, regional cooperation, and automation can resolve these impediments, smoothing the way for freight and passengers alike.

There is another, equally important, reason for the delays experienced along CAREC corridors—natural causes. High altitude and low temperatures are some of the conditions evidently beyond anyone’s control. Elevations in the Kyrgyz Republic and Tajikistan sections along Corridor 5 can reach more than 4,000m above sea level and winter temperatures in certain regions served by Corridor 4 can drop as low as -40 degrees Celsius.

The following discussion presents in detail the major bottlenecks and obstacles in road and rail transport along the CAREC corridors.

Road Transport

Table 5 shows that waiting in queues and customs clearance are both frequent and time-consuming activities. Data for ‘waiting in queue’ refers to the time a truck spends waiting outside in the vicinity or inside a border crossing . Poor design in processes or the layout of border-crossing points, inefficient procedures, a mismatch of operating hours on different side of the border, and excessive reliance on physical inspection can rapidly lead to traffic congestion and long waiting times (for example, if a risk-based management strategy is not in place then drivers are required to unload all cargo for physical inspection and then re-load the items). ‘Customs clearance’ duration refers to the time it takes for customs officers to review documentation and complete the necessary paperwork to authorize freight to enter or exit a country. (It does not mean, however, that goods are released to market, as often this final clearance is given at an inland customs facility). Lack of harmonized standards, the absence of “one-stop” processing procedures supported by single window facilities (Azerbaijan being the sole exception to this rule), and a prevalence of unofficial payments can cause clearance times to be lengthy.

Infrequent but time-consuming activities—such as loading and unloading, and the formation of escorted convoys for security

Table 5:
Most Frequent and Time-Consuming Activities

Road		Count	Duration (hr)	
1	Border Security	3,427	Waiting in Queue	4.6
2	Customs Clearance	3,203	Loading/Unloading	3.0
3	Phytosanitary	2,153	Customs Clearance	1.9
4	Waiting in Queue	1,862	Emergency Repair	1.5
5	Vehicle Registration	1,701	Escort/Convoy	0.9

Rail		Count	Duration (hr)	
1	Border Security	3,427	Waiting in Queue	4.6
2	Customs Clearance	3,203	Loading/Unloading	3.0
3	Phytosanitary	2,153	Customs Clearance	1.9

reasons—also deserve mention. Loading/unloading usually occurs because of cabotage regulations that do not permit foreign trucks to enter a country freely to provide carriage services. For instance, substantial freight volumes move from Urumqi to Almaty via sub-corridor 1b. However, PRC trucks will need to get a particular permit, which is difficult to obtain from Kazakhstan, to carry the goods all the way to Almaty. PRC trucks therefore usually carry the goods to Khorgos (PRC) and deposit cargo in a bonded warehouse for temporary storage. Kazakh trucks will then enter this node, load the goods, and return to Khorgos (Kazakhstan) to clear the items before traveling on to Almaty. This unloading and loading requires substantial time and adds considerable cost for shippers. However, differences in vehicle standards, such as axle load limits, mean this impediment cannot be easily resolved. PRC trucks are seldom permitted to enter other CAREC countries as roads in neighboring countries are not designed to support the higher payload permissible in PRC trucks.

Although escort and convoy are not frequently encountered, they can add substantially to total lead times. Only Karamyk and Shirkhan Bandar feature in CPMM data for this type of activity. It must be highlighted that (also for security reasons) two other nodes in Pakistan have mandatory escort and convoy—Quetta and Peshawar. A lot of commercial cargo moves from Karachi to Kabul and Kandahar using the extended Corridor 5. For freight going to Kandahar, the trucks will queue up to form a convoy at Quetta. For shipments going to Kabul, the truck will stop for escort/convoy at Peshawar. In either case, it is common for trucks to spend more than 24 hours waiting to join the convoy. Since there is no border crossing at night, trucks arriving in the late afternoon will have to park for the night. Furthermore, priority is usually given to fuel and energy products. This can result in yet more delay for trucks carrying other goods.

Rail Transport

Waiting time ranks as the most significant reason for delay in terms of frequency and duration. Delays normally occur at crossing borders, but can also happen at major railway terminals where the classification and switching of wagons is done. Long waiting times are experienced on Corridors 1 and 4.

Trains passing through Alashankou–Dostyk (PRC–Kazakhstan) encounter long waiting time. This node used to be the exclusive gateway for rail freight between PRC and other CAREC countries to its west. One notable event was the advent of railway operations at Khorgos. Construction of a 293 km line from Zhetigen (serving Almaty) to Khorgos was completed in December 2011. At Khorgos, transloading facilities were opened in December 2012, connecting the PRC and Kazakh railway networks. Trains travel from Jinghe to Khorgos then enter Kazakhstan at the Altynkol station. Freight transloading can take from 2 hours to 7 days. Once cleared by customs, trains continue to Zhetigen. Long waits at Dostyk–Alashankou still persist, but since the rail service via Khorgos started, there has been a noticeable reduction in waiting time at Alashankou. Waiting times ranged from 30–40 hours in 2012 but dropped to 10–12 hours in 2013. Alashankou–Dostyk will continue to handle bulk traffic while Khorgos–Altynkol focuses on container traffic. Containerization is not very widespread in much of CAREC, so it remains to be seen whether the transloading capacity installed at Khorgos–Altynkol can stimulate its growth and popularity.

Along Corridor 4, considerable waiting time occurs at Erenhot–Zamyn Uud (PRC–Mongolia) and at Naushki–Sukhbaatar (Russia–Mongolia). Higher throughput lengthens the wait at the Erenhot–Zamyn Uud (PRC–Mongolia) border crossing, as it serves traffic in both directions and also transit trade from Russia (such as for lumber), while the throughput at Naushki–Sukhbaatar (Russia–Mongolia) handles mainly goods transported from Russia into Mongolia. At present, Mongolia is encountering constraints in railway and freight terminal capacity, and performance is likely to stagnate absent substantial operational improvements and infrastructure investments to expand capacity. Part of the delays at Zamyn Uud can be attributed to the poor condition of Ulaanbaatar’s freight terminals. The Ministry of Roads and Transportation is planning a large, common use logistics center at Ulaanbaatar, coupled with the development of the Ulaanbaatar Bypass Line. These projects, however, will take time to be realized. Operational improvements in the meantime may free up capacity and bring some efficiency improvements.

In 2013, CPMM users expressed concern about the unclear nature of dwell times. In the current methodology, trains can be waiting either

before reaching the border-crossing point or in its vicinity, or held up due to a lack of rolling stock. In response, the CPMM team is designing and testing new CPMM data collection instruments to establish in more detail the reasons for waiting time and provide greater clarity about its nature. The information will be reported in the 2014 CPMM quarterly and annual publications.

Customs clearance is another principal cause of delay. The Customs Cooperation Committee, composed of the heads of customs administrations of the 10 CAREC countries, is a regional forum for addressing common issues such as promoting harmonization and standardization of customs practices. Policymakers and senior customs officers hold annual meetings to discuss and agree on key initiatives such as the development of national single window facilities, accession to the Revised Kyoto Convention, and the establishment of Authorized Economic Operator programs. Although it is not a member of the group, Georgia’s experience in customs reform serves as a good example for CAREC countries (see Box 2).

Azerbaijan is the only country that has implemented a national single window. The system succeeded in reducing its average border-crossing time from 3 hours in 2007 to 10 minutes in 2012. While all countries have expressed interest in developing the streamlined system, underlying impediments need to be resolved. Main obstacles include the interagency nature of the undertaking, required amendments of legislation (such as the acceptance of electronic documents and e-signatures in national single windows), reluctance to engage the private sector in the development of the systems, and the financing of their design and implementation. Also, business process re-engineering at single window agencies, new hardware, software, and networking tools will be needed for national single windows to succeed.

The difference in railway gauges at PRC borders with neighboring CAREC countries, including Mongolia, presents a structural problem. PRC railways feature the international standard (a 1,435 mm gauge) while neighboring CAREC countries use the 1,520mm Russian gauge. In CAREC, only Kazakhstan and Mongolia have direct railway connections with PRC, while Kyrgyz Republic is considering proposals to build a railway to link PRC with Uzbekistan. Thus, CPMM data also show the duration of transloading activities prompted by the break in gauge at Alashankou–Dostyk (PRC–Kazakhstan) and Erenhot–Zamyn Uud (PRC–Mongolia). Data for Khorgos are now being collected.

When there is a break in gauge, freight must be transloaded. The rules of the Organisation for Co-operation between Railways stipulate that the railway of the ‘importing country’ must handle transloading.⁶ For instance, if a train carrying ore from Kazakhstan

Box 2:

Customs Reform in Georgia

Georgia's remarkable experience in reforming its customs led to a significant increase in productivity and efficiency. Five main strategies were implemented: (i) improved customs operations, such as the adoption of single electronic window; (ii) revised and streamlined border-crossing procedures; (iii) implementation of joint customs controls; (iv) the development and upgrade of infrastructure and equipment; and (v) building capacity for customs and border officers. These strategies are well known but the difficulty lies in implementation. With strong political will and ruthless efficiency, Georgia managed to implement all the strategies within a short time.

A key component to Georgia's reform agenda is the need to review and rationalize tax and customs administration. Most Central Asian countries inherited a Soviet system of customs management that focused on tax revenue collection and full inspections. With the concept of customs as a trade facilitator gaining wider acceptance, the government legislated determinedly to overhaul the customs and tax structure. Formerly, eight agencies had oversight roles in trade. The long chain of procedures and involvement of different parties naturally led to inefficiencies and encouraged corruption.

The government overhauled the entire structure. Shippers and forwarders now only need to deal with two entities—the Georgia Revenue Service and the Patrol Police. Moreover, the government put the emphasis on investing in information and communications technology to further streamline the process. Electronic declaration is now possible. For instance, an importer in Batumi can submit electronic data to clear a shipment that is physically located at Tbilisi. Likewise, with technology taking the role as an enabler, the workflow has to be streamlined. The success of this is evident in the number of documents required for import or export; 54 documents were required in 2005, and that had dropped to two by 2013.

Besides streamlining its customs systems and procedures, Georgia also introduced changes with external parties. Georgia is now working on a Joint Customs Control arrangement with Azerbaijan to expedite border crossing. In addition, following the World Customs Organization's SAFE framework, Georgia introduced a national 'Golden List'. This is effectively an Authorized Economic Operators system where qualified companies enjoy a streamlined process in cargo movement. To qualify, the companies need to satisfy various criteria, such as paying GEL900,000 (about \$515,000) in customs duties per year, moving goods with value of GEL5 million or above per year, and no record of serious non-compliance in the previous six months.

The lessons, although not new, are invaluable to CAREC member countries. For example, Kazakhstan and Kyrgyz Republic have previously tried joint customs control at Akjol–Kordai, but this was discontinued. The idea of a single electronic window garnered interest in 2000 but many countries are still hesitant, and prefer to conduct more technical studies to help decide.

Adapted from "At the Border and Behind the Border: Integrated Trade Facilitation—Reforms and Implementation". This CAREC report was based on a workshop held in Tbilisi from 10–14 April 2013 for CAREC member countries.

Figure 2:
Transloading Process at Alashankou



travels to PRC, the train will stop at Alashankou and the ore will be transloaded to PRC wagons. Conversely, a train carrying consumer goods from PRC to Kazakhstan will stop at Dostyk to transship freight. The use of cranes, in addition to forklifts and mobile cranes, can improve transloading efficiency.

Figure 2 shows the transloading process in a terminal in Alashankou. The track on the left is the PRC track, while the Kazakh track is on the right. A shipment has just arrived from Almaty. A yard crane is used to move cargo to the left, positioning it on the PRC rail platform. The empty platform on the right will return to Dostyk, while cargo on the left will depart Alashankou for Urumqi, the nearest major railway terminal in PRC's Xinjiang Uygur Autonomous Region (XUAR).

The efficiency of transloading depends on the number of facilities and availability of equipment. A mismatch can result in long waiting time. For instance, Alashankou has four transloading centers, each equipped with a crane that can handle 36 tons. Annual capacity is 200,000 twenty-foot equivalent units (TEU). However, Dostyk has only one transloading center and only one crane. Transloading is lengthy, particularly during peak season. If the cargo-handling equipment malfunctions, still longer dwell times ensue.

6 Nine of the 10 CAREC countries are members of OSJD, headquartered in Warsaw.

C. Cost Factors in CAREC Corridors

Road Transport

CPMM was designed to focus on identifying transportation and border-crossing costs. In the process, CPMM strives to provide accurate baseline data and make cross-corridor and time-series comparisons among the six CAREC corridors. Data for corridors may not be as useful for forwarders and carriers since they tend to be interested in conditions on specific routes.

Transportation costs can fluctuate widely for the same origin-destination. For instance, the trucking cost to carry 20 tons of goods between Almaty and Khorgos can range from \$2,500 to \$4,000. This depends on the carrier used and the season. Empty backhauls also add significantly to costs. The carrier will consider the cost of empty backhaul in the outbound leg. As an example, the transportation cost in XUAR is high because of long distances and an unequal trade pattern, which suggests that drivers usually move goods from Urumqi to Khorgos, but return empty. This is because Kazakhstan usually exports by train bulk commodities such as iron ores and scrap metals. To minimize empty backhauls, some shippers sell the container to the purchaser of the contents. In other cases in the CAREC region, railways use open top wagons to carry containers. After the containers are delivered, the empty open top wagons can be used for bulk commodity backhauls like minerals. This partially explains the prevalence of moving containers in open top wagons in CAREC, even though the containers are not as well secured (not having pin-lock mechanisms like flat wagons do). The side sway and slack shocks can cause significant damage, both to cargo inside the container and to the container itself.

