CAREC CORRIDOR PERFORMANCE MEASUREMENT & MONITORING

ANNUAL REPORT

JANUARY 2010 TO DECEMBER 2010

SENIOR OFFICIALS MEETING
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ECONOMIC COOPERATION
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CAREC Corridor Performance Measurement and Monitoring: *Annual Report (January 2010 to December 2010)*

Senior Officials Meeting
Central Asia Regional Economic Cooperation
7 – 8 June 2011
Baku, Azerbaijan

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
CFCFA	–	CAREC Federation of Carrier and Forwarder Associations
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.

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EXECUTIVE SUMMARY

This Corridor Performance Measurement and Monitoring (CPMM) report summarizes the method and outcome of data collection, aggregation, and analysis for road and rail transport in eight Central Asian Regional Economic Cooperation (CAREC) program member countries along six priority CAREC corridors. This report covers data collected from January 2010 to December 2010. CPMM highlights for 2010 are:

Findings	Explanation
In terms of speed, Corridor 6 is the best performing corridor. Corridors 4 and 5 are not doing as well.	For the six CAREC corridors, SWOD[1] was between 31 kph to 54 kph. SWD was between 12 kph to 19 kph. For both SWOD and SWD, Corridor 6 had the highest speed while Corridor 4 had the lowest speed.
Transport time on Corridor 4 is unpredictable.	CV[2] for SWOD and SWD in Corridor 4 was 222% and 91% respectively.
In terms of cost[3], Corridor 5 is the least expensive while Corridor 6 is the most expensive.	Using a standardized cost of transporting a 20' container over 500km, Corridor 5 costs $196.80, while Corridor 6 costs $1,173.10.
Border crossing payments constituted roughly half of the total transport cost in some cases.	Activities cost as a percentage over total cost for Corridor 1 to 6 are 18%, 49%, 61%, 9%, 77%, and 79%, respectively.
Border crossing activities tend to reduce speed by more than half in most corridors.	This is measured by comparing the difference between SWOD and SWD per corridor. Corridors 2, 3, 4, and 6 have the largest percentage drop, at 66%, 74%, 70%, and 64%, respectively.
For road transport, the three most time-consuming activities are escort/convoy, waiting time, and loading/unloading. The three most costly activities are trans-shipment, loading/unloading, and customs clearance.	Escort/convoy, waiting time in queue, and loading/unloading took 11.5, 4.2, and 3.8 hours, respectively, for every 500km. Customs clearance costs $133. Trans-shipment, loading/unloading, and customs clearance took $403, $215, and $115, respectively, for every 500km.
For rail transport, the three most time-consuming activities are change in railways gauge, waiting time, and security services. The three most costly activities are change of railways gauge, loading/unloading, and trans-shipment.	Average duration for railways border crossing were change in railways gauge (43 hours), waiting time (23 hours), and security services (5 hours). Change of railways gauge took $143, loading/unloading required $63, and trans-shipment needed $34 for every 500km.
Unofficial payments are common. The top five activities involving unofficial payments are ecological checkpoints, GAI (State	In terms of frequency and the probability of unofficial payment, the five activities mentioned on the left are consistently cited. The probability

[1] SWOD refers to speed without delay, while SWD refers to speed with delay. Introduced in this report, SWOD and SWD are two ways to measure speed (and therefore transport efficiency) along CAREC corridors. More details can be found on page 12 of this report.

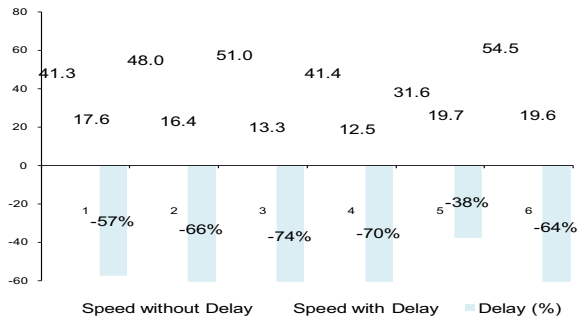
[2] The coefficient of variation (CV) is used to measure the reliability of speed along a corridor. This is calculated by dividing the standard deviation by the mean for SWD and SWOD.

[3] As each corridor has different distances, it is necessary to standardize the distance for cost comparisons. The actual total cost of each sample is standardized to 500 km carrying a load equivalent to 20 " container (TEU).

Traffic Inspectorate) police checkpoints, border security control, and weight inspection.	of drivers encountering unofficial payments in those activities ranged from 50% to 70%.

CPMM Senior Executive Dash Board

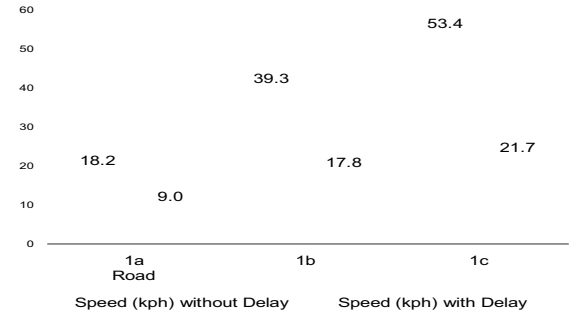
CAREC Corridors



Data Description

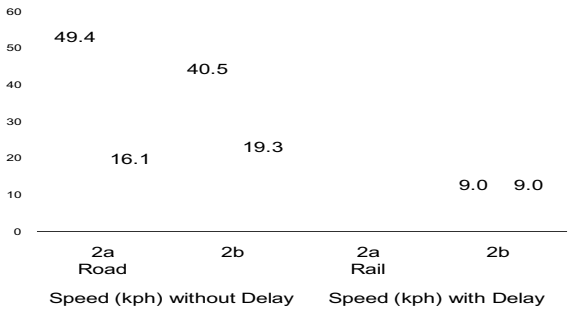
- 4,062 time/cost distance (TCD) observations received
- Speed in kph, and delay in %
- 73% travelled by road; 19% by rail and 8% by multi-modal transport
- 21% of cargo are perishables, 79% are non-perishables
- Commonly transported goods are: machineries, general merchandise, vegetables, textiles, and metals.

CAREC Corridor 1



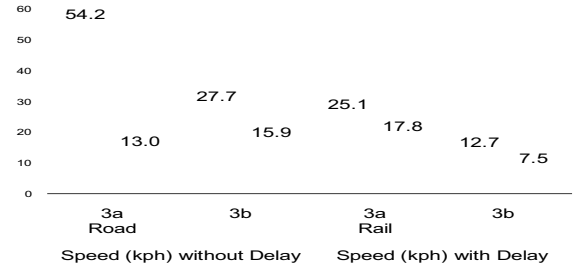
- Escort/convoy, waiting time, and loading/unloading reduce speed along all three sub-corridors.
- Corridor 1a is costly due to visa, customs clearance, loading and unloading.

CAREC Corridor 2



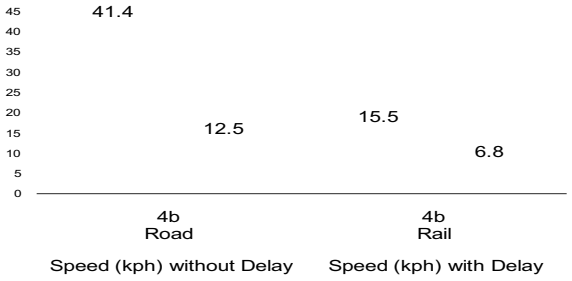
- Escort/convoy, waiting time, and loading/unloading reduce speed along all three sub-corridors.
- Customs clearance and ecology checks increase cost.

CAREC Corridor 3



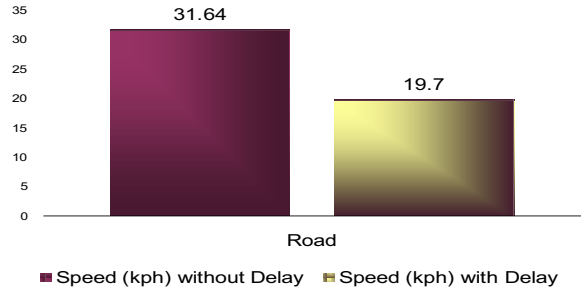
- Escort/convoy, customs clearance, and waiting time reduce speed, especially Corridor 3b.
- Visa and escort/convoy were major costs for Corridor 3a, while loading/unloading was costly for Corridor 3b.

CAREC Corridor 4



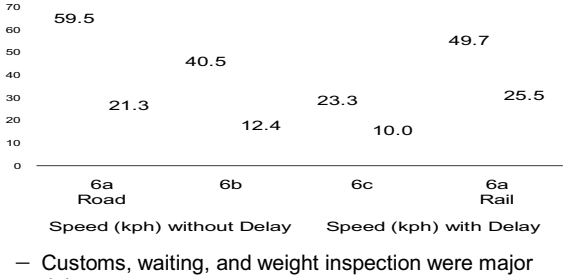
- Customs clearance, waiting time, and loading/unloading reduce speed for Corridor 4b
- Customs clearance is a costly activity, while change of railways gauge at Zamyn-Uud is a major cost activity.

CAREC Corridor 5



- Waiting in queue and loading/unloading delayed border crossing. The latter was also costly.

CAREC Corridor 6



- Customs, waiting, and weight inspection were major delays.
- These factors, as well as border security and GAI, were costly activities at border crossing.

I. BACKGROUND

1. The CAREC region today is undergoing rapid change. Its natural resources, strategic location linking Europe and Asia, domestic economic reforms and international trade liberalization are attracting more foreign direct investment. As economies in CAREC integrate with the world, there is need to reduce transport and trade barriers.

2. Recognizing the pivotal roles which trade facilitation and transport connectivity play in molding the future of the region, the CAREC Transport and Trade Facilitation Strategy (TTFS) and its Action Plan[4] 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.

3. Under the mandate of the TTFS and its Action Plan, transport efficiency along the six CAREC corridors are measured and monitored periodically. CAREC refined the Time/Cost Distance (TCD) methodology to establish the CAREC Corridor Performance Measurement and Monitoring (CPMM) project, which began in early 2009.

II. DATA DESCRIPTION

4. This CPMM annual report summarizes key findings based on data collected from January 2010 to December 2010. Over this period, a total of 4,062 samples were collected (Table 1). In 2009, 2,627 samples were collected. The 55% increase in samples was due to an increase in the number of national transport associations participating in CPMM (from 13 to 16), as well as more current members being able to provide the target of 30 samples per month.

5. Complications impeded data collection in some areas for a certain period last year. The civil unrest in Xinjiang Uyghur Autonomous Region (XUAR) in the People's Republic of China (PRC) as well as in the Kyrgyz Republic reduced the number of shipments to and from those areas. These prevented local transport associations from providing any samples during the affected periods. Nevertheless, the situations are stabilizing and data are now being collected for the next reporting period (2011).

[4] 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.

Table 1: Number of TCD Submissions by Associations by Month

COUNTRY	Name of Association	2010												Total
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Afghanistan	AAFFCO	30	30	30	30	30	30	30	30	30	30	30	30	**360**
Azerbaijan	ABADA	2	5	8	5						3			**23**
Kazakhstan	KFFA	30	30	30	30	30	30	30	30	30	30	30	30	**360**
	KAZATO				30	30	30	30	30	30	30	30	30	**270**
Kyrgyz Republic	FOA		9	15		25	3	4	15	33	30	30	30	**194**
	AIA			21	9	10	30						1	**71**
	KGZ FFA									2				**2**
Mongolia	MNCCI / NTTFC	30	30	30	30	30	30	30	30	30	30	30	30	**360**
	NARTAM	20	20	30	30	30	30	30	30	30	30	30	30	**340**
PRC	CIFA	10	30	30	30	30	30	30	30	30	30	30	30	**340**
	IMAR	30	30	30	30	60	60	30	30	30	30	30	30	**420**
	XUAR			2					15	15				**32**
	CFXU						30	30	30	30	30	30	30	**210**
Tajikistan	ABBAT	30	30	30	30	30	30	30	30	30	30	30	30	**360**
Uzbekistan	AIRCUZ	30	30	30	30	30	30	30	30	30	30	30	30	**360**
	ADBL	30	30	30	30	30	30	30	30	30	30	30	30	**360**
	TOTAL	**242**	**274**	**316**	**314**	**365**	**393**	**334**	**360**	**380**	**363**	**360**	**361**	**4062**

6. Road TCDs continue to dominate, accounting for 73% of the samples, while rail constituted 19% of the traffic monitored. TCDs for multi-modal transport increased from 5% in 2009 to 8% in 2010 (as shown in Figure 1a).

