CENTRAL ASIA REGIONAL ECONOMIC COOPERATION
TRADE FACILITATION

CAREC CPMM
CORRIDOR PERFORMANCE MEASUREMENT & MONITORING

ANNUAL REPORT
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CAREC

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

For more information, log on to CAREC Federation of Carrier and Forwarder Association (CFCFA) website **http://cfcfa.net/** and visit the CPMM page on **http://cfcfa.net/cpmm/.**

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Abbreviations

AAFFCO	–	Association of Afghanistan Freight Forwarders Companies
ABADA	–	Azerbaijan International Road Carriers Association
ABBAT	–	Association of International Automobile Carriers of Tajikistan
ADB	–	Asian Development Bank
ADBL	–	Business Development Logistics Association of Uzbekistan
AIRCUZ	–	Association of International Road Carriers of Uzbekistan
BCP	–	border crossing point
CAREC	–	Central Asia Regional Economic Cooperation
CIFA	–	China International Freight Forwarders Association
CIQ	–	Customs, Immigration and Quarantine
CPMM	–	Corridor Performance Measurement and Monitoring
CV	–	coefficient of variation
EU	–	European Union
FOA	–	Freight Operators Association of Kyrgyz Republic
GAI	–	State Automobile Inspectorate
IMAR	–	Inner Mongolia Autonomous Region
IMLA		Inner Mongolia Autonomous Region Logistics Association
IRU	–	International Road Transport Union
KFFA	–	Kazakhstan Freight Forwarders Association
kph	–	kilometer per hour
MNCCI	–	Mongolia National Chamber of Commerce and Industry
NARTAM	–	National Road Transport Association of Mongolia
PRC	–	People's Republic of China
QR	–	Quarterly Report
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.

Executive Summary

In 2011, 4,754 samples on road, rail and multimodal shipments were collected. The top five commodity categories, agricultural products, machineries, textiles and industrial materials, accounted for 58% of all shipments tracked. Fruits and vegetables remained to be the most popular product transported in Central Asia.

Trade Facilitation Indicators (TFI) displayed varying degrees of improvements. *TFI* (Time to cross border) and *TFI4* (speed along CAREC corridors) showed slight improvement, while *TFI2* (cost to cross border) registered significant improvement. However, *TFI3* (cost to travel along CAREC corridors) experienced a noticeable increase. This was largely attributed to the high vehicle operating cost in Tajikistan section along Corridor 5, as well as the challenges faced by drivers in the Afghanistan section.

Speed indicators, speed without delay (SWOD) and speed with delay (SWD)[1], revealed various differences among the six CAREC Corridors. For road transport, SWOD and SWD ranged between 31-52 kph and 19-30 kph, respectively. Vehicles moving along Corridor 1 enjoyed a relatively high speed while vehicles moving along Corridor 5 travelled at low speed. At the sub-corridor level, slowest speeds were recorded at 3b, 5 and 6c (SWOD) and 2b, 4b and 5 (SWD). Further examination showed that two border crossing activities (*customs clearance* and *waiting time at border*) were the most frequently cited reasons as well as the most extensive causes of delays. In terms of costs, the top five most commonly encountered payments were for customs *clearance, weight inspection, phyto-sanitary, visa/immigration,* and *veterinary inspections.*

For trains, rail speed averaged 11-38 kph along the six CAREC Corridors. In this mode of transport, trains travelling along Corridor 1 moved fastest, while those along Corridor 4 moved the slowest. Major causes of delays include change of *gauge, classification of trains,* and *waiting time in queue.* In terms of costs, *security services* (China Railways), *change of gauge, clearance fees,* and *loading/unloading* were key cost contributors. Corridor 1 serves as a key transit route for Chinese exports, such as manufactured consumer goods and machineries, to access European markets. Road vehicles moved through this corridor at speeds exceeding 50 kph. **Khorgos-Khorgos (China-Kazakhstan)** and **Ala Shankou-Dostyk (China-Kazakhstan)** continue to be the BCPs where long delays were reported.

Corridor 2 is heavily used by Chinese exporters to send goods into Central Asia, as well as by Uzbekistan traders to ship fresh vegetables, dried fruits, and cotton. Vehicles move at around 40 kph. The BCPs which reflected significant time delays are **Yierkesitan-Irkeshtan (China-**Kyrgyzstan**), Tazhen-Dautota (Kazakhstan-Uzbekistan)** and **Alat-Farap (Uzbekistan-Turkmenistan)**. Meanwhile, there was little transit movement observed across the Caspian Sea.

Corridor 3 is a north-south corridor linking Russia to Iranian ports in the south, through Central Asia. Although vehicles move relatively fast at 40 kph along Corridor 3, different sections reveal different scenarios. Trucks on 3a move at 51 kph, while on 3b travel at 37 kph. Along this corridor, two major BCP pairs showed some reduction in border crossing time[2], namely **Konysbaeva-Yallama (Kazakhstan-Uzbekistan)** and **Alat-Farap (Uzbekistan-Turkmenistan)**. Unfortunately, **Sarakhs-Sarahs (Iran-Turkmenistan)** continued to require much time due to waiting time in queue, customs clearance, escort/convoy and loading/unloading.

Corridor 4 is a Trans-Mongolian corridor. Railways play an important part especially for transit shipments. Apart from trains moving slowly at 11 kph, border crossing delays can be severe during peak periods due to the limited number of cranes at Erenhot and Zamyn-Uud to conduct trans-loading. Another bottleneck occurs at the Chinese port near Tianjin. Mongolian exports and imports could take a few days to clear and continue their journey. For road shipments, Russian and Chinese exports terminate at Ulaanbaatar. Moreover, it was observed that, for both rail and road shipments, imports are more expensive than exports. This is attributed to the imbalance of trade between Mongolia and its neighboring countries (Russia and China). Along this corridor, the two key BCP pairs of **Zamyn Uud-Erenhot (Mongolia-China)** and **Nauskhi-Sukhbaatar (Russia-Mongolia)** have consistently held the record of longest border-crossing time among all CAREC BCPs. Causes of delay include change of *gauge, waiting time in queue,* and *customs clearance.*

Corridor 5 turned out to be the slowest and most expensive corridor in 2011. Vehicles move at 31 kph on average. Although the corridor has a very attractive potential to offer the shortest route from Central Asia to Pakistan seaports in the south, various challenges remain that hinder widespread use of this route. To increase the viability of Corridor 5, border crossing efficiency has to be increased at two major areas, **Yierkeshitan-Irkeshtam (China -Kyrgyzstan)** and **Karamik-Karamik (Kyrgyzstan-Tajikistan)**. In these BCP pairs, *border security check, waiting time in queue,*

1 Please refer to Page 5 for a detailed explanation on the difference between SWOD and SWD.
2 Comparisons between 2010 and 2011.

and *customs clearance* were cited as the principal causes of delays.

Corridor 6 is a north-south corridor and offers access to Pakistani and Iranian seaports in the south. On average, vehicles move at 38 kph on road. While the vehicle's speed on 6a and 6b exceeded 40 kph, trucks moving on 6c averaged only 33 kph, due to poorer physical infrastructure. All five major BCP pairs along Corridor 6, **Dautoat-Tazhen (Uzbekistan-Kazakhstan), Kurmangazy-Kransni Yar (Kazakhstan-Russia), Ayratan-Hairatan (Uzbekistan-Afghanistan), Konysbaeva-Yallama (Kazakhstan-Uzbekistan),** and **Hairatan-Termez (Afghanistan-Uzbekistan)**, showed varying degrees of delay**.**

CPMM results provide useful insights on the relative performance of road and rail transport in Central Asia, as well as identify locations where improvements are needed. Under CAREC, renovations of BCPs, harmonization of customs procedures, automation of information systems, adoption of single window facilities and better border control risk management systems remain priority initiatives to facilitate smoother and more cost-effective transport in Central Asia.

The 2011 CPMM Annual Report offers much more information to the readers. Data and tables such as cargo movement (to describe direction of trade), margin of errors (for TFIs), seasonal decomposition of time and cost information, and separate analyses of road and rail transport are featured in the succeeding sections. Striving to improve further the quality and reliability of the study, the CPMM methodology, data gathering and data dissemination are reviewed and enhanced to better suit the needs of its stakeholders.

CPMM has reached a key juncture. While it is heartening to see improvements in certain locations and performance indicators, there are still many areas that need improvement. In each of the six CAREC Corridors, bottlenecks and causes of delay are identified. To effectively address these bottlenecks, there is need for the public and private sectors to engage in meaningful and sustained dialogue. Key decisions on physical transport infrastructure, cross border procedures and practices, as well as capacity building in the transport and logistics sector are much needed. In this aspect, the Asian Development Bank, through CAREC, will continue to play a facilitating role, funding key investments and responding to requests for technical assistance.

I. Background

2011 was an interesting year for Central Asia; (i) a customs union was created between Russia, Belarus and Kazakhstan, (ii) Pakistan and Turkmenistan have joined Central Asia Regional Economic Cooperation (CAREC), (iii) Afghanistan is now a signatory member under the IRU's TIR system, and (iv) negotiations for new bilateral and multi-lateral transit agreements were initiated.

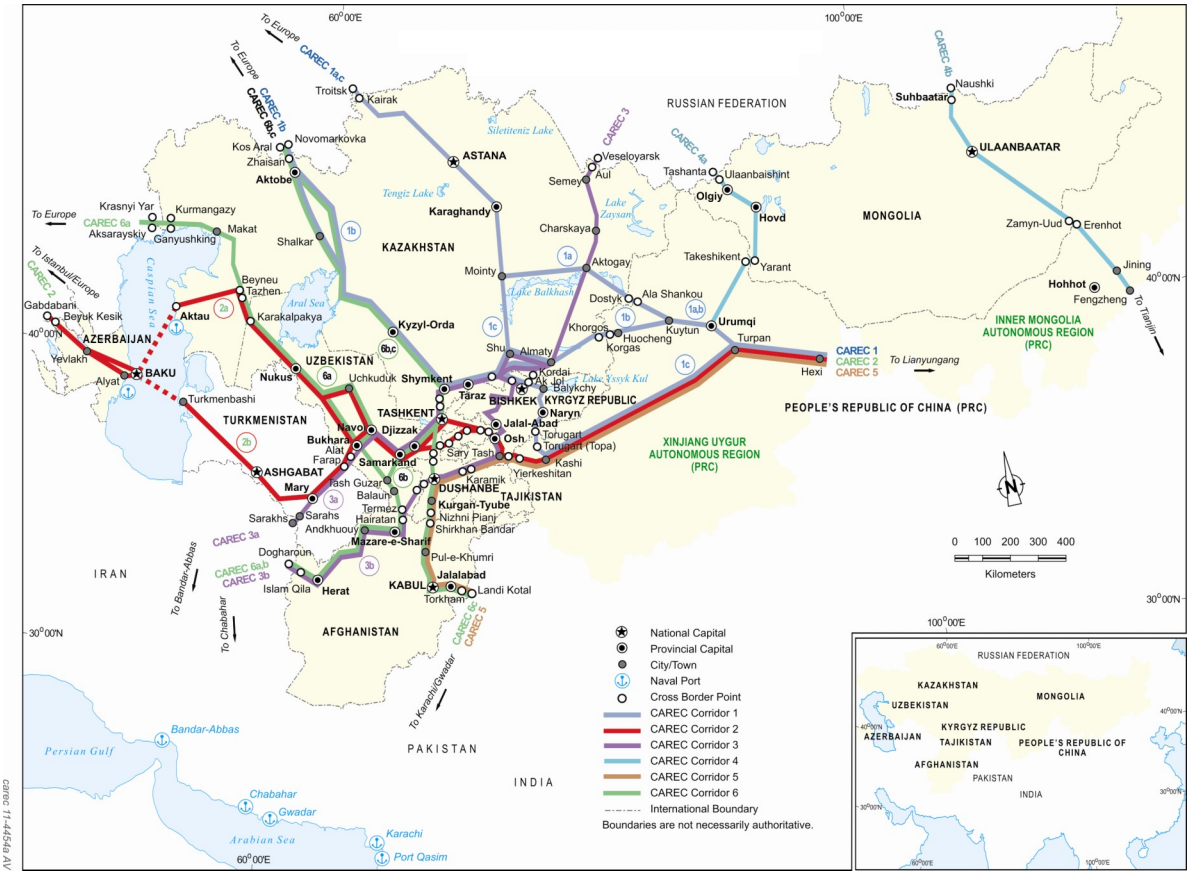
Corridor Performance Measurement and Monitoring (CPMM) is a region-wide study of transport and trade efficiency in Central and East Asia. Pivotal to the data collection is the traffic volume along six CAREC corridors, which provides the basis for measurement of the time and cost for shipments to move through these corridors. Using Time-Cost-Distance (TCD) methodology as its foundation, the working team customized the methodology to produce CPMM, which is designed for land-locked countries with heavy reliance on road and rail transport. Sponsored by ADB, the project has entered its fourth year. This report summarizes the findings from key data collected in 2011.

Recognizing the important roles which trade facilitation and transport connectivity play in determining the future of the region, the CAREC Transport and Trade Facilitation Strategy (TTFS), and its Implementation Action Plan, focus on the development of six priority CAREC transport corridors. The six priority corridors are:

CAREC 1: Europe–East Asia (KAZ, KGZ, and XUAR)
CAREC 2: Mediterranean–East Asia (AZE, KAZ, KGZ, TAJ, UZB, and XUAR)
CAREC 3: Russian Federation–Middle East and South Asia (AFG, KAZ, KGZ, TAJ, and UZB)
CAREC 4: Russian Federation–East Asia (MON, IMAR, and XUAR)
CAREC 5: East Asia–Middle East and South Asia- (AFG, KGZ, TAJ, and XUAR)
CAREC 6: Europe–Middle East and South Asia (AFG, KAZ, TAJ, and UZB)

AFG-Afghanistan; AZE-Azerbaijan; KAZ-Kazakhstan; KGZ-Kyrgyz Republic; MON-Mongolia; TAJ-Tajikistan; UZB-Uzbekistan; IMAR-Inner Mongolia Autonomous Region of the People's Republic of China (PRC); XUAR-Xinjiang Uygur Autonomous Region of the PRC.

Six Central Asia Regional Economic Cooperation Corridors



1 The Joint Transport and Trade Facilitation Strategy (TTFS) was endorsed by the CAREC Ministerial Conference (MC), in November 2007 in Dushanbe, Tajikistan and the corresponding Action Plan endorsed by the MC in 2008.

II. Data Description

From January to December 2011, a total of 4,754 samples of data were collected from 14 partner carrier and forwarder associations, compared to 4,061 samples in year 2010. This 17% increase is due mainly to the increased efforts of participating associations in data collection as 10 of the 14 associations were able to collect the target number of 30 samples per month. Using these data, estimates of cost, delay, and speed indicators were computed and then compared to the 2010 values.

According to the samples, road continued to be the dominant mode of transport monitored, accounting for 79% of all cargo shipments measured. Rail transport, on the other hand, accounted for 18%. Measurement of multi-modal transport was rare, contributing only 3%. These include samples of transport utilizing a combination of road, rail, or waterborne movements. Of the total samples of road transport, only 60% utilized TIR. A preponderance (72%) of all shipments crossed borders (different country of origin from country of destination), while 28% were shipments within the same country (domestic distribution).

A new classification system was used in 2011 to group similar products. Using the 2-digit harmonized system codes (HS code), twenty two categories of products are listed. The final category (CC23) was included as 'Others' for unique products that could not be classified under the system.

According to CPMM, the top five products that moved across the region in 2011 were *agricultural products, manufactured items, machineries, textiles, and industrial materials*. These mentioned items accounted for 58% of the total cargo movements. Of all cargo shipments, 19% were perishables, similar to the reported figures in 2010.

In 2011, fruits and vegetables were the most commonly transported goods. They were shipped by trucks and moved among Kazakhstan, Uzbekistan, Tajikistan, and Kyrgyz Republic. According to the samples, almost all of the commodities were transported by road except for minerals, wood, and vehicles, which were mostly transported by rail. Machineries and manufactured items originated mostly from Urumqi. They traveled west, entering either Kazakhstan or Kyrgyz Republic.

Trade flows and volume of exports/imports are often analyzed to understand cross-border trade in a particular region. CPMM data are only a sample of trade within the CAREC region and may not be as comprehensive as other international trade data. However, since the CPMM partners are associations of national carriers or freight forwarders, and work closely with leading transport companies, the data collected share a degree of resemblance to the actual trade flows in the region. This trade flow is exhibited in the graph and table under cargo movement.

It is notable that the two top exporting countries are PRC and Russia. Over the years, these two have emerged as the largest trading partners of most CAREC countries. As CPMM data monitors only the number of shipments but not the value of goods, it can only imply that the number of loaded trucks entering Central Asia from PRC and Russia most likely outnumbered the number of loaded trucks heading the other direction.

On the other hand, the two top importing countries are Kazakhstan and Mongolia, primarily because these two countries have indispensable roles to play as transit nations. Kazakhstan is heavily featured in Corridor 1 as the land bridge between PRC to Central Asia, Russia, and Europe. Likewise, Mongolia plays a central role in Corridor 4 facilitating transit traffic between PRC and Russia.

Another interesting observation is the comparison between intra-regional trade among the CAREC member countries and non CAREC member countries. Do CAREC member countries trade extensively among them, or do they trade more with external partners like Russia and Europe?

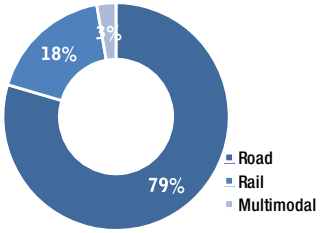
Cross-border Trade
between CAREC and non-CAREC countries

Origin	Destination			
	CAREC		Non-CAREC	
CAREC	2,030	59%	550	16%
Non-CAREC	843	25%	9	0%

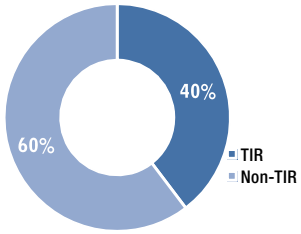
As mentioned above, cross-border trade accounted for 72% of all the samples; the rest were domestic distribution. Further examination of this trend reveals that 59% are shipments between CAREC countries. Trade between a CAREC country and a non CAREC country comprise 41% (16% exports, 25% import). Intra-regional trade is high due to two reasons. First, poor physical infrastructure and the land-locked nature of most CAREC countries make it difficult to transport goods across long distances, however great the demand. Second, the perishable nature of agricultural produce, one of the most transported commodities, limits the distribution coverage of these items.