Of more importance is CPMM's ability to determine border-crossing costs. Unlike the cost of transportation, which is influenced by market forces, the cost of crossing a border is more likely to be driven by policies, practices, and capacity. It is hoped that assistance from CAREC development partners can minimize or eliminate such 'non-tariff trade barriers' and promote cost competitiveness.

Customs clearance is the most frequent and most costly activity. Unlike developed countries with diversified national income, a sizeable revenue stream for many CAREC countries still comes from customs fees, duties, and tax collection. Measures to diversify sources of state revenue in the near- or medium-term are unlikely to displace customs-generated revenues. Exercising greater control over customs will have to be achieved through administrative and operational improvements to the customs workflow, such as establishing a national single window, adoption of risk-based management, and streamlining the process and harmonization of procedures to international standards. CAREC continues to facilitate

Table 6:
Most Frequent and Costly Activities

Road

Count		Cost (\$)		
1	Customs Clearance	2,664	Customs Clearance	230
2	Border Security	1,725	Escort/Convoy	91
3	Health/Quarantine	1,556	Loading/Unloading	80
4	Phytosanitary	1,219	Road Toll	33
5	Weight/Standard	1,036	(Various)	19

Rail

Count		Cost (\$)		
1	Break in Gauge	371	Break in Gauge	148
2	Customs Clearance	310	Customs Clearance	140
3	Loading/Unloading	180	Loading/Unloading	139

these initiatives. At the 9th Customs Cooperation Committee meeting in Tokyo, a target was set for all members to accede to the Revised Kyoto Convention by 2015. Five CAREC countries are still in the process of accession—Afghanistan, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan. Examining the impact of accession on cross-border trade may present CPMM with another test on which to run the data.

Three activities tied for the next most-costly border-crossing activity are: border security, visa/immigration, and transport inspection. Note that the numbers here include only official costs. Non-official costs are reported in the next section in 'Unofficial Payments'.

Comparing the costs in the six corridors, some observations are evident in terms of:

- Frequency: Corridors 4, 5, and 6 seem to engage in more cost-related activities.
- Cost magnitude: Corridors 1, 2, and 4 appear to be more costly.

These observations will be discussed further in the 'Corridor Analysis' section of this report.

Rail Transport

The transportation cost for railways refers to the tariff imposed for transporting goods from origin to destination. Tariff calculations are rather complex and due to the fees being levied by the state, there is little a freight forwarder or shipper can do about them. It is not the purpose of CPMM to analyze rail operations and suggest operational improvement. Rather, the focus is to look at systematic factors and impediments to crossing borders.

The top three reasons for delays in railways in terms of frequency and cost are: breaks in gauge, customs clearance, and loading/unloading.

D. Unofficial Payments

In various international studies, unofficial or informal payments have always been mentioned. This ‘non-tariff’ trade barrier translates to additional expense and creates uncertainty in the total delivery cost. Because of their adverse impact to the growth of an economy, unofficial payments should be exposed and eliminated. However, it is naive to think that this often deep-rooted problem will disappear overnight. Inefficient and business-hostile trade procedures,⁷ low pay grades of border management officials, and high border-crossing costs conspire to provide incentive for rent-seeking. There are notable examples of success in eradicating the problem, such as in Singapore and most recently Georgia, where draconian measures have been taken. Kazakhstan removed key customs officials at border-crossing points to achieve the same result, but unofficial payments reoccurred after some time. Sustainable improvements require a comprehensive effort combining political will, increased staff salaries, the review and reduction of official tariffs and fees, and the adoption of more efficient procedures and systems such as electronic single windows to streamline cargo movement.

“What cannot be measured cannot be improved.” CPMM, motivated by this axiom from inception, has included a methodology to quantify the extent of unofficial payments. Drivers provide the primary data, reporting unofficial payments at key nodes and border-crossing points. Interviews with carriers and associations verify those results. To quantify unofficial payments, drivers are requested to distinguish between the official and the unofficial component. To gauge the seriousness of the problem, CPMM measures both the frequency and the expected size of the unofficial payment, breaking the data down by activities and corridors. By doing so, CPMM is able to answer the following questions:

- How frequent is unofficial payment along CAREC corridors?
- What is the expected (average) size of unofficial payments?
- What activities are susceptible to unofficial payments?
- Where do they occur (which corridors)?

Analysis of unofficial payments presently focuses on road shipments. The reason is two-fold. First, shipments by road are more susceptible to demands for unofficial payments. Rail shipments are usually handled by large national rail operators, which are either government-owned or controlled. Also, it is easier to stop a truck than to stop a train. As truckers are small and private (and mostly individual carrier-owned), they have little bargaining power over demands for unofficial payments. Drivers carrying time-sensitive items such as fruits and vegetables are more vulnerable to extortions. Conversations with drivers and trucking companies

validated this theory. Second, CPMM presently has fewer samples from rail transport, making analysis less meaningful.

How frequent is unofficial payment along CAREC corridors? The number of times an unofficial payment is demanded per activity is recorded and compared with the total number of times this particular activity is encountered (with and without unofficial payment). By dividing the frequency of unofficial payment over the total number of samples, the probability of an unofficial payment can be calculated for each activity.

Table 7:
Analysis on Unofficial Payments: Frequency and Probability

Count		Probability		
1	Customs Clearance	3,324	Escort/Convoy	83%
2	Police Checkpoint	2,663	Border Security/Control	46%
3	GAI/Traffic Inspection	2,392	Vehicle Registration	37%
4	Road Toll	2,154	Visa/Immigration	30%
5	Border Security/Control	2,050	Customs Clearance	28%

Table 7 shows that the activities involved in transiting the corridors do not have the same ranking when it comes to considering both the frequency of unofficial payments and the probability that they will have to be paid. For instance, customs clearance is top-ranked when looking at the absolute number of payments made in the sample group. This is not surprising since all border crossings necessarily involve customs clearance. However, this activity drops to fifth spot when the probability of an unofficial payment is considered. At 28% probability, and extrapolating from the sample, this means 28 out of 100 trips in Central Asia involve unofficial payments.⁸ On the other hand, escort/convoy is infrequently encountered, yet with an 83% chance that the activity will involve unofficial payment, it is considered first-ranked in terms of probability. This is not surprising. Drivers often resort to giving officials ‘tea money’ so their truck can be placed in a favorable position in a convoy. Failure to pay could result in the truck remaining in its parking space for another day or two, waiting for the next convoy to move.

It is also interesting to note that with the exception of escort/convoy, most of the activities that involve unofficial payments take place

⁷ This is discussed in the World Bank Doing Business Reports. Each year, most of the CAREC economies fare low in the section ‘Trading across Border’, which points to excessive administrative burden and inefficiency to export or import a container cargo from the nearest port to the capital city. Although there are criticisms of the methodology which favors a country with a seaport, CAREC shippers do acknowledge the issues in cross-border trade.

⁸ Some of the unofficial payments to Customs are never reported by the carriers involved in CPMM. As example, some cargo owners travelled in cars that accompanied a convoy of trucks carrying their cargo from PRC to the Kyrgyz Republic and pay Kyrgyz Customs directly, bypassing the carrier. Also, the carrier that transports small trader parcels from Erlian to Zamyn Uud train station includes Mongolian Customs payment (both official and unofficial) in its freight charges to facilitate quotation to small traders.

Table 8:
Average Size of Unofficial Payments

	Average Cost (\$)
1 Customs Clearance	202
2 Loading/Unloading	85
3 Escort/Convoy	76
4 Road Toll	24
5 Health/Quarantine	22

inside a border cross point.

What is the expected (average) size of unofficial payments? This depends largely on the nature of the activity and the location. An aggregated measurement is calculated for each activity across CAREC. The results are summarized in Table 8.

Customs clearance has the highest average unofficial payment (\$202). After further examination, CPMM data show that high customs clearance fees are usually imposed on PRC exports at the adjacent border. When PRC shipments move across to Kazakhstan, Kyrgyz Republic, and Mongolia, the customs fees range from a few hundred dollars to \$1,000. Such magnitude provides conditions for unofficial payments to expedite goods. Loading/unloading and escort/convoy cost \$76 to \$86, while road toll and health quarantine cost \$22 to \$24. The actual charges for individual trucks may be significantly different since the reported values are aggregated and averaged.

It must be highlighted that each CAREC corridor presents a different picture. Based on 2013 CPMM data, truck drivers passing customs clearance on Corridors 4, 5, and 6 experience a higher incidence of unofficial payments than in other corridors. Police checkpoints are also another source of concern. Traffic inspection is the most common situation on Corridors 1 and 3 for encountering demands for unofficial payments. For truckers moving along Corridor 2, weight and standard inspections are the main concerns. All corridors are affected by demands for unofficial payments involving border security and control, as well as for other inspections such as customs, health and quarantine, and for dealings with visa/immigration issues.

How do CAREC shippers deal with unofficial payments? For inexperienced shippers, the best option is to engage an experienced forwarder or trucker for the shipment. Through familiarity with the unique conditions and personnel along each route and at border crossings, the trucker usually is able to give a good estimate of the unofficial fees. These are considered part of the 'operating expenses'. Company management will give cash to the drivers for settling unofficial payments. However, unforeseen circumstances do occur and sometimes demands can be much higher than the norm, resulting in cargo delay or the forwarder simply having to bear the additional cost.

Box 3:

Unofficial Payments in Central Asia

Suleimanov drives a delivery truck for a local transport company. The work is tough. During winter, Suleimanov has to brave freezing temperatures and drive on narrow roads that often can be slippery. On occasion, the Central-Asia-born driver has to navigate carefully over mountainous terrain or narrow access roads in residential areas leading to inland container depots. Nonetheless, the vagaries of weather and terrain are not his greatest hurdle. What causes Suleimanov to feel frustrated and helpless is when he has to contend with making informal payments at border-crossing points.

One summer, Suleimanov was taking a truck of tomatoes to another country. The drive was smooth and the weather was fine. At the border, Suleimanov joined a long queue of trucks waiting to cross. This was not unusual, especially during summer. After clearing the first border crossing point, he headed to the next one. This was where his nightmare started.

The border guard opened the entry gate and let Suleimanov drive into the customs zone. After going through immigration and phytosanitary inspection, he went to the customs office where the customs officer declined to process his documents. Without looking at Suleimanov, the customs officer waved him off and pointed to a man in a corner. After asking fellow drivers, Suleimanov realized he was being rejected because "many drivers were not aware of the proper way to fill the documents". Thus, the customs officer had suggested to each that the 'broker' in the corner would do it for them. Suleimanov approached the man in the corner.

"Yes, I can do that for you. It will be very fast. However, it will cost you \$500." The man smiled.

"What? This is too expensive!" Suleimanov replied.

"Very well..." the man shrugged. "Then you can wait for three days and perhaps the customs officer can let you go. Now, I have other drivers waiting, so if you please excuse me...." The man began talking to the next driver.

Suleimanov headed back to the truck, confused and shaken. Sitting inside his cabin, he recalled he has heard about such incidents before, and the boss has given him a few hundred dollars to deal with such a situation. If he were to concede, he might not have enough to cover informal payments in the return leg. He called his boss and the reply was to wait.

Back in the home office, Timur, the boss, thought through the bad news. There was this problem of 'Tolkach', a new way of collecting informal payments. It seemed that customs officers were pushing drivers to use a 'broker' for filling up documents and charging exorbitant fees. Would he lose money for this shipment? What if the tomatoes arrived in bad condition due to the delay? Should he pay the informal payment? This was the dilemma that kept Timur awake at night.

C1

Corridor 1

Europe—East Asia

Corridor 1 is a strategic link supporting transit traffic between Asia and Europe. The largest railway and trucking terminals are found in this corridor. Steady growth in cargo traffic between PRC's Xinjiang Uygur Autonomous Region (XUAR) and Kazakhstan testifies both to the importance and the potential of this corridor. In 2013, total trade between XUAR and Kazakhstan grew 13.4% year-on-year to \$22.81 billion, accounting for 51.1% of the autonomous region's overall trade. XUAR exports to Kazakhstan grew 12.8% to \$9.95 billion, while imports from Kazakhstan rose 13.8% to \$12.85 billion.

This corridor supports competition between road and rail transport. Both modes, however, face challenges beyond competition for traffic. The Customs Union between Russia, Kazakhstan and Belarus has resulted in more stringent border checks, giving rise to long queues of trucks. This has been compounded by Russia's suspension of privileges extended to vehicles traveling under the TIR carnet. The problem became so serious that the International Road Union issued a warning to Russia to remove all 'illegal border inspections and charges', or face expulsion from the TIR system. Although Russian–PRC borders are not included in CPMM studies, the more rigorous checks at Khorgos (PRC–Kazakhstan) are already taking longer than noted in earlier CPMM reports. This has resulted in truckers facing greater inefficiencies at Khorgos.

Similarly, while rail transport has benefited from recent developments such as container express train services, CPMM has detected that increasing rail tariffs have added significantly to the cost shipping by rail through Corridor 1. Even as Russia's Trans-Siberian Railway has decreased its rates in a bid to attract cargo, the Shanghai Container Freight Index indicates that excess capacity of container ships has depressed ocean freight rates. Increased rail tariffs and low maritime rates can discourage shippers from sending goods by rail through Corridor 1.

Road Transport

In 2013, Corridor 1 ranked first in terms of speed, with SWOD averaging 49 kph and SWD at 28 kph. However, speeds among the three sub-corridors, and on different sections of the same corridor, vary considerably. Using 2013 data, speeds at different sections are illustrated to show where traffic moves rapidly and where it slows. The sub-corridor speeds reveal interesting insights:

CAREC Corridor 1



- While trucks on 1a and 1b averaged more than 50 kph, trucks at 1c moved at just 37 kph. The illustration explains why. The road sections in PRC are usually good, as is the main road linking Almaty to Astana (1a). However, mountainous terrain, and poor infrastructure do not permit trucks to travel at higher speeds (1c).
- Comparing the net speed (SWD), 1b and 1c are similar. The speed dropped drastically at 1b, due to difficulties crossing the border at Khorgos (PRC–Kazakhstan).