7. A key export category in the region is perishables. The share of perishables in all shipments monitored remained at 21% in 2010. Common perishables indicated were fruits and vegetables.

Figure 1a : Mode of Transport

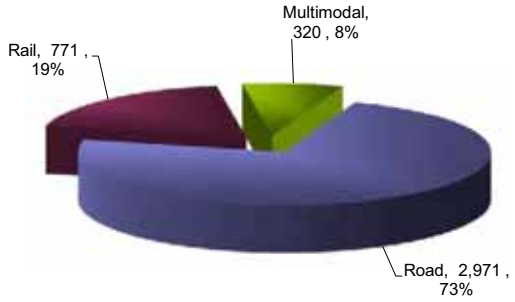


Figure 1b : Perishable Goods

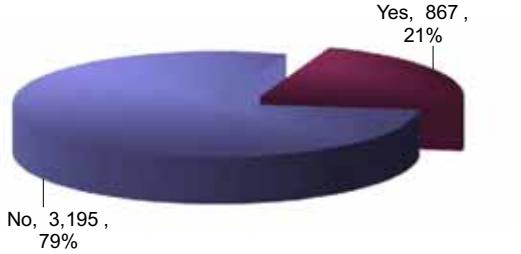


Figure 2: Types of Goods Carried (Sample Size = 4,062)

8. There is little change in the types of products carried across Central Asia in the samples. In 2009, the most common products were machinery (17.1%), vegetables (14.9%), and general merchandise (14.8%). In 2010, general machinery retained the top position. General merchandise rose to the second spot, while vegetables dropped to the third position.

9. Machinery and general merchandise (manufactured consumer goods) are generally exports from PRC, moving from XUAR to Central Asia. Vegetables are local produce and move within the country or across borders as exports.

Figure 2a : Types of Goods Carried

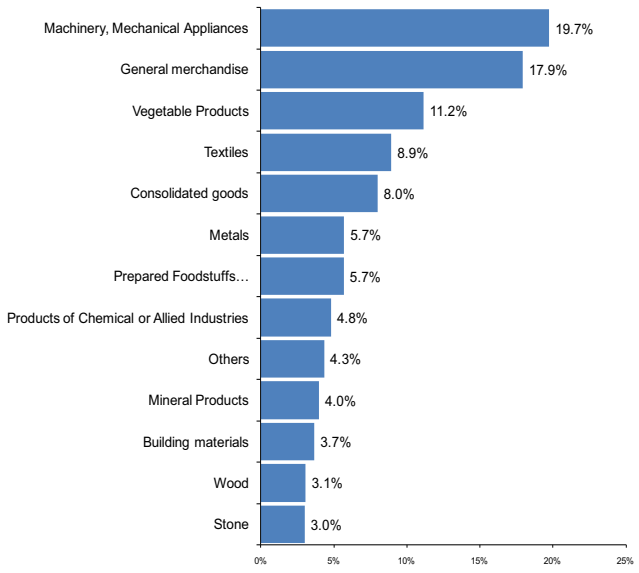


Figure 2b : Types of Goods Carried (Road)

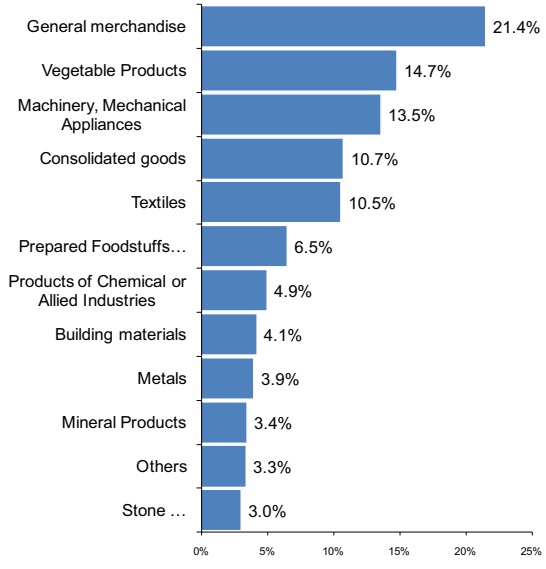
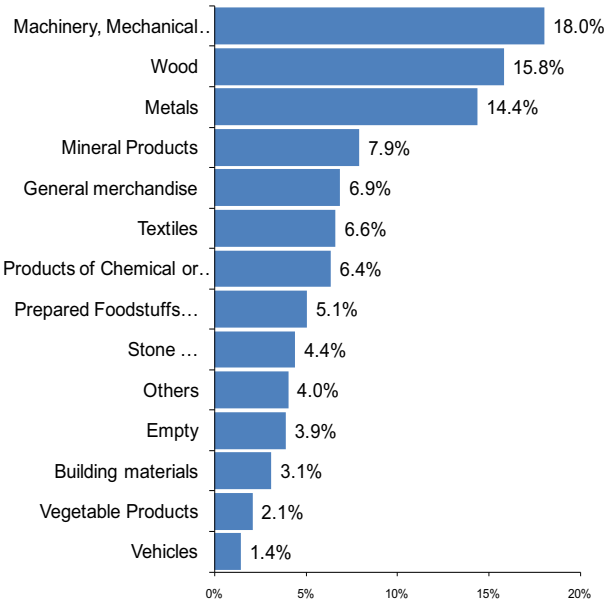


Figure 2c :Types of Goods Carried (Rail)



10. The top three products transported by mode remained unchanged too. Consumer goods continued to favor road transport, which is more flexible and able to provide door-to-door service. Industrial products and bulky commodities continued to favor rail transport, which is more economical over longer distances.

11. The proportion of domestic distribution increased from 21% in 2009 to 24% in 2010. This confirmed a drop of cross border shipments (from 79% in 2009 to 76% in 2010). Some difficulties were experienced in collecting cross border data because of visa regimes (e.g. Afghan drivers cannot drive into Uzbekistan and Pakistan easily), or because the neighboring country is not a CAREC member (e.g. Kazakh railways faced difficulties in collecting cross border information in Russia.)

Figure 3 : Cross-Border Movement

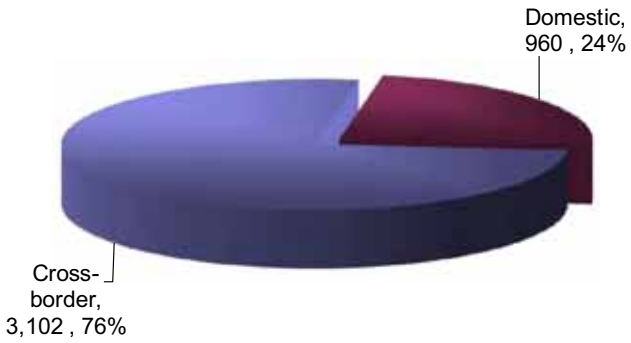
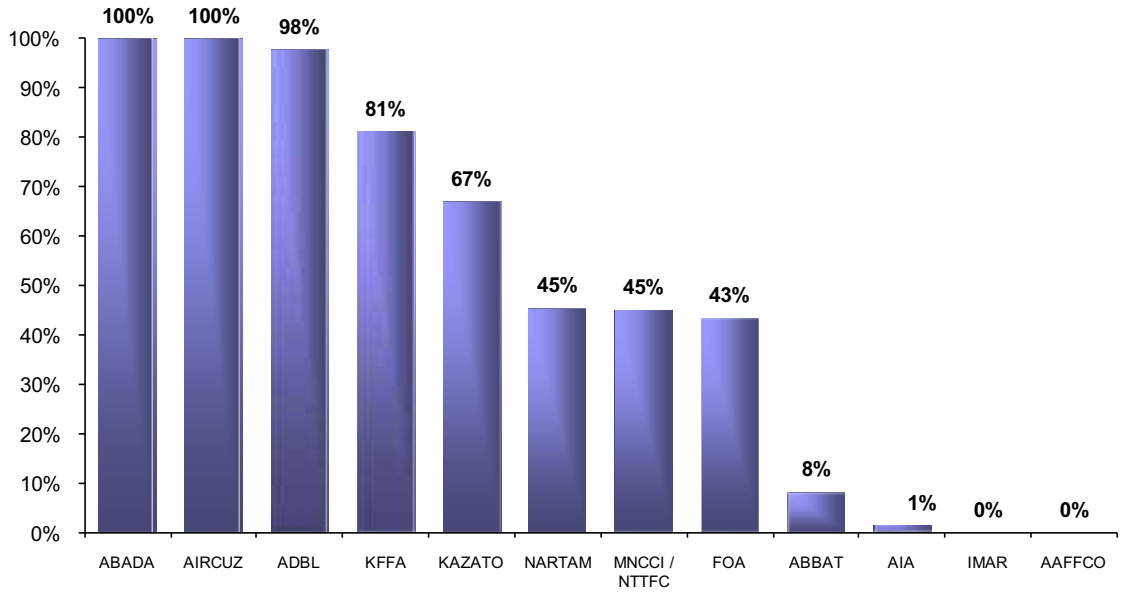


Figure 4: Use of TIR



12. Azerbaijan, Uzbekistan, and Kazakhstan reported extensive use of TIR[5]. Due to the popularity of this international transit regime, PRC and Pakistan reported interest in joining the TIR, and are now conducting feasibility studies. Afghanistan joined the International Road Union (IRU) in 1976 but did not enjoy much the benefits of TIR due to internal strife and war (which led to the discontinuation of TIR). An Afghanistan delegation met with IRU in December 2010 and declared that Afghanistan will issue TIR Carnets by end of 2011. The Afghanistan Chamber of Commerce and Industry will take the role of the national association for the issuance of TIR

[5] Transports Internationaux Routiers (TIR) is an international customs transit system administered by the International Road Union (IRU). It is used in road transport or in multi-modal transport where there is at least one leg which has road transport. Through the use of TIR Carnets, vehicles can move across intermediate borders without time-consuming inspections.

Carnets. Similarly, Afghanistan Customs, the Ministry of Finance, and the Ministry of Commerce and Industry are working to provide the regulatory framework for the use of TIR in Afghanistan. Thus, it is expected that AAFFCO will send data samples on shipments using TIR in 2012.

III. CPMM RESULTS (ANNUAL)

A. Speed / Travel Time

13. Two measures of speeds are used in CPMM, namely Speed Without Delay (SWOD) and Speed with Delay (SWD). SWOD is derived by distance divided by the time when vehicle is traveling on the road only. SWD is calculated by distance divided by the total time taken to traverse the journey, which includes the traveling time as well as stoppage time. In CPMM, all activities that cause stoppage time (such as customs clearance, inspections, loading/unloading and police checkpoints) are recorded by drivers. The SWOD indicates the condition of the physical infrastructure (such as road and railways) while the SWD indicates the efficiency of border management.

14. Another measure called the Coefficient of Variation (CV) is also calculated. This value is derived by dividing the standard deviation[6] over the average speed. This gives a measure of the predictability of the time taken to travel from origin to destination. Transport speed and predictability are both important in the study of transport efficiency. CVs are calculated for SWOD and SWD.

15. Figure 5a illustrates the SWOD, SWD and CV for each corridor. The range of SWOD is 31.6 kph to 54.5 kph, while that for SWD is between 12.5 kph to 19.7 kph. Corridor 5 has the lowest SWOD while Corridor 6 has the highest. In terms of SWD, Corridor 4 has the lowest while Corridor 5 has the highest.