Data Profile

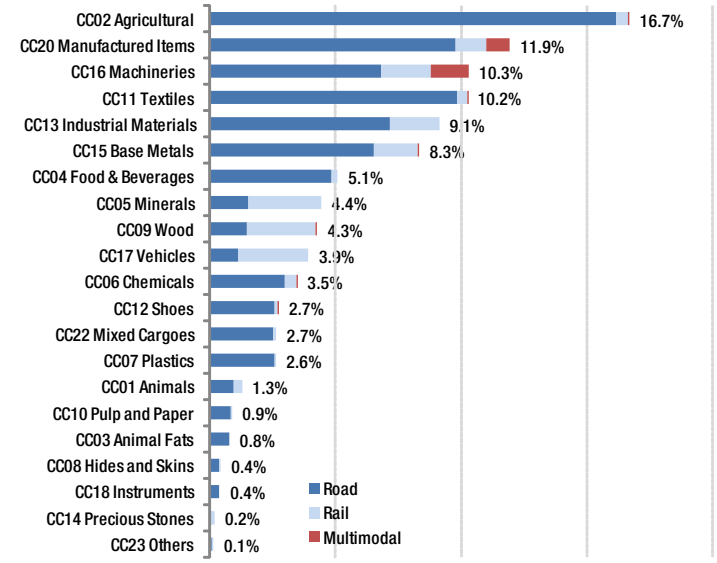
Mode of Transport



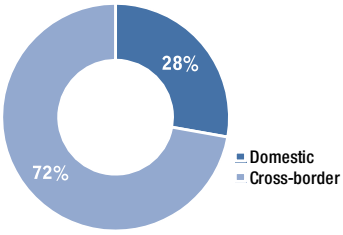
Use of TIR



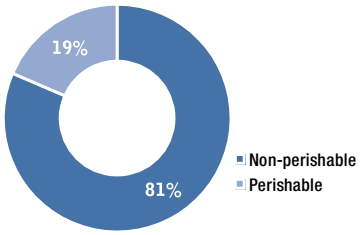
Type of Commodities Transported, by mode of transport



Cross-border Transports

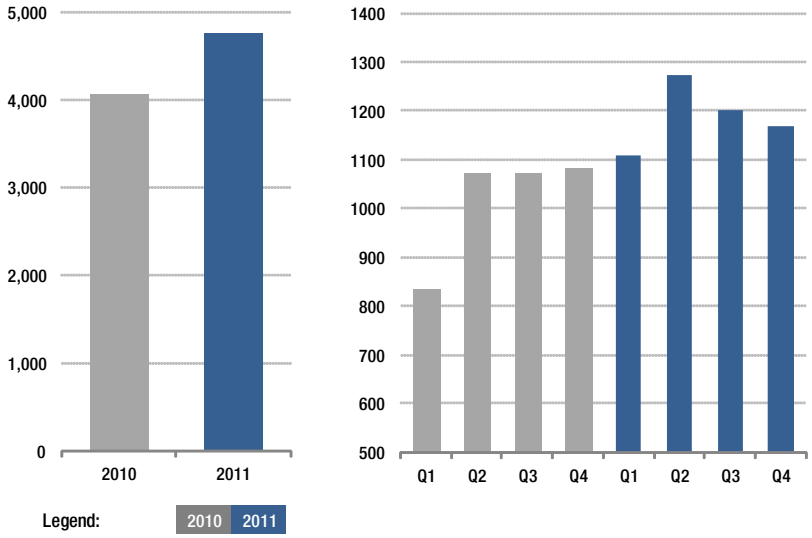


Perishable Cargo



Data Sample

TCD sample

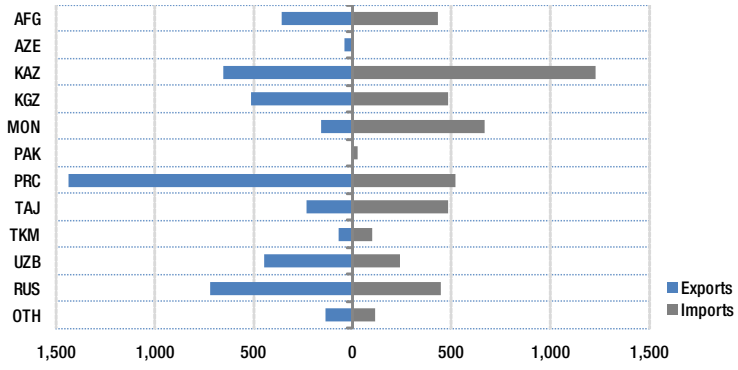


2011 TCD Sample by Association

Country	Association	2011 Q1	2011 Q2	2011 Q3	2011 Q4	2011	2010
AFG	AAFFCO	90	90	90	90	360	360
AZE	ABADA	14	35			49	23
KAZ	KAZATO	90	90	90	90	360	270
	KFFA	90	90	90	90	360	360
KGZ	AIA	45	69	90	90	294	70
	FOA	90	90	90	90	360	194
	KGZFFA					0	2
MON	NARTAM	90	90	90	90	360	340
	NTTFC	90	90	90	90	360	360
PRC	CFXU	61	90	90	90	331	210
	CIFA	90	90	30		210	340
	IMAR	90	90	90	90	360	420
	XUAR		90	90	90	270	32
TAJ	ABBAT	90	90	90	90	360	360
UZB	ADBL	90	90	90	90	360	360
	AIRCUZ	90	90	90	90	360	360
Total		1,110	1,274	1,200	1,170	4,754	4,061

Cargo Movement

Exports and Imports by Country, count based on sample



Origin	Destination AFG	AZE	KAZ	KGZ	MON	PAK	PRC	TAJ	TKM	UZB	RUS	OTH	Total
AFG	356												356
AZE												39	39
KAZ			470	90			1	3	7	38	40	1	650
KGZ	8		103	5			12	135	3	4	217	25	512
MON					39		120						159
PAK													
PRC			382	242	362	29	277	112		29	4		1437
TAJ	58		1					169	2		1		231
TKM			8	7				25	1	23		3	67
UZB	4	1	119	4				13	85	2	184	36	448
RUS			116	101	268		111	10	1	106	1	7	721
OTH	6	2	28	36				15	1	42	2	2	134
Total	432	3	1,227	485	669	29	521	482	100	244	449	113	4,754

III. Trade Facilitation Indicators

CAREC Results Framework

The CAREC Senior Officials Meeting in May 2009 in Ulaanbaatar, Mongolia considered a proposal to develop a CAREC Program Results Framework that will serve as the basis for an annual comprehensive development effectiveness review to track progress and achievements. The indicators for trade facilitation were discussed and approved at the Regional Joint Transport and Trade Facilitation Meeting held in Tashkent, Uzbekistan in February 2010.

In 2011, the trade facilitation indicators (TFIs) exhibited various levels of improvement. Though the time taken to clear a border crossing point (TFI1) and the speed to travel along CAREC corridors (TFI4) remained relatively unchanged, the cost incurred at border crossing clearance (TFI2) showed a significant drop while the cost incurred to travel a corridor section (per 500km, per 20-ton cargo, TFI3) showed a noticeable increase.

As these four indicators monitor the sum of actions taken by many different entities involved in trade facilitation in the CAREC countries, it is not possible to directly attribute improvement to CAREC-related activities. However, contributing factors, carried out under CAREC, may include: (i) renovation of BCPs by CAREC countries and 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 automating customs information systems; and (iv) moves toward establishing national single windows and upgrading border control risk management systems.

Trade Facilitation Indicators

	Indicator	2010 Mean	2010 Median	2010 Margin	2011 Mean	2011 Median	2011 Margin
TFI1	Time to Clear a Border Crossing Point (in hours)	8.7	4.1	± 0.4	7.9	4.1	± 0.5
TFI2	Cost Incurred at Border Crossing Clearance (in US$)	186	114	± 4	156	90	± 4
TFI3	Cost Incurred to Travel a Corridor Section (in US$, per 500km per 20 ton)	712	405	± 29	959	637	± 27
TFI4	Speed to Travel on CAREC Corridors (in kph), SWD	23.5	22.6	± 1.9	21.9	20.2	± 1.6
SWOD	Speed without Delay (in kph)	35.2	37.5	± 3.3	38.0	39.9	± 2.1

TFI1: Time to Clear a Border Crossing Point (in hours)

Road Transport

In 2011, the duration to clear a border crossing point (TFI1) declined slightly (by 2%) to 6.2 hours. This is mainly due to the significant decline in delays in clearing BCPs in Corridor 1, 3, and 6. The data on border crossing along these corridors had one thing in common – they all passed through Kazakhstan and crossed Kazakh-Russian BCPs. A Russia-Belarus-Kazakhstan customs union was formed and became operational in July 2010. This resulted in varying degrees of improvement in border crossing times among corridors. In Corridor 1, the time to clear a BCP dropped from 12.7 hours to 6.2 hours – a significant 51% drop.

Corridor 5, on the other hand, revealed a different scenario. The average duration to clear a BCP in this corridor rose from 1.8 hours to 6.8 hours. According to data, the major bottlenecks happened at Yierkeshitan (PRC)-Irkeshtan (KGZ). There was an increase in shipments transported on Corridor 5 in 2011, especially for goods going to Tajikistan and Afghanistan. It seemed PRC traders were sending significant volume of goods to Kabul. Long waiting time and border security checks at the two BCPs were the primary causes of delay.

Rail Transport

The time to clear a BCP for rail transport increased slightly from 22.1 hours to 22.3 hours. This increase is reflected in Corridors 2, 4, and 6. Beyneu and Aktau were the two BCPs responsible for the significant increase in BCP crossing time by rail in Corridor 2. Loading/unloading, waiting time and classification of trains were reported to be the main causes of the delays.

Moreover, Corridor 6 experienced a sharp increase in border crossing time, rising by 85% to 3.4 hours. This was primarily caused by the delays at the Kazakhstan BCP Ganyushking, where loading/unloading and waiting time averaged 3 to 4 hours for each activity.

Though rail transport exhibited an increase in the duration to clear a BCP, the overall indicator (road and rail) showed an improvement in border-crossing duration since the majority of transport is comprised of road shipments.

Trade Facilitation Indicators

		Overall						Road						Rail					
		2010			2011			2010			2011			2010			2011		
	Corridor	Mean	Median	Margin	Mean	Median	Margin	Mean	Median	Margin	Mean	Median	Margin	Mean	Median	Margin	Mean	Median	Margin
	TFI1: Time to Clear a Border Crossing Point (in hours)																		
TFI1	Overall	8.7	4.1	± 0.4	7.9	4.1	± 0.5	6.3	3.5	± 0.4	6.2	3.6	± 0.2	22.1	13.0	± 0.9	22.3	12.0	± 3.6
	1	17.9	6.0	± 1.6	8.5	3.3	± 0.6	12.7	2.3	± 2.7	6.2	2.5	± 0.5	24.5	14.0	± 1.5	21.2	8.2	± 2.2
	2	6.5	4.0	± 0.9	8.6	7.2	± 0.5	6.5	4.0	± 0.9	8.6	7.2	± 0.5	2.0	1.3	± 0.7	5.0	4.6	± 0.7
	3	7.8	7.0	± 0.5	5.5	3.8	± 0.6	7.7	7.0	± 0.5	5.5	3.8	± 0.6	8.8	12.0	± 1.6	3.3	2.3	± 1.8
	4	7.2	3.8	± 0.4	10.3	5.0	± 2.0	4.0	3.6	± 0.2	4.9	3.6	± 0.2	21.0	22.3	± 1.0	24.4	16.5	± 6.3
	5	1.8	1.3	± 0.1	6.8	2.9	± 0.6	1.8	1.3	± 0.1	6.8	2.9	± 0.6	-	-	-	-	-	-
	6	7.5	7.6	± 0.4	5.6	3.8	± 0.3	7.6	7.7	± 0.4	5.6	3.9	± 0.3	1.8	1.7	± 0.2	2.8	2.2	± 0.8
	TFI2: Cost Incurred at Border Crossing Clearance (in US$)																		
TFI2	Overall	186	114	± 4	156	90	± 4	192	118	± 5	148	89	± 4	160	50	± 9	223	100	± 14
	1	159	66	± 9	156	69	± 8	174	77	± 14	143	69	± 8	143	50	± 12	235	100	± 27
	2	216	154	± 12	142	140	± 6	216	154	± 12	142	140	± 6	214	214	± 0	-	-	-
	3	113	89	± 7	91	58	± 6	113	89	± 7	91	58	± 6	-	-	-	-	-	-
	4	215	118	± 10	182	45	± 11	222	118	± 12	169	30	± 15	195	100	± 16	213	100	± 15
	5	147	156	± 5	201	102	± 25	147	156	± 5	201	102	± 25	-	-	-	-	-	-
	6	317	318	± 14	149	140	± 5	317	318	± 14	149	140	± 5	-	-	-	-	-	-
	TFI3: Cost Incurred to Travel a Corridor Section (in US$, per 500km per 20 ton)																		
TFI3	Overall	712	405	± 29	959	637	± 27	758	382	± 38	1,055	704	± 33	571	508	± 27	503	424	± 23
	1	637	463	± 37	803	481	± 51	744	515	± 60	909	529	± 71	503	429	± 39	477	333	± 36
	2	607	416	± 65	679	524	± 37	595	416	± 66	679	523	± 39	907	882	± 354	665	577	± 99
	3	557	299	± 54	1,012	502	± 88	524	282	± 61	1,040	515	± 96	759	635	± 88	476	445	± 89
	4	1,171	826	± 107	1,213	860	± 65	1,552	1,189	± 173	1,663	1,441	± 87	617	684	± 36	536	531	± 32
	5	352	276	± 33	1,592	1,198	± 107	352	276	± 33	1,592	1,198	± 107	-	-	-	-	-	-
	6	906	467	± 90	929	666	± 51	939	465	± 99	950	690	± 55	528	467	± 122	414	350	± 63
	TFI4: Speed to Travel on CAREC Corridors (in kph), SWD																		
TFI4, SWD	Overall	23.5	22.6	± 1.9	21.9	20.2	± 1.6	24.4	23.3	± 1.8	24.5	23.5	± 1.5	22.3	13.5	± 5.1	17.7	13.0	± 4.5
	1	28.8	28.0	± 4.3	25.6	22.0	± 3.2	29.5	25.3	± 5.6	29.9	29.7	± 3.4	28.4	29.5	± 6.5	21.9	17.0	± 6.1
	2	26.1	27.1	± 4.0	22.7	22.3	± 2.8	25.5	26.7	± 3.9	22.5	22.1	± 2.7	31.3	33.5	± 34.8	24.9	23.3	± 21.8
	3	23.1	21.8	± 2.8	22.4	23.3	± 3.9	22.3	21.4	± 2.7	22.9	23.7	± 3.8	25.7	31.9	± 10.2	20.6	20.7	± 16.0
	4	11.9	8.3	± 3.0	11.8	8.1	± 2.8	20.1	18.6	± 3.3	20.1	17.7	± 2.7	6.7	6.3	± 1.6	6.5	6.4	± 1.6
	5	23.8	24.3	± 2.3	19.4	21.8	± 3.6	23.8	24.3	± 2.3	19.4	21.8	± 3.6	-	-	-	-	-	-
	6	24.8	26.8	± 5.2	22.9	23.6	± 3.1	21.7	22.1	± 5.1	23.5	24.1	± 2.8	32.0	30.9	± 13.9	20.8	16.4	± 17.8
	Speed without Delay (in kph)																		
SWOD	Overall	35.2	37.5	± 3.3	38.0	39.9	± 2.1	41.0	41.9	± 3.8	43.0	43.5	± 1.9	27.2	25.3	± 5.5	30.1	34.3	± 5.4
	1	39.2	42.8	± 7.5	44.6	46.3	± 3.2	48.6	49.3	± 13.1	52.1	53.2	± 3.0	33.8	41.3	± 6.8	38.0	41.0	± 5.9
	2	40.4	44.3	± 5.0	40.0	43.3	± 3.5	40.9	44.8	± 4.9	40.4	43.5	± 3.5	35.4	39.0	± 37.0	36.1	38.5	± 23.8
	3	41.1	44.8	± 3.9	40.8	38.9	± 4.6	44.5	47.2	± 3.3	43.2	44.0	± 4.6	28.9	34.8	± 11.9	32.8	34.9	± 12.3
	4	22.1	12.9	± 9.1	22.6	13.7	± 6.8	40.1	28.3	± 12.9	41.0	35.8	± 7.6	10.8	9.3	± 3.3	11.0	9.9	± 2.7
	5	29.9	29.9	± 2.9	30.5	30.6	± 3.2	29.9	29.9	± 2.9	30.5	30.6	± 3.2	-	-	-	-	-	-
	6	40.8	42.3	± 4.9	36.7	36.2	± 2.8	41.5	45.0	± 5.2	37.6	38.2	± 2.8	39.3	38.8	± 15.4	33.2	32.4	± 9.9

Note: The term "margin" in the table refers to absolute margin of error, at 95% level of confidence, in the mean estimates.

CPMM uses two measures of speeds, namely Speed without Delay (SWOD) and Speed with Delay (SWD). SWOD is derived as a ratio of the distance travelled to the time spent by a vehicle in motion between origin and destination (actual traveling time). On the other hand, SWD is derived as the ratio of distance travelled to the total time taken to traverse the entire journey, which includes transit time as well as time spent on stop activities. In CPMM, all activities that delay transit (such as customs clearance, inspections, loading/unloading and police checkpoints, among others) are recorded by drivers. SWOD represents a measure of the condition of physical infrastructure (such as road and railways), while SWD is an indicator of the efficiency of border crossing points along the corridors.

Components of Normalized Cost
To travel a 500-km corridor section

		Overall						Road						Rail					
		2010			2011			2010			2011			2010			2011		
	Corridor	Total	Transit	Activity	Total	Transit	Activity	Total	Transit	Activity	Total	Transit	Activity	Total	Transit	Activity	Total	Transit	Activity
	TFI3: Cost Incurred to Travel a Corridor Section (in US$, per 500km per 20 ton)																		
Average	Overall	712	621	200	959	822	166	758	650	236	1,055	898	182	571	545	45	503	462	60
	1	637	519	165	803	640	200	744	551	230	909	705	226	503	481	38	477	441	68
	2	607	536	130	679	603	96	595	517	131	679	601	96	907	1,071	87	665	665	-
	3	557	482	208	1,012	939	159	524	427	208	1,040	965	159	759	759	-	476	476	-
	4	1,171	1,339	37	1,213	1,187	31	1,552	2,049	24	1,663	1,661	13	617	565	52	536	481	55
	5	352	247	176	1,592	1,256	336	352	247	176	1,592	1,256	336	-	-	-	-	-	-
	6	906	341	709	929	724	220	939	322	709	950	737	220	528	528	-	414	414	-
Percent	Overall		76%	24%		83%	17%		73%	27%		83%	17%		92%	8%		88%	12%
	1		76%	24%		76%	24%		71%	29%		76%	24%		93%	7%		87%	13%
	2		80%	20%		86%	14%		80%	20%		86%	14%		92%	8%		100%	0%
	3		70%	30%		85%	15%		67%	33%		86%	14%		100%	0%		100%	0%
	4		97%	3%		97%	3%		99%	1%		99%	1%		92%	8%		90%	10%
	5		58%	42%		79%	21%		58%	42%		79%	21%		-	-		-	-
	6		33%	67%		77%	23%		31%	69%		77%	23%		100%	0%		100%	0%

Note:

- The sum of the averages, of transit and activity costs, is not equal to the average of the sum, total cost. This is due to zero component in the sum which is not included in their individual averages.
- Percentages are derived as the ratio to the sum of transit and activity cost average.

TFI2: Cost Incurred at Border Crossing Clearance (in US$)

Road Transport

In general, the cost incurred at border crossing points is lower compared to estimates in 2010, except for Corridor 5. A sizeable jump in cost from $147 to $201 (a 37% increase) in Corridor 5 was traced to Karamik (KGZ)-Karamik (TAJ) BCPs. In July 2011, volumes of construction materials such as cement, steel and plastic pipes were transported from Urumqi to Dushanbe. The trucks travelled to Kashi, where they crossed Irkeshtan into Kyrgyz Republic. There, the trucks headed to Karamik and entered Tajikistan, unloading the goods at Dushanbe. Customs clearance costs between $1,300 and $1,700 per shipment were assessed at Kyrgyz Republic's Karamik BCP, but cost only $300 to $500 at the Karamik BCP on the Tajik side. These movements continued into August and September. Drivers revealed that the high customs clearance fees were unofficial payments. Collected as 'road usage fee', the customs officials did not issue official receipts for these payments. In addition, the drivers reported that no such payments were collected in 2010.

Rail Transport

Costs incurred at BCPs increased in all corridors using rail transport. In Corridor 1, a significant cost increase took place at Alashankou (PRC)-Dostyk (KAZ). Average border crossing at each of these BCP cost $300-$400. Interestingly, the cost increases in these two BCPs were of different causes. In Alashankou, the main costs consisted of customs clearance, loading/unloading and security services (unique to PRC, where escort service is mandated by law), while in Dostyk, the costly activities were customs clearance and change of gauge.

Again, though rail border clearance cost increased, the overall indicator revealed a substantial decline in border-crossing costs since the majority of transport is comprised of road shipments.

TFI3: Cost Incurred to Travel a Corridor Section (in US$, per 500km per 20 ton)

Road Transport

All of the corridors exhibited an increase in the normalized cost to travel a corridor section. However, this increase is more pronounced in Corridor 5 where costs per 500km jumped from $352 to $1,592. Corridor 5 passes through four countries, namely PRC, Kyrgyz Republic, Tajikistan, and Afghanistan. The highest vehicle operating costs are reported by vehicles passing through Tajikistan. In a typical section (from Karamik to Dushanbe to Nizhny Pianj) which spans about 500km, the vehicle operating cost averaged $2,500 to $2,800. The mountainous terrain and the very poor physical infrastructure drive up the vehicle operating cost. This partly explained why Corridor 3 (which passes through

Tajikistan) also registered a drastic increase in TFI3.

The current CPMM does not disaggregate vehicle operating cost, although a large portion is attributed to fuel expenses. The increase in oil prices since 2009 most likely drove the increase in cost of transportation across all corridors. This shall be further monitored in 2012 to confirm this observation.

Rail Transport

All corridors encountered a drop in standardized rail transit cost in 2011. The increase in overall cost for road transport is due mainly to the increase of vehicle operating cost, which is minimal, almost constant, in rail transport. (This indicator, however, does not distinguish between the types of costs—hence the details are not presented in the tables.)

TFI4: Speed to Travel on CAREC Corridors (in kph), SWD

Road Transport

Corridor 5 suffered the largest percentage drop in speed at 18%. With a speed of 19.4 kph, it is also the slowest corridor among the six routes. In line with the above analysis on TFI1 (time to clear a border crossing point), the longer border crossing delay contributed to the slower speed. Conversely, the reduction in border crossing time at Corridors 1, 3, and 6 yielded a slight increase in speed.

Rail Transport

The time to cross borders by rail in Corridor 6 was relatively long; this affected the rail speed.

IV. CPMM Results

The following section describes in detail key aspects of the trade facilitation indicators.

A. Speed / Travel Time

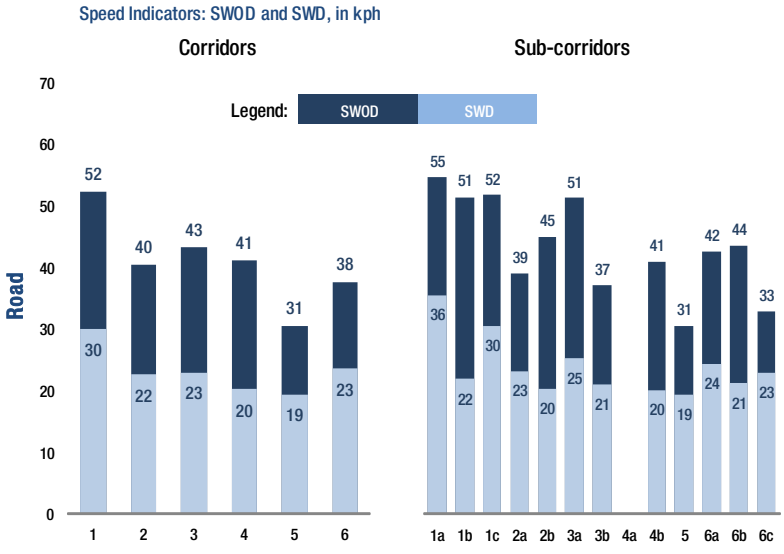
Road Transport

The figures below display the SWOD and SWD per corridor and sub-corridor. At a corridor level, SWOD for road ranged from 31 kph to 52 kph. This range is remarkably close to the range of SWOD in 2010 (32 kph to 55 kph). Meanwhile, SWD ranged from 19 kph to 30 kph. For both indicators, Corridor 1 registered the highest speed, and Corridor 5 the slowest. However, when one looks at the percentage drop from SWOD to SWD, a different picture emerges. In Corridor 4, the speed indicators dropped from 41 kph to 20 kph, a reduction of 52% as compared to a range of 35% to 45% for other corridors. Corridor 5 had the least drop of 37% which suggests that the major cause of delays in Corridor 5 would be poor infrastructure and not delays due to stop activities.