Border-crossing points and Bottlenecks

Corridor 1b is a key road corridor that is also fast becoming an important container rail corridor. The key node is Khorgos (PRC–Kazakhstan), which has expanded its capacity and capability to develop into an integrated multimodal hub for CAREC traffic. Its importance can be illustrated in the growth of cargo volume and value. In 2013, Khorgos handled throughput of 780,400 tons of goods, 32.5% more than in 2012. Exports totaled 731,000 tons (up

Figure 3:
Different Speeds at Various Sections in Corridor 1



by 29.86%) and imports 49,300 tons (up by 90.35%). The statistics indicate trade flows are predominantly from east to west.

Unfortunately, this border point is also one of the most inefficient. Every year, the CPMM reports long crossing times. Only PRC trucks with Permit A can enter Kazakhstan. The limited quota and difficulty of obtaining this class of permit, coupled with differing vehicle standards, makes it very challenging for PRC trucks to ship goods directly from Urumqi to Almaty. PRC trucks therefore carry goods (normally procured by merchants and traders in Urumqi) to Khorgos, and Kazakh trucks collect and clear the goods from the PRC side of the border.

A journey of a Kazakh truck that collects goods from Khorgos and returns to Almaty would involve a first stage from Almaty to Khorgos that typically takes about 4–5 hours and covers a distance of 350 km. The Kazakh truck would proceed quite quickly through Khorgos (on the Kazakhstan side of the border), completing all formalities within 4 hours. However the inefficiencies begin when the truck enters Khorgos (PRC). Incoming trucks take close to 20 hours to enter, of which 50% of the time is spent waiting. It will take 4 hours to load the goods, and another 4 hours each for customs clearance and health/quarantine. The main delay is caused by the long queue of trucks in the holding area on the PRC side, where average waiting time is 32 hours. Because of the smaller parking space in Kazakhstan side of the crossing, customs officers will stop traffic when there are too many trucks in the holding area. Upon returning to the Kazakh side, the truck will spend on average another 6 hours waiting, and another 5 hours to clear the goods.

In terms of cost, CPMM data shows that loading/unloading is the single-most costly activity inside the border-crossing point. At the PRC side, the number of bonded warehouses is limited so temporary storage can be relatively costly. There is currently no temporary storage facility on the Kazakhstan side. This means that shippers or forwarders cannot consolidate and use a bigger truck for shipments from Khorgos to Almaty.

A new road between Khorgos and Almaty, scheduled for completion by end-2015, is to be equipped with new border-crossing facilities that will be adjacent to those serving rail cargo. These will be situated several kilometers south of the ‘International Centre for Border Cooperation’ (ICBC). The ICBC features considerable warehousing capacity nearing completion, so any shipments to be consolidated/deconsolidated will presumably be processed there. The new facilities are likely to support intermodal transit traffic. For access to the ICBC, Kazakhstan customs is now working towards a single-stop service so drivers do not need to take separate steps for customs clearance, visa/immigration, health/quarantine, and vehicle inspection. The new ICBC will feature an advanced gate control where drivers use ID cards to expedite identification and clearance at entry and exit gates. The impact of these developments will become apparent in 2016.

Besides Khorgos, important border-crossing points include Torugart–Torugart (PRC–Kyrgyz Republic), Akjol–Kordai (Kyrgyz Republic–Kazakhstan) and Ak-Tilek–Karasuu (Kyrgyz Republic–Kazakhstan). These border-crossing points did not exhibit serious problems in

Figure 4:
Long queue of Kazakhstan trucks at Khorgos (PRC) waiting to return to Kazakhstan.



■ The construction of a new storage facility at Khorgos (Kazakhstan). This 40,000 square feet facility will be operational in 2014. It will be used for consolidation and break-bulk activities of consumer goods.



■ A new gate system to manage incoming and outgoing trucks at Khorgos (Kazakhstan). Using ID cards, drivers can go through the gate and reduce the need for paperwork.⁹



and St. Petersburg. However, these trade flows will likely change if the Kyrgyz Republic joins the Customs Union.

A card ID system to manage drivers has proven to be very effective in reducing queues and waiting time at border-crossing points. For instance, drivers transiting the Friendship Pass at Pingxiang (the Guangxi crossing at the PRC-Vietnam border) require only 10 minutes to complete border formalities.

Part of the problem can be attributed to the Khorgos crossing having been temporarily relocated. Originally, the border crossing was situated where the ICBC has been developed. The temporary facilities are now several kilometers north of the ICBC. By the end of 2015, new, permanent facilities will be developed, linking the Almaty-Khorgos road to the PRC road network.

Rail Transport

It was mentioned earlier that XUAR external trade with Kazakhstan rose to \$22.81 billion in 2013. The Alashankou–Dostyk border crossing handled \$17.42 billion in the same year, 7% more than in 2012. This suggests that as much as 76% of all trade crossing the PRC–Kazakhstan border went through this crossing, where imports rose 10.9% to \$13.32 billion but exports dropped 3.8% to \$4.1 billion. This disparity could be explained by a reduction of automobile exports. In 2013, automobile exports dropped 5.2% to \$22.91 million, according to the Xinjiang Inspection and Quarantine Department, while labor-intensive exports such as textiles grew by 26.2%, electro-mechanical parts by 4.2%, and steel exports by 3%. This however was a result of the imposition of tariff and non-tariff barriers in some CAREC economies and Russia. Kazakhstan adopted the Euro III and IV standards, while Uzbekistan decreed there was to be a 50% increase in tax on imported cars in 2014, which resulted in a weakening demand for PRC automobiles as importers began to cut back on orders in the second-half of 2013. However, there is another possible explanation for the rise in imports and fall in exports.

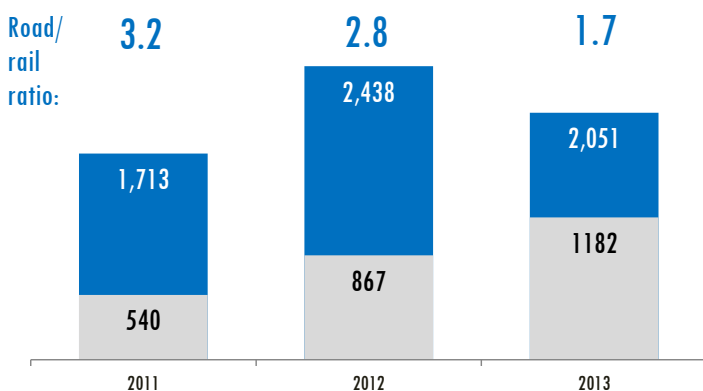
In 2013, shippers and forwarders reported an increase in rail tariff along Corridor 1. The common perception of the reason for this was the liberalization of the Kazakhstan railway market. The national railway operator Kazakhstan Temir Zholy had been reorganized to become a national integrated logistics company, while new organizations such as Kazakhstan Temir Trans and KedenTrans Services entered the market. Such liberalization, if designed and implemented in a way to foster competition, should prove positive for the industry, so initially it was puzzling why the feedback was negative. Using CPMM data in 2013, it was possible to test if the complaints were true; to see if rail tariffs increased, rather than declined, as the market opened.

2013. Waiting time was restricted to 2 hours and procedures to cross were completed in 4 hours. Corridor 1c is especially important for Kyrgyz Republic's regional trade and the country is a key trading hub due to two factors: its successful textile/garment industry and favorable tax regime. Wholesale centers such as Dordoy and Medina in Bishkek focus on the garment industry, creating economies of scale. This attracts other CAREC and Russian importers, drawn by the possibilities for profit offered by low customs duties, to buy garments. Why? At the PRC/Kyrgyz Republic border, simplified customs duties have produced an applicable rate of between 1% to 5% ad valorem equivalent, as imported PRC goods are charged based on weight and not on the actual product value. This is far below the average 30% to 60% combined import duty and value-added tax (VAT) found in the Customs Union. Thus, it becomes a profitable trade to buy PRC exports in Kyrgyz Republic and re-export to other CAREC countries and Russia. The significant tax savings offset the additional transportation cost of this trade. Other factors that work to the advantage of the Kyrgyz Republic transport sector are similarity of its truck specifications and phytosanitary standards. Kyrgyz trucks can move in Kazakhstan's territory with little restriction and can access the Kazakhstan and Russian markets easily. This is the reason why the Kyrgyz Republic can export fruits and vegetables to destinations as distant as Ekaterinburg, Moscow,

⁹ A card ID system to manage drivers has proven to be very effective in reducing queues and waiting time at BCP. For instance, drivers crossing the Friendship Pass at the Pingxiang (Giangxi BCP at the PRC-Vietnam border) requires only ten minutes to go through the BCP.

¹⁰ Part of the problem can be attributed to the fact that the Khorgos BCP has been temporarily relocated. Originally, the BCP was situated where the ICBC has been developed. The temporary facilities are now several km to the north of the ICBC. By the end of 2015, new, permanent BCP facilities will be developed, linking the Almaty-Khorgos road to the PRC road network.

Figure 5:
Comparing TFI3 for Road and Rail in Corridor 1, \$



To do this, three years of samples, from 2011 to 2013, were utilized. Transport cost is a complex concept, so TFI3 was applied in the test because it is an aggregate measure of transport cost normalized at 500 km for carrying 20 tons of goods. To study rail cost, the TFI3 for sub-corridor 1c was selected since the Alashankou–Dostyk border crossing is on that sub-corridor and trade statistics show most rail cargo passes through that point. To make the assessment more interesting, the road transport cost was also included—and since trucks tend to pass Khorgos, the TFI3 for sub-corridor 1b was selected. Using both values for road and rail it was then possible to calculate the road/rail cost ratio and assess if the ratio had changed. If both road and rail costs had converged, the ratio should have fallen (implying that either the road cost has come down or rail cost has gone up, or both). If the road and rail cost had diverged, the ratio should have shown a rise, signifying that the road cost had gone up or the rail cost had gone down, or both).

The results are summarized in Figure 5.

- Over a 3-year period, the road cost increased 1.2 times: from \$1,722 to \$2,051. Rail cost grew by 2.2 times: from \$540 to \$1,182.
- While the road cost fluctuated, the rail cost increased steadily.

- The road/rail cost has dropped from 3.19 to 1.74. This differential makes it less attractive for shippers to use rail as a means of transportation.

Thus, CPMM data seem to give support to the observation that rail tariffs had increased. This will be an interesting development to monitor, and, in combination with the start of rail services via Khorgos, could explain why PRC exports through Alashankou–Dostyk dropped in 2013. Monitoring could also show freight may be diverted to alternative routes such as the Trans-Siberian Railway or Corridor 4 via Mongolia.

Border-crossing points and Bottlenecks

Although Alashankou–Dostyk (PRC–Kazakhstan) handle cargoes in either direction, CPMM results indicate that goods moving from PRC to Kazakhstan faced more difficulties. A key reason is the lower throughput capacity of Dostyk versus Alashankou. The hilly geography of Dostyk station also limits potential for expansion. Trains leaving Alashankou spent 42 hours waiting and 3 hours for customs clearance. When the trains arrive at Dostyk, an average of 65 hours were spent waiting. On the other hand, trains leaving Dostyk only spent an average of 12 hours waiting.

The inefficient border crossing is due to stringent checks on documentation by Kazakhstan Customs. International waybills are used at the BCPs and major railways terminals. However, errors can occur when shipments go through smaller rail stations in PRC authorized only to handle domestic shipments. These stations use a domestic waybill to record items. Consequently, there is a need to change the waybills, but doing so may increase the chance for errors. Furthermore, PRC and Kazakh Customs can disagree on the proper classifications of the same product, which can imply valuation differences. Some countries use the OSJD’s eight digit classification code based on the Nomenclature of Goods to identify the items. There is an urgent need to harmonize the process at the PRC–Kazakh border.

Box 4: Investing in Rail along Corridor 1

The competitiveness of Corridor 1 depends heavily on the efficient provision of rail services. Rail freight is of more consequence in terms of tonnage and value than other transport modes. Furthermore, the ability of PRC’s XUAR and Kazakhstan to export to new markets depends on rail services.

Recognizing this, PRC and Kazakhstan have made significant investments in developing the rail sector. PRC has abolished the Ministry of Railways and initiated the restructuring of China Railways Corporation. Non-core businesses such as freight-

forwarding and customs brokerage are expected to be spun off into private enterprises.

At Alashankou, rail operations are run by China Railways Container Transport Corporation Limited. With an annual capacity of 200,000 TEU, the company is looking ahead to invest in expanding this. For instance, a large railway transloading center is now being built in Alashankou to handle the break in gauge at the PRC–Kazakh border.

A key achievement is the successful launch of the container express train service. Working with Russian Railways and DB Schenker, China Railways Corporation runs the Chongqing–Duisburg container express train, or “Yu-Xin-Ou” as it is known in Mandarin. A forty-

foot equivalent unit container can reach Duisburg in 16 days at a cost of \$9,600. Research conducted by the Institute of Transportation Research under the PRC's National Development and Reform Committee indicates that air cargo normally takes between 3 to 6 days to complete, including for customs clearance, but costs six times as much as rail and adds 25 times more carbon to the atmosphere.

Since container express trains cost less than air freight and can transport goods faster than ocean shipping, the service is highly attractive for time-sensitive goods such as consumer electronics. For the initiative to be successful, however, the trains need to return loaded with European goods for PRC. The unbalanced trade structure between PRC and Europe and the cold climate on the route during winters add to the challenge. The service is also heavily subsidized for westbound movements. Regular—but less frequent, and unsubsidized—backhaul service started only in May 2014. The empty PRC Railway containers are shipped by train back to PRC. The ocean carrier-owned containers return to their European pool and can be shipped anywhere in the system, including to Latin America.