16. The difference between SWOD and SWD gives an indication on the relative efficiency of border crossing. Corridor 5 has the lowest drop of 38%, while Corridor 3 and 4 suffer significant drops of 74% and 70%, respectively. Interestingly, the above pattern mirrored closely the observation in 2009, where the percentage reduction in speed is lowest in Corridor 5, and the highest in Corridors 3 and 4.

17. Figure 5b shows the CV for both SWOD and SWD for each corridor. As in 2009, the CV for Corridor 4's SWOD is significantly high. The poor road conditions and the harsh winter contribute to unpredictable travelling time. Corridor 6 has the highest CV for SWD, which suggests difficulties in predicting border crossing times. This is usually a result of unharmonized border crossing procedures, operating hours, and documentation problems.

18. Figure 5c displays the SWOD and SWD for rail along each corridor. The range of SWOD is between 15.5 kph to 49.7 kph, while that of SWD is 1.3 kph to 25.5 kph. Corridor 4 continued to show the challenges faced in railway transport. The slow movement of trains reflects the severe shortage of rail wagons and locomotives. Delays worsened in winter.

19. Figure 5d illustrates the CV for railway transport. Surprisingly, the CV for Corridor 3 is relatively larger, much larger compared to Corridor 3's road transport.

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[6] Standard deviation is a measure of dispersion of sample data around the central value such as the average (mean). A high standard deviation means the sample values can occur within a wide range from the mean. Since the mean can have a small or large value, it will be difficult to compare dispersion between two samples of different means. As such, another measure called Coefficient of Variation (CV) is introduced. This is calculated by diving the standard deviation over the mean. This normalization allows the ratio to be used as a comparison across different samples with dissimilar means. In this case, each CAREC corridor has different average speed. The CV is used to measure and compare transport reliability for each of the CAREC corridors.

Figure 5a : Road Speed Along Corridors

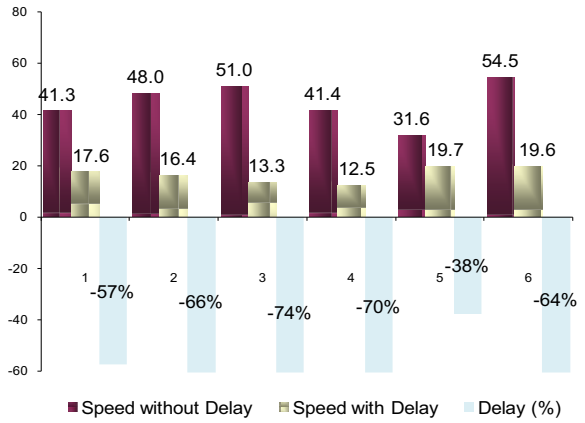


Figure 5b : Coefficient of Variation % (Road)

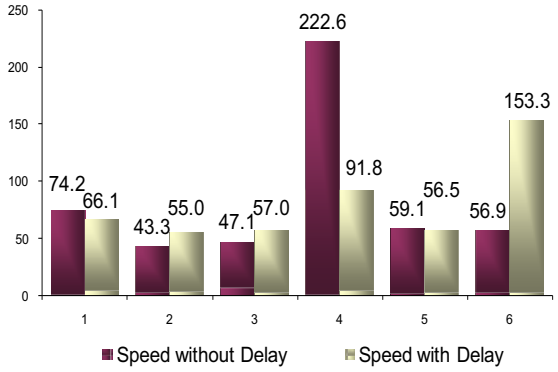


Figure 5c : Rail Speed Along Corridors

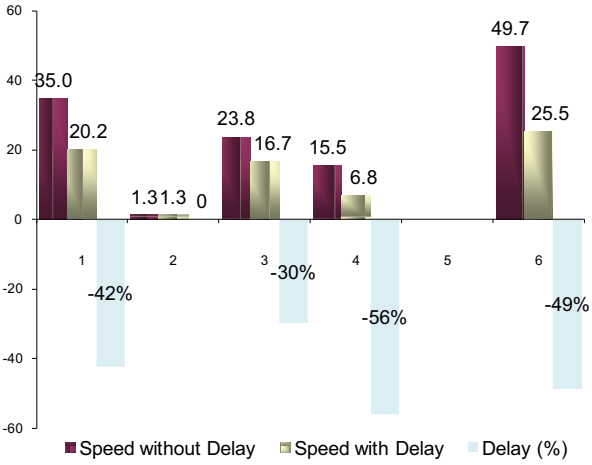
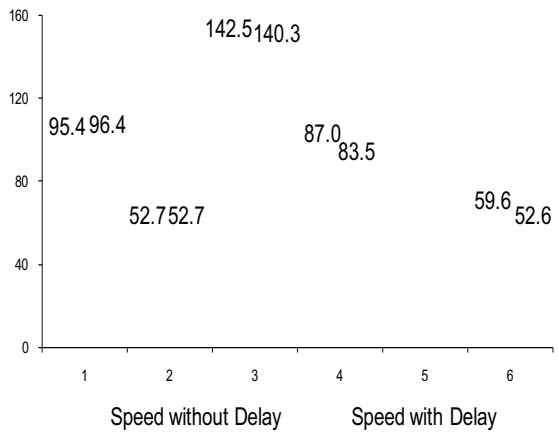


Figure 5d : Coefficient of Variation % (Rail)



B. Delays and Time Factors in CAREC Corridors

20. This section analyzes why there is such a sizeable reduction in speed when vehicles cross a border. As each shipment may cover different distances, there is a need to normalize all the data so that the impact of each activity can be compared meaningfully. A distance of 500km[7] was selected as a base unit of measure, and all the time delays of activities are scaled to this distance. This normalization is needed because data sent by different associations cover different distances. For instance, a driver that drives from Khorgos to Aktobe in Kazakhstan (Corridor 1) can travel more than 2,000 km, while a driver that drives from Karamik to Dushanbe in Tajikistan (Corridor 5) covers only 300 km. Many activities such as police checkpoints and GAI correlate with distance and, if not normalized, can skew the results.

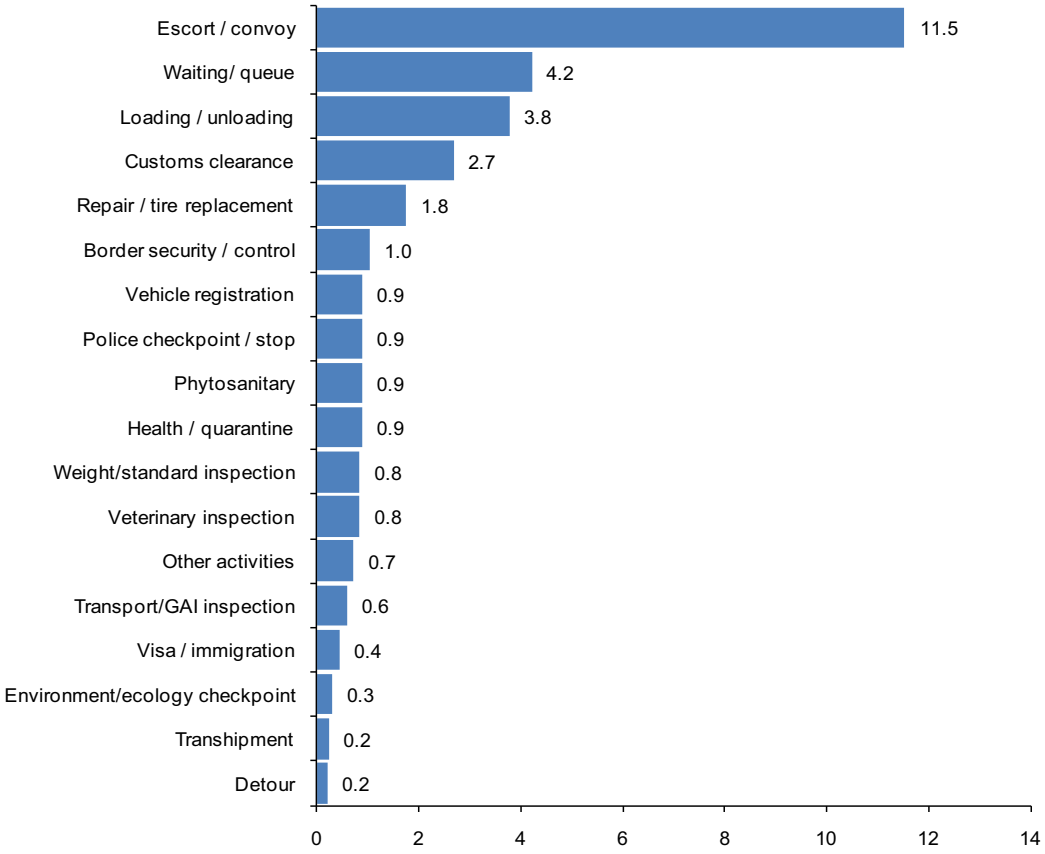
21. Figure 6 ranks the relative impact of each activity. Over a standard distance of 500 km, the average duration of each activity is calculated. The three major activities that cause delays are **escort/convoy,**[8] **waiting in queue,** and **loading/unloading**. The respective values are

[7] The value of 500 km is selected as it represents the median of all the distances collected.

[8] Escort/convoy is a major cause of delay. Required by regulation in many countries, drivers need to wait at designated points. A minimal number of vehicles to make up a convoy must be achieved before the entire fleet can

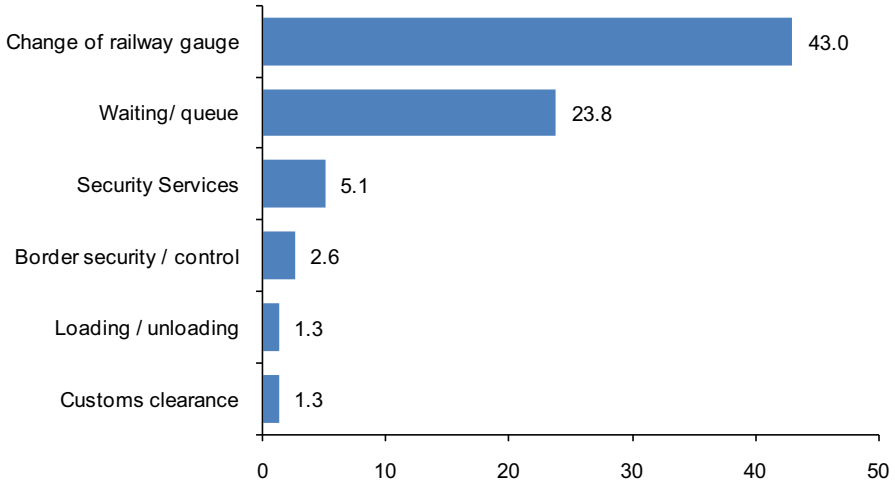
11.5 hours, 4.2 hours, and 3.8 hours. This pattern coincides with the same observations in 2009, where these three activities were also the principal cause of delays in the same order of importance.

Figure 6: Average duration of road activities (hours per 500 km)



move to the next destination. Traffic police or armed escorts may accompany the convoy, especially if the vehicles carry high value or sensitive cargoes. The delay here is mainly caused by the waiting time for vehicles that arrive early. They cannot leave until the minimal number of vehicles in a convoy is reached.

Figure 7: Average duration of rail activities (hours per 500 km)



22. Unlike road transport, rail transport encounters fewer delay activities. Figure 7 identifies the top three delays as **change in railways gauge, waiting in queue,** and **security services.**

23. These activities were described in CPMM Annual Report 2009. Comparing 2009 and 2010 data, there are some areas of concern. For road transport, the key delays in 2009 were escort/convoy (5.7 hours), waiting in queue (3 hours), and loading/unloading (2.6 hours). In 2010, the same activities took 11.5 hours, 4.2 hours, and 3.8 hours, respectively, which showed a general increase in stoppage time. If this trend continues into the first half of 2012, further investigation on reasons for such increase in stoppage time need to be undertaken.