The speed indicators on a sub-corridor level further define where the slow down occur. Corridor 1 has three sub-corridors. SWOD for all three sub-corridors was more than 50 kph, but SWD averaged 29.9 kph. Corridor 1b had the most drastic drop: from 51 kph to 22 kph.

Sub-corridors with lowest SWOD were sub-corridors 3b, 5 and 6c. As SWOD is computed by distance travelled over time, the quality

Speed Indicators for Road Transport



Sub-corridor Comparison of Speed Indicators

Comparison	Sub-corridors
Top 3 (lowest SWOD)	3b, 5, 6c
Top 3 (lowest SWD)	2b, 4b, 5
Top 3 (largest drop in speed)	1b, 2b, 6b

of the physical infrastructure plays a significant role. Lack of roads or poor surface roads can slow down travel. Further examination of these three sub-corridors shows that all three routes pass through Afghanistan and Tajikistan. The fact that CPMM samples from Afghanistan traverse either Corridor 5 or 6 only, suggests that road segments in Tajikistan slow down transport along sub-corridor 3b. In addition, all three sub-corridors pass through sections near Dushanbe. The mountainous terrain, weak physical road networks, and the cold weather worked against fast transport and thus resulted in a relatively low SWOD across the three sections. An ADB-EBRD road project to renovate part of the M41 (the main road between Dushanbe and the border with Uzbekistan) may help to improve SWOD in due course.

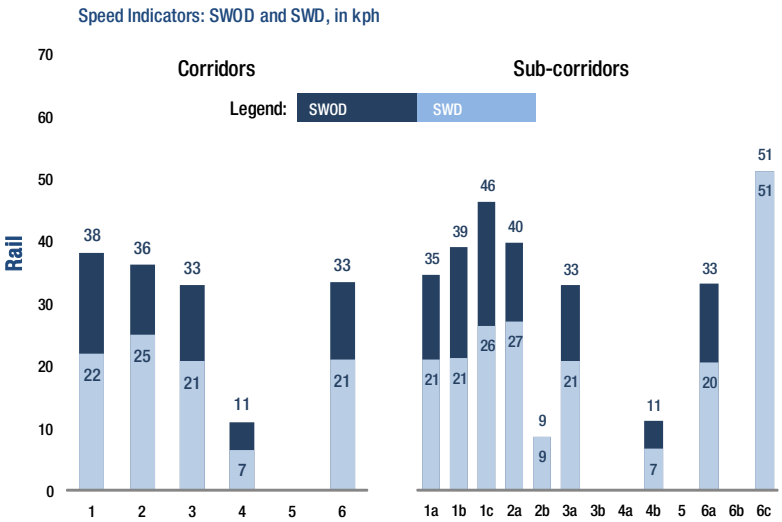
Sub-corridors with lowest SWD were sub-corridors 2b, 4b and 5. Unlike the previous group of sub-corridors, there is no apparent common factor that contributes to the low SWD in these 3 sub-corridors. Sub-corridor 2b passes through six countries (PRC XUAR, Kyrgyz Republic, Tajikistan, Uzbekistan and Turkmenistan and Azerbaijan), 4b is essentially a Trans-Mongolian corridor, and 5 traverses through PRC XUAR, Kyrgyz Republic, Tajikistan and Afghanistan. Further analysis is required to identify the bottlenecks in these 3 sub-corridors: it may be useful to look more closely at the Yierkeshitan (PRC)-Irkeshtan (KGZ) BCP pair, which serves as a major gateway for goods moving along 2b and 5.

Sub-corridors which suffered the most severe drop in speed (difference between SWOD and SWD) were 1b, 2b, and 6b. All these three sections had relatively high SWOD, but very low SWD. Again, there is no common factor noted along these three routes. However, sub-corridor 1b and 6b pass through the western section of Kazakhstan. Both routes traverse Shymkent-Kyzlorda-Aktobe, entering Russia in the north and Uzbekistan in the south. Further studies would be needed to ascertain the causes of delay.

Rail Transport

Rail speed (SWOD) along CAREC corridors ranged from 11 kph to 38 kph, a very low range compared with road SWOD. Corridor 1 registered the fastest speed, and Corridor 4 the slowest. In 2010, rail SWOD ranged from 15 kph to 49 kph; Corridor 4 was also the slowest rail corridor then. Furthermore, even SWD estimates of

Speed Indicators for Rail Transport



corridors, which ranged from 6 kph to 22 kph, are also lower by comparison with road SWD.

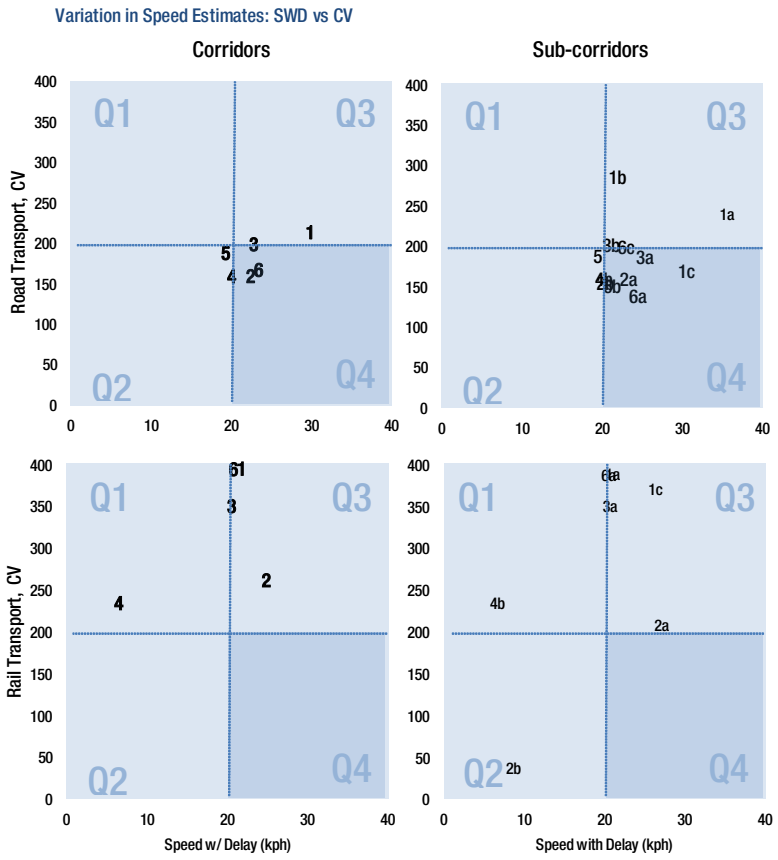
At sub-corridor level, a fast rail section is Corridor 6c, with a speed of 51 kph. This is remarkable because road SWOD in Corridor 6c is only 33 kph. However, it should also be noted that the rail sample from this corridor is quite small and might not be statistically significant. Another important observation was that this section had a very small change from SWOD to SWD. In other corridors, the rail speed dropped by half when border crossing delays were considered. This was due mainly to the nature of rail transportation. Although the number of border crossing activities might be fewer than border crossing by road, the time spent per activity (such as change in railway gauge) is extraordinarily long. Furthermore, trains stop at switch terminals (usually located in major cities) and wait for many hours during classification. More details are given in the corridor analyses discussed later in the report.

Variation in Sample

Estimation of average speed indicators is one factor to consider; assessment of the reliability of these estimates is another. Shippers are concerned about the average speed as well as the reliability of arrival time of goods. If the delivery of a shipment cannot be predicted accurately, the timing and mode of transport of goods, especially perishables, need to be carefully considered. Producers, processors, and retailers may need to carry excessive inventories of inputs or goods for sale to buffer against shipment delays.

In CPMM, the coefficient of variation is used as a measure to evaluate corridor transport reliability. This value is derived by

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 of arrival. 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 the cargoes 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.

dividing the standard deviation over the average of any given indicator. By definition, a high CV is undesirable as arrival times are more unpredictable.

The charts on reliability of estimates contain four different charts. Each chart consists of Quadrants 1 to 4. The chart compares speed (SWD) with its corresponding CV for each mode of transport. Since shippers prefer high speed and high reliability (low CV), routes found in Quadrant 4 are the most desirable. In these corridors, shipments travel faster and the arrival times are more reliable. On the other hand, Quadrant 1 suggests the least desirable corridors and sub-corridors. In Quadrant 1, speed is slow and the CV is high suggesting unpredictability of arrival time.

For road transport, there is no clear choice among corridors. Corridor 1 registered the highest speed but its corresponding high CV suggests less consistent speed of travel. On the other hand, trucks on Corridor 2 and 6 had the advantage of more consistent speed of travel albeit slightly slower compared to Corridor 1. The same analysis on a sub-corridor level reveals that, while sub-corridor 1a had the highest speed, speed of travel on sub-corridor 1c is more consistent. Routes in sub-corridors 2a, 3a, and 6a are also located in Quadrant 4, which makes them good choices for road shipments.

Interestingly, rail transport showed more divergence in the relative positioning of each routes in the four quadrants. At the corridor level, Corridor 2 has the best relative position (fast and more reliable). Meanwhile, Corridors 1, 3, and 6 are closely similar. They are slower compared to Corridor 2 but speed estimates are more unreliable. Trains in Corridor 4 move slowly.

For rail sub-corridors, there were no sections located in Quadrant 4. However, in relation to other sub-corridors, sub-corridor 2a performed well, while in sub-corridors 2b and 4b rail travel was very slow.

B. Delays and Time Factors in CAREC Corridors

Activities spent on stops result in transit delays. Generally, such delays are encountered at border crossing points. To analyze the reasons for such delays, CPMM adopts the following approach. First, a list of reasons for possible delays has been compiled through consultations with transport associations and logistics experts. Next, the drivers report the frequency and duration for each delay along major stops in each corridor. These data are then aggregated by mode of transport (road or rail). It is important to differentiate the delays by mode of transport because road and rail have different characteristics and reasons for delays.

The succeeding tables list the different reasons for delays faced by a cargo truck driver travelling along CAREC corridors. The table 'count' shows how often each activity is reported and 'average' refers to the average duration of each activity. These two measures, count and average, are used to give a complete picture on the extent of the effect of such delays on speed in road transport. A frequently encountered reason for delay may not necessarily add up to a significant delay. For instance, it is common that road drivers are stopped at *police checkpoints*, but data showed that this delay did not significantly prolong the shipment time. On the other hand, *emergency repair* does not occur frequently. However, such repairs typically add a substantial amount to transport time. Naturally, stop activities that have a high count and a high average should be monitored closely since they are major causes of delays.

Using the table, the five most common delays (by count) are

- customs clearance
- border security
- phyto-sanitary
- health / quarantine and
- waiting time in queue

Also, the five most time-consuming delays (by average) are

- customs clearance,
- emergency repair,
- escort/convoy,
- loading/unloading and
- waiting time in queue

Thus, it appears that *customs clearance* and *waiting time in queue* during border crossing are the two most common and time consuming delays. Any reduction in time for these two stop activities will bring about considerable improvements in the transport time along CAREC corridors.

C. Cost Factors in CAREC Corridors

Similar to the above analysis, it is possible to track expenses incurred along each section of a journey. In CPMM, drivers are asked to report any activity that required payment, official or unofficial. These costs were added and reported in the above table.

The top five most common payments were

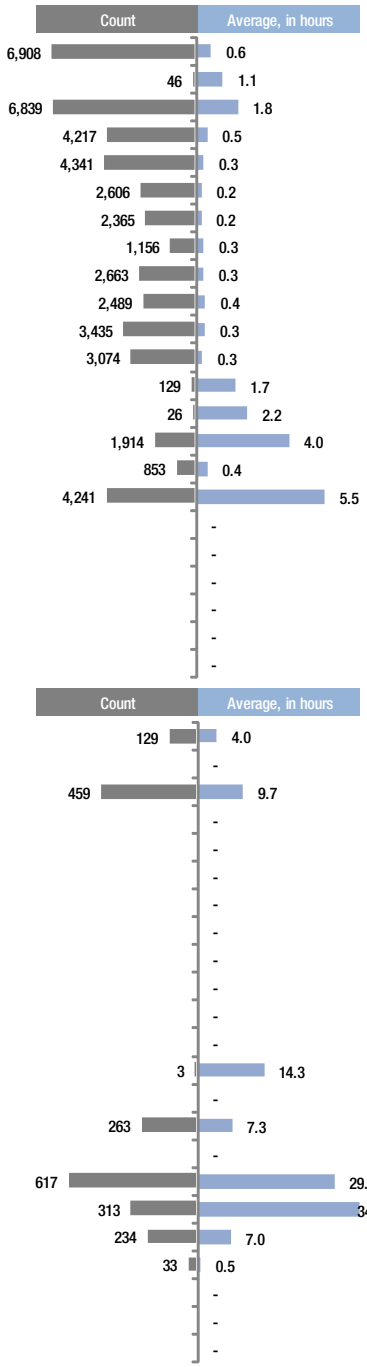
- customs clearance fees,
- weight inspection,
- phyto-sanitary,
- visa/immigration and
- veterinary inspections

It appears that the expenses are highly correlated with the reasons for delays. The top three activities that incur delays and payments are the same (clearance fees, weight inspection, and phyto-sanitary inspections). On the other hand, the most expensive payments are for a variety of reasons. Border security payments averaged more than $100 and are reported across many corridors. In general, the standard customs activities are not very expensive, averaging less than $100. An interesting observation is that Corridor 6 faces multiple reasons for high expenses. Besides border security fees, loading/unloading, road tolls, and waiting in queue result in rather high payments, where each activity costs more than $100.

Duration of Actvities spent on BCPs

	Road	Count							Average, in hours						
		Overall	Corridors 1	2	3	4	5	6	Overall	Corridors 1	2	3	4	5	6
A.	Border Security / Control	6,908	2,221	1,062	910	954	545	1,216	0.6	0.3	0.6	0.5	0.4	2.3	0.8
B.	Customs (Single Window)	46	-	46	-	-	-	-	1.1	-	1.1	-	-	-	-
C.	Customs Clearance	6,839	2,106	1,130	944	935	581	1,143	1.8	1.8	1.8	1.5	2.5	1.4	1.6
D.	Health / Quarantine	4,217	1,355	756	555	641	268	642	0.5	0.6	0.5	0.2	0.3	0.6	0.5
E.	Phytosanitary	4,341	1,183	431	792	914	311	710	0.3	0.2	0.3	0.3	0.3	0.5	0.6
F.	Veterinary Inspection	2,606	950	234	512	471	168	271	0.2	0.2	0.3	0.2	0.3	0.2	0.3
G.	Visa/Immigration	2,365	957	389	291	359	344	25	0.2	0.2	0.2	0.3	0.1	0.2	0.5
H.	GAI/Traffic Inspection	1,156	373	295	65	250	17	156	0.3	0.3	0.3	0.3	0.3	0.4	0.5
I.	Police Checkpoint / Stop	2,663	743	586	514	153	118	549	0.3	0.3	0.3	0.3	0.2	0.2	0.4
J.	Transport Inspection	2,489	945	358	422	101	87	576	0.4	0.3	0.4	0.3	0.3	0.2	0.6
K.	Weight/Standard Inspection	3,435	1,379	565	385	540	81	485	0.3	0.2	0.4	0.5	0.2	0.4	0.6
L.	Vehicle Registration	3,074	776	483	389	954	178	294	0.3	0.2	0.3	0.3	0.2	0.2	0.5
M.	Emergency Repair	129	54	12	17	9	1	36	1.7	1.4	3.8	1.0	2.0	1.8	1.6
N.	Escort / Convoy	26	7	4	6	3	1	5	2.2	2.4	0.9	2.1	2.6	0.2	3.2
O.	Loading / Unloading	1,914	293	160	99	593	335	434	4.0	5.3	7.6	4.0	5.6	1.3	1.7
P.	Road Toll	853	182	314	38	270	25	24	0.4	0.6	0.7	0.5	0.1	0.1	0.5
Q.	Waiting/ Queue	4,241	1,275	854	480	591	200	841	5.5	6.5	6.5	5.7	1.2	10.1	5.1
R.	Change of Railways Gauge	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.	Classification of Trains	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T.	Technical Inspection	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.	Commercial Inspection	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V.	Load Protection	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W.	Security Services	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Rail	Count							Average, in hours						
		Overall	Corridors 1	2	3	4	5	6	Overall	Corridors 1	2	3	4	5	6
A.	Border Security / Control	129	128	-	-	-	-	1	4.0	4.0	-	-	-	-	1.1
B.	Customs (Single Window)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C.	Customs Clearance	459	314	-	4	141	-	-	9.7	3.7	-	0.7	23.2	-	-
D.	Health / Quarantine	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E.	Phytosanitary	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F.	Veterinary Inspection	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G.	Visa/Immigration	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H.	GAI/Traffic Inspection	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I.	Police Checkpoint / Stop	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J.	Transport Inspection	-	-	-	-	-	-	-	-	-	-	-	-	-	-
K.	Weight/Standard Inspection	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L.	Vehicle Registration	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M.	Emergency Repair	3	3	-	-	-	-	-	14.3	14.3	-	-	-	-	-
N.	Escort / Convoy	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O.	Loading / Unloading	263	141	9	-	110	-	3	7.3	3.3	6.1	-	12.7	-	3.9
P.	Road Toll	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Q.	Waiting/ Queue	617	247	8	7	347	-	8	29.6	33.2	3.8	4.7	28.8	-	2.2
R.	Change of Railways Gauge	313	61	-	-	252	-	-	34.9	11.1	-	-	40.6	-	-
S.	Classification of Trains	234	190	22	7	-	-	15	7.0	8.2	1.9	2.8	-	-	1.7
T.	Technical Inspection	33	25	5	1	-	-	2	0.5	0.6	0.2	0.8	-	-	0.4
U.	Commercial Inspection	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V.	Load Protection	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W.	Security Services	-	-	-	-	-	-	-	-	-	-	-	-	-	-

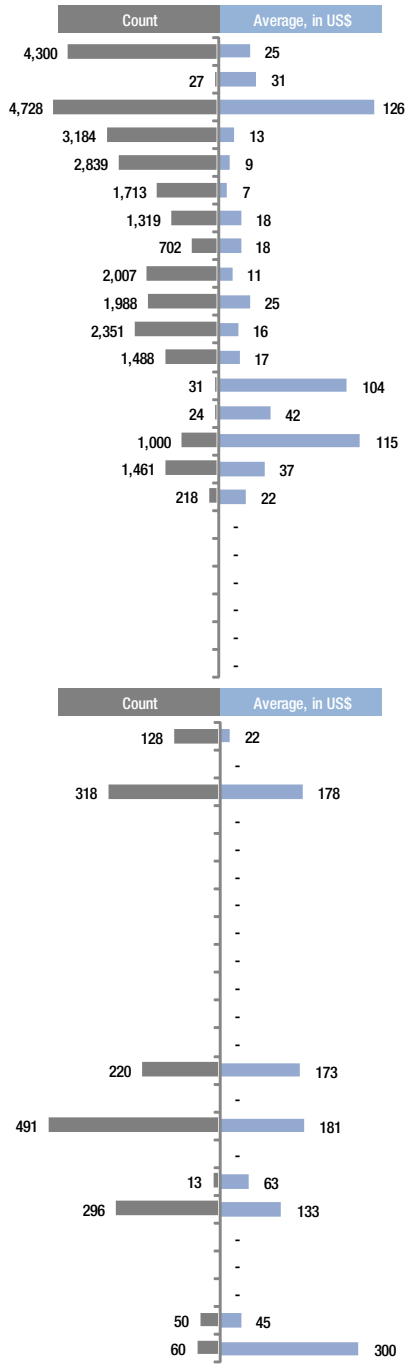


Legend: More than 1 hour

Cost of Actvities spent on BCPs

	Road	Count Overall	Count Corridors 1	2	3	4	5	6	Average, in US$ Overall	Average, in US$ Corridors 1	2	3	4	5	6
A.	Border Security / Control	4,300	1,639	645	628	-	508	880	25	23	25	16	-	24	37
B.	Customs (Single Window)	27	-	27	-	-	-	-	31	-	31	-	-	-	-
C.	Customs Clearance	4,728	1,727	713	634	359	463	832	126	106	84	47	480	196	72
D.	Health / Quarantine	3,184	1,082	602	414	367	268	451	13	17	14	6	13	5	12
E.	Phytosanitary	2,839	808	220	554	423	311	523	9	6	11	8	5	7	19
F.	Veterinary Inspection	1,713	621	138	382	176	168	228	7	6	9	4	9	4	13
G.	Visa/Immigration	1,319	569	240	244	-	248	18	18	10	29	30	-	15	20
H.	GAI/Traffic Inspection	702	339	164	55	12	12	120	18	15	32	13	3	28	9
I.	Police Checkpoint / Stop	2,007	640	419	345	99	118	386	11	14	14	6	20	6	6
J.	Transport Inspection	1,988	696	272	365	6	86	563	25	20	30	20	4	10	35
K.	Weight/Standard Inspection	2,351	1,199	429	231	180	8	304	16	17	12	14	7	17	22
L.	Vehicle Registration	1,488	501	201	340	-	178	268	17	14	22	12	-	8	31
M.	Emergency Repair	31	14	2	4	4	1	6	104	173	13	17	40	10	91
N.	Escort / Convoy	24	6	2	9	-	1	6	42	39	4	20	-	8	97
O.	Loading / Unloading	1,000	72	-	18	188	312	410	115	237	-	3	41	111	136
P.	Road Toll	1,461	175	342	72	699	72	101	37	64	79	170	3	2	18
Q.	Waiting/ Queue	218	101	12	-	-	102	3	22	40	19	-	-	5	25
R.	Change of Railways Gauge	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.	Classification of Trains	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T.	Technical Inspection	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.	Commercial Inspection	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V.	Load Protection	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W.	Security Services	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Rail	Count Overall	Count Corridors 1	2	3	4	5	6	Average, in US$ Overall	Average, in US$ Corridors 1	2	3	4	5	6
A.	Border Security / Control	128	128	-	-	-	-	-	22	22	-	-	-	-	-
B.	Customs (Single Window)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C.	Customs Clearance	318	318	-	-	-	-	-	178	178	-	-	-	-	-
D.	Health / Quarantine	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E.	Phytosanitary	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F.	Veterinary Inspection	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G.	Visa/Immigration	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H.	GAI/Traffic Inspection	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I.	Police Checkpoint / Stop	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J.	Transport Inspection	-	-	-	-	-	-	-	-	-	-	-	-	-	-
K.	Weight/Standard Inspection	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L.	Vehicle Registration	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M.	Emergency Repair	220	-	-	-	220	-	-	173	-	-	-	173	-	-
N.	Escort / Convoy	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O.	Loading / Unloading	491	140	-	-	351	-	-	181	205	-	-	172	-	-
P.	Road Toll	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Q.	Waiting/ Queue	13	13	-	-	-	-	-	63	63	-	-	-	-	-
R.	Change of Railways Gauge	296	55	-	-	241	-	-	133	429	-	-	66	-	-
S.	Classification of Trains	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T.	Technical Inspection	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.	Commercial Inspection	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V.	Load Protection	50	50	-	-	-	-	-	45	45	-	-	-	-	-
W.	Security Services	60	60	-	-	-	-	-	300	300	-	-	-	-	-



Legend: More than US$100

CORRIDOR 1: Europe – East Asia

Introduction

Transport along Corridor 1 is characterized by the following: (1) most shipments originate from Urumqi in XUAR, PRC; (2) the goods move from east to west, and a wide expanse of the journey traverses Kazakhstan; (3) Russia is the destination for all the routes but a number of shipments continue on to Europe; and (4) it is a multi-modal corridor that caters to both road and rail transport.