CPMM data reveal significant delays at Alashankou–Dostyk. The container express trains, accorded special treatment, avoid the usual lengthy delays experienced at this bottleneck due to a streamlining agreement between the countries involved. As an express train run-through, it is also unaffected by the classification and technical inspections common along the journey. The data show that, for other trains, internal delays at major stations such as Aktogay and Astana can be lengthy.



Asia's Largest Rail Inland Trans-loading Centre in Alashankou, Xinjiang, PRC.

In Kazakhstan, a major reform is also underway. Kazakhstan Temir Zholy is refashioning itself as an integrated logistics center. With 10 major logistics centers planned in Kazakhstan, the company has also invested in a center in Lianyungang to handle grain exports. Kazakhstan is privatizing the rolling stock fleet. While a transparent, well-designed, and well-implemented program to liberalize the market for supplying rolling stock should make the rail sector more competitive, CPMM data have shown that the cost of shipment by rail actually increased. This is a cause for concern because higher rail transport costs will force shippers to explore alternative routes.

Figure 6:
Comparison of Container Express Train versus Sea Route
Trade Volume (\$, billion)



C2

Corridor 2 Mediterranean—East Asia

If the CPMM samples are representative of actual cargo movement, then the following can be inferred for Corridor 2:

- While rail shipments move from PRC to Uzbekistan and Turkmenistan, there are none by road. PRC exports instead are carried by rail through Kazakhstan via sub-corridor 1a, and then enter Saryagash–Keles (Kazakhstan–Uzbekistan) before reaching Tashkent. Part of unpopularity of Corridor 2 could also be due to the lack of railway from Kashi in PRC to Osh in Kyrgyz Republic .
- Samples also show little cross border trade between Uzbekistan and Kyrgyz Republic along Corridor 2. Kyrgyz Republic shippers rely on 1c to ship exports to Kazakhstan and Russia. Uzbekistan shippers rely on 2a to send goods through Kazakhstan to Russia.
- ☑ Uzbekistan shippers are active users of 2a and 2b. The former serves trade with Russia while the latter serves trade with Turkmenistan. Cargo moves in both directions.
- ☑ In Uzbekistan, the section that covers the Fergana Valley is widely used for domestic movement of fresh fruits and vegetables. Produce moves from east to west, originating in Andijan and goes through Kokand–Angren–Tashkent. At Tashkent, drivers normally stay overnight before continuing the next day to major cities like Samarkand and Bukhara. Export shipments then continue to Alat for clearance before entering Turkmenistan.

This corridor competes with Corridor 1 for the fastest Speed without delay (SWOD), but didn't match up in terms of data for Speed with delay (SWD). Both 2a and 2b recorded high SWOD but suffered a substantial drop in SWD. Trucks moving along 2a drove at an average speed of 47 kph, and SWD of 25 kph. Trucks moving along 2b drove on average at 50 kph and had SWD of 23 kph, showing a reduction in speed of 54% once delays were factored in. Although both sub-corridors featured similar speeds, 2b appeared to have a lower variability.

Comparing the TFI2 (border-crossing cost), the cost of using 2b was 25% higher than 2a. This was mainly due to transport inspection cost (\$295) and road toll (\$160) at Farap (Turkmenistan), which are not assessed at Beyneu–Tazhen (Uzbekistan–Kazakhstan).

Corridor 2a is mainly used as a transit section for Uzbekistan trucks to enter Russia. There are no signs of Kazakhstan trucks using it to

CAREC Corridor 2



enter Uzbekistan, so traffic was mainly in one direction. In 2012, truck drivers reported an average border-crossing time at Dautota–Tazhen (Uzbekistan–Kazakhstan) of 14 hours and 30 hours, respectively, for vehicles entering the Customs Union. Conditions seem to have improved because the average time dropped to 5–6 hours each in 2013. No major problems were reported at this border crossing. As a remote outpost, the infrastructure and equipment there may benefit from renovation. After exiting Tazhen, trucks continue northwest, using CAREC Corridor 6a to enter Russia through Ganyushkin. No data are available on the inland waterways because drivers do not continue to Aktau or use the Trans-Caspian Ferry. The cost of the ferry is prohibitive: studies have been proposed to examine how to make it more competitive.

CAREC identified Corridor 2b for a road-sea multimodal option to reach the Caucasus and Europe by crossing the Caspian Sea. Trucks moving from Tashkent to Mary are often bound for Iran, and do not proceed northwest to Turkmenbashi.

The performance of Alat–Farap did not improve much. The average border-crossing time remained at 7–8 hours per node, identical to that reported in 2012. Waiting normally accounted for at least half of the total time. As a remote outpost, Alat–Farap also suffers from poor sanitation and aging infrastructure and equipment. This may benefit from renovation and additional capacity since it is the most heavily used of Uzbekistan's border-crossing points. At the moment, no such plans are in place. The CAREC investment program for Corridor 2 is focused solely on railway projects, with electrification of rail tracks the priority. There are presently no plans to upgrade Alat–Farap plays a key role for trade flows between Uzbekistan and Iran).

C3

Corridor 3

Russian Federation—Middle East and South Asia

Corridor 3 plays a vital role in the movement of agricultural products across CAREC. Both its sub-corridors flank the fertile Fergana Valley. In Uzbekistan, agricultural products are sent to Tashkent for classification and consolidation. For exports to Kazakhstan, trucks travel to Yallama–Konysbaeva (Uzbekistan–Kazakhstan) while trains carry goods to cross at Keles–Sarygash (Uzbekistan–Kazakhstan). Cotton and yarn are exported to overseas markets using Corridor 3a, crossing into Iran via Alat–Farap (Uzbekistan–Turkmenistan). In Kyrgyz Republic, fresh produce is shipped from Jalalabad and Issyk-kul to Kazakhstan through Ak-Tilek–Karasuu (Kyrgyz Republic–Kazakhstan). The Kyrgyz Republic recently established a Farmers Union and is studying the feasibility of building a logistics center (with cold storage facility) at Kara Balta in Corridor 3b to manage the supply chain of fruit and vegetables for nationwide distribution and export.

Cost and Time Spent on Delays

Compared to 2012, Corridor 3 suffered a drop in fortunes because of the divergent performance of 3a and 3b. The SWOD in 2013 was 38 kph, down from 47 kph in 2012. In fact, 3a performed well, with SWOD of 54 kph and SWD of 32 kph, but 3b had a low SWOD of 35 kph and SWD of 20 kph.

The sub-corridors exhibited curious time and cost factors that further analysis helps explain. Examining TFI1 (time to cross a border-crossing point in hours), 3a registered 5.3 hours, versus 2.4 hours for 3b. The key reason was longer border-crossing times at Yallama–Konysbaeva (Uzbekistan–Kazakhstan), Alat–Farap (Uzbekistan–Turkmenistan), and Sarahs–Sarakhhs (Turkmenistan–Iran). TFI2 showed that 3a was associated with much higher border-crossing costs than 3a. This was due mainly to the relatively high fees for truckers to traverse Turkmenistan, where costs for each vehicle came to about \$300 for transport inspection and \$165 for road tolls. However, using TFI3 (\$ per 500 km per 20-ton of cargo) as an indicator, the cost of transport in 3b was four times higher than for 3a. This is attributed to the very high cost of transport in the Tajikistan section.

As Tajikistan is a heavy user of 3b, TFI3 provides a good reflection of trucking costs in the country. Generally, the distance travelled within Tajikistan averaged 500 km and the vehicle operating cost ranged

CAREC Corridor 3

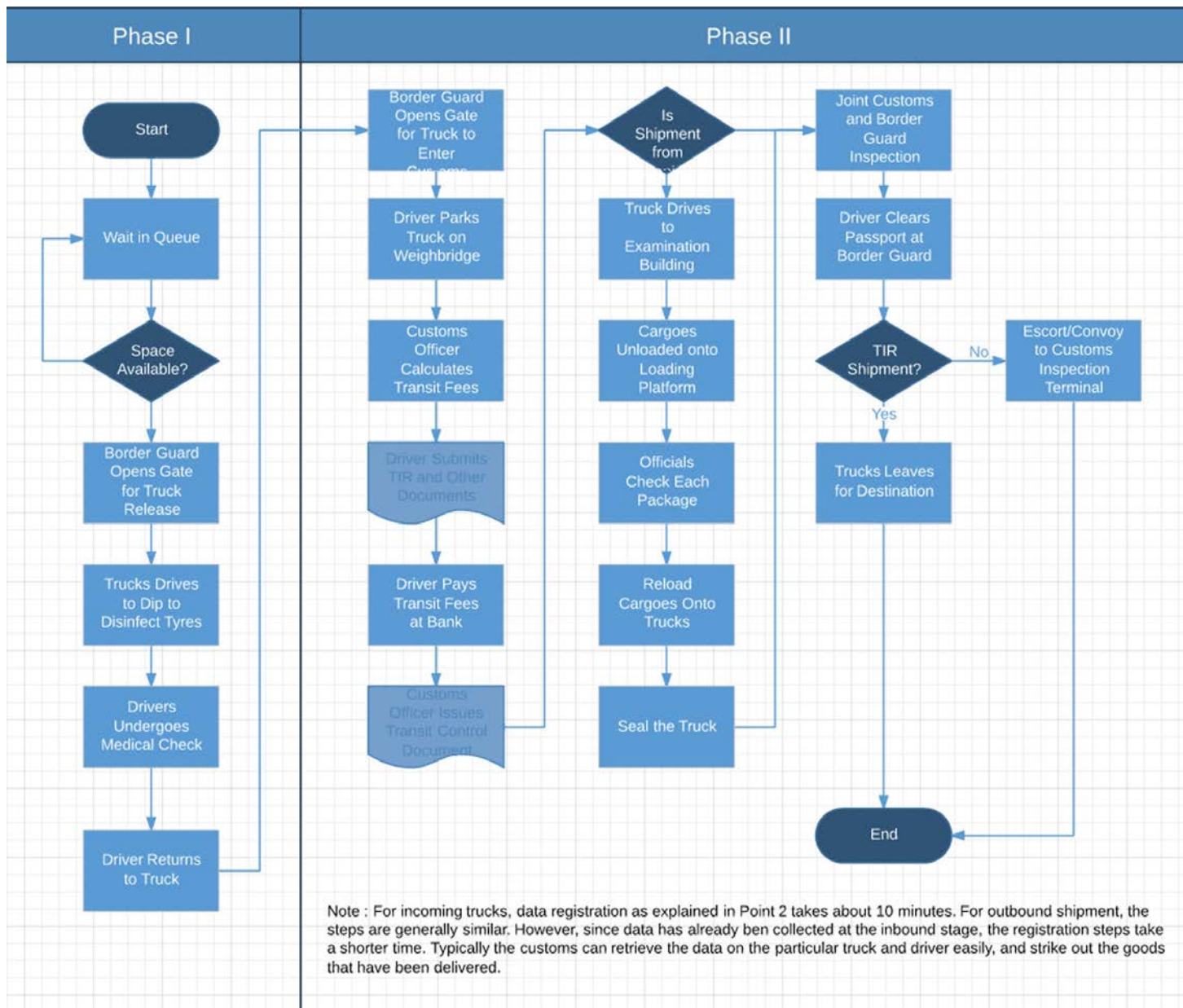


from \$2,000 to \$2,700 for a shipment of 20 tons. CPMM quarterly reports in 2013 also documented this trend. Results for TFI4 (the speed of traveling along CAREC corridors) were easy to explain: Superior infrastructure and less challenging terrain in 3a support higher speeds of travel. Trucks traveling on 3b have to navigate carefully through mountainous terrain with many sections either unpaved or seriously degraded due to lack of maintenance and the passage of overweight vehicles.

Border-crossing points and Bottlenecks

The border crossings on 3a reported more severe problems, particularly at Yallama–Konysbaeva (Uzbekistan–Kazakhstan), Alat–Farap (Uzbekistan–Turkmenistan), and Sarahs–Sarakhhs (Turkmenistan–Iran). Each point required 7–8 hours to cross, and even more during peak seasons. The waiting time at Sarahs (Turkmenistan) had the highest average at close to 6 hours. CPMM data samples showed that the border crossing in Iran was even more time-consuming, where waiting time alone could take 24 hours. The Artik–Luftabad (Turkmenistan–Iran) border-crossing point was similarly challenging.

Figure 7:
Standard Workflow at Uzbekistan Border Crossing Points



Notes:

1. Many UZB border crossing points (BCPs) are designated as 'Border Customs Complex'. The function is to register and check passing traffic, while the final clearance is done in inland locations called Customs Post for Foreign Economic Activity (CP-FEA). Transit fees apply only to foreign vehicles.
2. Customs captures all details like truck number, driver license number, goods and other details using a customs information system called Unified Automated Information System (UAIS).
3. Full physical inspection is usually done in places like CP-FEA. However, for trucks from Afghanistan, physical checks are done at BCPs like Ayratan. There is a perceived heightened risk of smuggling narcotics and firearms.
4. The customs officer uses an x-ray to scan each package and inspect the images. If there are dubious items, the customs officer can check with a senior customs officer to determine if a further detailed examination of the package is required.
5. The joint inspection is done for the exterior of the truck, to determine if there is any smuggling.
6. Current legislation states that all non-TIR shipments, including those in transit, have to undergo full inspection.
7. Non-TIR shipments are inspected by the Customs Inspection Group at the Customs Inspection Terminal, such as the one in Karakol. The total time depends on the order of trucks in the whole convoy. Naturally, the last truck in queue needs to wait for all the trucks to finish inspection before its turn.