24. For delays in railways, there were some changes in the key causes. In 2009, the key delays were attributed to security services (54 hours), phyto-sanitary (53 hours), and queuing time (20.5 hours). In 2010, the principal causes were: change in railways gauge (43 hours), waiting time in queue (23.8 hours), and security services (5.1 hours). Apparently, the delay caused by security services has reduced sharply, but the change in rail gauge has increased from 8.7 hours in 2009 to 43 hours in 2010, representing a fivefold increase. To improve the efficiency of rail gauge change, the number of available sidings for changing rail gauge, the size of the terminal, and the degree of mechanization would need to be reviewed.

C. Cost Factors in CAREC Corridors

25. This section focuses on the analysis of transport and activities costs. Transport cost is the total cost involved in moving the goods[9] plus paying for all the activities involved at inland stops or border crossing, while activities cost represents the aggregate payments associated with activites during vehicle stoppage. The bulk of these activites usually happen at border crossing points (BCPs) where vehicles queue to wait for their turn to enter the BCP and undergo customs clearance and inspection processes. Note that some activities can happen outside a border crossing point (such as police checkpoints which usually happen along a highway). A

[9] Costs of moving goods refer to the freight cost. This includes the operating costs (such as petrol and driver's salary) as well as money to cover overhead expenses such as insurance, vehicle license, road taxes and asset depreciation.

high proportion of activities cost relative to transport cost means that most of the payment occurred when the vehicle crossed the border.

Figure 8a : Road Cost per 20 tons / 500km

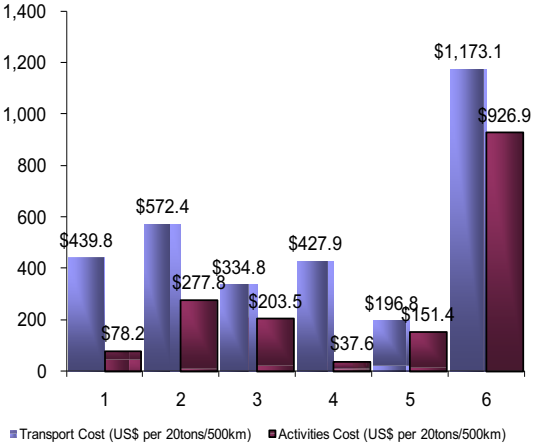
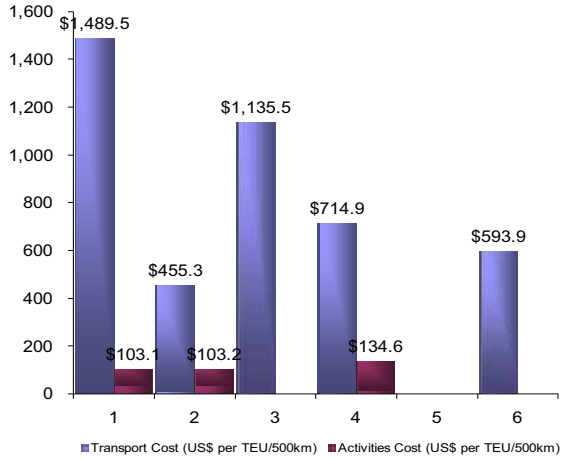


Figure 8b : Rail Cost per TEU / 500km



26. As shown in Figure 8a, the data collected suggest that, for road transport, traveling on Corridor 1 is the most cost-effective while traveling on Corridor 6 is the most costly. It is also notable that, in several corridors, activities cost constitute 50% or more of the total transport cost.

27. Figure 8b illustrates the fact that rail transport tends to be more economical. In general, this is true for bulky cargoes transported over long distances. The fee structure for railways is also more standardized compared to road and there is less exposure to unofficial payments. The same pattern is observed in both 2009 and 2010, where railway transport in Corridors 1 and 3 was relatively costly.

28. **Trans-shipment ($403.10), loading/unloading ($215.40), and customs clearance[10] ($115.20)** ranked as the three most costly activities (Figure 9 below). This is an increase over 2009 results, where the top three causes of road delays were loading/unloading ($133.30), trans-shipment ($66.70), and customs clearance ($62.0).

29. **Change of rail gauge ($143.20), loading/unloading ($63.00), and trans-shipment ($34.00)** were the main cost drivers for railway transport in 2010 (Figure 10). In 2009, the three key cost drivers for railways were change of rail gauge ($68.30), security services ($64.10), and trans-shipment ($47.50). The situation here showed a mixed picture at best. The cost for changing rail gauge has increased tremendously, while that of trans-shipment has reduced slightly.

Figure 9: Average Road Transport Cost ($ per 500km) by Activity

[10] The customs clearance cost here includes only standard fees paid to customs, regardless of the value and size of shipment. Tariffs, duties and product specific charges are not included here.

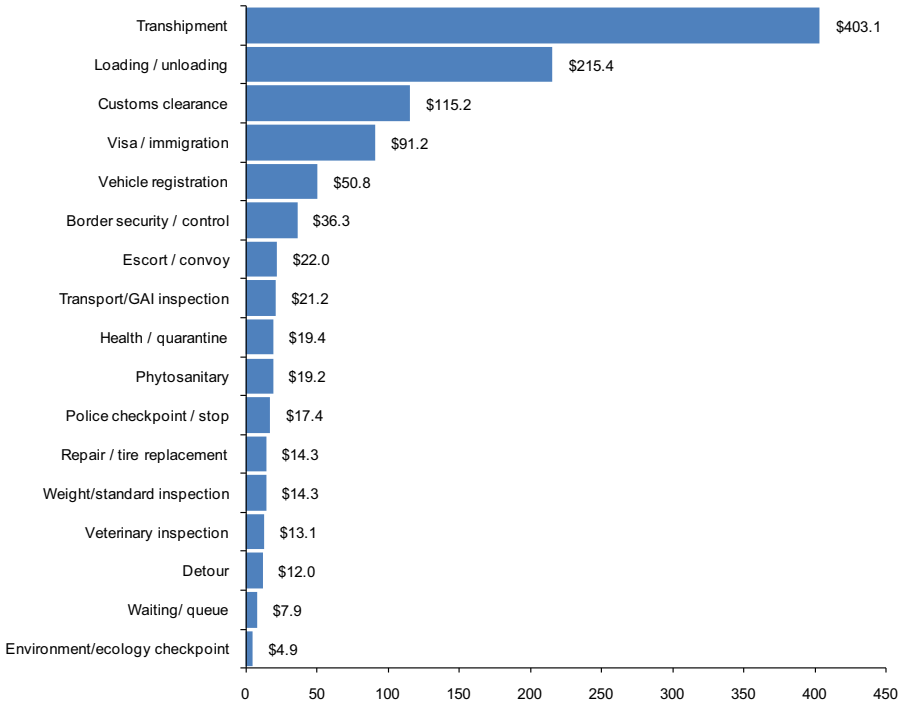
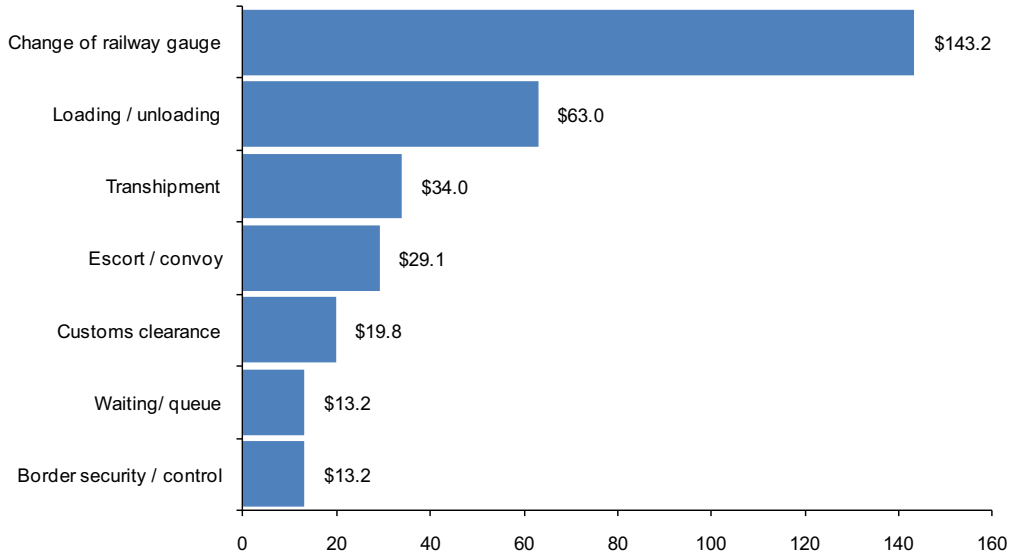


Figure 10: Average Rail Transport Cost ($ per 500km) by Activity



30. Table 2 highlights the extent of unofficial payments along CAREC corridors. Unofficial payments are very likely to happen **for ecological checkpoint, transport/GAI inspection, police checkpoints, and border security**. These activities were also the major areas of unofficial payments in 2009.

Table 2: Analysis of Unofficial Payments in Road Transport

Activity		Official		Unofficial	
	Stops	Count	Percent	Count	Percent*
Environment/ecology checkpoint	295	94	31.9%	201	68.1%
Transport/GAI inspection	2,998	1,134	37.8%	1,864	62.2%
Police checkpoint / stop	11,202	4,483	40.0%	6,719	60.0%
Border security / control	4,899	2,031	41.5%	2,868	58.5%
Weight/standard inspection	2,343	990	42.3%	1,353	57.7%
Phyto-sanitary	3,900	2,073	53.2%	1,827	46.8%
Customs clearance	6,034	3,250	53.9%	2,784	46.1%
Health / quarantine	3,311	1,853	56.0%	1,458	44.0%
Vehicle registration	2,250	1,318	58.6%	932	41.4%
Veterinary inspection	2,468	1,468	59.5%	1,000	40.5%
Visa / immigration	765	570	74.5%	195	25.5%
Repair / tire replacement	344	279	81.1%	65	18.9%
Escort / convoy	51	45	88.2%	6	11.8%
Loading / unloading	3,716	3,435	92.4%	281	7.6%
Detour	67	65	97.0%	2	3.0%
Waiting/ queue	4,415	4,386	99.3%	29	0.7%
Trans-shipment	56	56	100.0%	0	0.0%

D. CAREC Results Framework

31. The May 2009 CAREC Senior Officials Meeting 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, tracking 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. CPMM results for the four indicators based on January 2010 – December 2010 data are the following:

Table 3: CAREC Results Framework: Trade Facilitation Indicators

Time taken to clear a border crossing point	Median 7.4 hours Average 12.9 hours
Costs incurred at a border crossing clearance	Median $155.60 Average $277.70
Speed to travel 500 km on CAREC Corridor section for a 20 ton truck or a TEU container	w/o delay 37.6 kph w/ delay 16.6 kph
Cost incurred to travel corridor section	Median $441.20 Average $1,247.70

E. Seasonality

32. CPMM reports are prepared on quarterly and annual bases supported by data collected monthly. The availability of monthly data for a whole year allows for analysis of seasonal variations of corridor performance. Figures 11a-d show charts of quarterly variations for the above four result framework indicators.