Corridor 1 has three sub-corridors. Corridor 1a facilitates rail shipments, where **Ala Shankou (PRC)–Dostyk (KAZ)** is a major gateway. Manufactured goods are transported by trains and pass through this BCP pair before continuing on to Astana or Almaty. From there, the goods can either continue northwards and pass through **Kairak–Troitsk (KAZ-RUS)** or turn west to Aktobe, another major railways terminal. Travelling in the opposite direction, Kazakhstan exports large amounts of minerals, scrap metals, and commodities, using this sub corridor to access PRC markets.

Corridor 1b is also an important section of the 'Western China-Eastern Europe' corridor, where over 2,200 km of road in Kazakhstan links China to European markets. Chinese goods pass through **Khorgos (PRC)–Khorgos (KAZ)**, to Almaty (about 330km) for re-distribution to other parts of the country. Shipments may also continue westwards and pass through Shymkent and Kyzlorda destined for Aktobe or Aktau in West Kazakhstan.

Corridor 1c provides an alternative route for goods to move through southern parts of XUAR, where Kashi is an important consolidation/deconsolidation center and relay terminal. From Kashi, goods are shipped by truck to Kyrgyz Republic, crossing **Torugart-Torugart (PRC-KGZ)**. Kyrgyz exports may move through this route to XUAR or start from Bishkek and cross **Ak Zhol–Kordai (KGZ-KAZ)**, one of the most frequently crossed BCPs in Central Asia. The shipments pass through major Kazakh cities and cross **Jana Jol–Petukhovo (KAZ-RUS)**, ending at Russian cities such as Moscow, Ekaterinburg, or Kazan.

A. Road Transport

Manufactured consumer goods, agricultural products, machineries, industrial materials, and base metals were transported along this corridor. The weight of the goods ranged between 15 tons to 30 tons. Containerization is not popular on Corridor 1. Most shipments were completed using delivery trucks; 40-foot containers were seldom used. One-third of the shipments used TIR, especially for cross border shipment between Kyrgyz Republic, Kazakhstan, and Russia.

CAREC Corridor 1

Trucks travelling along Corridor 1 moved at relatively faster speeds. SWOD estimates for sub-corridors 1a, 1b, and 1c were 55 kph, 51 kph, and 52 kph, respectively. Though significant speed reduction occurred across these three sections (with corresponding SWDs of 35 kph, 21 kph, and 30 kph), these sub-corridors fare relatively better compared to other sub-corridors. Sub-corridor 1b is the worst performer, where speed indicators dropped by 58% from 51 kph (SWOD) to 21 kph (SWD). This can be attributed to longer border crossing duration at **Khorgos–Khorgos (PRC-KAZ)**.

BCPs and Bottlenecks

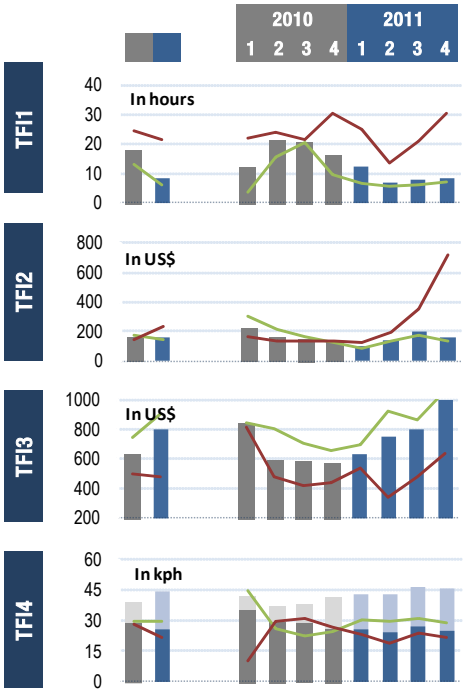
The major BCPs of Corridor 1 include **Ak Zhol-Kordai (KGZ-KAZ), Kairak-Troitsk (KAZ-RUS), Khorgos-Khorgos (PRC-PRC), Ala Shankou-Dostyk (PRC-KAZ), Jana Jol-Petukhovo (KAZ-RUS)** and **Torugart-Torugart (KGZ-PRC).** In 2011, the number of crossings at Ak Zhol-Kordai (KGZ-KAZ) is three times more than the next popular BCP, Khorgos-Khorgos (PRC-KAZ).

Of these BCPs, the most severe delays occurred mostly at two PRC-KAZ BCP pairs, namely Khorgos-Khorgos (PRC-KAZ) and Ala Shankou-Dostyk (PRC-KAZ).

Drivers reported an average border-crossing time of 26.8 hours at Khorgos (PRC) and 12.8 hours at Khorgos (KAZ). Customs clearance, loading/unloading and waiting in queue were the three common reasons for delays. At Khorgos (PRC), the three activities took 3.8 hours, 3.5 hours, and 21.3 hours, respectively. At Khorgos (KAZ), the same activities took 8.4 hours, 8.4 hours, and 10.2 hours. At both BCPs, waiting time in queue registered the longest delay due to the long queues at the border posts. Khorgos

CORRIDOR 1

Trade Facilitation Indicators



		2010	2011	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4
TFI1	**Overall**	**17.9**	**8.5**	**12.1**	**21.0**	**20.8**	**16.4**	**12.2**	**6.9**	**7.6**	**8.4**
	Road	12.7	6.2	3.4	15.4	20.6	9.7	6.4	5.5	6.0	6.8
	Rail	24.5	21.2	21.9	23.6	21.2	30.4	24.7	13.6	20.7	30.3
TFI2	**Overall**	**158.6**	**155.9**	**224.5**	**159.0**	**151.2**	**131.2**	**104.1**	**144.7**	**196.1**	**163.6**
	Road	174.1	142.9	302.5	209.9	164.2	128.2	90.8	136.0	179.8	139.6
	Rail	142.7	235.0	168.7	136.8	135.1	135.9	129.6	198.8	349.4	718.6
TFI3	**Overall**	**636.6**	**802.9**	**836.1**	**597.9**	**578.7**	**571.5**	**635.8**	**755.5**	**798.1**	**1,011**
	Road	744.2	909.0	846.4	802.2	707.3	660.6	699.7	928.2	868.8	1,065.5
	Rail	503.0	477.0	813.5	477.8	416.4	444.0	540.4	340.0	478.5	639.2
TFI4	**Overall**	**28.8**	**25.6**	**34.9**	**29.2**	**28.4**	**25.8**	**25.9**	**24.0**	**27.3**	**25.0**
	Road	29.5	29.9	45.0	25.9	22.4	24.7	30.2	29.9	31.0	28.6
	Rail	28.4	21.9	10.1	29.9	31.3	26.6	23.4	18.7	23.6	21.4
SWOD	**Overall**	**39.2**	**44.6**	**42.1**	**37.1**	**38.2**	**41.3**	**42.6**	**42.8**	**46.3**	**46.0**
	Road	48.6	52.1	54.8	43.5	39.6	53.9	55.0	52.1	52.5	50.0
	Rail	33.8	38.0	11.1	35.7	37.5	31.6	35.2	34.6	40.1	42.0

Legend: 2010 (Road) 2011 (Rail)

Border Crossing Points: TOP 10 (BASED ON 2011 SAMPLE)

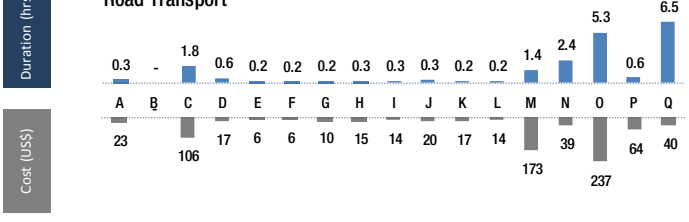
Road BCPs

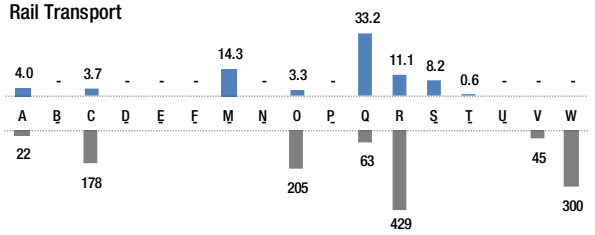
	BCP	Country	Count	Duration (hrs) Total Avg	Total Median	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	Cost (US$) Total Avg	Total Median	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Ak Zhol	KGZ	492	2.7	1.8	0.2		0.4	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.2			2.8		2.8	32	28	7		12	3	3	2	4	2	3	5	4	4			1		0
	Kordai	KAZ	491	3.7	2.2	0.2		0.4	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.3	3.0	1.0	7.0	0.2	4.2	152	122	25		55	9	8	6	13	6	15	34	26	17	750		0	290	0
	Jana Jol	KAZ	168	2.9	2.5	0.3		1.1	0.2	0.1	0.1	0.7	0.1	0.4	0.3	0.2	0.2		0.1	3.0	0.5	2.3	122	102	45		72	6	7	8	26	16	22	28	39	21		34			
	Torugart	PRC	168	9.5	4.6	0.3		1.4	1.4	0.2	0.4	0.1	0.4	0.5	0.3	0.4	0.2	5.0		4.3	0.9	16.0	111	40	6		101	57	10	3	1	37	22	1	11	1	4		0	83	4
	Troitsk	RUS	162	1.7	0.8	0.3		1.4	0.2	0.2	0.2	0.2	0.1	0.2	0.3	0.2	0.2	0.4				1.0	40	17	26		29	3	5	4	2	8	5	18	16	6					0
	Khorgos	KAZ	161	12.8	12.0	0.3		8.4	0.4	0.2	0.2	0.2	0.2	0.3	0.4	0.2	0.1	0.5		8.4	0.4	10.2	657	500	11		663	12	3	15	6	14	46	28	0	6	50			73	0
	Khorgos	PRC	158	26.8	18.8	0.3		3.8	3.4	0.2	0.2	0.2	0.3	0.4	0.8	0.4	0.2	4.2		3.5	0.5	21.3	346	353	8		134	79	3	4	2	19	6	20	10	6	126		240	27	39
	Petuchovo	RUS	147	2.0	1.8	0.3		1.4	0.2	0.2	0.2	0.2	0.1	0.2	0.4	0.2	0.2	0.3			0.1	1.0	43	31	23		26	4	4	4	6	12	11	22	20	8				4	
	Kairak	KAZ	145	1.6	1.2	0.3		1.0	0.2	0.2	0.2	0.2		0.4	0.3	0.2	0.2	1.0				1.2	77	63	41		39	8	8	8	16		16	16	20	26	100				0
	Kurgan	RUS	104	0.8	0.3								0.1	0.2	0.2	0.2		0.4		4.9	2.3		23	20								9	9	24	23				13	

Rail BCPs

	BCP	Country	Count	Duration (hrs) Total Avg	Total Median	A	B	C	D	E	F	M	N	O	P	Q	R	S	T	U	V	W	Cost (US$) Total Avg	Total Median	A	B	C	D	E	F	M	N	O	P	Q	R	S	T	U	V	W
1	Ala Shankou	PRC	243	16.5	11.0	4.0		3.5						4.2		31.7	4.0	18.4					288	53	22		79						343		23		0			45	350
	Dostyk	KAZ	210	40.8	34.0			4.7						2.1		42.4	11.3	1.9	0.6				404	20			498						20		0	429					50
	Taraz	KAZ	94	6.9	4.9							14.3				7.5		3.2																								
	Zhaisan	KAZ	28	13.1	9.4											12.5		4.0	0.7																							
	Merke	KAZ	11	5.5	0.8			1.7								7.6		0.9	0.2																							

A. Border Security / Control, B. Customs (Single Window), C. Customs Clearance, D. Health / Quarantine, E. Phytosanitary, F. Veterinary Inspection, G. Visa/Immigration, H. GAI/Traffic Inspection, I. Police Checkpoint / Stop, J. Transport Inspection, K. Weight/Standard Inspection, L. Vehicle Registration, M. Emergency Repair, N. Escort / Convoy, O. Loading / Unloading, P. Road Toll, Q. Waiting/ Queue, R. Change of Railways Gauge, S. Classification of Trains, T. Technical Inspection, U. Commercial Inspection, V. Load Protection, W. Security Services





(PRC) also showed that health/quarantine inspection averaged 3.4 hours. Border crossing payments at the Kazakhstan side cost nearly twice the Chinese side ($656 vs. $345). At both BCPs, customs clearance fees were the principal cost-drivers.

Ala Shankou-Dostyk serves mainly rail cargoes, although it also accommodates trucks crossing the border. Border-crossing time was 11.6 hours at Ala Shankou and 21.1 hours at Dostyk. Customs clearance, loading/unloading, and waiting time in queue accounted for most of the delays at this BCP pair. Similarly, delays due to waiting time in queue are the longest, though slightly lower compared with delays at Khorgos-Khorgos. Total border crossing fees range from $300 to $400 per BCP.

Data collected from Kyrgyz and Chinese drivers passing through Torugart-Torugart (PRC-KGZ) show that border-crossing time averages about 9.5 hours on the PRC side and 6.8 hours on the KGZ side. Waiting time in queue was the most time-consuming activity at both BCPs. Curiously, customs clearance took only an hour at each BCP. This is much shorter than customs clearance at PRC-KAZ BCPs.

CPMM results since 2009 reveal that Khorgos-Khorgos and Ala Shankou-Dostyk have been consistently identified as the key bottlenecks in Corridor 1. Among the KAZ-RUS BCPs, Kairak-Troitsk has improved. In 2009, data revealed that some delays at Troitsk are caused by customs clearance and waiting time. Since 2010, the situation has improved. This continued in 2011 where the average border-crossing time at Kairak and Troitsk averaged 1-2 hours each. The Customs Union could have played a part in this improvement, as border crossing procedures have been simplified. Interviews with drivers by KAZATO in Kazakhstan testified to this observation.

In summary, goods transported by road along all three sub-corridors of Corridor 1 face impediments at major BCPs: Ala Shankou-Dostyk in 1a, Khorgos-Khorgos at 1b and Torugart-Torugart in 1c. Border-crossing time took several hours, causing a significant drop in the speed indicators. Improvements at these BCP pairs would yield a significant reduction in total transport time.

B. Rail Transport

Rail is an important mode of transport in Corridor 1. Due to the relatively long distances in this corridor, bulky and low-value cargoes are moved by rail from source to destination. A variety of goods were transported using trains - minerals (ores, sulfur and mineral fuels), textiles (cotton), industrial materials (cement), base metals (iron and steel), and manufactured goods (furniture). It is observed that minerals and base metals were usually transported from Kazakhstan to PRC, while manufactured goods departed from Urumqi (PRC) or Orenburg (RUS) and transported to Kazakhstan. A small volume of agricultural products (mainly wheat flour) was transported by train; there are no reports of perishables transported by rail.

In Kazakhstan, goods are carried in standard rail wagons with a capacity of 70 tons. Containers were rarely used in rail transport in this country. Interviews with companies and transporters reveal that most freight forwarders, transport agents, and customs officials are more familiar with the documentation and procedures for moving goods in standard rail wagons, and not used to handling goods in ISO standard containers. Unless the goods come from or go to PRC, where containers are required (so that they can be trans-loaded onto vessels at Lianyungang quickly), the use of containers is not widespread.

Trains moved at an average SWOD of 35 kph, 39 kph, and 46 kph along sub-corridors 1a, 1b, and 1c, respectively. After accounting for border crossing delays, the corresponding SWD is 17 kph, 18 kph, and 21 kph. The percentage drop in rail is more significant than the drop using road transport in these three sub-corridors, suggesting that border crossing delays in railways are more severe.

BCPs and Bottlenecks

Ala Shankou (PRC)-Dostyk (KAZ) was the most commonly-crossed and the most time-consuming BCP pair. Crossing borders at Ala Shankou by rail took an average of 16.5 hours. Meanwhile, at Dostyk, it took 40.8 hours (second only to Russian BCP Naushki in Corridor 4). The long border-crossing duration on both sides of the border was mainly due to customs clearance, loading/unloading, waiting time, change in gauge and classification of trains. Delays due to waiting time greatest, taking at an average of 21.7 hours at Ala Shankou and 42.4 hours at Dostyk. On the other hand, change of gauge was much slower at Dostyk: 11.3 hours compared to 4 hours at Ala Shankou. However, the latter took longer time in classification of trains, requiring 18.4 hours (compared to 1.9 hours at Dostyk).

It is important to note that delays do not necessarily happen at BCPs only. For rail transport, one of the key delays that happen within a country is the classification of trains. Most marshalling yards are located in main cities. When trains arrive at these marshalling yards, rail wagons are re-grouped into a new train before continuing to another city. This process can be very time-consuming due to the combined delays of classification of trains and waiting in queue. CPMM data identified Almaty, Aktogay, Astana, Tobol, Shubarkudyk, and Kandagash as the key cities where classification typically takes a very long time. ■

Note that minor differences in average estimates of BCPs classified under more than one corridor are due to overall route and classification preferences of partner associations.

CORRIDOR 2: Mediterranean – East Asia

Introduction

Corridor 2 is a very long route that passes through Azerbaijan, PRC, Kazakhstan, Kyrgyz Republic, Turkmenistan, and Uzbekistan. At Navoi or Bukhara in Uzbekistan, the corridor diverges into 2a and 2b. Moving northwards, 2a enters Kazakhstan at **Dautota-Tazhen (UZB-KAZ)**, from where trucks move northwards into Russia, or go westwards to Aktau. Goods have to be trans-loaded onto ferries at Aktau and cross the Caspian Sea into Baku (AZE). Alternatively, trucks can depart Navoi or Bukhara and continue southwards into Turkmenistan, crossing at **Alat-Farap (UZB-TKM)**. From the border, the goods can go to Mary or Ashgabat, and cross the Caspian Sea at Turkmenbashi into Baku. In total, six CAREC countries are involved, the highest compared to other corridors.

CPMM data merit a few key observations. First, although Corridor 2 caters for both road and rail, there are insufficient data on rail transport. Rail transport through Corridor 2 crosses many countries. A more efficient route will be through Corridor 1 where the majority of the train journey is within Kazakhstan, simplifying border crossing procedures. Second, there are no samples that traverse the entire span of Corridor 2. All samples use sections of this corridor. Third, although Corridor 2 is the only corridor which presents waterborne transport possibilities, CPMM partner associations were not able to collect data on Trans-Caspian routes. This is because Azerbaijan has relatively infrequent trade with other CAREC countries. There is more substantial trade with Georgia and Russia, but these routes are outside the scope of CAREC corridors.

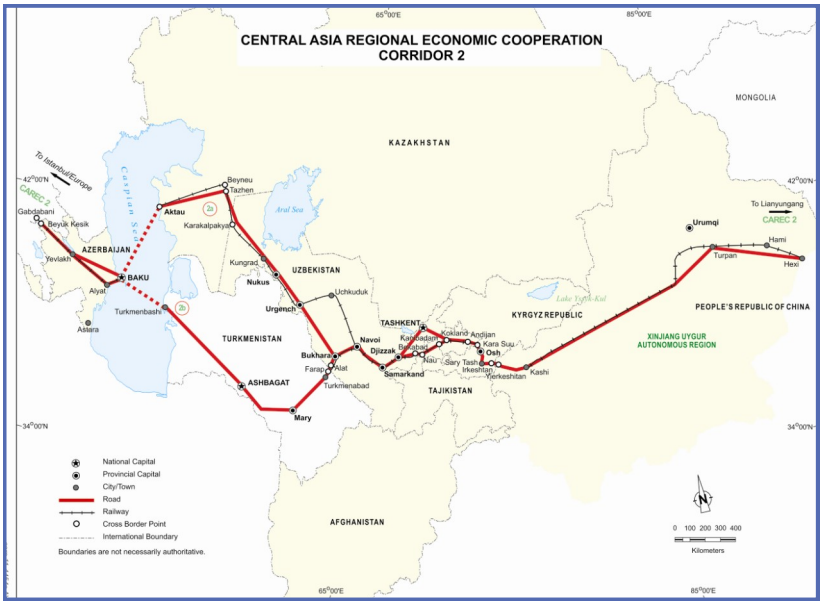
Cost and Time Spent on Delays

In general, trucks travelling on Corridor 2 have SWOD of 40 kph and 22 kph for SWD. The SWOD and SWD for sub-corridors 2a and 2b are 39/23 and 45/20 kph, respectively. While sub-corridor 2b has higher SWOD compared with sub-corridor 2a, the latter has higher SWD. This suggests that the roads in sub-corridor 2b are slightly superior, but border crossing in sub-corridor 2a is more efficient.