Other constraints in regional freight traffic are explained below. Since Uzbekistan is a key transit economy and a heavy user of Corridor 3, it is reasonable to examine what bottlenecks drivers face there. Based on work completed by project-preparation consultants for the Regional Improvement in Border Services initiative during the CAREC TTFS Mid-Term Review (conducted in 2013), it is possible to illustrate the generic procedures at border-crossing points in Uzbekistan.

Some policies and regulations pose as “non-tariff trade barriers” that shippers and forwarders find aggravating. From the illustration above, the following constraints are summarized:

- Uzbekistan requires all non-TIR shipments to undergo physical inspection. Trucks are escorted to an inland inspection center for further examination. This means a lengthier time to complete customs formalities.
- Transit cargo without a TIR carnet is subject to physical inspection.
- Although Afghanistan is a TIR signatory, Afghan trucks are still treated as non-TIR by Uzbekistan and other CAREC countries due to security concerns and vehicle standards. Any Afghan trucks entering Ayratan will therefore need to go through time-consuming inspection.
- Uzbekistan’s customs code is also very stringent. Certain items such as electronic appliances could be classified as military, requiring approval from the Ministry of Defense for these goods to enter Uzbekistan’s territory. This was the reason why shipments from Manas for the International Security Assistance Force took the more difficult route to move supplies through Tajikistan rather than Uzbekistan.

Recognizing these constraints, Uzbekistan is taking steps to reform its customs procedures. Improvements in transport infrastructure, the use of a Unified Automated Information System and the like, have helped to achieve more efficiency.

C4

Corridor 4 Russia—East Asia

Corridor 4 is a Trans-Mongolian corridor. Not only is it considered the trunk line for Mongolian freight, it also supports the movement of goods between Russia and the northeastern provinces of PRC. Rail is the dominant mode of transport, especially for international cargo.

In Corridor 4, Erenhot–Zamyn Uud (PRC–Mongolia) plays a vital role. In 2013, Erenhot handled 13.05 million tons of cargo. It is one of the largest PRC border checkpoints for goods going overland to Russia. PRC’s Inner Mongolia Autonomous Region has 16 dry ports (nine serving trade with Mongolia and four with Russia). Tonnage handled by these dry ports doubled to 67.98 million tons from 33.2 million tons between 2007 and 2013. Erenhot alone accounted for 20% of this increase, proving its leading status as a dry port. Rail transport continues to be dominant at Erenhot especially since much of the imports received at the Xingang international port in Tianjin are containerized.

Several constraints compromise the growth potential of Corridor 4. First, the railway network experiences capacity constraints in Mongolia. Expanding capacity would entail construction of additional tracks, exploring the use of double-stack train technology and the electrification of tracks. Investments in Mongolia’s railway infrastructure, together with construction of the ADB-financed Zamyn Uud Logistics Center (expected to be completed in 2016), may produce greater efficiency in rail transit. The second constraint is a technical one—the break in gauge at the PRC–Mongolia border. This is part of the reason why border crossings at Erenhot–Zamyn Uud have reportedly been lengthy since 2010. Third, Mongolia relies solely on the seaport in Tianjin. There are at present no alternative ports. Thus, any delays due to congestion or breakdown of equipment could result in substantial delay for Mongolian shippers and forwarders. In 2013, Mongolia and PRC discussed the feasibility of using Jinzhou as an alternative port.

Road Transport

Trucks in Corridor 4 travelled at 24 kph, according to Speed without delay data, but the net speed dropped to 15 kph when stoppages were considered. The Speed without delay was similar to the average Speed with delays recorded in other corridors. Trucks travelled on a paved road from Altanbulag to Ulaanbaatar, but the southern section of the road (especially from Sainshand to Choyr and

CAREC Corridor 4



on to Zamyn Uud) was either missing or in poor condition. This resulted in the slowest movement for trucks in Corridor 4, especially during winter. Heavy snowfall and poor visibility mean that drivers have to exercise much caution. For a 736 km section from Zamyn Uud to Ulaanbaatar, the driving time was about 24 hours, and stoppages added another 13 hours. In short, 1.5 days is required to cover the distance. With a paved road from Choyr to Zamyn Uud having been completed in December, 2013, a substantial reduction in travel time is anticipated.

The trucking cost in Corridor 4 is also high (only trucking costs in Kazakhstan, Tajikistan, and Afghanistan were higher due to other reasons). To ship cargo from Zamyn Uud to Ulaanbaatar, the vehicle operating cost averaged \$2,037, and the cost of other border-crossing activities averaged \$1,000, making a total cost of \$3,037. A truckload often carries an average of 30–40 tons of goods, ranging from consumer products to building materials. The new road may help to reduce vehicle operating costs.

Border-crossing points and Bottlenecks

Khiagt–Altanbulag (Russia–Mongolia) and Erenhot–Zamyn Uud (PRC–Mongolia) are the gateways for road traffic. Relatively speaking, these two crossing points did not report major problems in 2013. In the south, customs clearance was the main cause of delay at Zamyn Uud and Erenhot.

To clear one truck at Altanbulag or Zamyn Uud, the average fee ranged from \$400 to \$600. When the shipment arrives in Ulaanbaatar, the unloading process took 6 hours. Besides these factors, the other cost and time factors were relatively minor.

Rail Transport

Every year, CPMM data showed that Corridor 4 requires improvements, particularly with regard to speed. Trains moved at 18 kph in 2013. Significant delays continue to occur at the Tianjin port, borders and major stations along Corridor 4b. It is not surprising for a twenty- or forty-foot equivalent unit container shipment to take 10 days to cover a distance of 1,692 km from Tianjin to Ulaanbaatar. Upon closer examination, however, CPMM reveals that the travel time can actually be reduced to 2 days. Due to waiting and transloading time, however, an additional 8 days is added to the journey.

Mongolia's trade imbalance and seasonal fluctuations in demand result in the shipping cost in Corridor 4 being high. Because Mongolia imports more than it exports, there is more demand for inbound wagons and trains than for the outbound journey. The cost of empty backhaul pushes up the rail tariff, which itself depends on a number of factors including the direction and type of container. For twenty- and forty-foot equivalent unit containers moving from Tianjin to Ulaanbaatar, the rail tariff in 2013 averaged \$2,283 and \$4,466, respectively—inclusive of transit fees in PRC and the cost of using wagons. Fees for the same container types moving in the opposite direction averaged \$1,756 and \$3,256. Sometimes the railway authorities offer rebates or discounts to attract traffic, so actual rail tariffs can vary from time to time.

Border-crossing points and Bottlenecks

In the north, at Naushki–Sukhbaatar (Russia–Mongolia), a train can exit the border-crossing point in 1–2 days. Waiting time averaged 12 hours in 2013, while 4.5 hours was spent for reissuance of transit documents. Usually, customs documentation can be completed in 2 hours. Overall, the performance at this node has improved slightly compared to 2010, when CPMM started monitoring there.

The crossing with the greatest potential for improvement lies in the south, at Erenhot–Zamyn Uud (PRC–Mongolia).

The key delays were due to three factors:

■ Tianjin port

For containers bound for Mongolia, CPMM showed that they typically remain in the port for six days. This dwell time is significant. Since the port is usually congested, Mongolian containers are usually not attended to immediately. There is no green lane or express clearance for Mongolian containers.

■ BCP

Break in gauge transloading is processed on the importing side. Containers entering Mongolia are transloaded at Zamyn Uud. For containers bound for Tianjin, break in gauge transloading occurs at Erenhot. There is little predictability in this process, which can range from 8 hours to 24 hours. Other trains in queue could add another ten hours. Customs clearance in Mongolia could be completed within 3 hours, but the PRC customs could take 24 hours. Reissuance of transit documents can require 3 hours on average.

For non-containerized freight, however, the situation is less straightforward, and still more time-consuming. Non-containerized freight carried by rail from PRC to Mongolia is off-loaded at Erenhot, trucked across the border, and then reloaded at Zamyn Uud onto Mongolian trains. The same procedures apply for non-containerized freight heading south to PRC. Non-containerized traffic can include commercial goods from all over PRC destined for points in Mongolia other than Ulaanbaatar (Oyu Tolgoi or Tavan Tolgoi). In cases where such shipments contain hazardous goods, they are not permitted to cross the border by rail—dangerous goods are carried only by trucks. The inordinate amount of time and cost involved in conducting such short-haul movements exacerbates other Corridor 4 inefficiencies, and reverberates throughout the supply chain as far as Tianjin.

■ Railway Station Stops

Trains are stopped for technical inspection when they pass through Sainshand and Choyr. Locomotives are also switched. Sometimes, wagons are collected and re-deployed in the system, while at other times trains simply wait for these activities to be completed. Overall, trains stop for about 10 hours in each of these two locations.

The performance of Corridor 4 has remained steady over the past few years. A major effort is planned to improve Mongolia's transportation system. For example, with CAREC support a logistics cell was created in Ulaanbaatar to benchmark the road and rail services and adopt new designs, systems, and processes to make them work more efficiently.

C5

Corridor 5

Europe—East Asia—Middle East and South Asia

Corridor 5 initially connected PRC, Kyrgyz Republic, Tajikistan, and Afghanistan: it now extends to Pakistan. Three sub-corridor alignments (5a, 5b, and 5c) are defined along its length. CAREC continues to provide technical assistance to develop this corridor, in part by supporting implementation of a Cross Border Transport Agreement (CBTA).

Cost and Time Spent on Delays

Corridor 5 is the second-slowest corridor after Corridor 4. The SWOD was 29 kph, and SWD as 18 kph. The combination of high altitude, mountainous terrain, a harsh winter climate, and poor physical infrastructure make a large portion of this section challenging to navigate. With the assistance of partner organizations, road conditions have improved. The Afghanistan Association of Freight Forwarders Companies stated that the road in the Salang Tunnel, which serves as a critical route for traffic into and out of Kabul, is now 50% paved with asphalt, supporting faster travel.

The shipment cost in Corridor 5 is high. To understand the breakdown of costs, it is instructive to compare TFI2 and TFI3 data. TFI2, the border crossing cost, averaged \$122.90 in 2013, while TFI3, the cost to travel a 500 km section of Corridor 5 carrying 20

tons, was \$2,392.60. TFI3 for Corridor 5 is the second-highest in CAREC, after 3b. High values for these indicators in both 3b and 5 are due to trucking costs in Tajikistan. A truck carrying 20 tons of goods moving the 480 km from Karamyk to Nizhni Pianj costs \$2,800, for instance. This is considered very high compared to trucking costs in other parts of CAREC.

Border-crossing points and Bottlenecks

The three key border-crossing points in Corridor 5 are Irkeshtan–Irkeshtan (PRC–Kyrgyz Republic), Karamyk–Karamyk (Kyrgyz Republic–Tajikistan), and Nizhni Pianj–Shirkhan Bandar (Tajikistan–Afghanistan). Traffic flows from PRC to Kyrgyz Republic at Irkeshtan continue to be impeded by long crossing time, averaging 7 hours on both sides of the border in 2013. Waiting time accounted for 50% in each case. The border-crossing point only operates on weekdays. A rush of trucks on Fridays and Mondays is symptomatic of this problem. CPMM data showed the waiting time for trucks bound to Kyrgyz Republic is highly unpredictable, ranging from 2 hours to 24 hours on entering the Kyrgyz Republic side of Irkeshtan.

Karamyk is the shortest node to facilitate Kyrgyz Republic–Tajikistan traffic, but the crossing is categorized as bilateral on the Kyrgyz

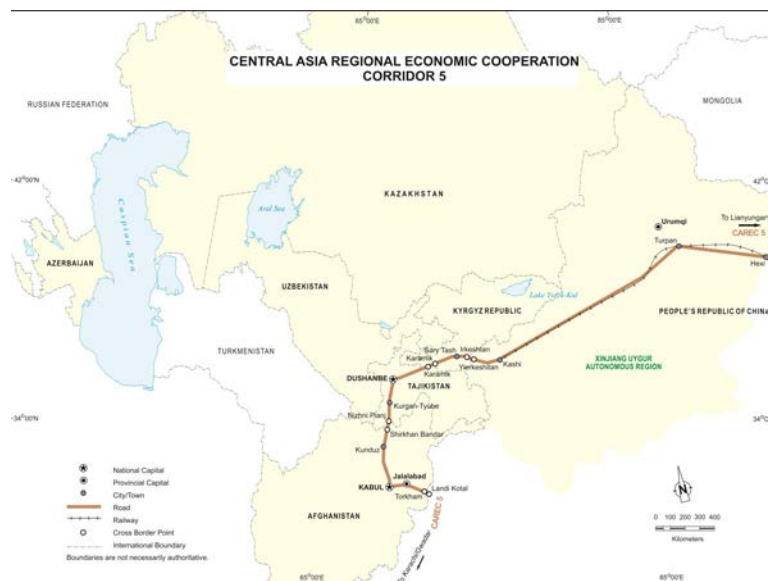
The newly asphalt-paved road section in the Salang Tunnel that elicited positive feedback from drivers and carriers. Driving is now safer and faster.



During winter, the Pulkhumri to Kabul road section is still difficult to navigate as avalanches are common and lack of machinery makes it difficult to remove snow from the road. Sometimes the Salang Tunnel is closed as a result.