Figure 11a : Time (hr) Taken to Clear Border Crossings

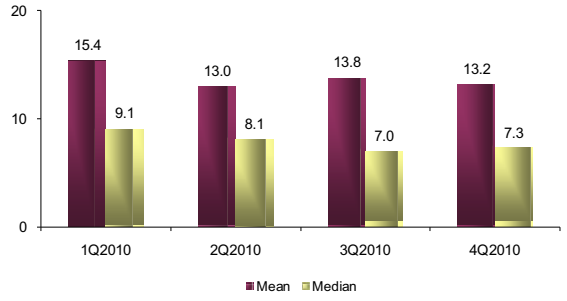


Figure 11b : Cost (US$) Incurred for Border Crossing Clearances

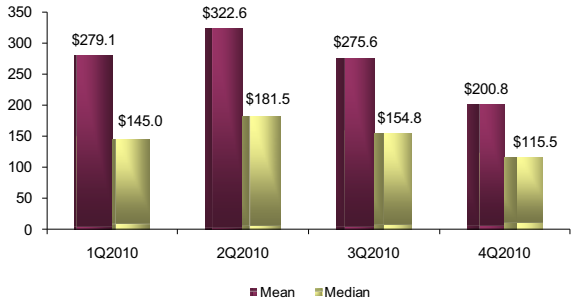


Figure 11c : Speed (kph) Taken to Travel Corridor Sections

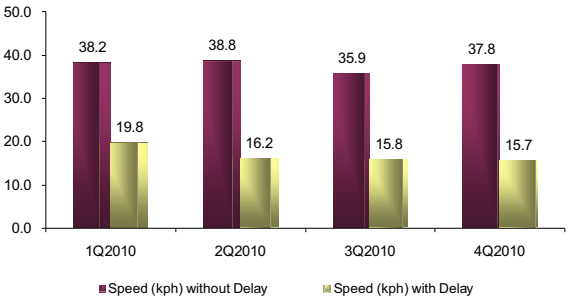
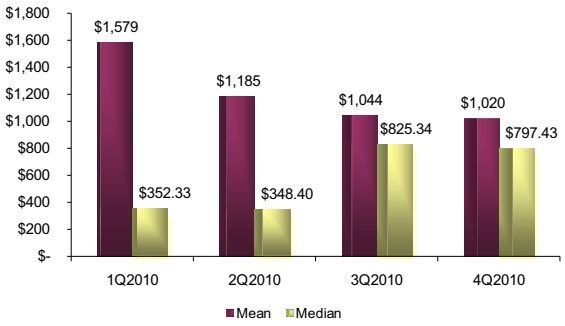


Figure 11d : Cost (US$/20ton/500km) Incurred Traveling on Corridor Sections



33. Figure 11a shows the average time to cross a border in each quarter. These figures are slightly higher than those recorded in 2009. Figure 11b also mirrors the pattern observed in 2009. The cost to cross a border was most expensive at the beginning of the year, and dropped gradually towards the end of the year.

34. Compared with 2009 figures, the time and cost it takes to cross a border increased in 2010. The median and average of border crossing time increased from 4.4 hours and 9.7 hours, respectively, in 2009 to 7.4 hours and 12.9 hours in 2010. Further analysis revealed that key border crossing activities such as waiting time and loading/unloading were indeed longer in 2010.

35. Increased delays were quite apparent at certain key BCPs. In 2010, the following BCPs were identified to have relatively longer clearance time:

- *Khorgos-Korgas (Corridor 1)*
- *Dostyk-Alashankou (Corridor 1)*
- *Daut Ota (Corridor 2 and 6)*
- *Erkechtam-Yierkeshitan (Corridor 2)*
- *Alat-Farap (Corridor 2 and 3)*
- *Aul-Veseloyarsk (Corridor 3)*
- *Konysbaeva-Yallama (Corridor 3)*
- *Sukhbaatar-Naushki (Corridor 4)*
- *Zamyn Uud-Erlian (Corridor 4)*

36. Corridors 1 and 3 experienced a drastic increase in border crossing time. In particular, the Khorgos-Korgas BCP at Corridor 1 recorded a marked increase in border crossing time. In 2009, border crossing activities such as customs clearance, waiting time in queue and loading/unloading each took 1-2 hours to complete. In 2010, each of those activities averaged 4 to 9 hours to complete. The Konysbaeva-Yallama BCP at Corridor 3 also reported an increase in border crossing time. Drivers were frustrated at the erratic opening and closing of the Yallama border, which created long queues at the BCP. Waiting time increased from 9 hours in 2009 to 13 hours in 2010. As nearby BCPs were also closed, drivers had no choice but to wait patiently in queue to cross this Kazakhstan-Uzbekistan border.

37. Referring to Figure 11c, it is observed that the speed for each quarter was fairly constant, with the fastest travel recorded in Q2. Figure 11c also shows a longer border crossing time, which translated into comparatively lower relative speeds in 2010 as compared with 2009. The former had a slightly lower SWOD and SWD. Vehicles seemed to be able to travel relatively faster in Q2, which was due to the shorter time spent in border crossing during that period.

38. Figure 11d shows the total cost to travel along CAREC corridors per quarter. The pattern reveals an increase in total average cost for the first quarter and almost the same average cost for the last 3 quarter of the year. The principal cost drivers continue to be trans-shipment, loading/unloading fees, and customs clearance -- the same principal cost drivers as in 2009.

IV. PERFORMANCE OF CAREC CORRIDORS

Corridor 1: Europe – East Asia

A. Speed Indicators

39. For road transport, Corridor 1a has the lowest speed without delay of 18.2 kph. Corridor 1b is 39.3 kph, and Corridor 1c has the highest speed at 53.4 kph. The speed for all 3 sub-corridors is cut in half or more when stops or delays are considered. (Figure 12a).

40. Figure 12b illustrates the CV of each sub-corridor. The CV (SWOD) values for Corridor 1a, 1b, and 1c are 34%, 49.1%, and 80.9%, respectively. The respective CV (SWD) values for Corridor 1a, 1b, and 1c are 57.9%, 60.5%, and 67.4%. Although Corridor 1c records the most rapid movement of goods, the CVs for this sub-corridor are also the highest, indicating that travel time is more unpredictable.

Figure 12a : Road Speed (per 20 ton)

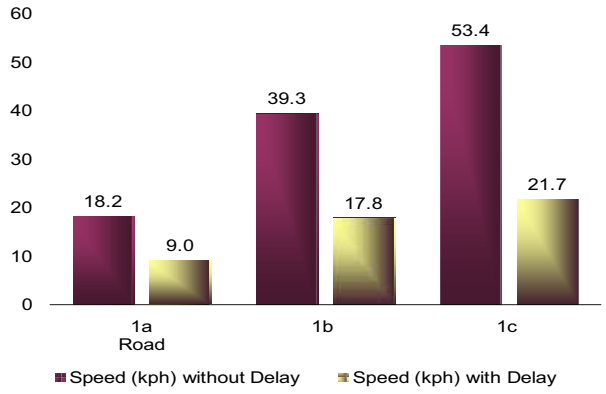


Figure 12b : Coefficient of Variation (Road)

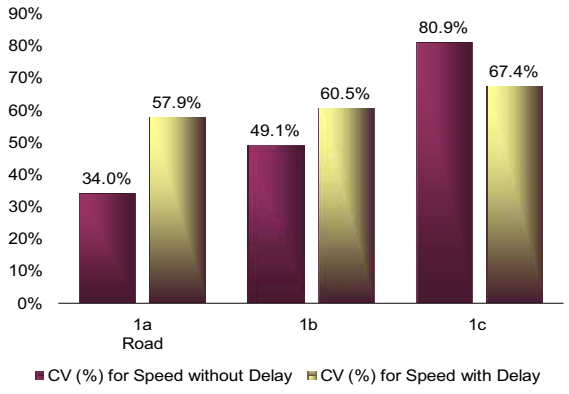


Figure 12c : Rail Speed (per 20 ton)

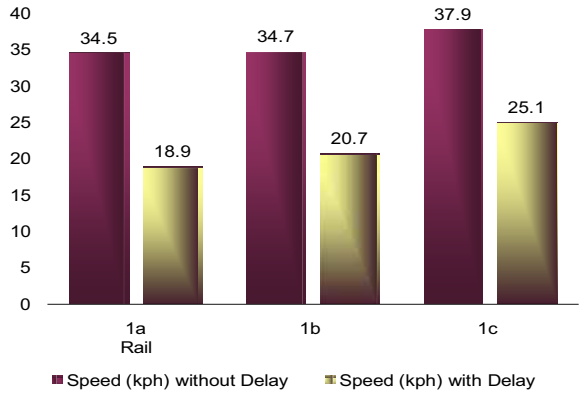
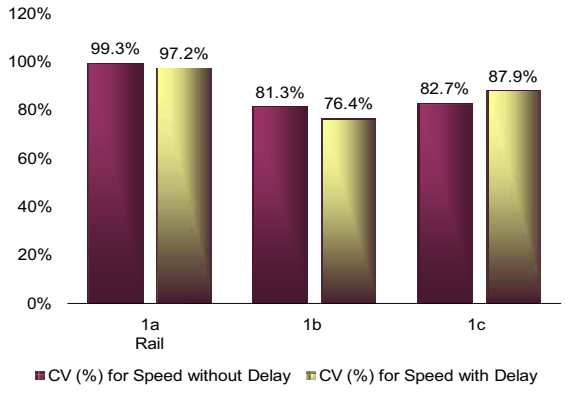


Figure 12d : Coefficient of Variation (Rail)



41. For rail transport, the speeds appear to be rather similar. Corridor 1a has the lowest speed of 34.5 kph, followed closely by Corridor 1b (at 34.7 kph), while Corridor 1c has the highest speed (37.9 kph). The SWD for Corridor 1a, b, and c are 18.9 kph, 20.7 kph, and 25.1 kph, respectively (Figure 12c). Delays encountered at the rail stops cause a drop in speed of only a bit over 40% (compared to a drop of 50% or more for road speed).

42. Figure 12d illustrates the CV of each sub-corridor using rail transport. The CVs for SWOD and SWD for all 3 sub-corridors are very high.

B. Cost and Time Spent on Delays

43. The most common delays reported by drivers in the sub-corridors were escort/convoy, waiting time while on queue (or queueing time), and loading/unloading. Visa/immigration fees were costly, as well as customs clearance and loading/unloading.

44. Freight forwarders using railways emphasized the long queueing time, especially at Dostyk-Alashankou, due to trans-loading of goods prompted by the difference in rail gauges.

Table 4: Average Duration and Cost of Activities by Mode of Transport (Corridor 1)

Activity	Duration (hours per 500 km)						Cost ($ per 500 km)					
	Road			Rail			Road			Rail		
	1a	1b	1c	1a	1b	1c	1a	1b	1c	1a	1b	1c
Health / quarantine	0.1	1.1	0.3				4.4	3.9	7.9			
Phyto-sanitary	0.1	0.1	0.2				2.6	2.8	7.1			
Veterinary inspection	0.1	0.1	0.2				2.6	2.8	5.1			
Border security / control	0.2	0.2	0.4	2.6			8.8	41.4	13.1	13.2		
Visa / immigration	1.3	0.3	0.3				2000.0	56.0	79.0			
Customs clearance	0.9	0.4	1.5	1.3	0.3	0.8	308.0	280.7	79.0	19.8		
Detour		0.6	0.3						20.6			
Waiting/ queue	3.0	1.1	5.6	31.7	1.7	2.8	10.4		2.6	13.2		
Loading / unloading	5.1	4.1	5.9	1.3	3.7		400.0	50.0	48.7	13.2		
Escort / convoy			10.7							29.1		
Weight/standard inspection	0.2	0.2	0.5	0.0			4.4	7.0	10.0			
Police checkpoint / stop	0.2	0.2	0.3				44.0	37.3	8.8			
Transport/GAI inspection	0.2	0.2	0.3				12.4	14.2	9.6			
Environment/ecology checkpoint			0.4						8.6			
Vehicle registration	0.5		0.3				2.8		3.3			
Repair / tire replacement	0.4	1.6	1.5	6.3	0.5		16.7	16.8	3.9			
Trans-shipment			1.2							34.0		
Meals	0.8	1.0	0.8				7.6	7.9	7.8	264.0		
Rest/overnight stay	4.3	6.6	7.9				5.1	8.0	3.8	29.1	77.0	
Other activities	0.4	0.5	0.5	5.7	5.4	4.5	88.0	97.1	115.4	299.7	81.9	