BCPs and Bottlenecks

Use of Corridor 2 could be grouped into four main sections: (1) the PRC-KGZ section, where **Yierkeshitan-Irkeshtan (PRC-KGZ)** is the gateway for goods; (2) the UZB-KAZ portion of 2a, where **Dautota-Tazhen (UZB-KAZ)** is a very busy BCP; (3) the UZB-TKM portion of 2b, where **Alat-Farap (UZB-TKM)** is the main BCP to facilitate

CAREC Corridor 2



freight flows; and (4) the AZE section in the western side of Corridor 2.

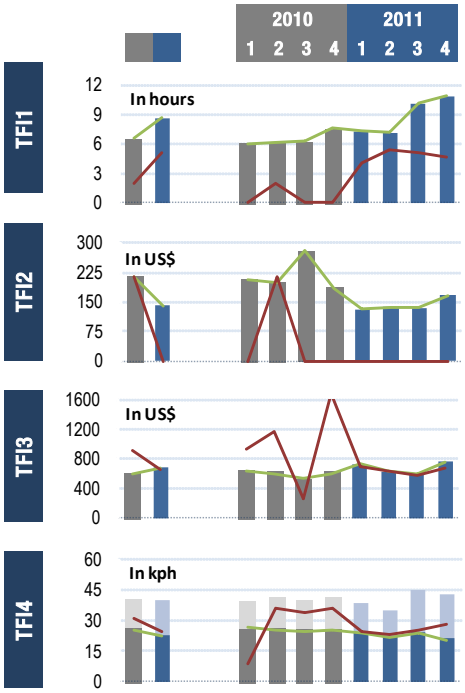
Corridor 2 is used heavily by Chinese exporters to ship manufactured goods to Central Asia via Kyrgyz Republic. **Yierkeshitan-Irkeshtan (PRC-KGZ)** is the key BCP here. Unfortunately, the border-crossing time for this BCP pair is very long, taking 11 to 12 hours at either side. Waiting time averaged 7 to 8 hours at either BCP, while customs clearance averaged 2 hours. On the KGZ side, health/quarantine and loading/unloading took a long time. Since 2009, this BCP pair has surfaced as an excessively time-consuming gateway, and the situation has not changed considerably.

The next heavily traversed section is 2a. Uzbekistan used this section to export cotton to Russia and Europe, while the same route caters for imports of food, base metals, animals, and home appliances. The imbalance in trade is highlighted when comparing the number of imports and exports, where imports outnumbered exports significantly.

The route Mashtakovo (RUS)–Sirim (KAZ)–Tazhen (KAZ)–Dautota (UZB)–Tashkent (UZB) was the most frequently travelled section. This distance spans 2,632km and takes 6 days to travel, with a total transport cost average of $1,578. Total border-crossing time at BCP pair Tazhen-Dautota averaged 10.9 hours and 3.3 hours, respectively. Waiting time at Tazhen was cited as the main cause

CORRIDOR 2

Trade Facilitation Indicators



		2010	2011	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4
TFI1	**Overall**	**6.5**	**8.6**	**6.0**	**6.1**	**6.2**	**7.6**	**7.2**	**7.1**	**10.0**	**10.8**
	Road	6.5	8.6	6.0	6.1	6.2	7.6	7.2	7.1	10.1	10.9
	Rail	2.0	5.0	-	2.0	-	-	4.0	5.3	5.0	4.6
TFI2	**Overall**	**215.9**	**141.7**	**208.1**	**200.1**	**279.9**	**185.8**	**131.5**	**136.4**	**136.1**	**167.4**
	Road	215.9	141.7	208.1	200.0	279.9	185.8	131.5	136.4	136.1	167.4
	Rail	213.6	-	-	213.6	-	-	-	-	-	-
TFI3	**Overall**	**607.2**	**678.8**	**651.9**	**630.9**	**526.2**	**624.5**	**726.5**	**636.4**	**598.0**	**760**
	Road	595.3	679.3	637.9	603.3	538.0	606.3	728.2	636.5	598.2	762.0
	Rail	906.7	664.7	943.8	1,164.3	252.3	1,677.3	702.2	634.2	587.3	668.2
TFI4	**Overall**	**26.1**	**22.7**	**25.9**	**26.6**	**26.0**	**26.0**	**24.0**	**21.9**	**24.2**	**21.1**
	Road	25.5	22.5	27.0	25.3	24.6	25.5	23.8	21.8	24.1	20.6
	Rail	31.3	24.9	9.0	36.1	33.9	35.8	24.8	23.1	25.2	28.0
SWOD	**Overall**	**40.4**	**40.0**	**39.3**	**41.2**	**39.8**	**41.1**	**38.2**	**34.8**	**45.2**	**42.8**
	Road	40.9	40.4	41.4	41.1	39.9	41.4	40.1	34.4	45.5	42.8
	Rail	35.4	36.1	9.0	42.1	39.0	35.8	28.5	38.4	41.5	43.0

Legend: 2010 Road / 2011 Rail

Border Crossing Points: TOP 10 (BASED ON 2011 SAMPLE)

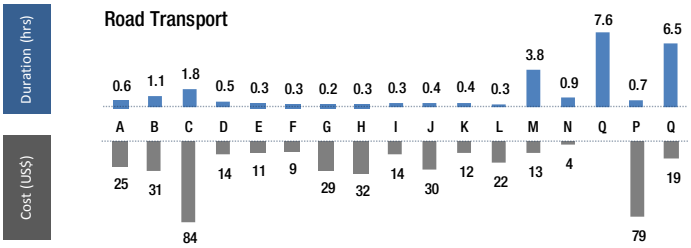
Road BCPs

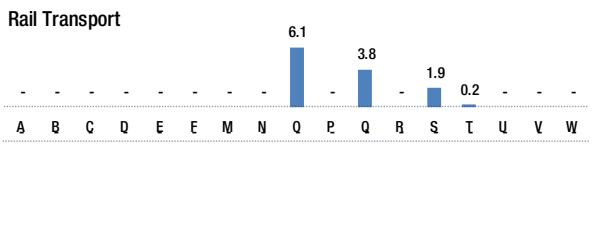
	BCP	Country	Count	Duration (hrs) Total Avg	Duration (hrs) Total Median	Duration (hrs) Activities A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	Cost (US$) Total Avg	Cost (US$) Total Median	Cost (US$) Activities A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
2	Irkeshtan	PRC	153	11.2	11.5	0.5		2.1	0.3			0.1	0.4	0.4	0.3	0.3	0.1				0.5	8.2	217	181	24		121	16			0	29	9	0	12	0				52	0
	Irkeshtan	KGZ	150	11.6	10.8	0.4		2.1	1.5		0.5	0.1	0.2	0.4	0.2	0.2	0.1			5.4	0.4	7.1	145	175	17		59	21		6	3	9	25	18	11	0			0	17	0
	Alat	UZB	135	6.6	5.0	0.6		1.0	0.3	0.4	0.2	0.3	0.4	0.3	0.3	0.6	0.4	2.9				4.0	176	175	21		85	13	11	9			15	23	19	20					
	Farap	TKM	132	8.5	7.2	0.7		1.3	0.3	0.3	0.3	0.5	0.2	0.2	0.6	0.5	0.3	0.5			0.4	5.2	191	117	14		27	7	9	3	86	5	3	96	12	11				222	58
	Tazhen	KAZ	131	10.9	9.3	0.9		2.7	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.5	0.6	0.7			0.2	6.8	199	174	36		96	12	12	11	20	22	18	35	21	42				50	
	Dautota	UZB	114	3.3	2.5	0.5		1.2	0.3	0.3	0.3	0.3				0.2	0.5					2.5																			
	Artik	TKM	75	16.2	8.4	0.6		1.0	0.3	0.4	0.3	0.5	0.2	0.2	0.3	0.7	0.4				4.5	13.4	143	75	14		26	7	13	7	73	2	3	8	12	8				261	
	Krasnyi Most	AZE	49	2.4	0.5	0.2	1.1									0.3		1.5				3.5	24	30	6	24									9		20				10
	Krasnyi Most	GEO	49	0.3	0.3			0.3															2	0			2														
	Beyneu	KAZ	44	0.7	0.7								0.5	0.4	0.6	0.3		0.3					41	32								20	16	37	20		5				

Rail BCPs

	BCP	Country	Count	Duration (hrs) Total Avg	Duration (hrs) Total Median	Duration (hrs) Activities A	B	C	D	E	F	M	N	O	P	Q	R	S	T	U	V	W	Cost (US$) Total Avg	Cost (US$) Total Median	Cost (US$) Activities A	B	C	D	E	F	M	N	O	P	Q	R	S	T	U	V	W
2	Beyneu	KAZ	25	4.4	4.4											3.8		2.7																								
	Aktau	KAZ	20	6.3	5.6									6.1				0.1	0.2																							
	Dautota	UZB	1																																							

A. Border Security / Control, B. Customs (Single Window), C. Customs Clearance, D. Health / Quarantine, E. Phytosanitary, F. Veterinary Inspection, G. Visa/Immigration, H. GAI/Traffic Inspection, I. Police Checkpoint / Stop, J. Transport Inspection, K. Weight/Standard Inspection, L. Vehicle Registration, M. Emergency Repair, N. Escort / Convoy, O. Loading / Unloading, P. Road Toll, Q. Waiting/ Queue, R. Change of Railways Gauge, S. Classification of Trains, T. Technical Inspection, U. Commercial Inspection, V. Load Protection, W. Security Services





of delay, averaging 6.8 hours.

Sub-corridor 2b is an important route for goods from Mediterranean or Iranian seaports to access Central Asia. There are a number of shipments from Istanbul that are sent to Central Asia. After passing through Iran, the goods will enter Turkmenistan at Sarakhs, which then go to the BCP **Farap–Alat (TKM-UZB)**. The trucks can go to Tashkent or pass through Bukhara, Navoi, Samarkand, Djizzak, and **Yallama–Konysbaeva (UZB-KAZ)**. From there, the truck goes to Almaty or Bishkek. The distance from Sarakhs (TKM) to Bishkek (KGZ) spans 1,705 km, take 6 days, and costs $2,200.

Drivers crossing the BCP pair Alat-Farap encountered some delay as well, although it was slightly shorter than that at other key BCPs. Total border-crossing time averaged 6.6 hours and 8.5 hours at Alat and Farap, respectively. This was mainly due to long waiting time, which took 4 hours in Alat and 5 hours in Farap.

Meanwhile, the BCP pair **Krasnyi Most-Krasnyi Most (AZE-GEO)** presented no major problems in border crossing. This is due to single window implementation in AZE. Customs clearance was completed in less than 30 minutes and there were no long waiting times in queue, the common delay plaguing other BCPs.

Uzbekistan is a heavy user of sub-corridors 2a and 2b. It exports fresh vegetables, dried fruits, and cotton through sub-corridor 2b. It imports base metals, machineries, and manufactured goods. It is also a transit nation for overseas suppliers shipping goods to other parts of Central Asia. Most shipments are non-containerized. There are some 40-foot containers in use, mainly to store and transport cotton to overseas market. Azerbaijan exports food such as biscuits, sweets, and macaroni to Tbilisi. It imports vehicles to Baku. Azerbaijan is also a transit nation for products like gypsum from Russia to Georgia. A typical truck will start from Goranboy in Russia, pass through Shamkir, Krasnyi Most (both AZE and GEO), and end in Tbilisi. In summary, Corridor 2 is strategic, as sections of it are key transit corridors. ■

CORRIDOR 3: Russian Federation – Middle East and South Asia

Introduction

Corridor 3 is a regional transit corridor that links Russia in the north to the Middle East in the Southwest. The corridor starts from **Veseloyarsk-Aul (RUS-KAZ)** in the north and trucks pass through several Kazakhstan cities (Semey, Charskaya, and Aktogay) before reaching Almaty and crossing into Uzbekistan, or Kyrgyz Republic at **Kordai–Ak Zhol (KAZ-KGZ)**. Trucks using Corridor 3a enter Turkmenistan at Alat–Farap (UZB-TKM) and cross into Iran at **Sarahs–Sarakhs (TKM-IRN)**. Sub-corridor 3b enables trucks to drive from Bishkek in Kyrgyz Republic to Dushanbe in Tajikistan, crossing the border at **Karamik–Karamik (KGZ-TAJ)**. The trucks can then move into Uzbekistan via **Dusti (TAJ) – Saryasia (TAJ-UZB)** and enter Afghanistan at **Termez–Hairatan (UZB-AFG)**. The corridor continues into Iran.

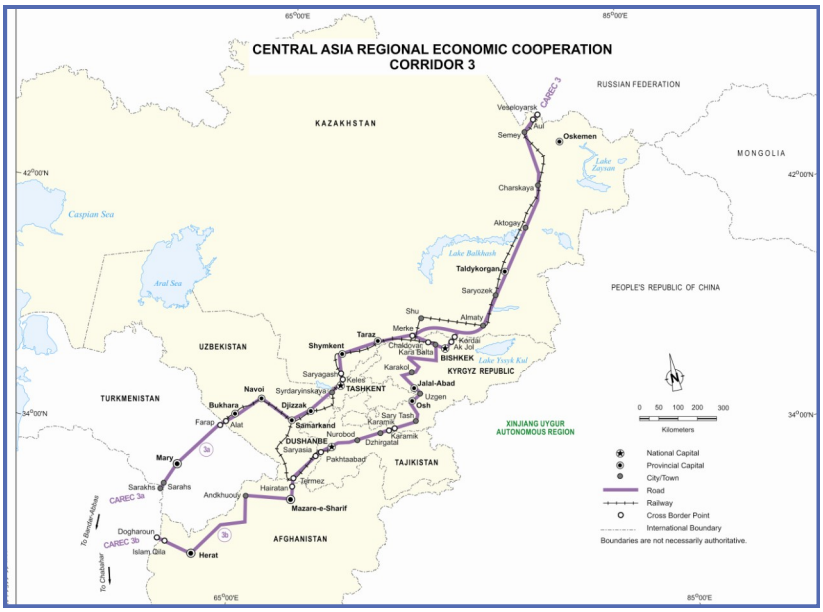
Based on the CPMM samples, the specific routes and BCPs actually used by drivers differ from the CAREC identified routes and BCPs. **Konysbaeva–Yallama (KAZ-UZB)** is a popular BCP pair that road drivers use to move between Kazakhstan and Uzbekistan.

Unlike Corridors 1 and 2 where cargo moves from east to west, cargo movements in Corridor 3 show a north-south direction. The strategic significance is access to maritime shipping channels at Iran's Bandar Abbas or the new port Chabahar. This is observed from CPMM data samples where machineries and equipment move through Iran into Central Asia using Corridor 3a. However there are not many movements of materials from Central Asia to Iran. This low volume of exports could be explained by the fact that Central Asia produces a significant amount of perishables such as fresh fruits and vegetables, and less manufactured goods. Feedback from CPMM participating associations reveal that using Corridor 3 to ship products can take considerable time at border crossings, not conducive to the shipment of perishables. Other causes of delays are examined in more detail below.

A. Road Transport

In 2011, Corridor 3 fared relatively well compared to other corridors. SWOD and SWD averaged 43 kph and 23 kph, respectively. However, corresponding estimates vary greatly at the sub-corridor level. Trucks travelling on sub-corridor 3a moved at 51 kph (SWOD) while those on sub-corridor 3b moved at 37 kph (SWOD). This suggests that the roads in the northern section of Corridor 3 may have better road surface condition and are well-connected compared to the southern section. The percentage

CAREC Corridor 3



change in the speed indicators for sub-corridors 3a and 3b were 51% and 37%, respectively. This would suggest that crossing borders in sub-corridor 3b is more efficient.

There are two popular routes in Corridor 3. One is the road transit of imported goods from Iran to Uzbekistan, which can continue to Kyrgyz Republic and Tajikistan. Trucks usually pass through Sarakhs-Sarahs and Saryasia-Dusti and may end up in Dushanbe as final destination. Manufactured items and machineries are transported along this route. The distance is about 1,200 km, and on the average, the trip takes 3 days and normally costs $1,000. The origin is usually Sarakhs in Iran, while the destination varies: Andijan, Tashkent, Dushanbe, or Bishkek.

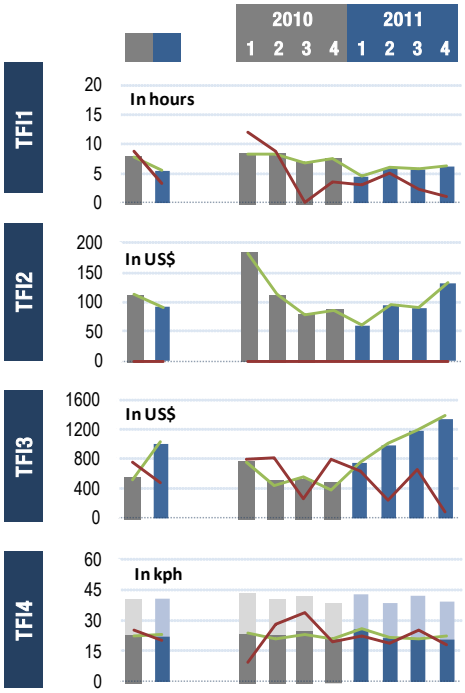
The second route is cargo movement between Russia and Central Asia. The goods start from Uzbekistan and travel into Kazakhstan, going to the designated Russian cities. Agricultural products and textiles are sent in along this route from Central Asia to Russia, while equipment and manufactured goods come from Russia destined for Central Asia. For instance, a truck starts from Termez in Uzbekistan, passing through Yallama and Pavlodar en route to Novosibirsk. The entire journey is 3,300km, and on the average takes 7 days and normally costs $3,000.