CAREC Corridor 5



Republic side of the border. This means it does not support transit traffic and is not equipped to handle high volumes. Until late 2012, the bilateral classification was enforced sporadically, so it was not regarded as having serious economic impact. From November to December 2012, however, the Kyrgyz Republic shut this crossing to international traffic, causing major disruption to shipments. Since then, trucks other than those registered in Kyrgyz Republic and Tajikistan have had to travel a roundabout route to cross at Batken–Guliston (Kyrgyz Republic–Tajikistan), adding 700 km to the journey. This also applies to freight originating in a third country: Kyrgyz Republic does not permit transit traffic to cross at Karamyk even if it is transported in vehicles registered at home or in Tajikistan. The ‘advantage’ of travelling through Batken–Guliston (Kyrgyz Republic–Tajikistan) is the shorter waiting time. In 2013, most trucks waited for 2 hours before entering the border-crossing point for clearance.

At Shirkhan Bandar–Nizhni Pianj (Tajikistan–Afghanistan), border crossings were also long and unpredictable. Waiting time at either node can exceed 9 hours—unfortunate given the regional importance of Nizhni Pianj.¹¹

In terms of trade facilitation, Afghanistan faces considerable difficulties because its trucks are not permitted to cross CAREC borders. In addition, Afghanistan trucks are also prohibited from entering Pakistan, even after conclusion of a bilateral transit-trade

agreement. This development is harmful to Afghanistan’s trucking industry and hurts the country’s export competitiveness. Afghanistan trucks need to transload goods and rely on truckers from other countries to take a shipment to its destination. Drivers also cited the problem of unofficial payments. At crossing points, unofficial payments for customs clearance and border security are common, with charges ranging from a few dollars to less than \$100. Police checkpoints are another place where unofficial payments are extorted, especially at Samangan and Pulkhumri. There are also issues relating to low literacy among Afghani drivers, which requires capacity building so that they can be trained on international standards and best practices for cargo safety and security, border crossing, and driving.

¹¹ Customs Services of Tajikistan, March 2013.

Box 5: Comparing Different Routes in Corridor 5

Growing traffic has been seen for shipments from Kashi to Dushanbe and Kabul via Corridor 5. PRC exports machineries and steel products (such as pipes) to Tajikistan, with Dushanbe as its final destination. For shipments to Afghanistan, PRC exports an assortment of consumer items (household appliances, footwear, textiles, plastic wares) and industrial products (building materials, wires, cables, and pipes). Many buyers from other CAREC countries visit Urumqi to source consumer and industrial products. Upon purchase, they arrange for a forwarder or carrier to move the goods to Kashi. Since PRC trucks cannot easily enter other CAREC countries due to different vehicle standards, PRC trucks off-load the shipment at Kashi for collection by Kyrgyz drivers who cross into PRC from Irkeshtan. They then drive back to Batken for Tajik drivers to collect the goods before going to Tajikistan. For Afghanistan-bound goods, Tajik drivers normally drop a shipment at Shirkhan Bandar and let the Afghan drivers take it the rest of the way.

Based on the shipment route above, cargo typically is subjected to at least two transloading procedures, each of which incur additional cost and place goods at higher risk of damage. The first occurs at Kashi, when the PRC driver unloads the goods into a warehouse.

The Kyrgyz Republic driver then loads the goods upon arrival. Since Kyrgyz Republic and Tajikistan have a bilateral transit agreement, it is easier for the drivers and registered trucks to move between territories, thus avoiding the need (but not excluding the possibility) of transloading at Batken. However, since most Tajik drivers will not drive into Afghanistan, a second transloading occurs at Shirkhan Bandar, where Afghani drivers will collect the goods and continue on to Kabul.

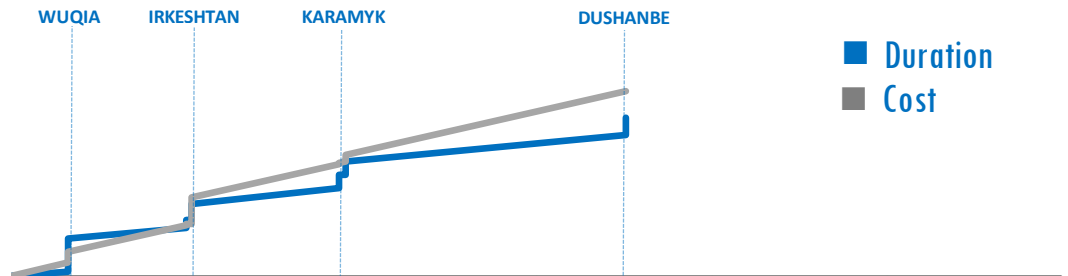
One of the questions that CPMM data can answer is, which route is more efficient? To answer, three routes are compared.

- Option A: Kashi to Dushanbe via Karamyk (the ‘Karamyk Route’)
- Option B: Kashi to Dushanbe via Batken (the ‘Batken Route’)
- Option C: Kashi to Dushanbe through Kulma Pass (the ‘Kulma Route’)

Corridor 5: Kashi-Dushanbe Alternate Routes

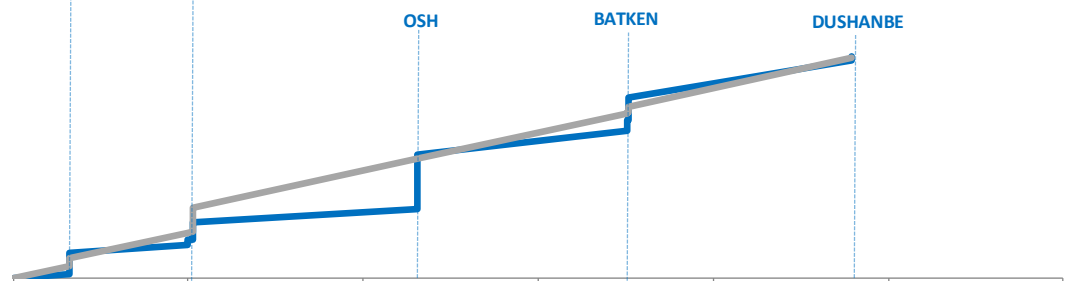
■ Karamyk Route

Distance: 877 km
 Total Duration: 75 hours
 Total Cost: \$ 7,333



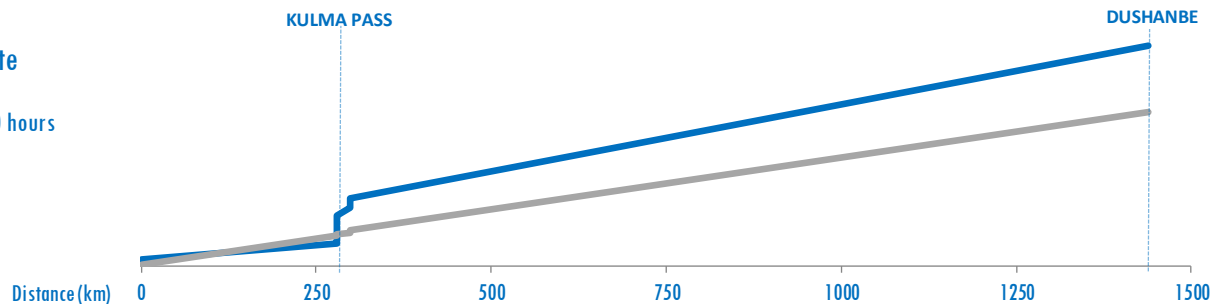
■ Batken-Isfara Route

Distance: 1,198 km
 Total Duration: 111 hours
 Total Cost: \$ 9,212



■ Kulma Pass Route

Distance: 1,438 km
 Total Duration: 120 hours
 Total Cost: \$ 6,871



On the Batken route, a truck encounters two pairs of border-crossing points and takes about 111 hours or 4.6 days to complete. The total shipment cost is \$9,212. Costs for crossing borders and road tolls total about \$1,602, with transportation accounting for much of that.

For the Kulma route, the truck passes through one pair of border-crossing points and does not need to transit through Kyrgyz Republic. The total time taken is 120 hours or 5 days. The total cost is \$6,871—border crossing and road tolls account for only \$171.

The shortest route, via Karamyk, takes 75 hours to reach the destination and costs an average of \$7,333, including the vehicle operating cost and other fees at the border. However, this route has been closed to transit traffic and third-country vehicles since the end of 2012.

This leaves two alternatives. Since Kulma Pass is not situated on a CAREC corridor, it may be interesting to consider its viability. Trucks using the Batken route take longer, but the route costs less than the Kulma route. However, note that the comparisons here are made during peak season in the summer. In winter, the argument against using Kulma Pass is even stronger. The harsh climate and the high altitude makes this route more expensive, dangerous to navigate, and more time-consuming. In fact, the total travel time can extend to 8 days. The Batken route has a more stable pattern for time and cost than the Kulma route.

C6

Corridor 6

Europe—Middle East and South Asia

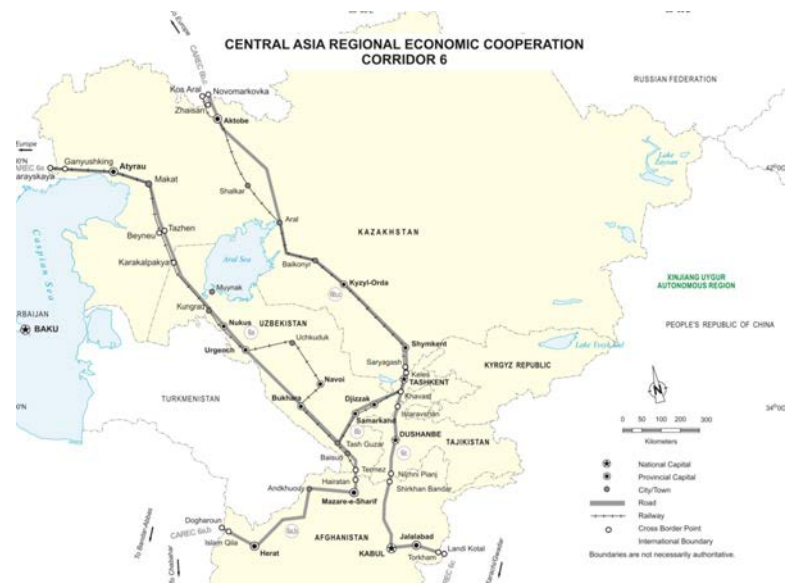
Corridor 6 runs north-south and all the four countries it crosses (Afghanistan, Kazakhstan, Tajikistan, and Uzbekistan) play important transit functions. The corridor is experiencing new developments that will shape future trade flows. On 20 March 2013, Afghanistan, Tajikistan, and Turkmenistan signed an agreement for a new 400 km railway to connect Pyandzh in Tajikistan to Andkhoy in Afghanistan and go on to Atamarat–Ymannaze in Turkmenistan. This will effectively provide a new rail corridor to link sub-corridors 6a and 6c. For 6b, Uzbekistan issued Decree No. 4518 (dated 18 March 2013) to establish Djizzak as a Free Industrial and Economic Zone. This allows Djizzak to enjoy a preferential customs and administrative regime for 30 years. Companies registered in this zone will enjoy a unified tax payment and be exempted from corporate income tax, property tax, infrastructure development tax, and possibly also qualify for a waiver of customs duties on imported equipment, materials, and spare parts for government-approved projects.

Road Transport

Corridor 6 averaged SWOD of 45 kph, with SWD of 28 kph, in 2013. Both speeds are considered above average compared to other corridors. However, the three sub-corridors have exhibited diverse performances. Since 6b is a small section linking 6a and 6c, it is reasonable to compare 6a and 6c and assess which route is faster and more cost-effective. Sub-corridor 6a links Russia to Iran, passing through Kazakhstan, Uzbekistan, and Afghanistan. This is heavily used by Uzbekistan drivers to move goods to the north and also for transit goods to Pakistan via Afghanistan. Sub-corridor 6c links Russia to Pakistan via Kazakhstan, Tajikistan, and Afghanistan.

Generally, Corridor 6a is faster and cheaper than 6c. Although 6a has a longer border-crossing time, Speed with delay (SWD) was still higher than in 6c. The high cost for shipment (as measured by (TFI3) is primarily caused by transport costs in Tajikistan. Furthermore, the travel speed of trucks is also reduced in the Tajikistan and Afghanistan sections because the Tajikistan section is slow due to the road conditions and mountainous terrain, while in Afghanistan trucks move slowly due to poor roads and lack of security. Overall, the better road conditions in the Uzbekistan and Kazakhstan sections along 6a make it superior to the sections in Tajikistan and Kyrgyz Republic.

CAREC Corridor 6



Border-crossing points and Bottlenecks

Crossings at the Russia-Kazakhstan border have been easier since the formation of the Customs Union. In 2013, major problems were identified at Kurmangazi, Ganyushkin, and Zhaisan. In 6a, the key border-crossing points are Dautota-Tazhen (Uzbekistan–Kazakhstan) and Ayratán–Hairatan (Uzbekistan–Afghanistan). At Dautota–Tazhen, average border-crossing times were from 6–9 hours. The most serious delays were encountered by trucks entering Tazhen (from Uzbekistan to Kazakhstan). Its remote location makes this border-crossing point a low priority for renovation. Thus, with a restricted layout and no segregation of passenger and cargo traffic, crossing can be daunting. However, despite its current state, performance improved slightly. In 2012, the average border-crossing time at Dautota was 15.7 hours, and at Tazhen 19.3 hours. Waiting time constituted the bulk of the border-crossing time. This dropped to less than 10 hours at each node in 2013. CPMM will continue to monitor to see if the improvement is sustainable.

Ayratán–Hairatan (Uzbekistan–Afghanistan) serves transit trade between Uzbekistan and Pakistan. CPMM observed shipments of

agricultural products, scrap metals, and cement. However, the shipments do not turn westwards into Iran following the route of 6a (where at the border crossing of Islam Qila no samples were taken). Instead, trucks leave Hairatan and head to Samangan and Pulkhumri, rest at Kabul, and then continue to Torkham. The Afghanistan Government imposes a transit fee of \$100 on all transit cargo. Unofficial payments appeared common in 2013, especially at police checkpoints. Despite the challenges, transit at Afghanistan's borders is relatively fast. Most trucks need to wait only for an hour and all formalities can be completed within 2–3 hours. The Ministry of Finance, which oversees the Customs Administration, attributes the efficiency to the installation of ASYCUDA, an automated system for customs data, at major crossing points. Workflow is simplified where necessary and a risk-based management system is used where possible. Delays usually happen due to documentation errors made by the agent or shipper. One common cause is the wrong classification of cargo.