C. BCPs and Bottlenecks

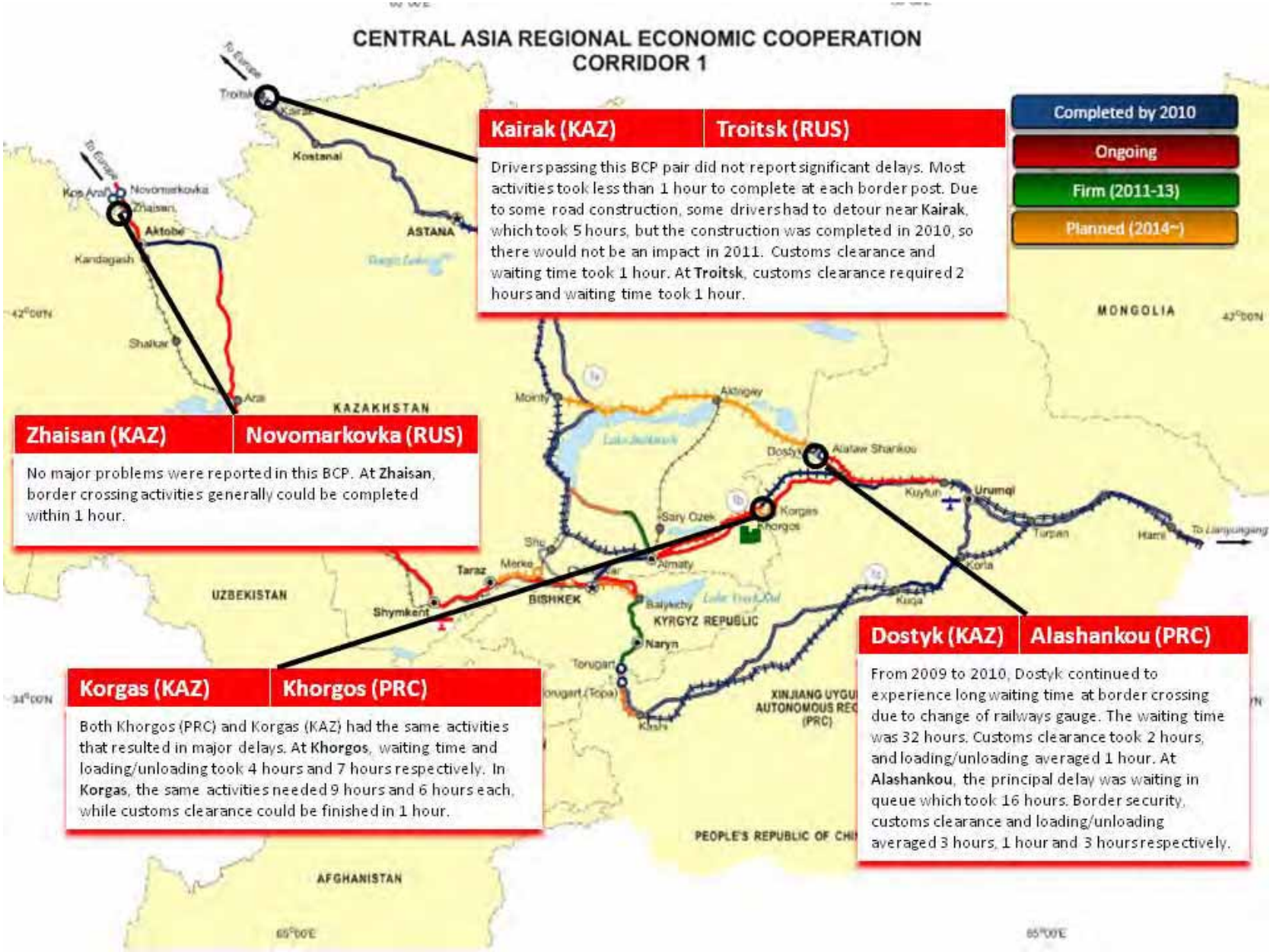
45. The major BCPs include **Alashankou-Dostyk (PRC-KAZ), Khorgos-Korgas (PRC-KAZ)**, **Zhaisan-Novomarkovka (KAZ-RUS)** and **Kairak-Troitsk (KAZ-RUS)**.

46. Although queueing time at the Dostyk and Alashankou borders is long, it is relatively shorter in Alashankou. **Dostyk** has limited trans-loading capacity, requiring trains to wait longer. The magnitude of waiting time at Dostyk in 2009 and 2010 was similar (more than 30 hours).

47. Similarly, the waiting time at **Alashankou** was long (16 hours), but only half of the waiting time at Dostyk. Border security and loading/unloading averaged 3 hours each. Shippers reported that customs clearance was quite efficient and could be completed within 1 hour.

48. Delays at the Kazakh side of **Korgas** inched up in 2010. Long queues were observed at this BCP, which reported an average waiting time in queue of 9 hours. The manual process of materials transfer meant low productivity, leading to long average loading/unloading time of 6 hours. The situation at the PRC side of **Khorgos** is similar. It is reported that the PRC and the Kazakh customs are working to synchronize their operating hours so that goods can clear the border earlier.

49. At the northwestern region, little problems were reported during border crossing. There were some road construction near **Kairak** which compelled drivers to detour that averaged 5 hours. This is not expected to affect 2011 results. Comparatively speaking, the customs clearance at **Troitsk** (2 hours) took longer than other activities. The elimination of border formalities within the Kazakhstan-Russia-Belarus Customs Union should eliminate customs clearance at Troitsk from 1 July 2011.


CENTRAL ASIA REGIONAL ECONOMIC COOPERATION
CORRIDOR 1
Completed by 2010
Ongoing
Firm (2011-13)
Planned (2014~)
Kairak (KAZ)
Troitsk (RUS)
Drivers passing this BCP pair did not report significant delays. Most activities took less than 1 hour to complete at each border post. Due to some road construction, some drivers had to detour near Kairak, which took 5 hours, but the construction was completed in 2010, so there would not be an impact in 2011. Customs clearance and waiting time took 1 hour. At Troitsk, customs clearance required 2 hours and waiting time took 1 hour.
Zhaisan (KAZ)
Novomarkovka (RUS)
No major problems were reported in this BCP. At Zhaisan, border crossing activities generally could be completed within 1 hour.
Korgas (KAZ)
Khorgos (PRC)
Both Khorgos (PRC) and Korgas (KAZ) had the same activities that resulted in major delays. At Khorgos, waiting time and loading/unloading took 4 hours and 7 hours respectively. In Korgas, the same activities needed 9 hours and 6 hours each, while customs clearance could be finished in 1 hour.
Dostyk (KAZ)
Alashankou (PRC)
From 2009 to 2010, Dostyk continued to experience long waiting time at border crossing due to change of railways gauge. The waiting time was 32 hours. Customs clearance took 2 hours, and loading/unloading averaged 1 hour. At Alashankou, the principal delay was waiting in queue which took 16 hours. Border security, customs clearance and loading/unloading averaged 3 hours, 1 hour and 3 hours respectively.
To Europe
Troitsk
Kostanai
Kandagash
Aktobe
ASTANA
Shalkar
Aral
KAZAKHSTAN
MONGOLIA
UZBEKISTAN
Taraz
Shymkent
BISHKEK
Almaty
Sary Ozek
Korgas
Khorgos
Dostyk
Alataw Shankou
Urumqi
Kuytun
Turpan
Hami
Korla
Kuqa
Aktogay
Balykchy
KYRGYZ REPUBLIC
Naryn
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Corridor 2: Mediterranean – East Asia

A. Speed Indicators

50. The SWOD, SWD, and CV for Corridor 2a and 2b are not significantly different when compared to Corridor 1. Among these corridors, Corridor 1c and Corridor 2a indicated higher speeds, but Corridor 2a has a lower CV.

51. Due to the broad coverage that includes several countries in Corridor 2, there were limited data along this route. Trains move at a slow 9kph, which compare unfavorably to road transport.

Figure 13a : Road Speed (per 20 ton)

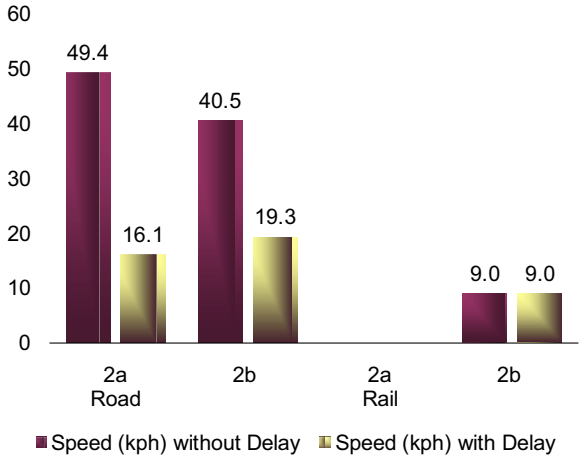
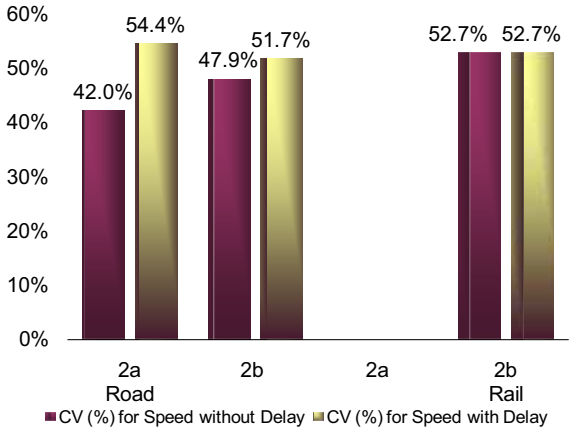


Figure 13b : Coefficient of Variation (Road)



B. Cost and Time Spent on Delays

52. Drivers faced the same sets of delays mentioned in Corridor 1. The more severe causes of delays were escort/convoy, waiting time in queue, and loading/unloading. Customs clearance activities were relatively more expensive.

Table 5: Average Duration and Cost of Activities by Mode of Transport (Corridor 2)

Activity	Duration (hours per 500 km)					Cost ($ per 500 km)				
	Road			Rail		Road			Rail	
	2	2a	2b	2a	2b	2	2a	2b	2a	2b
Health / quarantine	0.3	1.1	0.1			5.8	26.1	0.9		
Phyto-sanitary	0.3	1.0	0.1			6.1	24.7	1.3		
Veterinary inspection	0.4	0.8	0.1			3.0	24.7	0.9		
Border security / control	0.4	1.5	0.4			2.2	72.5	6.5		
Visa / immigration		0.7	0.2				36.3	38.7		
Customs clearance	1.7	4.0	1.3	1.7		43.2	217.5	12.9		
Detour										
Waiting/ queue	9.0	4.3	3.0	4.5			17.4			
Loading / unloading	6.0	3.1	2.8	1.9			78.7	24.1	309.6	
Escort / convoy	0.2	17.4				23.3	21.2	64.5		
Weight/standard inspection	0.4	0.7	0.5			3.5	29.0			

Activity	Duration (hours per 500 km)					Cost ($ per 500 km)				
	Road			Rail		Road			Rail	
	2	2a	2b	2a	2b	2	2a	2b	2a	2b
Police checkpoint / stop	0.7	0.5	1.2			7.6	10.7	5.6		
Transport/GAI inspection	0.3	0.725				108.6	36.3	10.8		
Environment/ecology checkpoint		0.3					4.9			
Vehicle registration	0.6	0.7	0.2				95.7	2.2		
Repair / tire replacement		3.2					12.2			
Trans-shipment		0.3					408.9			
Meals	1.8	1.5	0.9			15.7	15.1	6.9		
Rest/overnight stay	18.9	11.6	3.4			0.9	10.8	1.7		
Other activities		0.6	0.5	6.6			394.7	139.8		57.0