BCPs and Bottlenecks

There are five important BCP pairs in Corridor 3: (1) **Karamik-**

CORRIDOR 3

Trade Facilitation Indicators



		2010	2011	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4
TFI1	**Overall**	**7.8**	**5.5**	**8.3**	**8.3**	**6.8**	**7.5**	**4.5**	**5.9**	**5.7**	**6.2**
	Road	7.7	5.5	8.2	8.2	6.8	7.6	4.5	5.9	5.8	6.3
	Rail	8.8	3.3	12.0	8.7	-	3.5	2.9	5.0	2.3	1.0
TFI2	**Overall**	**112.9**	**90.9**	**183.4**	**112.5**	**79.1**	**86.5**	**60.3**	**95.0**	**89.8**	**132.2**
	Road	112.9	90.9	183.4	112.5	79.1	86.5	60.3	95.0	89.8	132.2
	Rail	-	-	-	-	-	-	-	-	-	-
TFI3	**Overall**	**557**	**1,012**	**757**	**500**	**537**	**494**	**741**	**985**	**1,180**	**1,339**
	Road	523.6	1,040.1	754.2	445.4	550.8	389.9	750.4	1,021.0	1,189.3	1,380.1
	Rail	759.4	476.1	796.6	817.2	263.2	790.0	632.1	233.1	650.9	90.3
TFI4	**Overall**	**23.1**	**22.4**	**23.5**	**23.2**	**25.2**	**20.8**	**25.5**	**21.1**	**21.7**	**20.7**
	Road	22.3	22.9	24.1	21.2	23.2	21.1	26.3	21.5	20.7	22.1
	Rail	25.7	20.6	9.8	28.1	33.9	19.9	22.1	19.0	25.6	18.3
SWOD	**Overall**	**41.1**	**40.8**	**43.5**	**40.4**	**42.4**	**38.9**	**43.1**	**38.6**	**42.1**	**39.3**
	Road	44.5	43.2	45.2	43.4	44.0	45.9	45.6	40.0	43.7	43.2
	Rail	28.9	32.8	10.1	33.1	35.2	22.1	31.5	32.2	35.2	32.6

Legend: 2010 Road | 2011 Rail

Border Crossing Points: TOP 10 (BASED ON 2011 SAMPLE)

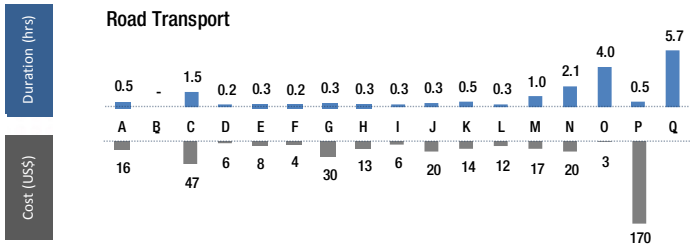
Road BCPs

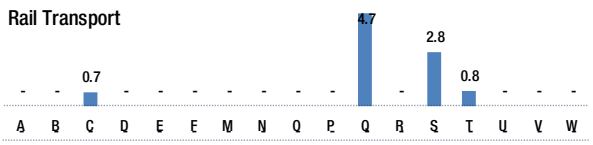
	BCP	Country	Count	Duration (hrs) Total Avg	Total Median	Activities A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	Cost (US$) Total Avg	Total Median	Activities A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
3	Karamik	KGZ	106	2.5	1.7	0.2		0.4	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2			0.9	0.7	7.5	61	65	4		26	3	4	4	4	11	8	11	2	3			3	50	0
	Nizhni Pianj	TAJ	106	1.2	1.3	0.2		0.3	0.1	0.1	0.1	0.1		0.2	0.2	0.4	0.1			0.8			35	38	3		18	3	2	2	3		20	3	4	3					
	Alat	UZB	92	7.2	6.5	0.8		1.2	0.2	0.4	0.1	0.3	0.1	0.4	0.4	0.6	0.3	1.8			1.0	5.1	208	200	27		87	12	10	9	250		15	34	23	15					
	Farap	TKM	92	7.9	7.0	0.8		1.3	0.2	0.4	0.2	0.4	0.1	0.4	0.4	0.6	0.5				0.3	5.0	172	112	29		39	6	12	6	399	2	2	46	12	29				254	
	Dusti	TAJ	77	4.2	3.7	0.5		1.4	0.2	0.3	0.2	0.2	0.3	0.2	0.3	0.6	0.2	0.2	1.3	13.0		2.4	138	45	13		42	3	6	4	14	8	3	104	11	8		20	10	221	
	Yallama	UZB	70	7.9	7.3	0.6		3.2	0.2	0.3	0.2	0.9	0.3	0.3	0.4	0.5	0.6					5.3	156	95	18		88	9	8	7	174	10	25	27	22	70					
	Sarahs	TKM	61	8.9	7.6	0.8		1.6	0.2	0.4	0.2	0.4	0.2	0.4	0.4	0.6	0.5	0.2			0.3	5.8	135	100	24		29	6	12	6	173	5	3	20	12	22				216	
	Taraz	KAZ	61	1.4	0.4								0.3	0.2	0.3	0.2	0.6			5.9		2.3	15	10								11	5	13	22	70					
	Konysbayeva	KAZ	56	5.2	4.8	0.7		1.8	0.4	0.4	0.2	0.2		0.3	0.7	0.2	0.3					3.0	203	240	42		100	17	21	6			6	56	40	35					
	Sarasiya	UZB	55	5.9	6.1	0.7		1.1	0.3	0.3	0.2	8.5		0.3		0.5	0.2	1.0				3.8	100	100							100										

Rail BCPs

	BCP	Country	Count	Duration (hrs) Total Avg	Total Median	Activities A	B	C	D	E	F	M	N	O	P	Q	R	S	T	U	V	W	Cost (US$) Total Avg	Total Median	Activities A	B	C	D	E	F	M	N	O	P	Q	R	S	T	U	V	W
3	Saryagash	KAZ	12	2.9	3.1			0.7								2.8		3.0	0.8																						
	Lokot	KAZ	3	10.4	10.4											9.5		1.7																						
	Keles	UZB	2																																						

A. Border Security / Control, B. Customs (Single Window), C. Customs Clearance, D. Health / Quarantine, E. Phytosanitary, F. Veterinary Inspection, G. Visa/Immigration, H. GAI/Traffic Inspection, I. Police Checkpoint / Stop, J. Transport Inspection, K. Weight/Standard Inspection, L. Vehicle Registration, M. Emergency Repair, N. Escort / Convoy, O. Loading / Unloading, P. Road Toll, Q. Waiting/ Queue, R. Change of Railways Gauge, S. Classification of Trains, T. Technical Inspection, U. Commercial Inspection, V. Load Protection, W. Security Services





Karamik at the KGZ-TAJ border, (2) **Alat-Farap** at the UZB-TKM border, (3) **Konysbaeva-Yallama** at the KAZ-UZB border, (4) **Dusti-Saryasia** at the TAJ-UZB border and, (5) **Sarakhs-Sarahs** at the IRN-TKM border. Among these pairs, Karamik-Karamik and Dusti-Saryasia fare better in terms of border-crossing time.

Alat-Farap (UZB-TKM) continues to be one of the heavily used BCP pairs, and similar to 2010, crossing this BCP pair was a time-consuming affair. Total border-crossing time for each BCP averaged at about 7 to 8 hours, which is mainly a result of 5-hour waiting time in queues. But this is a significant improvement from 2010, when the waiting times at Alat and Farap were 11 and 21 hours, respectively.

Yallama-Konysbaeva (UZB-KAZ) was a popular BCP in 2011. Their corresponding total border-crossing times averaged 5 and 8 hours, respectively. Waiting time and customs clearance were the principal causes of delay. Both activities took about twice as long at Yallama; at Konysbaeva, the waiting time and customs clearance took 3 hours and 1.8 hours, while at Yallama, the same activities took 5 and 3 hours. Still, this is a marked improvement from previous years where the average waiting times were 9 hours (2009) and 13 hours (2010). This suggests that traders and border officials may have adapted to new procedures introduced when the Customs Union was put in place, and that border crossing point improvements completed by UZB and KAZ have had positive effects. Further investigation is needed to confirm the sources of improved (though still suboptimal) performance.

The BCP pair **Sarakhs-Sarahs (IRN-TKM)** is a key gateway, but average border-crossing time was the longest, requiring an average of 41 hours at Sarakhs and 9 hours at Sarahs. At Sarakhs, multiple delays such as waiting time (37.4 hours), loading/unloading (8.8 hours), escort/convoy (6 hours), and customs clearance (6.1 hours) posed problems for truck drivers. The situation at Sarahs was relatively better. Waiting time was 5.8 hours and customs clearance took 1.6 hours. It is important to monitor the situation at Sarakhs in 2012.

B. Rail Transport

Rail speed is comparable to other corridors. SWOD is 33 kph but SWD is only half that (16 kph). CPMM contains samples of rail transport in Corridor 3a only. As with Corridor 1, the rail data came mainly from within the Kazakhstan portion of Corridor 3. Products moved include consumer goods, cement, coal, steel, and industrial materials.

The samples in Kazakhstan show the products are moved in conventional rail wagons with a capacity of 70 tons. There is no use of containers. Feedback given was that shippers, freight forwarders, and customs officials are familiar with the documentation and procedures for conventional rail transport, but containerized rail transport is something relatively new and thus many transporters lack the knowledge to complete the job.

BCPs and Bottlenecks

Most of the CPMM data were internal movement of goods within Kazakhstan. Some cargoes crossed **Sarygash–Keles (KAZ-UZB)**, but the border crossing did not take too much time. On the other hand, substantial delays were encountered in the major railway junctions at Semey, Pavlodar and Aktogay. The delays were caused by long waiting time and classification. This could take one to two days. ■

CORRIDOR 4: Russian Federation – East Asia

Introduction

Corridor 4 is a Trans-Mongolian route that offers road and rail connectivity between Russia and East Asian markets that include PRC, South Korea, and Japan. The 1,000 km rail track forms the main corridor for Mongolia's imports, exports, and transit cargo movement. A road also connects the north to Ulaanbaatar, and continues to Choyr. Road construction is still ongoing in the south. When the new ADB-funded road section between Choyr and Zamyn-Uud is completed, moving cargoes by road in the southern part of the country will be faster.

Road drivers pass through **Khiagt–Altanbulag (RUS-MON)** in the north and **Zamyn Uud–Erenhot (MON-PRC)** in the south. Meanwhile, trains pass through **Naushki–Sukhbaatar (RUS-MON)** in the north and **Zamyn Uud–Erenhot (MON-PRC)** in the south.

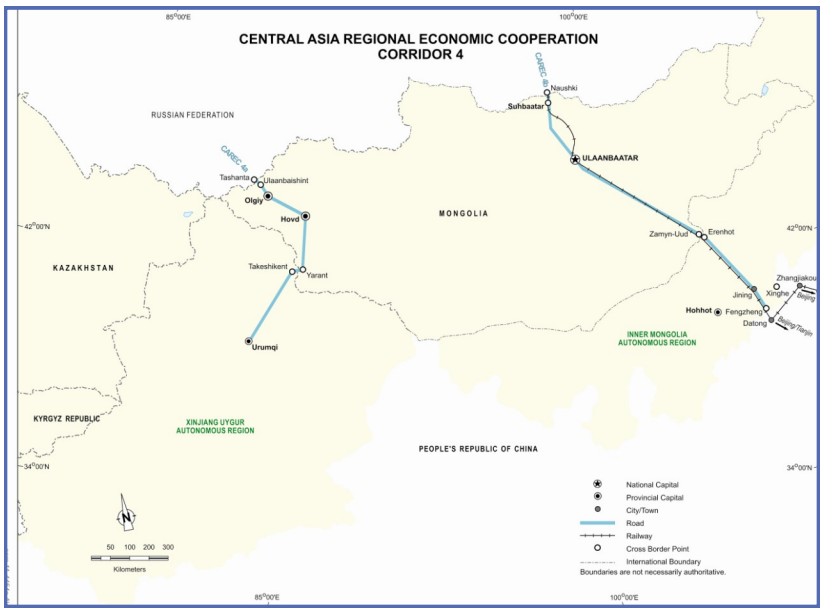
Being land-locked, Mongolia relies largely on the Erenhot-Jining-Tianjin route (about 980 km long) to access the seaport Xingang. While Russia's Far East seaports (principally Vladivostok, Nadkhoda, and Vostochniy) could, in theory, offer access to maritime shipping lanes, the transit time is too long and service is unreliable. Furthermore, most of Mongolia's exports are meant for Japanese and Korean markets. Therefore, the seaport at Xingang offers the most direct route. For some time, however, Mongolian interests have been complaining that the transit time between Xingang-Jining-Erenhot takes too long. Delays have been attributed to the fact that Xingang is a very busy port and sometimes it is felt that priority goes to handling Chinese exports and imports. While the idea of a dedicated 'green lane' has been suggested by the Mongolians (to handle incoming and outgoing Mongolian cargo), it has not generated positive response from the Chinese counterparts.

A. Road Transport

There is no road transit traffic in Mongolia except in Corridor 4a where Russian cargoes move through Mongolian cities of Olgii, Hovd, and Yarant before reaching Urumqi in XUAR. However, the number of shipments in sub-corridor 4a is significantly less than that in 4b; hence CPMM efforts are currently more focused on 4b. In sub-corridor 4b, road traffic occurs in two segments; (1) the northern segment from Khiagt to Ulaanbaatar, and (2) the southern segment from Ulaanbaatar to Erenhot.

The northern segment connecting Khiagt to Ulaanbaatar is 337 km long and caters to the Russian-Mongolian trade. CPMM showed

CAREC Corridor 4



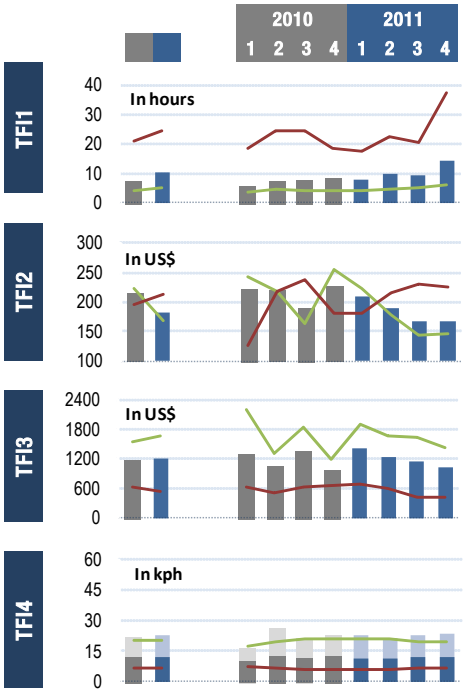
that Russian exports to Mongolia comprised mostly of cosmetics and medicine, although commodities like building materials and equipment were also reported. In 2011, for every ten Russian exports, there were only two Mongolian exports mostly of furniture and meat.

In this segment, trucks travelled at 30-40 kph (SWOD) and 10-20 kph (SWD). Total time taken was between 20-30 hours for the entire journey, including border crossing and other stop activities. In terms of cost, records show a sizeable difference in import and export cost. A typical truck moving from Khiagt to Ulaanbaatar spends $900 to $1,000, but the same trip cost only $700 if the truck begins at Ulaanbaatar and ends at Khiagt.

The southern segment links Ulaanbaatar to Erenhot. Through this section, China exports clothing, shoes, furniture, and building materials, while Mongolia exports meat, animal hides, and minerals. The number of shipments was very low due to poor roads along the 736-km journey between Ulaanbaatar and Erenhot. The trip takes about 40 hours, including border-crossing time. When conditions are less than ideal (adverse weather, heavy traffic), the entire journey could last 70 hours. In this segment, trucks move at an average of 30 kph (SWOD) and 10-20 kph (SWD). Similar to the northern section, cost is higher for Mongolian imports than exports. A truck travelling from Erenhot to Ulaanbaatar spent $2,000, but the same journey in the opposite direction cost only $1,300.

CORRIDOR 4

Trade Facilitation Indicators



		2010	2011	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4
TFI1	**Overall**	**7.2**	**10.3**	**5.8**	**7.1**	**7.8**	**8.1**	**7.8**	**9.6**	**9.4**	**14.3**
	Road	4.0	4.9	3.4	4.5	3.9	4.2	4.1	4.6	5.1	5.9
	Rail	21.0	24.4	18.4	24.5	24.5	18.2	17.4	22.5	20.5	37.1
TFI2	**Overall**	**215.0**	**181.8**	**222.4**	**218.2**	**190.5**	**225.5**	**208.2**	**189.5**	**167.7**	**166.6**
	Road	222.0	169.1	242.5	218.3	164.5	255.1	223.2	179.2	143.3	145.7
	Rail	194.8	213.3	125.6	218.1	238.4	181.4	180.7	216.4	231.6	226.6
TFI3	**Overall**	**1,171.5**	**1,213**	**1,310**	**1,071**	**1,361**	**983.1**	**1,410**	**1,241**	**1,162**	**1,037**
	Road	1,551.7	1,663.5	2,190.4	1,310.3	1,852.8	1,197.4	1,897.4	1,658.9	1,652.1	1,445.5
	Rail	617.3	536.1	616.1	525.8	635.3	666.5	679.3	613.3	426.4	425.3
TFI4	**Overall**	**11.9**	**11.8**	**10.3**	**13.1**	**11.4**	**12.5**	**11.7**	**11.7**	**11.8**	**12.0**
	Road	20.1	20.1	17.3	19.9	21.4	20.8	20.8	20.8	19.4	19.6
	Rail	6.7	6.5	7.6	7.0	6.1	6.3	6.3	6.0	7.0	6.8
SWOD	**Overall**	**22.1**	**22.6**	**16.7**	**26.3**	**21.4**	**22.9**	**22.5**	**21.2**	**23.2**	**23.5**
	Road	40.1	41.0	30.9	41.5	42.5	41.2	43.9	40.8	39.8	39.7
	Rail	10.8	11.0	11.3	12.7	10.2	9.2	9.7	9.0	12.7	12.5

Legend: 2010 Road / 2011 Rail

Border Crossing Points: TOP 10 (BASED ON 2011 SAMPLE)

Road BCPs

	BCP	Country	Count	Duration (hrs) Total Avg	Total Median	Activities A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
4	Erenhot	PRC	600	6.6	5.0	0.2		3.9	0.2	0.2	0.2	0.1	0.3	0.2		0.2	0.1	2.4		6.8	0.1	1.5
	Zamyn Uud	MON	445	5.8	5.0	0.9		4.7	0.4	0.3	0.3	0.1	1.1	0.2	0.3	0.3	0.2	0.8		3.4		4.3
	Altanbulag	MON	254	2.5	2.1	0.3		0.7	0.3	0.3	0.3		0.3	0.3	0.3	0.3	0.3		6.8	3.4		0.7
	Sukhbaatar	MON	248	0.8	0.3	0.3		0.5	0.3	0.3	0.3		0.3	0.3	0.3	0.3	0.3	1.9		1.5		0.5
	Khiyagt	RUS	227	2.9	2.7	0.3		0.7	0.3	0.3	0.3		0.3	0.3	0.3	0.3	0.3		0.5			0.8

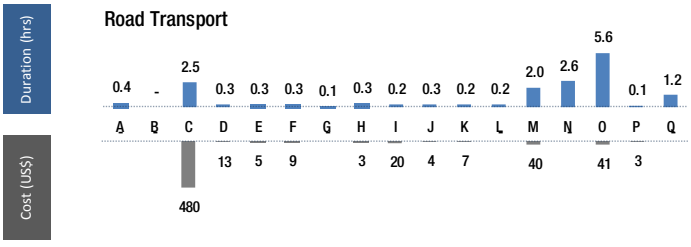
Cost (US$) Total Avg	Total Median	Activities A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
86	45	0		155	9	8	9	0		13		7	0	51		24	6	0
363	30	0		807	17	1	0	0	3	30			0			0	1	
4	4				3	3			3		5						1	
1	1					3			3		3			8			1	

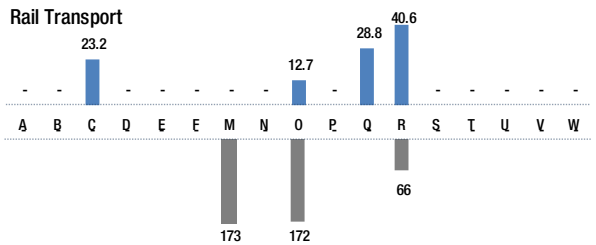
Rail BCPs

	BCP	Country	Count	Duration (hrs) Total Avg	Total Median	Activities A	B	C	D	E	F	M	N	O	P	Q	R	S	T	U	V	W
4	Erenhot	PRC	351	40.5	48.0			31.4								33.8	45.4					
	Zamyn Uud	MON	351	16.4	10.8									12.6		11.4	30.5					
	Naushki	RUS	120	43.6	24.0											43.6						
	Sukhbaatar	MON	120	21.8	24.0			21.8														

Cost (US$) Total Avg	Total Median	Activities A	B	C	D	E	F	M	N	O	P	Q	R	S	T	U	V	W
140	140									135			66					
256	146							173		191			64					

A. Border Security / Control, B. Customs (Single Window), C. Customs Clearance, D. Health / Quarantine, E. Phytosanitary, F. Veterinary Inspection, G. Visa/Immigration, H. GAI/Traffic Inspection, I. Police Checkpoint / Stop, J. Transport Inspection, K. Weight/Standard Inspection, L. Vehicle Registration, M. Emergency Repair, N. Escort / Convoy, O. Loading / Unloading, P. Road Toll, Q. Waiting/ Queue, R. Change of Railways Gauge, S. Classification of Trains, T. Technical Inspection, U. Commercial Inspection, V. Load Protection, W. Security Services

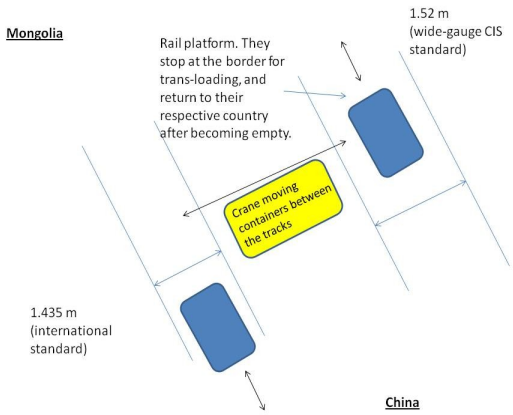




Border Crossing in Corridor 4

Mongolia uses the broad gauge rail standard adopted by the Russia in the 19th century . The rail gauge in Mongolia is 1.52m while in the PRC the standard gauge of 1.435m is used. As such, trains crossing the two countries will need to stop and transfer the containers by fixed crane or by mobile crane, or transfer the goods manually form container to conventional rail wagons or vice-versa before continuing to the final destination.

For Mongolian imports from China, trains travel from Tianjin to Inner Mongolia, passes through Jining (a major railway junction in Inner Mongolia), and stops at Erenhot. Here, China Customs inspects the train before it is allowed to cross the border and stop at Zamyn Uud. The trans-loading of containers is done in Zamyn Uud, where heavy cranes are used to move the container from a Chinese rail wagon onto a Mongolian rail wagon (using broad gauge). Zamyn Uud has three terminals for trans-loading; Terminal 1 has 2 fixed cranes, terminal 2 has 2 mobile cranes and terminal 3 has 1 fixed crane. After this process is completed, the train continues to Ulaanbaatar. For exports, trans-loading is done at Erenhot. The cost of trans-loading in Zamyn Uud is $40 for one 20-foot container and $80 for a 40-foot container.



In 2011, Mongolian shippers and freight forwarders were hit by a sharp increase in rail tariffs. Effective 1 August 2011, China Railways implemented an additional $300 for a TEU and $600 for a FEU. The mechanism for railway pricing is established by OSJD (Organization for Collaboration between Railways), where tariffs are set in Swiss Francs (CHF). Following the Euro financial crisis, CHF appreciated sharply and China Railways cited this increase in currency as the reason for raising the rail tariffs for all transit cargoes going through Chinese territory. This was a unilateral decision which took the transport sector in Mongolia by surprise.

BCPs and Bottlenecks

Corridor 4b has two important BCP pairs, **Khiagt (RUS)-Altanbulag (MON)** in the north and **Zamyn Uud (MON)–Erenhot (PRC)** in the south.

Border-crossing time averaged 2.9 hours at Khiagt and 2.5 hours at Altanbulag. This is an improvement compared to 2010, where long waiting time (possibly a product of Russia's introduction of a Customs Union with Kazakhstan and Belarus) caused the border crossing to be excessively time-consuming.

At **Zamyn Uud (MON)–Erenhot (PRC)**, the border-crossing time averaged 5.8 hours and 6.6 hours, respectively. Waiting time in queue, loading/unloading, and customs clearance were the three main causes of delays; at Zamyn Uud, these activities took 4.3 hours, 3.4 hours, and 4.7 hours, respectively, while at Erenhot, the same activities took 1.5 hours, 6.8 hours, and 3.9 hours, respectively.