To access the seaport at Bandar Abbas, the transit route through Turkmenistan (rather than via Afghanistan) is preferred by Uzbekistan drivers; this route is well established and perceived to be more secure.

On 6c, the key border-crossing points are Yallama–Konysbaeva (Uzbekistan–Kazakhstan) and Nizhni Panj–Shirkhan Bandar (Tajikistan–Afghanistan). In 2013, Uzbek drivers crossed into Kazakhstan with an average border-crossing time of 6–9 hours. Tajiki drivers at Nizhni Panj–Shirkhan Bandar averaged 8–12 hours and experienced unpredictable waiting times due to traffic congestion at crossing into Afghanistan, which is used for exports into Afghanistan with Kabul as the final destination. The heavily used border point also serves trade between Tajikistan and Pakistan. Since these countries do not share a common border, Afghanistan has a critical transit function.

Rail Transport

In 2013, the Speed without delay (SWOD) for sub-corridor 6a was 41 kph and SWD was 28 kph; for 6c, SWOD was 22 kph with SWD of 5 kph. CPMM analysis focused on the Keles–Sarygash border crossing between Uzbekistan and Kazakhstan.

Dialogue with freight forwarders in CAREC showed different operational problems. PRC relies on railways to send goods to Kazakhstan, Uzbekistan, and Turkmenistan. Key problems identified are in the areas of documentation and empty backhaul. Kazakhstan forwarders who use 6a and 6c highlighted the delay or non-return of wagons. More often than not, the wagons are used for shipments to Iran before returning to Uzbekistan. Uzbekistan forwarders complain about the lack of railway wagons, and while many traders and merchants are looking into the benefits of buying wagons of their own, financing is a main constraint.

The 75 km rail track from Hairatan to Mazar-e-Sharif was completed in 2012. Uzbekistan Temir Yullari (UTY), Uzbekistan's railway operator, has a 3-year contract to run the service. The Mazar-e-Sharif station, however, did not commence operations in 2013 as was expected because customs officers were still undergoing training and funds were not available to purchase equipment. The Railways Department under the Ministry of Public Works was established as the national regulator for railway traffic. Since Afghanistan is surrounded by neighbors who use different gauges, the department is also exploring the merits of a multi-gauge network to minimize freight transloading.

Border-crossing points and Bottlenecks

The key point is Keles–Sarygash (Uzbekistan–Kazakhstan). No significant problems were observed in this section.

VI. Special Report: Pakistan

Pakistan joined CAREC in 2010. CPMM work began two years later, although CAREC Corridors through Pakistan were not defined at the time. As such, CPMM findings on Pakistan shipments and cross border movement are reported in this section for the first time.

In terms of trade facilitation and transportation, the country has made notable progress. The World Bank's Doing Business report for 2014 ranked Pakistan 110th position in the world, ahead of the South Asian regional average ranking of 121. On customs standards, Pakistan has signed all general conditions and four of 11 special conventions of the Revised Kyoto Convention. The Afghanistan-Pakistan Transit Trade Agreement was also signed in 2010. This is important because between 1,200 and 1,400 trucks cross their border daily. With the agreement in place, Pakistan offers an alternative route for shipping freight between Karachi and major economic centers in CAREC.

However, a myriad of challenges discourages CAREC shipments from transiting Pakistan. First, the capacity of Pakistan's railways is limited. The infrastructure is seriously underfunded and an acute funding deficit hampers improvement of the network and rolling stock. Some studies on the viability of delegating rolling stock management to the private sector have been made, according to the Ministry of Railways. (In this regard, Pakistan may wish to study Kazakhstan's railway reforms.) Second, since different organizations are involved in transport management there is no unified strategy to help deal with additional challenges in coordination and communication. The Ministry of Defense is responsible for the aviation sector. The Ministry of Railways manages what is predominantly a passenger service, while the Ministry of Communications looks after the road network. Third, the existence of tribal forces in the country complicates shipments, resulting in a need for escort and convoy in certain sections. Fourth, unofficial payment is a perennial issue for shippers.

In 2013, CPMM efforts focused on two major routes. All the shipment samples are from Pakistan to Afghanistan, since Afghanistan exports little to Pakistan. Shipments originate in Karachi, and end either in Kabul (for the northern route) or Kandhar (southern route). From Karachi to Kabul, the truck will cross Peshawar-Torkham. Products such as paper items like towels and napkins, drinks like fruit juice and beverages, food (including chilled and frozen meat), medicines, and textiles are often sent to Kabul through this northern route. On the southern route, trucks carrying mostly food items cross Chaman-Spin Buldak.

Based on CPMM data in 2013, the following observations are made.

- **Karachi Seaport:** All samples are intermodal, using twenty- or forty-foot equivalent unit containers, which arrive via sea and are then transferred to trucks. The average dwell time in the

port was 6 to 8 days, with customs clearance accounting for 4 to 6 days. Once the container is cleared, transloading took about 8 hours. Here, the cost to clear a container ranged from \$200 to \$300, with fees for loading/unloading of \$50 per truck.

- **Escort-Convoy:** This is a mandatory activity. For shipments going to Kandhar, the truck will park at Quetta and await instructions from the customs officers before moving 130 km to Chaman. For shipments to Kabul, the escort and convoy forms at Dera Ismail Khan and travels 305 km to Peshawar. In both places, the truck spent about 12 hours waiting and would only move out when a convoy of an average of 60 trucks had been formed.
- **Border Crossing:** Shipments going to Kandhar cross at Chaman-Spin Buldak (Pakistan-Afghanistan), with 10 km separating the two checkpoints. Customs clearance at Chaman took 24 hours and at Torkham about 48 hours in 2013. Sometimes, congestion lengthened the waiting time. Customs clearance averaged \$200 to \$300 at each node. Shipments going to Kabul cross at Peshawar-Torkham (Pakistan-Afghanistan) where customs clearance takes about 24 hours at Peshawar and a further 48 hours at Torkham. Costs incurred for clearance in each node ranged from \$200 to \$300 per truck. Peshawar and Torkham are 55 km apart.

For a forty-foot equivalent unit container, the cost of shipment is similar between the north and south routes. A land shipment by truck from Karachi to either Kabul or Karachi would cost approximately \$3,600. About 25% of the cost is related to border crossing, the remaining is the cost of transport. Noting that Karachi-Kabul is 1,654 km and Karachi-Kandhar is 953 km, the unit cost per 500 km is then quite different. Since the Karachi-Kandhar route is only about 60% of the Karachi-Kabul route in terms of distance, the former is actually more expensive. Transit costs at both border points are similar, so this suggests the cost of transport per kilometer is higher for Karachi-Kandhar shipments.

In 2014, in line with the refined TTFS, efforts will be redirected to examine shipments across the Karakorum Highway, which allows direct traffic between PRC and Pakistan. Traffic had been increasing prior to an earthquake in January 2010, which created a lake where the road was located. With a bypass of the lake nearing completion, the route is expected to support the increasing volume of trade. Also, CPMM will also monitor shipments from Gwadar, a seaport which Pakistan is promoting. This should help provide a more comprehensive analysis of the transport and trade facilitation performance of Pakistan.

12 World Bank. 2013. *Doing Business 2014: Understanding Regulations for Small and Medium-Size Enterprises*. Washington, DC: World Bank Group

13 Pakistan Federal Board of Revenue (FBR), which oversees the customs administration.

VII. Concluding Observations

CPMM derives its mandate from the CAREC Trade and Trade Facilitation Strategy (TTFS), which requires periodic assessment of activity on the CAREC corridors to identify bottlenecks and explore initiatives to improve performance.

Over time, it has become clear that each corridor is unique and has different challenges and potential. Looking at the Trade Facilitation Indicators (TFI) during 2013, one, TFI1 (the time to cross a border) offered some comfort by showing improvement. This was unfortunately offset by the increase in TFI2 (cost to cross a border) and TFI3 (cost to transport goods through CAREC corridors). Both cost curves showed stability in 2011 and 2012, before ticking upwards in 2013. The causes of the increase were explained in the corridor analysis. It will be important to monitor if the trend continues, or if mitigating measures will have a positive effect.

Following the Mid-Term Review of the TTFS, which resulted in a refined TTFS 2020, corridors across the region were re-aligned. Three corridors were affected; namely 4, 5, and 6. Corridor 4c was added, linking Ulaanbaatar to the PRC seaport of Jinzhou via the border crossing at Zuun Khataavch–Bichigt (PRC–Mongolia). Corridor 5 now features sub-corridors: 5a, 5b, and 5c. Sub-corridor 5a follows the original CAREC Corridor 5, going through Kashi–Irkeshan–Dushanbe–Kabul–Torkham–Peshawar and on to Islamabad. The other route, 5b, links Kashi to Islamabad through the Karakoram Highway. That is the only corridor linking PRC directly to Pakistan. This is especially interesting as the PRC government has decided to establish Kashi as a special economic zone. The third route, 5c, is a long ‘ring-like’ connection linking Gwadar and Karachi as terminal nodes. Sub-corridor 5c passes through Kandhar–Kabul–Peshawar–Islamabad–Multan–Dera Ghazi Khan–Karachi. Sub-corridors 6a, 6b, and 6c were also extended into Pakistan, linking the northern section to similar sections in Corridor 5. A new addition, Corridor 6d, links Pakistan with Turkmenistan via Afghanistan. Connecting the Arabian and Caspian Seas, it starts from Gwadar and moves through Kandhar–Herat–Mary–Ashgabat–Turkmenbashi. CPMM data collection is being expanded in 2014 to cover some of these new sections.

Railway samples have always been limited. As activities inside a railway terminal are not easily visible to freight forwarders and shippers, only the rail operator knows the actual time and cost for each task. Accordingly, the CPMM team has further identified a comprehensive list of activities for rail shipment, and conducted a workshop in October 2013 in Almaty to apply a new data collection instrument for railways. New CPMM partners will join in the exercise.

The results will be reported in the 2014 Annual Report.

Corridor 5 continues to attract attention. Since 2010, Corridor 5 was identified as being costly and time-consuming. Efforts such as the Cross Border Transport Agreement (CBTA) and rehabilitation of road sections in Corridor 5 were aimed at improving the performance. As the International Security Assistance Force withdraws from Afghanistan in 2014, transport operators in Kyrgyz Republic, Tajikistan, and Afghanistan anticipate declining business volumes. They are now looking for new markets and opportunities. Thus, improvements to infrastructure, the regulatory environment, and the operating capacity of public and private sectors will provide a boost to intra-regional trade. However, challenges abound. The short armed conflict at the border between Kyrgyz Republic and Tajikistan disrupted the flow of cargo in 2013. The Kyrgyz Republic continues to regard Karamyk as a bilateral border-crossing point. Regional cooperation is required to complement progress in the Asian Development Bank’s investment programs, since infrastructure alone is not the answer. That said, there is hope that completion in 2014 of the bypass around the earthquake-created lake that impedes traffic on sub-corridor 5b will lead to an increase in trade between PRC and Pakistan. Similarly, the completion of the Ulaanbaatar–Zamyn Uud section of sub-corridor 4b at the end of 2013 should usher in a notable increase in the volume of road transportation from PRC to Mongolia.

Other developments, such as Kazakhstan’s currency devaluation, may translate into lower traffic volumes, temporarily alleviating some capacity constraints. This may afford an opportunity to improve operational practices and train border management officials. Work underway to complete a new road from Almaty to Khorgos will be complemented by investments by PRC and Kazakhstan to develop border-crossing facilities. Beginning in 2016, these investments should relieve congestion at this important regional hub.

Finally, some enhancements to the website of the CAREC Federation of Carrier and Forwarder Associations. CPMM quarterly and annual results have always been reported in the www.cfca.net. This portal has undergone improvement and readers are encouraged to visit regularly for updates on CPMM.

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 2013, the 13 CPMM partners working closely with CAREC include the following:

	Country	Association	Abbreviated Names
1	AFG	Association of Afghanistan Freight Forwarding Companies	AAFFCO
2	KAZ	Kazakhstan Freight Forwarders Association	KFFA
3	KGZ	Association of the International Road Transport Operators of the Kyrgyz Republic	AIRTO
4	KGZ	Freight Operators Association of Kyrgyzstan	FOA
5	MON	Mongolia Chamber of Commerce and Industry	MNCCI
6	MON	National Road Transport Association of Mongolia	NARTAM
7	PAK	Pakistan International Freight Forwarders Association	PIFFA
8	PRC	Chongqing International Freight Forwarders Association	CQIFA
9	PRC	Inner Mongolia Autonomous Region Logistics Association	IMARLA
10	PRC	Xinjiang Uygur Autonomous Region Logistics Association	XUARLA
11	TAJ	Association of International Automobile Carriers of Tajikistan	ABBAT
12	TAJ	Association of International Automobile Transport of Tajikistan	AIATT
13	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.