C. BCPs and Bottlenecks

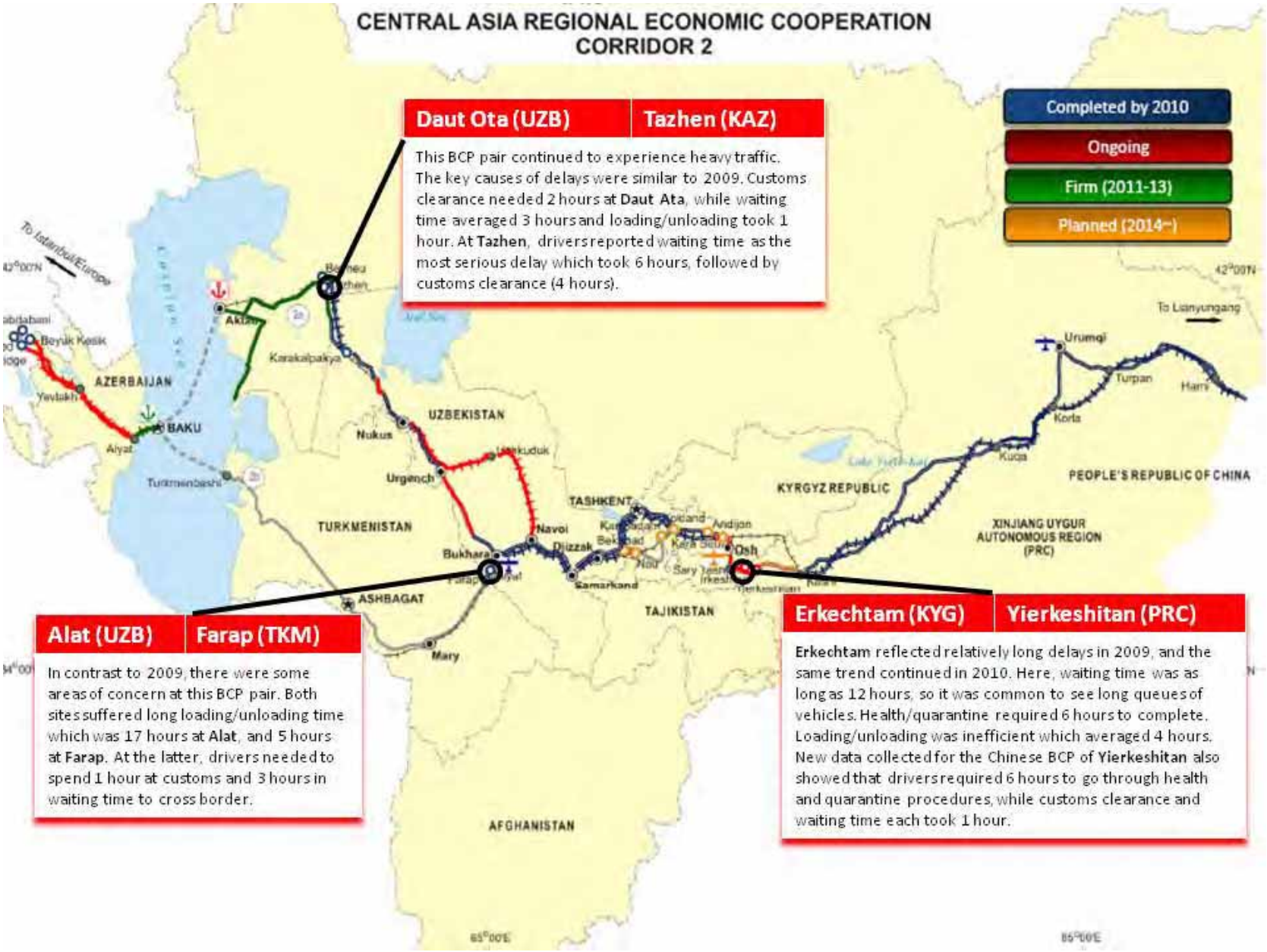
53. CPMM has identified three BCP pairs that raise some concerns for border crossing. They are **Yierkeshitan-Erkechtam (PRC-KGZ)**, **Alat-Farap (UZB-TKM)** and **Daut Ota-Tazhen (UZB-KAZ)**.

54. At **Yierkeshitan-Erkechtam**, long queues of trucks were observed at the BCP, substantiated by data that showed waiting time as long as 12 hours at the Kyrgyz BCP Erkechtam. This BCP presented the same challenges mentioned in 2009. Moreover, health/quarantine for drivers took 6 hours, and loading/unloading activities required 4 hours. In 2010, new data on the border crossing process at Yierkeshitan revealed that, while the waiting time is shorter (1 hour), drivers spent much time going through health/quarantine process (6 hours).

55. **Daut Ota-Tazhen** were very popular BCPs, but the substantial delays encountered in 2009 persisted in 2010. Waiting time in queue was the most important cause of delays at both BCPs, which took 3 hours at Daut Ota and 6 hours in Tazhen. Loading/unloading and customs clearance also required 2 to 4 hours each to complete at either BCP.

56. While the two BCP pairs of Yierkeshitan-Erkechtam and Daut Ota-Tazhen showed the same challenging situations, **Alat-Farap** displayed a different picture. Border crossing was efficient in 2009 at this location, but became inefficient in 2010. New data collected in 2010 indicated very long loading/unloading times, which averaged 17 hours at Alat, compared to 5 hours at Farap. Drivers also needed to spend another 3 hours waiting in queue at Farap.

57. Corridor 2 is a heavily used corridor by shippers from Kazakhstan, Turkmenistan, and Uzbekistan for deliveries to Europe and Russia. The inefficiencies described at the three major BCP pairs raise some cause for concern, because the long border crossing time would inevitably affect the viability of shipping perishables in this corridor (e.g. tomatoes, vegetables, etc.). Improved loading/unloading times (using better material handling equipment) and better roads in this corridor should yield an improved result.


CENTRAL ASIA REGIONAL ECONOMIC COOPERATION
CORRIDOR 2
Completed by 2010
Ongoing
Firm (2011-13)
Planned (2014~)
Daut Ota (UZB)
Tazhen (KAZ)
This BCP pair continued to experience heavy traffic. The key causes of delays were similar to 2009. Customs clearance needed 2 hours at Daut Ata, while waiting time averaged 3 hours and loading/unloading took 1 hour. At Tazhen, drivers reported waiting time as the most serious delay which took 6 hours, followed by customs clearance (4 hours).
Alat (UZB)
Farap (TKM)
In contrast to 2009, there were some areas of concern at this BCP pair. Both sites suffered long loading/unloading time which was 17 hours at Alat, and 5 hours at Farap. At the latter, drivers needed to spend 1 hour at customs and 3 hours in waiting time to cross border.
Erkechtam (KYG)
Yierkeshitan (PRC)
Erkechtam reflected relatively long delays in 2009, and the same trend continued in 2010. Here, waiting time was as long as 12 hours, so it was common to see long queues of vehicles. Health/quarantine required 6 hours to complete. Loading/unloading was inefficient which averaged 4 hours. New data collected for the Chinese BCP of Yierkeshitan also showed that drivers required 6 hours to go through health and quarantine procedures, while customs clearance and waiting time each took 1 hour.
To Istanbul/Europe
To Lianyungang
AZERBAIJAN
BAKU
Beyuk Kesik
Yevlakh
Aktau
Karakalpakya
UZBEKISTAN
Nukus
Urgench
Turkmenbashi
TURKMENISTAN
ASHBAGAT
Mary
Bukhara
Navoi
Djizzak
Samarkand
TASHKENT
Andijon
Osh
KYRGYZ REPUBLIC
TAJIKISTAN
AFGHANISTAN
Urumqi
Turpan
Hami
Korla
Kuqa
PEOPLE'S REPUBLIC OF CHINA
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Corridor 3: Russian Federation – Middle East and South Asia

A. Speed Indicators

58. Corridor 3a continued to offer higher SWOD compared to Corridor 3b, due to more sections of paved roads. In fact, the SWOD in Corridor 3a is the second highest among all the sub-corridors. With a relatively low CV, this route is promising. However, the SWD drops significantly from 54.2 kph to 13 kph, due to several obstacles at border crossings. Trucks heading north encountered multiple delays at Aul-Veseloyarsk, while trucks heading south met delays at Konysbaeva-Yallama and Alat-Farap.

59. Rail transport offers a SWOD of 25.1 kph on Corridor 3a and 12.7 on Corridor 3b, while SWD is 17.8 kph and 7.5 kph respectively. Date obtained in 2010 suggest that the rail section in Corridor 3a linking Almaty-Shu-Taraz-Shymkent is busy.

Figure 14a : Road Speed (per 20 ton)

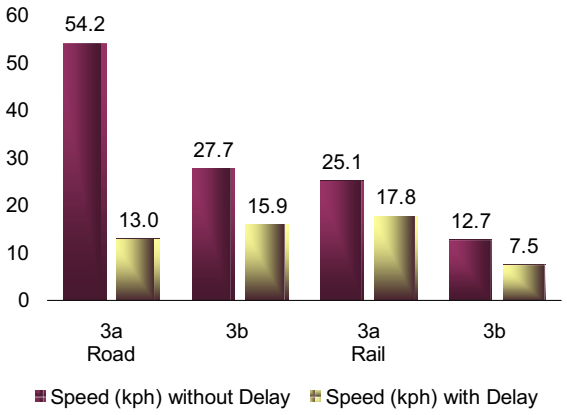
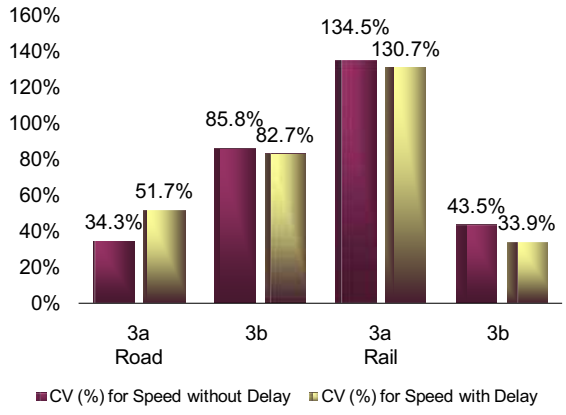


Figure 14b : Coefficient of Variation (Road)



B. Cost and Time Spent on Delays

60. Table 6 reveals why Corridor 3 suffered a drastic drop from SWOD to SWD. Principal delays were caused by escort/convoy, customs clearance, waiting time in queue, and loading/unloading.

61. Transshipment and loading/unloading are the most costly activities in both corridors, while customs clearance and visa/immigration are major cost items.