B. Rail Transport

Rail transport serves transit, import, and export traffic. Transit shipments include Russian timber sent to PRC across Mongolia. In CPMM samples, the route is Nauskhi-Sukhbaatar-Tolgoit-Choyr-Sainshand-Zamyn Uud-Erenhot, spanning 1,113 km. The trip takes 5-8 days and cost $1,500 on average. No containers were used, only the conventional 70-ton capacity rail wagons for the trip from the Russian points of origin to Zamyn Uud.

Imports shipments began in Tianjin, traveled to Erenhot-Zamyn Uud, and ended in Ulaanbaatar. The PRC section is 980 km while the Mongolian section is 712 km; covering a total of 1,692 km. Products transported include electronics goods, consumer products, new vehicles, used cars, and spare parts. The journey averaged 16 to 18 days. As Chinese customs demand all applicable products, originating from Mongolia, to be shipped in containers on rail, the cost depended on the type of containers used. A 20-foot container cost $2,500 in total, while a 40-foot container cost $4,500.

Exports shipments began in Ulaanbaatar and ended in Tianjin. Mongolia exports a large number of minerals as well as zinc cathodes and copper cathodes to PRC. The journey takes 8 to 12 days and cost $2,200 for a 20-foot container and $3,600 for a 40-foot container.

It is apparent that an import shipment is more expensive and time -consuming than export. As Mongolia and PRC do not use the same rail system, there is a need to transload at the BCPs. For Mongolian imports, transloading is done at Zamyn Uud before the train continues to Ulaanbaatar. For exports, transloading is done

in Erenhot, before the train continues to Tianjin. There are three rail terminals in Zamyn Uud. The change of gauge is done by yard crane or mobile crane, and even manual labor. At times when heavy traffic is encountered, Zamyn Uud does not have sufficient cranes to move the goods between trains, and severe delays occur. The PRC BCP at Erenhot is also affected by resource constraints. Analyzing the border crossing data at Zamyn Uud and Erenhot, both have an average of 24 hours of border-crossing time but surprisingly the export time is shorter than the import time. After further analysis, it was found out that export samples did not include the waiting time at Tianjin. However, the import samples included the waiting time at Tianjin when the goods were unloaded from the vessel and waiting in the railways terminal for the rail wagons. This could take 24 to 48 hours. This effectively explained why import time was longer than export time.

In addition, the expensive demurrage charges in Tianjin also compel freight forwarders or shippers to return containers from Ulaanbaatar to Tianjin (laden or empty) quickly. Free demurrage is given for the first three days only. After that, the charge is $10/day for a 20-foot container and $20/day for a 40-foot container. The fee doubles per week after the free period. Thus, seven days after the free period, the penalty will be $20/day for a 20-foot container and $40/day for a 40-foot container. This forces the shippers or freight forwarders to unload items quickly at Ulaanbaatar, load the necessary goods, and send the container back to Tianjin.

The difference in cost is also reflective of the trade imbalance between Mongolia and PRC. Mongolia imports much more goods from PRC. Thus, there is a high demand for containers and rail wagons moving from Tianjin to Ulaanbaatar, but low export volumes mean that many containers would have to return empty. Thus, shipping costs are usually higher for the first leg of the journey; the cost for the return leg can be lower since most of the cost has already been paid by the first shipper. This applies to both rail and road transport, and is reflected in the CPMM estimates.

BCPs and Bottlenecks

In Corridor 4b, **Zamyn Uud–Erenhot (MON-PRC)** remains the only BCP pair for rail shipment between Mongolia and PRC. In the northern part of Mongolia, trains pass through Naushki-Sukhbaatar to Russia. Sukhbaatar is the rail BCP; it is situated somewhat inland, 24 km south of the MON-RUS border.

CPMM data showed extensive delays at these two BCP pairs. At **Zamyn Uud–Erenhot (MON-PRC)**, the border-crossing time averaged 16.4 hours and 40.5 hours respectively. Multiple reasons made the border crossing at Erenhot very time-consuming. Change of gauge took, on the average, 45.4 hours. Queuing time averaged 33.8 hours and customs clearance took 31.4 hours. At Zamyn-Uud, change of gauge took 30.5 hours and waiting time took 11.4 hours. Loading/unloading required 12.6 hours.

At **Naushki-Sukhbaatar (RUS-MON)**, the average border-crossing time was 43.6 hours at the former and 21.8 hours at the latter. At Nauskhi, the long delay was entirely due to the long waiting time. The same reason was cited in 2010, so it seemed that the situation has remained unchanged. Delays at Sukhbaatar were mainly due to customs clearance.

SWOD on corridor 4b was 11 kph; SWD was 7 kph. SWD compares favorably with the 4.4 kph average speed of a train serving the 1,692 km Tianjin-Ulaanbaatar segment (assuming the 16- rather than 18-day journey). There may be some scope for improvement in this particular service, both in border management and rail operations. ■

CORRIDOR 5: Europe – East Asia – Middle East and South Asia

Introduction

Corridor 5 connects East Asia and Central Asia to South Asia. Featuring no sub-corridors and used mainly for regional road transit, the corridor is quite significant. Like Corridor 3, Corridor 5 offers access to seaports in the south. The difference is that Corridor 5 routes link to seaports in Pakistan, namely Karachi and the new port at Gwadar. From Karachi to Torkham (Afghanistan BCP) the distance is about 1,750km, which is the shortest route from Central Asia to a sea port. If physical infrastructure and external environment conditions improve, this corridor could see a tremendous increase in regional trade.

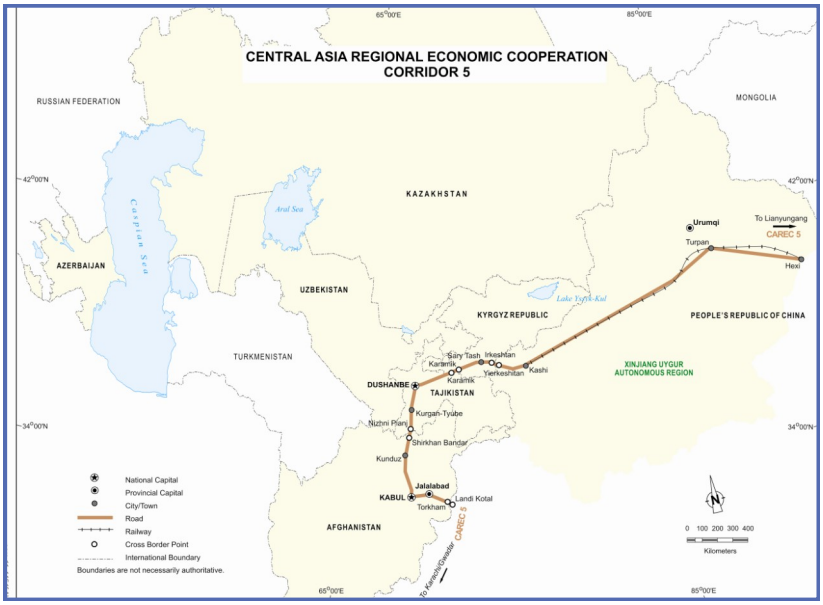
Unfortunately, Corridor 5 faces several challenges. First, multi-modal transport is not possible. From PRC, the trains can move to Urumqi but cannot continue beyond Kashi. The railway networks in Kyrgyz Republic and Tajikistan are not well connected. In Afghanistan, there is virtually no railroad, except for an ADB-funded 168-km rail that connects Termez in Uzbekistan to Mashar -e-Sharif in Afghanistan. Second, the physical terrain in Tajikistan is mountainous. Third, shippers face higher premium in cargo insurance and freight cost for shipments to cross Afghanistan and Pakistan due to security concerns. These factors contributed to the long time and high cost in transportation, details of which are described in the following section.

Cost and Time Spent on Delays

Corridor 5 is the worst performer in 2011. Both the SWOD and SWD registered the lowest speed relative to all corridors. SWOD was 31 kph and SWD was 19 kph.

The movement of cargoes could be grouped into a few routes. One is the Kashi-Dushanbe route, a stretch of 877 km. The truck begins in Kashi, crossing into the Kyrgyz Republic at the Yierkeshitan-Irkeshtan BCP pair. It continues into Tajikistan territory at the Karamik-Karamik BCP pair, before stopping at Dushanbe. On the average, this journey takes 2.5 days, registering a speed of 30 kph (SWOD) and 15 kph (SWD). The transport cost was unusually high, averaging $5,200 for the entire trip. Further examination of the cost reveals that vehicle operating cost and activities cost each contributed 50%. This was rather relatively high for activities cost compared to other corridors. Data shows that the most expensive payment occurred at Karamik (KGZ) where customs clearance payment cost $1,700. This sum includes a road usage fee but no receipt was given, thus suspected as unofficial payment. Furthermore, products sent via this route consisted of machineries, tractors, cement, and building materials. Dushanbe was undergoing some construction projects and these shipments were sent to supply the sites.

CAREC Corridor 5



Another popular route is the stretch from Karamik-Tursunzade (KGZ-TAJ). Through this route, Tajikistan received many shipments from Kyrgyz Republic, such as flour, vegetables, and fruit juice. On average, vehicle operating costs range from $2,500 to $3,000 for this 340-km stretch. This is relatively high since a 503-km road shipment from Karamik (KGZ) to Nizhni Pianj (TAJ), which connects to the Afghanistan border, costs just as much. Freight forwarders explained that the poor physical infrastructure was the principal reason for such high cost. Meanwhile, the best road section was from Karamik to Dushanbe; road sections in other parts of the country require much improvement.

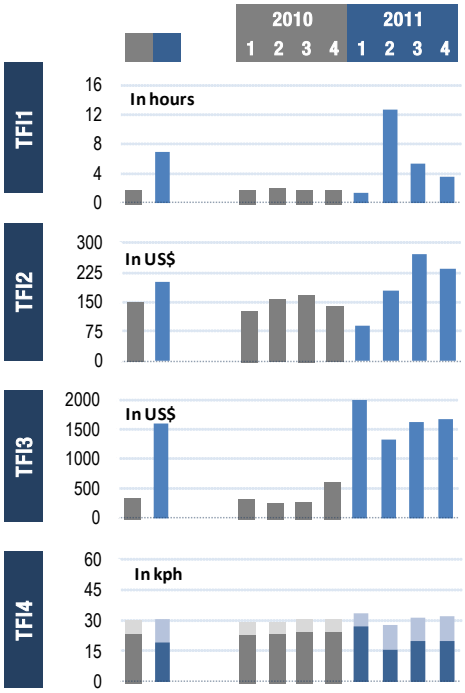
Corridor 5 also plays an important role for Afghanistan. The Torkham-Shirkhan Bandar route is one of the busiest sections in Afghanistan. It was observed that cargo movement between Afghanistan and Pakistan was limited to a few products. Fruits and cement were commonly sent from Torkham to Shirkhan Bandar, while scrap iron was transported in the opposite direction. In terms of frequency, there was only one Shirkhan Bandar-Torkham shipment for every ten Torkham-Shirkhan Bandar shipments. On the average, this 600-km stretch cost about $800 and took 1-2 days to complete.

BCPs and Bottlenecks

In 2009 and 2010, no major delays were observed along Corridor 5. However, in 2011, the two BCP pairs that handled high volumes of traffic, namely **Yierkeshitan-Irkeshtan (PRC-KGZ)** and **Karamik-Karamik (KGZ-TAJ)**, reported significant delays.

CORRIDOR 5

Trade Facilitation Indicators



		2010	2011	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4
TFI1	Overall	1.8	6.8	1.7	1.9	1.8	1.7	1.4	12.7	5.3	3.5
	Road	1.8	6.8	1.7	1.9	1.8	1.7	1.4	12.7	5.3	3.5
	Rail	-	-	-	-	-	-	-	-	-	-
TFI2	Overall	147.4	201.3	128.5	157.1	165.9	138.1	89.5	179.1	269.9	234.5
	Road	147.4	201.3	128.5	157.1	165.9	138.1	89.5	179.1	269.9	234.5
	Rail	-	-	-	-	-	-	-	-	-	-
TFI3	Overall	352.1	1,592	323.0	247.7	266.5	600.5	2,033	1,335	1,620	1,672
	Road	352.1	1,592.1	323.0	247.7	266.5	600.5	2,033.1	1,335.0	1,620.1	1,672.2
	Rail	-	-	-	-	-	-	-	-	-	-
TFI4	Overall	23.8	19.4	23.1	23.4	24.5	24.3	26.9	15.8	19.7	20.1
	Road	23.8	19.4	23.1	23.4	24.5	24.3	26.9	15.8	19.7	20.1
	Rail	-	-	-	-	-	-	-	-	-	-
SWOD	Overall	29.9	30.5	29.0	29.4	30.5	30.7	33.3	27.6	31.4	32.0
	Road	29.9	30.5	29.0	29.4	30.5	30.7	33.3	27.6	31.4	32.0
	Rail	-	-	-	-	-	-	-	-	-	-

Legend: 2010 Road / 2011 Rail

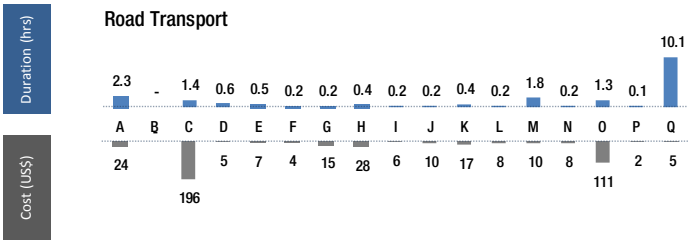
Border Crossing Points: TOP 10 (BASED ON 2011 SAMPLE)

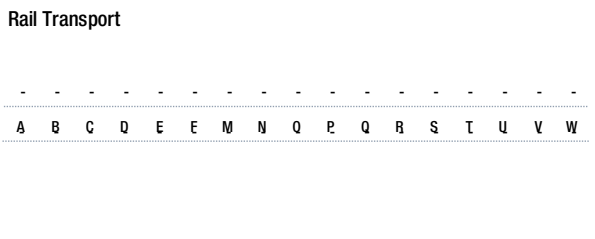
Road BCPs

	BCP	Country	Count	Duration (hrs) Total Avg	Total Median	Activities A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
5	Sherkhan Bandar	AFG	168	1.5	1.2	0.4		0.6	0.2	0.2	0.2	0.1		0.2		0.2	0.3			1.3	0.2	
	Karamik	KGZ	164	9.0	2.9	3.2		3.6	0.5	0.5	0.2	0.2		0.1	0.2		0.2			1.6		4.4
	Torkham	AFG	147	2.7	2.8	0.8		0.8					0.3	0.2				1.8		1.3		
	Irkeshtan	PRC	87	15.2	15.8	2.5		0.2	1.0	1.0		0.2	0.2			0.5					0.1	11.6
	Karamik	TAJ	73	8.9	8.8	7.8		0.9	0.7	0.2	0.2	0.5	0.5	0.2	0.2	0.2	0.2		0.2	1.3		6.2
	Irkeshtan	KGZ	70	13.2	14.3	0.9		0.2	1.0	1.0		0.2									0.1	10.9
	Nizhni Pianj	TAJ	27	1.0	1.0	0.2		0.2	0.1	0.1	0.1		0.2			0.3	0.1					
	Dusti	TAJ	5	1.1	1.1	0.1		0.3		0.1	0.1	0.1		0.1	0.2		0.2					

	BCP	Country	Count	Cost (US$) Total Avg	Total Median	Activities A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
5	Sherkhan Bandar	AFG	168	117	112	20		39	20	3	4	15		6		20	20			117	12	
	Karamik	KGZ	164	437	74	6		410	4	4	4	3		2	11	3	3			3		0
	Torkham	AFG	147	171	170	30		31					10	6				10		120		
	Irkeshtan	PRC	87	20	18	5		0	9	14		0	0			0					2	4
	Karamik	TAJ	73	330	348	41		235	6	6	4	58	32	8	10	18	25		8			0
	Irkeshtan	KGZ	70	91	98	70		11	9	14		2									2	3
	Nizhni Pianj	TAJ	27	27	30	3		16	2	2	2		4			4	2					
	Dusti	TAJ	5	42	43	2		30		2	2			2	3		2					

A. Border Security / Control, B. Customs (Single Window), C. Customs Clearance, D. Health / Quarantine, E. Phytosanitary, F. Veterinary Inspection, G. Visa/Immigration, H. GAI/Traffic Inspection, I. Police Checkpoint / Stop, J. Transport Inspection, K. Weight/Standard Inspection, L. Vehicle Registration, M. Emergency Repair, N. Escort / Convoy, O. Loading / Unloading, P. Road Toll, Q. Waiting/ Queue, R. Change of Railways Gauge, S. Classification of Trains, T. Technical Inspection, U. Commercial Inspection, V. Load Protection, W. Security Services





At the PRC-KGZ border, drivers at Yierkeshitan needed 15.2 hours to cross the border while Irkeshtan needed 13.2 hours. The reasons for delay at Yierkeshitan were long waiting time (11.6 hours) and border security check (2.5 hours). At Irkeshtan, long waiting time of 10.9 hours contributed to the delay.

At **Karamik-Karamik (KGZ-TAJ)**, each BCP averaged 9 hours for border crossing. On the KGZ side, four causes accounted for most of the delays. They were waiting time (4.4 hours), customs clearance (3.6 hours), border security (3.2 hours), and loading/ unloading (1.6 hours). On the TAJ side, the delays were caused by border security (7.8 hours), waiting time (6.2 hours), and loading/ unloading (1.3 hours). ■

CORRIDOR 6: Europe – Middle East and South Asia

Introduction

Corridor 6 is a north-south corridor that shares sections with other corridors. It branches out to three sub-corridors 6a, 6b, and 6c. Corridor 6a is served by both roads and railways. The route starts from the BCP pairs **Krasnyi Yar–Kurmangazy (RUS-KAZ)** for road and **Aksarayskaya-Ganyushking (RUS-KAZ)** for rail in the western part of Kazakhstan. It passes through major Kazakhstan cities (Atyrau and Makat) and enters Uzbekistan at BCP pair **Tazhen-Dautota (KAZ-UZB).** The route then continues through Nukus, Bukhara, and Navoi, and entering Afghanistan through **Termez-Hairaton (UZB-AFG).** Finally, the route moves westwards and enters Iran through the Afghan BCP at Islam Qila. The northern section of this route in Kazakhstan and Uzbekistan is shared with sub-corridor 2a, except for the most northern part where sub-corridor 6a continues on a road journey around Atyrau while sub-corridor 2a goes on to the Trans-Caspian route using ferries. Meanwhile, the southern section of 6a shares that route with sub-corridor 3b.

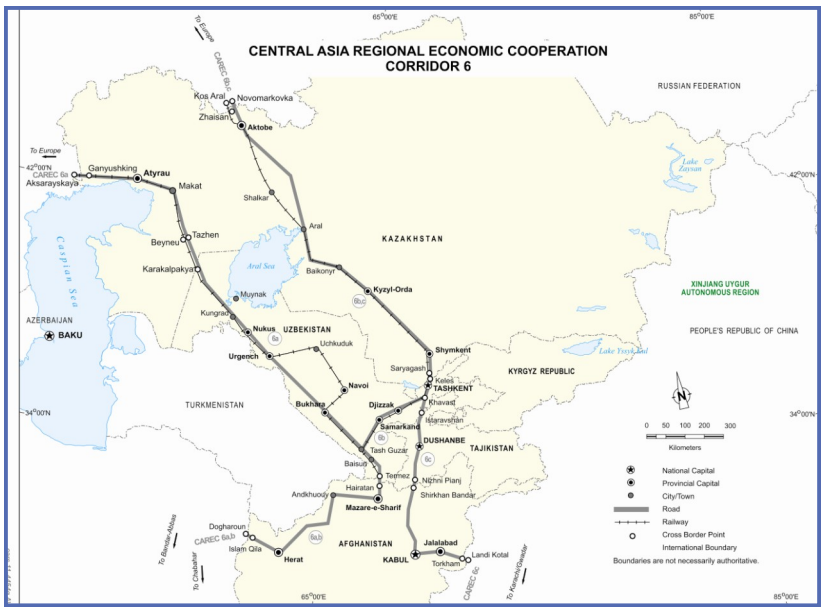
On the other hand, Corridor 6c starts from the BCP pair **Kos Aral-Zhaisan (RUS-KAZ)** and passes through Aktobe, Kyzlorda, and Shymkent, facilitating both road and rail transport (this is fairly similar to sub-corridor 1b). The route then extends southwards and passes through Sarygash-Keles (KAZ-UZB) for railways or **Konysbaeva-Yallama (KAZ-UZB)** for trucks entering Uzbekistan. After going through Tashkent, it enters Tajikistan and passes through Dushanbe until BCP **Nizhni Pianj-Shirkhan Bandar (TAJ-AFG)**. The rest of the section is shared with Corridor 5 moving through Kundoz, Kabul, and Jalalabad, connecting with Pakistan at **Torkham-Landi Kotal (AFG-PAK).**

In between 6a and 6c, sub-corridor 6b is the east-west section that allows trucks to move within Uzbekistan. Corridor 6 is a route used heavily by Uzbek freight forwarders to move exports and imports from Iran and Russia. Through this route, Uzbekistan plays the role of a transit nation for Middle East and Russia in sending goods to Central Asia. Goods come from as far as Turkey, Estonia and Latvia. Corridor 6 is also the only corridor that connects both Iranian and Pakistani seaports in the south to Central Asia in the north.

A. Road Transport

In 2011, average road speed in Corridor 6 was 38 kph (SWOD) and 23 kph (SWD). In the sub-corridor level, 6a, 6b, and 6c had 42/23 kph, 44/21 kph, and 33/23 kph, respectively, for SWOD/SWD.