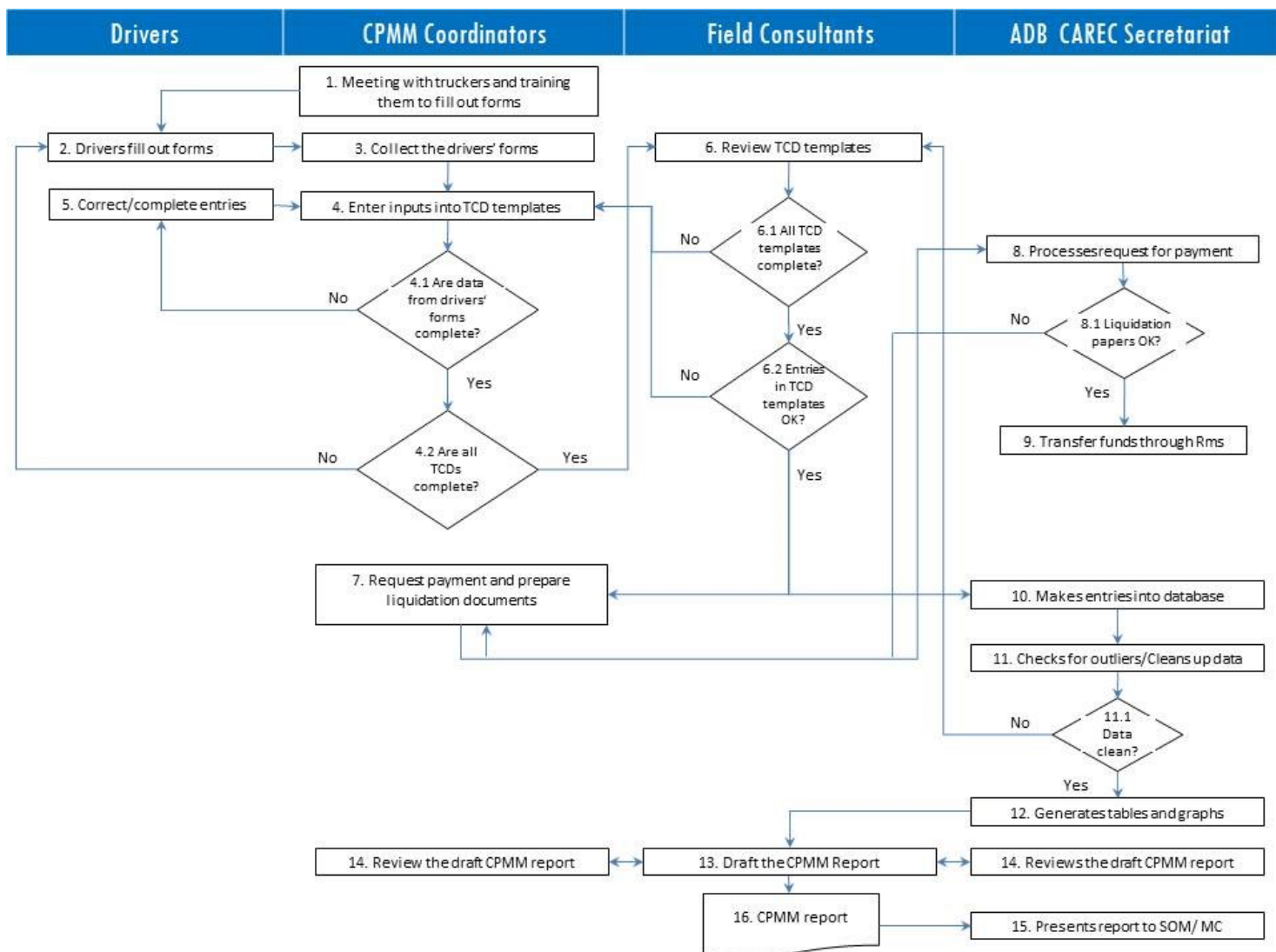
Normalization is done in terms of a 20-ton truck in the case of road transport or in terms of a twenty-foot equivalent unit (teu) in the case of rail traveling 500 kilometers (km). The number of border crossing points (BCPs) for sub-corridors is also normalized for each 500 km segment.

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: Trade Facilitation Indicators

Trade Facilitation Indicators

Corridor	Overall						Road Transport						Rail Transport					
	2012			2013			2012			2013			2012			2013		
	Mean	Median	Margin	Mean	Median	Margin	Mean	Median	Margin	Mean	Median	Margin	Mean	Median	Margin	Mean	Median	Margin
TF11	Time to Clear a Border Crossing Point (hours)																	
Overall	10.9	4.2	± 0.7	10.0	5.3	± 0.5	8.9	3.4	± 0.7	5.6	4.2	± 0.2	24.7	24.0	± 1.3	29.9	24.0	± 1.9
1	13.7	3.0	± 2.0	23.0	8.0	± 2.3	12.4	2.1	± 2.3	8.3	1.3	± 1.6	22.6	17.0	± 2.4	40.2	19.0	± 4.1
2	11.6	5.9	± 1.3	7.2	6.3	± 0.7	11.7	6.0	± 1.4	7.2	6.3	± 0.7	4.0	3.3	± 1.3	-	-	-
3	7.1	5.3	± 0.8	3.2	2.0	± 0.3	7.2	5.4	± 0.8	3.2	2.0	± 0.3	5.1	4.6	± 1.3	5.1	5.2	± 1.9
4	12.2	6.3	± 0.6	10.4	6.6	± 0.5	5.3	4.0	± 0.2	5.5	5.0	± 0.2	26.6	24.0	± 1.5	22.7	24.0	± 1.1
5	8.3	2.3	± 3.1	3.0	2.3	± 0.2	8.3	2.3	± 3.1	3.0	2.3	± 0.2	-	-	-	-	-	-
6	7.5	2.5	± 0.9	6.5	5.6	± 0.4	7.6	2.5	± 0.9	6.5	5.6	± 0.4	3.2	2.4	± 1.2	3.2	3.2	± 0.0
TF12	Cost Incurred at Border Crossing Clearance (US\$)																	
Overall	157	76	± 5	235	120	± 10	146	62	± 5	236	100	± 12	280	145	± 21	229	165	± 15
1	175	45	± 12	233	165	± 17	139	40	± 10	194	58	± 22	465	164	± 59	281	209	± 26
2	166	101	± 10	175	153	± 17	166	101	± 10	175	153	± 17	-	-	-	-	-	-
3	168	103	± 14	55	36	± 10	168	103	± 14	55	36	± 10	-	-	-	-	-	-
4	173	45	± 11	387	310	± 24	172	15	± 15	433	355	± 28	176	144	± 7	171	140	± 11
5	151	100	± 15	123	81	± 13	151	100	± 15	123	81	± 13	-	-	-	-	-	-
6	90	88	± 4	117	100.0	± 9	90	88	± 4	117	100	± 9	-	-	-	-	-	-
TF13	Cost Incurred to Travel a Corridor Section (US\$, per 500km per 20 tons)																	
Overall	999	621	± 42	1,482	1,003	± 51	1,068	670	± 50	1,612	1,135	± 58	638	452	± 46	920	600	± 91
1	1,159	604	± 108	1,344	861	± 112	1,234	603	± 142	1,538	1,064	± 143	864	638	± 88	1,009	599	± 174
2	563	476	± 41	616	497	± 53	541	475	± 37	616	497	± 53	1,613	1,429	± 660	-	-	-
3	1,076	898	± 76	2,167	1,902	± 161	1,076	897	± 82	2,245	1,922	± 162	1,059	914	± 120	403	451	± 121
4	933	725	± 44	1,156	1,224	± 55	1,322	1,364	± 50	1,437	1,378	± 51	428	452	± 19	876	746	± 84
5	1,547	1,228	± 120	2,393	2,451	± 124	1,547	1,228	± 120	2,393	2,451	± 124	-	-	-	-	-	-
6	721	536	± 49	1,149	550	± 114	729	537	± 50	1,153	550	± 114	346	325	± 67	93	93	± 316
TF14	Speed to Travel on CAREC Corridors (in kph), SWD																	
Overall	22.9	25.0	± 2.1	19.9	18.2	± 2.2	25.9	29.4	± 2.0	22.3	20.0	± 2.4	14.5	10.0	± 4.6	12.8	8.5	± 4.1
1	25.2	26.6	± 4.0	23.4	20.3	± 5.9	28.1	29.4	± 4.4	28.0	22.6	± 7.9	18.9	18.7	± 6.9	18.0	18.5	± 6.7
2	22.1	20.9	± 3.6	23.8	22.2	± 5.1	22.1	20.9	± 3.7	23.8	22.2	± 5.1	22.4	20.1	± 21.4	-	-	-
3	21.9	20.7	± 5.3	22.0	21.1	± 4.9	23.5	21.7	± 5.4	21.8	20.8	± 5.1	16.8	15.2	± 16.6	25.6	25.9	± 11.0
4	12.2	8.2	± 3.2	11.6	9.9	± 2.7	20.4	18.6	± 3.0	15.2	14.3	± 3.5	6.7	6.5	± 1.4	7.7	7.2	± 1.4
5	17.3	17.9	± 3.7	18.1	15.9	± 4.3	17.3	17.9	± 3.7	18.1	15.9	± 4.3	-	-	-	-	-	-
6	27.6	30.2	± 4.3	27.7	31.0	± 4.4	28.0	30.2	± 4.2	27.8	31.1	± 4.3	17.0	16.5	± 20.0	16.9	21.6	± 613.2
SWOD	Speed without Delay (in kph)																	
Overall	37.8	35.5	± 3.4	36.1	34.2	± 2.9	39.4	35.5	± 3.9	37.8	35.3	± 2.9	33.5	39.9	± 6.7	30.8	28.4	± 8.1
1	41.9	37.1	± 3.4	47.4	46.3	± 5.1	40.7	35.5	± 4.5	49.3	51.2	± 6.2	44.5	44.0	± 4.1	45.3	42.6	± 8.7
2	42.9	42.4	± 4.5	48.7	49.7	± 4.0	43.1	42.5	± 4.6	48.7	49.7	± 4.0	40.9	41.5	± 24.0	-	-	-
3	44.9	39.0	± 24.0	37.8	37.0	± 7.7	47.1	39.9	± 27.2	37.7	37.0	± 8.0	37.8	38.4	± 10.0	38.7	37.2	± 18.9
4	22.9	19.6	± 4.8	21.4	18.5	± 3.9	34.3	33.0	± 4.8	24.2	23.8	± 4.8	15.3	14.7	± 3.5	18.3	16.8	± 5.5
5	33.1	30.4	± 5.4	28.5	28.1	± 4.2	33.1	30.4	± 5.4	28.5	28.1	± 4.2	-	-	-	-	-	-
6	37.4	35.2	± 4.6	44.5	47.5	± 4.4	37.5	35.2	± 4.7	44.5	47.5	± 4.4	36.2	35.5	± 21.9	37.8	41.4	± 476.0

- 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 5: Cost Structure of TFI3

		Overall						Road Transport						Rail Transport					
		2012		2013				2012		2013				2012		2013			
		Total	Transit	Activity	Total	Transit	Activity	Total	Transit	Activity	Total	Transit	Activity	Total	Transit	Activity			
TFI3	Cost Incurred to Travel a Corridor Section (US\$, per 500km per 20 tons)																		
	Overall	999	830	199	1,482	1,278	227	1,068	875	219	1,612	1,384	248	638	591	76	920	822	123
	1	1,159	949	253	1,344	1,138	240	1,234	983	269	1,538	1,290	249	864	809	156	1,009	874	216
	2	563	455	168	616	510	220	541	431	168	616	510	220	1,613	1,613	-	-	-	-
	3	1,076	912	192	2,167	2,079	98	1,076	907	192	2,245	2,153	98	1,059	1,059	-	403	403	-
	4	933	893	47	1,156	894	263	1,322	1,284	54	1,437	982	454	428	390	38	876	805	71
	5	1,580	1,178	402	2,393	2,131	262	1,580	1,178	402	2,393	2,131	262	-	-	-	-	-	-
	6	719	549	192	1,149	937	224	726	553	192	1,153	941	224	346	346	-	93	93	-
%	Percentage																		
	Overall	81%	19%	85%	15%	80%	20%	85%	15%	89%	11%	87%	13%						
	1	79%	21%	83%	17%	79%	21%	84%	16%	84%	16%	80%	20%						
	2	73%	27%	70%	30%	72%	28%	70%	30%	100%	0%								
	3	83%	17%	95%	5%	83%	17%	96%	4%	100%	0%	100%	0%						
	4	95%	5%	77%	23%	96%	4%	68%	32%	91%	9%	92%	8%						
	5	75%	25%	89%	11%	75%	25%	89%	11%										
	6	74%	26%	81%	19%	74%	26%	81%	19%	100%	0%	100%	0%						

Appendix 6: CAREC Border Crossing Points

	Corridor	Country	BCP	Country	BCP
1	1a	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, 5	PRC	Yerkeshitan	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	3b, 5	KGZ	Karamyk	TAJ	Karamyk
17	5, 6c	AFG	Shirkhan Bandar	TAJ	Panji Poyon
18	3a, 3b	KAZ	Aul	RUS	Veseloyarsk
19	3a, 6b, 6c	KAZ	Zhibek Zholy - Saryagash/Yallama	UZB	Gisht Kuprik - Keles
20	3a	TKM	Saraks	IRN	Sarakhs
21	3b	TAJ	Pakhtaabad	UZB	Saryasia
22	3a, 6a, 6b	AFG	Hairatan	UZB	Termez /Airatam
23	3b, 6b	AFG	Islam Qala	IRN	Dogharoun
24	4a	MON	Ulaanbaishint/Tsagaanur	RUS	Tashanta
25	4a	PRC	Takehikent	MON	Yarant
26	4b	MON	Sukhbaatar	RUS	Naushki
27	4b	PRC	Erenhot	MON	Zamiin-Uud
28	6a	KAZ	Kurmangazy (road)/Ganyushking (rail)	RUS	Krasnyi Yar (road)/Aksaraskaya (rail)
29	6c	TAJ	Istaravshan	UZB	Khavast
30	5	AFG	Torkham	PAK	Peshawar

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