CAREC Corridor 6



Corridor 6c had noticeably lower SWOD. Drivers along the sub-corridor expressed that the roads are poorly constructed or lacking in many areas. Between the two sub-corridors, 6a and 6c, Uzbek drivers opt for 6a which provides a more direct route to Russia and Europe. Moreover, sub-corridor 6b registered a relatively low SWOD. According to CPMM data, samples for sub-corridor 1b include only journeys from Khorgos to Shymkent, while the section through Shymkent-Kyzlorda-Aktobe is only used by trains.

While differences exist in SWOD estimates, the three sub-corridors had similar SWD. This indicated that border crossing delays were significant in certain BCPs, which are discussed later in the report.

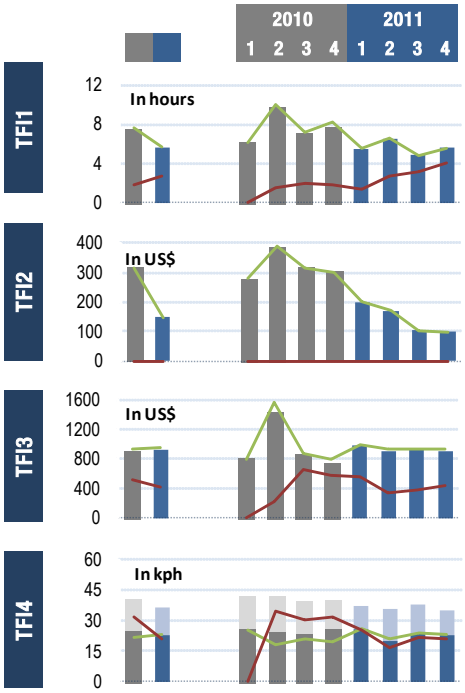
Corridor 6a was used heavily by Uzbek drivers, both for imports and for exports. For exports, products such as fruits, vegetables, and textiles were carried from Uzbekistan to Moscow, or Samara, in Russia. For imports, on the other hand, machineries and agricultural products were transported from Moscow, Ekaterinburg, and St. Petersburg.

BCPs and Bottlenecks

Major BCPs in Corridor 6 include **Dautota-Tazhen (UZB-KAZ), Kurmangazy-Krasnyi Yar (KAZ-RUS), Ayratan-Hairaton (UZB-AFG)** and **Konysbaeva-Yallama (KAZ-UZB)**. Unfortunately, CPMM data

CORRIDOR 6

Trade Facilitation Indicators



		2010	2011	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4
TFI1	**Overall**	**7.5**	**5.6**	**6.1**	**9.8**	**7.1**	**7.7**	**5.5**	**6.5**	**4.9**	**5.6**
	Road	7.6	5.6	6.1	10.0	7.1	8.2	5.5	6.6	4.9	5.6
	Rail	1.8	2.8	-	1.6	2.0	1.8	1.4	2.7	3.2	4.1
TFI2	**Overall**	**316.9**	**149.3**	**279.8**	**387.6**	**315.5**	**301.7**	**199.2**	**170.6**	**104.9**	**99.8**
	Road	316.9	149.3	279.8	387.6	315.5	301.7	199.2	170.6	104.9	99.8
	Rail	-	-	-	-	-	-	-	-	-	-
TFI3	**Overall**	**905.8**	**928.9**	**803.9**	**1,445**	**862.2**	**750.7**	**977.1**	**903.7**	**921.9**	**914**
	Road	939.1	950.2	803.9	1,566.2	877.1	789.3	993.1	939.3	939.4	928.9
	Rail	528.1	413.8	-	217.1	656.4	574.2	551.0	336.2	379.6	442.9
TFI4	**Overall**	**24.8**	**22.9**	**25.6**	**24.2**	**23.8**	**25.5**	**25.7**	**20.2**	**23.2**	**22.5**
	Road	21.7	23.5	25.6	18.4	20.8	19.5	25.7	21.2	23.6	23.0
	Rail	32.0	20.8	-	34.5	30.3	31.8	25.4	16.8	21.9	20.9
SWOD	**Overall**	**40.8**	**36.7**	**42.2**	**42.1**	**39.6**	**40.0**	**37.4**	**35.9**	**38.0**	**35.3**
	Road	41.5	37.6	42.2	44.3	41.7	38.2	37.8	36.9	38.7	36.7
	Rail	39.3	33.2	-	38.0	35.2	41.9	34.9	32.4	35.2	30.9

Legend: 2010 Road / 2011 Rail

Border Crossing Points: TOP 10 (BASED ON 2011 SAMPLE)

Road BCPs

	BCP	Country	Count	Duration (hrs) Total Avg	Total Median	Activities A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
6	Tazhen	KAZ	258	10.7	8.1	0.9		1.8	0.7	0.5	0.3	0.3	0.3	0.4	0.7	0.6	0.4	1.2			0.3	6.8
	Dautota	UZB	256	6.0	5.2	0.6		1.2	0.4	0.6	0.3	0.3	0.3	0.3	0.8	0.5	0.7	1.4				4.0
	Hairaton	AFG	215	2.8	1.8	0.7		0.6						0.2				0.2	3.2	1.4	0.8	20.8
	Torkham	AFG	213	2.3	2.5	0.8		0.7		0.6				0.2						1.4		
	Kurmangazy	KAZ	206	8.2	7.0	0.9		2.5	0.3	0.4	0.3	0.6	3.2	0.8	0.6	0.6	0.6	2.0				4.9
	Beyneu	KAZ	169	1.1	0.3								0.3	0.4	0.4	0.3	0.3	1.6				22.0
	Krasnyi Yar	RUS	147	9.3	8.3	0.9		2.4	0.4	0.6	0.3	0.7	0.3	0.4	0.8	0.5	0.7					5.6
	Istaravshan	TAJ	90	0.1	0.1									0.1	0.2						0.1	
	Saryagash	KAZ	34	0.3	0.3								0.3	0.3	0.3							
	Konysbayeva	KAZ	33	6.4	6.7	0.8		1.5	0.8	1.0			0.3	0.2	0.7	1.0	0.3					1.5

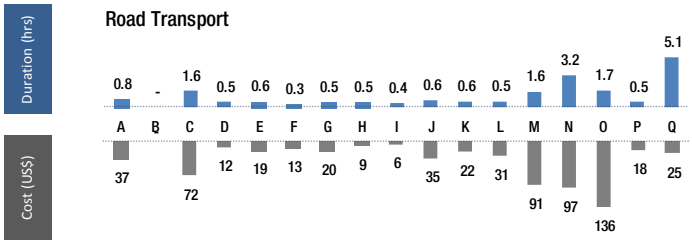
	BCP	Cost (US$) Total Avg	Total Median	Activities A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
6	Tazhen	191	145	32		81	10	15	11	10	17	7	36	21	26	31	200		29	
	Dautota																			
	Hairaton	158	156	29		29						5				6	76	133	93	10
	Torkham	176	170	33		31		33				5						140		
	Kurmangazy	183	170	47		104	13	18	13	41	14	10	32	24	38	370				33
	Beyneu	17	6								7	5	25	17	12	75				
	Krasnyi Yar	196	183	37		91	14	21	16	10	33	9	44	25	36					33
	Istaravshan	11	12									2	2						10	
	Saryagash	5	4								4	4	5							
	Konysbayeva	223	224	38		60	30	36			5	7	64	15	18					

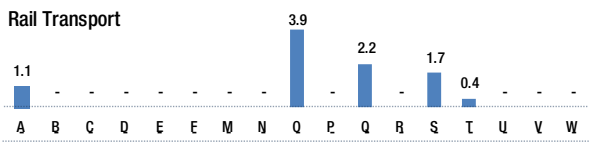
Rail BCPs

	BCP	Country	Count	Duration (hrs) Total Avg	Total Median	Activities A	B	C	D	E	F	M	N	O	P	Q	R	S	T	U	V	W
6	Ganyushking	KAZ	14	3.8	3.8	1.1								3.9		3.1		1.6	0.4			
	Beyneu	KAZ	7	2.7	2.6											1.4		1.9				
	Aksarayskiy	RUS	2																			

	BCP	Cost (US$) Total Avg	Total Median	Activities A	B	C	D	E	F	M	N	O	P	Q	R	S	T	U	V	W
6	Ganyushking																			
	Beyneu																			
	Aksarayskiy																			

A. Border Security / Control, B. Customs (Single Window), C. Customs Clearance, D. Health / Quarantine, E. Phytosanitary, F. Veterinary Inspection, G. Visa/Immigration, H. GAI/Traffic Inspection, I. Police Checkpoint / Stop, J. Transport Inspection, K. Weight/Standard Inspection, L. Vehicle Registration, M. Emergency Repair, N. Escort / Convoy, O. Loading / Unloading, P. Road Toll, Q. Waiting/ Queue, R. Change of Railways Gauge, S. Classification of Trains, T. Technical Inspection, U. Commercial Inspection, V. Load Protection, W. Security Services





showed that all four BCPs posed challenges for road drivers to cross borders.

Along Corridor 6, the BCP pair **Dautota-Tazhen (UZB-KAZ)** were the most heavily-crossed BCPs in 2011. Average border-crossing time took 6 hours and 10.7 hours, respectively. This is mainly due to delays waiting in queues; drivers waited an average 6.8 hours at Tazhen and 4 hours at Dautota. Estimates in 2010 revealed similar results: waiting in queues took 6.8 hours in Tazhen and 5.2 hours in Dautota. Customs clearance though, may now be completed within 2 hours at each BCP, an improvement from the 3-4 hour average of 2010.

Similar observations were seen at the BCP pair **Kurmangazy-Krasnyi Yar (KAZ-RUS)** as well. On the average, border-crossing duration took 8.2 hours at Kurmangazy and 9.3 hours at Krasnyi Yar. At Kurmangazy, the main contributors to the delay include waiting time (4.9 hours), GAI/Traffic inspection (3.2 hours) and customs clearance (2.5 hours). Meanwhile at Krasnyi Yar, key delays include waiting time (4.9 hours) and customs clearance (2.3 hours). It appears that customs posts within the Customs Union space have not yet been entirely abolished.

The BCP pair **Ayratan-Hairatan (UZB-AFG)** exhibited differing situations; crossing Ayratan took about 10.7 hours, while it took only 2.8 hours to cross Hairatan. In Ayratan, drivers have to wait for 10 hours, load/unload for 8 hours, and obtain customs clearance only after 3.2 hours. On the other hand, drivers passing through Hairatan experienced, on the average, escort/convoy services taking 3.2 hours and loading/unloading procedures consuming a further 3.2 hours.

Konysbaeva-Yallama (KAZ-UZB) presented an average border-crossing time of 6.4 hours and 8 hours, respectively. Waiting time in queues (1.5 hours) and customs clearance (1.5 hours) are the main contributors to delays at Konysbaeva. At Yallama, the causes of delays include 3.4 hours of waiting time and 2 hours of vehicle repair.

At **Hairatan-Termez (AFG-UZB),** crossing borders became more challenging. For Afghan goods to enter Uzbekistan, the goods need to be trans-loaded onto a boat and ferried across to Termez. The loading/unloading process took 2.3 hours. Meanwhile, in Termez, more problems were cited. Drivers complained about long waiting time of 7.6 hours in queue. Even more challenging was the longer time required for loading/unloading of goods, which averaged 19 hours. Also, customs clearance took 5.8 hours.

B. Rail Transport

Rail travelled at 33 kph (SWOD) and 17 kph (SWD). Further examination of rail samples revealed two important observations; (1) the direction of goods seldom moved in a north-south direction (most movements were in a west to east direction instead), and (2) no samples travelled along Corridor 6 in its entirety. Rail samples usually moved through sections of Corridor 6a and 6c, as well as parts of the eastern section of Corridor 1b and 1c.

Common products transported through Corridor 6 include crude oil (especially from Aktau), cement, machineries/vehicles, and coal. These cargoes are usually bulky; hence it is sensible to transport them by rail. The intensive mining activities in western regions of Kazakhstan also created a strong demand for rail freight to carry goods to the industrial regions in the east such as Pavlodar. This explained the west to east direction observed. In addition, all such shipments used conventional 70-ton capacity rail wagons. No containers are used in domestic rail transport or exports to Russia.

Some Kazakhstan cities surfaced as important railway junctions, where long delays occurred, even though they are not BCPs. Kandagash, Atyrau, Beyneu, and Makat reflected long rail wagon classification and waiting time, which could take 4-15 hours. A shipment from Aktau to Bishogyr provides an example. The intermediate stops included Beyneu, Kulsary, Makat, and Kandagash. The classification at Beyneu took 4.5 hours and the waiting time at Kandagash took 13 hours. In proportion to the whole trip, the delays at Beyneu and Kandagash accounted for 27% of the total transport time.

In another case, a train moved from east to west. The route taken was Sarysai-Kandagash-Makat-Atyrau-Ganyushking. The waiting time at Makat was 5 hours and the classification time at Atyrau was 4 hours, accounting for 16% of the total transport time.

BCPs and Bottlenecks

There are several railway BCPs along Corridor 6, but only information at the **Ganyusking-Aksarayskiy (KAZ-RUS)** could be collected. Main causes of delay at Ganyusking included border-crossing (4 hours), loading/unloading time (3.9 hours), waiting time (3.1 hours), classification of trains (1.6 hours), and border security (1.1 hours). Unfortunately, information at the Russian side was not available. ■

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 2011, the 14 CPMM partners working closely with CAREC include the following:

	Country	Official Names	Abbreviated Names
1	AFG	Afghanistan Association of Freight Forwarders Companies	AAFFCO
2	AZE	Azerbaijan International Road Carriers Association	ABADA
3	KAZ	Union of International Road Carriers of the Republic of Kazakhstan	KAZATO
4	KAZ	Kazakhstan Freight Forwarders Association	KFFA
5	KGZ	Freight Operators Association of Kyrgyzstan	FOA
6	KGZ	Association of International Road Carriers of the Kyrgyz Republic	ASMAP
7	MON	Mongolia National Chamber of Commerce and Industry	MNCCI
8	MON	National Road Transport Association of Mongolia	NARTAM
9	PRC	China International Freight Forwarders Association	CIFA
10	PRC	Inner Mongolia Autonomous Region Logistics Association	IMLA
11	PRC	Xinjiang Uighur Logistics Association People's Republic of China	XULA
12	TAJ	Association of International Automobile Carriers of the Republic of Tajikistan	ABBAT
13	UZB	Business Logistics Development Association	ADBL
14	UZB	Association of International Road Carriers of Uzbekistan	AIRCUZ

APPENDIX 2: CPMM Methodology

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

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 lean about CPMM, train the drivers, customize the driver's 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 who would 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 30 TCD forms a month, which are submitted to the international consultants and are then screened for consistency, accuracy and completeness.

The time-cost/distance (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.

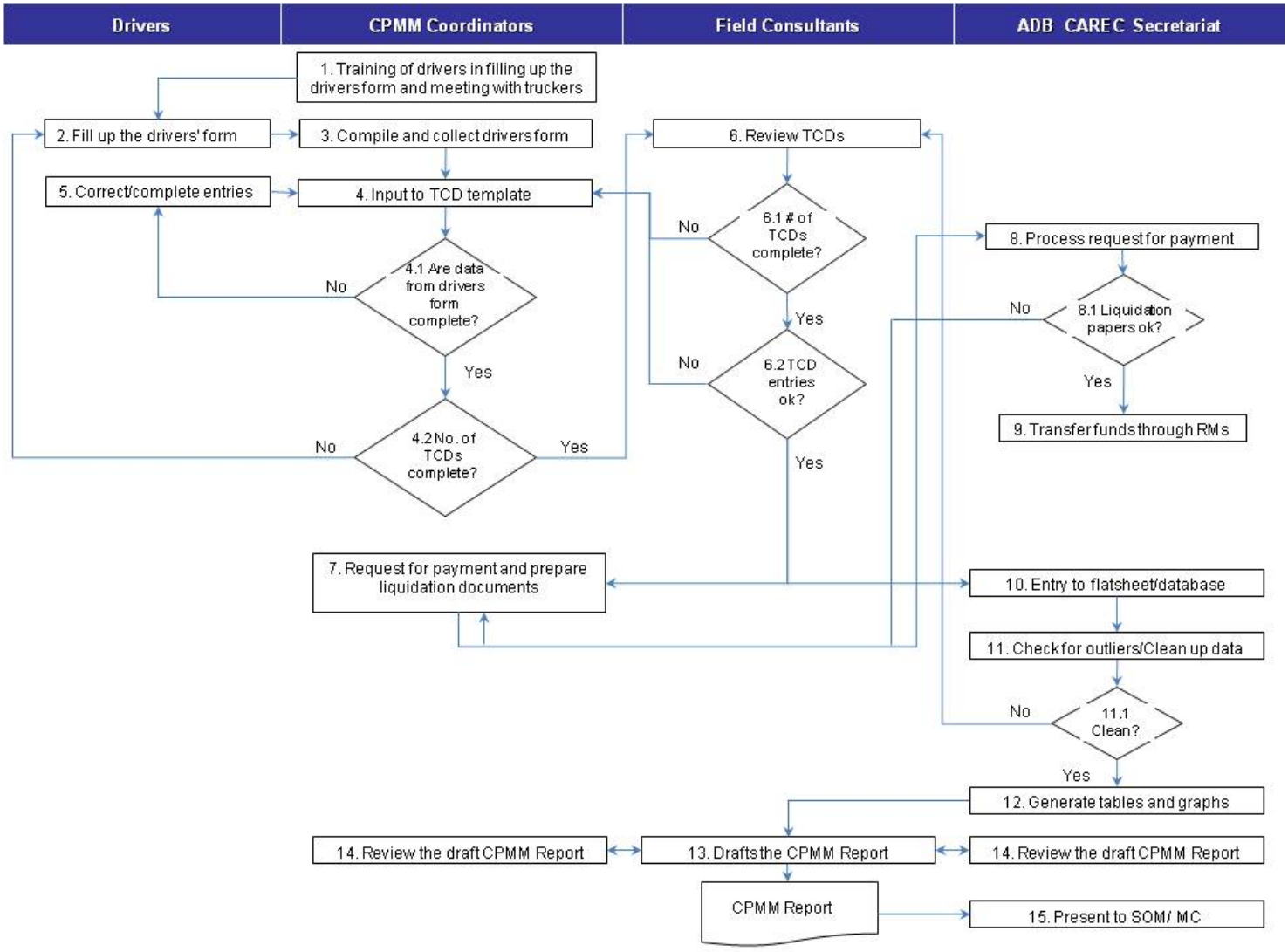
The normalization is done at the level of a 20-ton truck in the case of road transport or a twenty-foot equivalent unit (TEU) in the case of rail traveling 500 kilometers (km). The number of border crossing points (BCPs) on the sub-corridor level is also normalized for each 500 KM segment.

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 is 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 is 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 as well as 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 overall, based on normalized TCD samples.

APPENDIX 3: Overview of CPMM Methodology



APPENDIX 4: Methodology Revisions

The CAREC Transport and Trade Facilitation Strategy and its Action Plan focus on developing and improving six regional corridors. CAREC Corridor Performance Measurement and Monitoring monitors and reports on selected links and nodes, identifies bottlenecks, and proposes actions to improve corridor traffic flow. In 2011, improvements in the standardization process of CPMM data were introduced to ensure and improve consistency in estimates of time, cost, and speed indicators. These improvements focus mainly on the classification and standardization of raw data before any estimation and data aggregation procedures are used.

The time-cost/distance (TCD) documents submitted by CPMM partners (the CAREC Federation of Carrier and Forwarder Associations [CFCFA]) provide information on actual trips along CAREC corridors. As routes taken vary by corridor and mode of transport, problems arise in aggregating and rescaling the data based on TCD factors. CAREC corridors are not similar, which poses issues of comparability. Given that CAREC corridors cross several countries, they differ significantly in terms of road development, length, and cross-border protocols. The chosen mode of transport poses the same issues: road and rail movements have different standards and protocols that set them apart, making one mode preferable to the other for some freight forwarders. In 2011, TCD documents are divided into segments depending on mode of transport and corridor classification.

To facilitate better estimation – not just on a modal basis but also by corridor –, TCD documents were subjected to this classification before any further standardization procedures were applied. To maintain data comparability, the standardization of TCDs per 20-ton cargo and per 500-kilometer trip must still apply.

Furthermore, both the border-crossing point (BCP) and the non-BCP component of the trips are normalized for each 500 km segment. However, due to the complexity of TCD data, and the indicators that CPMM monitors, standardization is not straightforward. Transit cost and duration can easily be rescaled as both of these variables are directly affected by distance, while activity cost and duration are not. The latter depends on the number of stops made en route before reaching a final destination, and the number of stops is, indirectly, affected by distance. For example, in a trip of 1,000 km, a truck made 4 stops, which averages to 2 stops in a 500-km distance. This implies that the above example has a stop multiplier of 0.5, which is then applied to the average of total activity cost and duration spent throughout the trip.

The frequency of stops for border-crossing activities is not similar to those of non-border-crossing stops. Therefore, multipliers should be made on both of these stops separately. Different multipliers for different corridors and modes of transport should be obtained as well. This is due to the inherent incomparability of trips classified under these factors.

Other minor adjustments made in 2011 include: (i) corrections on treatment of missing values, (ii) standardization in names of BCPs and other key cities, (iii) application of appropriate weight to reflect cargo transport, (iv) validity checks on missing key TCD information, and (v) outlier management on duration of activities. These adjustments provide more efficient and more robust estimates for cost, duration and speed indicators monitored in CPMM. When applied to 2010 data, the methodological revisions generate lower estimates than those presented in earlier reports (higher in the case of speed with delay). These revised estimates better reflect reality.

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