Table 6: Average Duration and Cost of Activities by Mode of Transport (Corridor 3)

Activity	Duration (hours per 500 km)		Cost ($ per 500 km)	
	Road	Rail	Road	Rail

	3a	3b	3a	3b	3a	3b	3a	3b
Health / quarantine	0.6	0.28			12.81	6.3		
Phyto-sanitary	1.6	0.22			23.04	5.0		
Veterinary inspection	0.5	0.26			14.40	5.0		
Border security / control	3.5	0.28			48.00	8.3		
Visa / immigration	1.0	1.7			192.00			
Customs clearance	4.8	1.7	2.4	30.6	71.01	25.2		
Detour	0.2							
Waiting/ queue	9.6	12.8	2.9		3.85	33.3		
Loading / unloading	2.3	7.7			11.56	500.0		
Escort / convoy	11.5	15.3			211.32			
Weight/standard inspection	2.6	1.3			19.20	6.8		
Police checkpoint / stop	1.8	1.5			3.84	29.7		
Transport/GAI inspection	0.8	0.2			38.40	75.7		
Environment/ecology checkpoint	0.3	0.2			10.42	3.8		
Vehicle registration	1.0	0.3			48.00	14.1		
Repair / tire replacement	5.6	5.1			43.54	13.6		
Trans-shipment	1.9	0.2			17.28	295.2		
Meals	3.2	3.1			15.61	13.9		
Rest/overnight stay	23.0	26.8			5.31	8.9		
Other activities	0.8	0.5	5.6		435.20	316.1		

C. BCPs and Bottlenecks

62. Three BCPs are critical in Corridor 3, namely **Alat-Farap (UZB-TKM)**, **Konysbaeva-Yallama (KAZ-UZB)**, **Aul-Veseloyarsk (KAZ-RUS)** and **Sarahs-Sarakhs (TKM-IRN).**

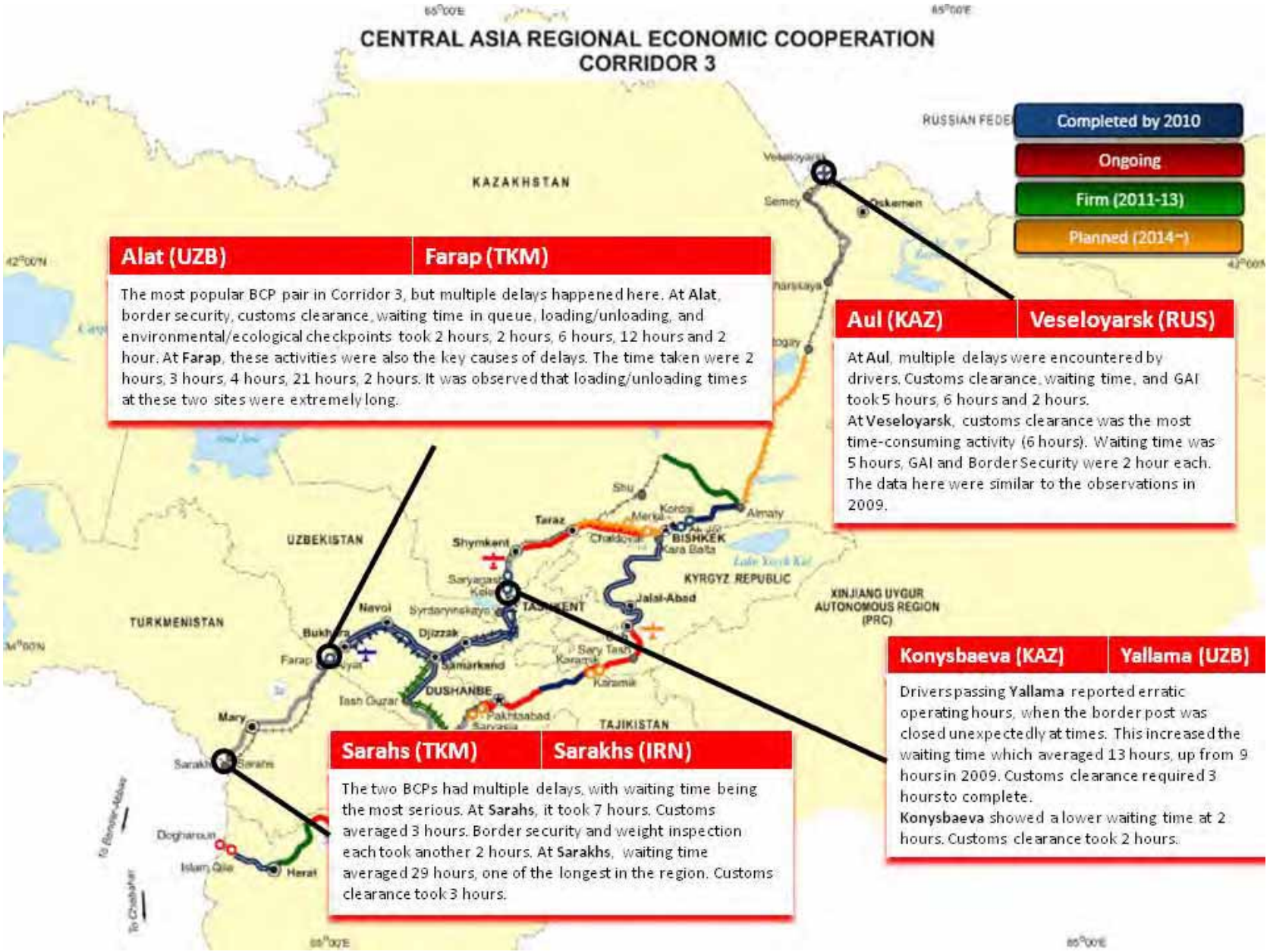
63. **Alat-Farap** posted multiple challenges to truck drivers moving goods between Uzbekistan and Turkmenistan along Corridor 3. The loading/unloading time in the two locations were comparatively long, resulting in 12 hours at Alat and 21.1 hours at Farap. Border security, customs clearance, waiting time in queue, weight inspection and ecological checkpoint required 2 to 4 hours each to complete.

64. **As in 2009,** lengthy border crossing times were experienced **at Aul-Veseloyarsk** in 2010. Queuing to cross the border was the most time-consuming activity at Aul, taking 6 hours. Other delays were caused by customs clearance (5 hours) and GAI (2 hours). The situation at Veseloyarsk was slightly different. The main delay was the need to spend 6 hours clearing customs formalities. Waiting time in queue averaged 5 hours, while border security and GAI each required about 2 hours to complete.

65. Drivers complained about long waiting times experienced at **Yallama**. In 2009, the waiting time averaged 9 hours. This rose to 13 hours in 2010. Erratic operating hours and unannounced closures frustrated drivers. Customs clearance at Yallama required 3 hours. At **Konysbaeva**, the key delays were waiting time (2 hours) and customs clearance (2 hours).

66. New data were collected at the Turkmenistan-Iran border at **Sarahs-Sarakhs**. Waiting time was very long at this border pair. It took vehicles 7 hours at Sarahs and 29 hours at

Sarakhs. At Sarahs, customs clearance averaged 3 hours, border inspection took 3 hours and weight inspection took 2 hours. At Sarakhs, customs clearance took 3 hours.


CENTRAL ASIA REGIONAL ECONOMIC COOPERATION
CORRIDOR 3
Completed by 2010
Ongoing
Firm (2011-13)
Planned (2014~)
KAZAKHSTAN
RUSSIAN FEDE
UZBEKISTAN
TURKMENISTAN
KYRGYZ REPUBLIC
TAJIKISTAN
XINJIANG UYGUR AUTONOMOUS REGION (PRC)
Alat (UZB)
Farap (TKM)
The most popular BCP pair in Corridor 3, but multiple delays happened here. At Alat, border security, customs clearance, waiting time in queue, loading/unloading, and environmental/ecological checkpoints took 2 hours, 2 hours, 6 hours, 12 hours and 2 hour. At Farap, these activities were also the key causes of delays. The time taken were 2 hours, 3 hours, 4 hours, 21 hours, 2 hours. It was observed that loading/unloading times at these two sites were extremely long.
Aul (KAZ)
Veseloyarsk (RUS)
At Aul, multiple delays were encountered by drivers. Customs clearance, waiting time, and GAI took 5 hours, 6 hours and 2 hours.
At Veseloyarsk, customs clearance was the most time-consuming activity (6 hours). Waiting time was 5 hours, GAI and Border Security were 2 hour each. The data here were similar to the observations in 2009.
Konysbaeva (KAZ)
Yallama (UZB)
Drivers passing Yallama reported erratic operating hours, when the border post was closed unexpectedly at times. This increased the waiting time which averaged 13 hours, up from 9 hours in 2009. Customs clearance required 3 hours to complete.
Konysbaeva showed a lower waiting time at 2 hours. Customs clearance took 2 hours.
Sarahs (TKM)
Sarakhs (IRN)
The two BCPs had multiple delays, with waiting time being the most serious. At Sarahs, it took 7 hours. Customs averaged 3 hours. Border security and weight inspection each took another 2 hours. At Sarakhs, waiting time averaged 29 hours, one of the longest in the region. Customs clearance took 3 hours.
Semey
Oskemen
Taraz
Shymkent
BISHKEK
Almaty
Jalal-Abad
Navoi
Bukhara
Farap
Djizzak
Samarkand
TASHKENT
DUSHANBE
Pakhtabad
Mary
Sarakhs
Dogharoun
Islam Qala
Herat
Karamik

Corridor 4: Russian Federation – East Asia

A. Speed Indicators

67. Corridor 4 showed some interesting developments. SWOD for road transport along Corridor 4b increased from 32.2 kph (2009) to 41.4 kph in 2010, a 28% improvement. However, the SWD did not change much (11.6 kph compared to 12.5 kph in 2010). The CV reduced from 349.1% in 2009 to 222.6%. Mongolia is experiencing a mining boom and the demand for fast and reliable transport is increasing. Nonetheless, under-developed physical infrastructure and lack of maintenance for the road and rail systems continue to challenge shippers and carriers. The shipment patterns were also highly irregular, with heavy movement in summer and little movement in winter due to the harsh weather which makes driving unsafe.

68. While road transport showed some improvement, rail transport suffered a drop of SWOD from 17.6 kph in 2009 to 15.5 kph in 2010. SWD followed the trend, reducing from 8.1 kph to 6.8 kph. CVs for both rail and road transport are quite high.

Figure 15a : Speed (per 20 ton) (Road and Rail)

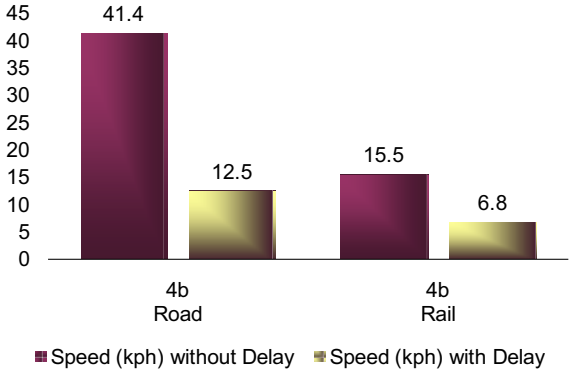
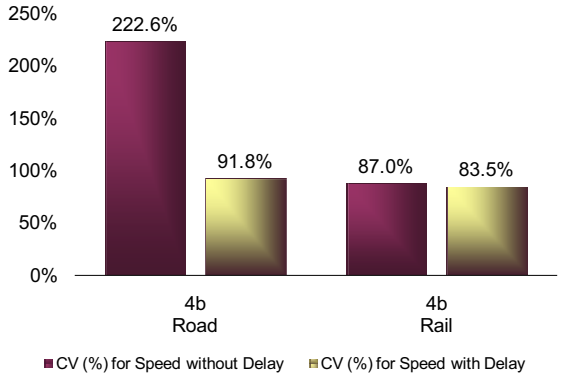


Figure 15b : Coefficient of Variation (Road and Rail)



B. Cost and Time Spent on Delays

69. For both modes of transport, customs clearance, waiting time, and loading/unloading were identified as the top three causes of delays. These delays were particularly evident for rail transport. The shortage of wagons and locomotives produced long waiting times at rail terminals along Sainshand and Choir, while burdensome customs clearance created a bottleneck at Zamyn-Uud and Erlian. The operational practice of giving priority to passenger trains also tends to delay freight traffic. Another equally time-consuming affair was the need to change rail gauge at the Mongolia-PRC border.

Table 7: Average Duration and Cost of Activities by Mode of Transport (Corridor 4)

Activity	Duration (hours per 500 km)		Cost ($ per 500 km)	
	Road		Rail	
	4b	4b	4b	4b
Health / quarantine	1.2		29.2	
Phyto-sanitary	0.9		13.1	
Veterinary inspection	0.9		13.1	
Border security / control	1.2			
Visa / immigration	0.4			
Customs clearance	4.2	43.0	1182.7	
Detour				
Waiting/ queue	2.8	21.1		
Loading / unloading	6.6	12.6	2500.0	126.4
Escort / convoy				
Weight/standard inspection	0.3		14.3	
Police checkpoint / stop	0.4		26.9	
Transport/GAI inspection	0.6		6.9	
Environment/ecology checkpoint	0.4		8.0	
Vehicle registration	0.9			
Repair / tire replacement	1.8		10.2	196.3
Trans-shipment				
Meals	2.7		16.1	
Rest/overnight stay	13.4		15.8	
Other activities	1.2		37.6	
Change of Railway Gauge		43.0		143.2

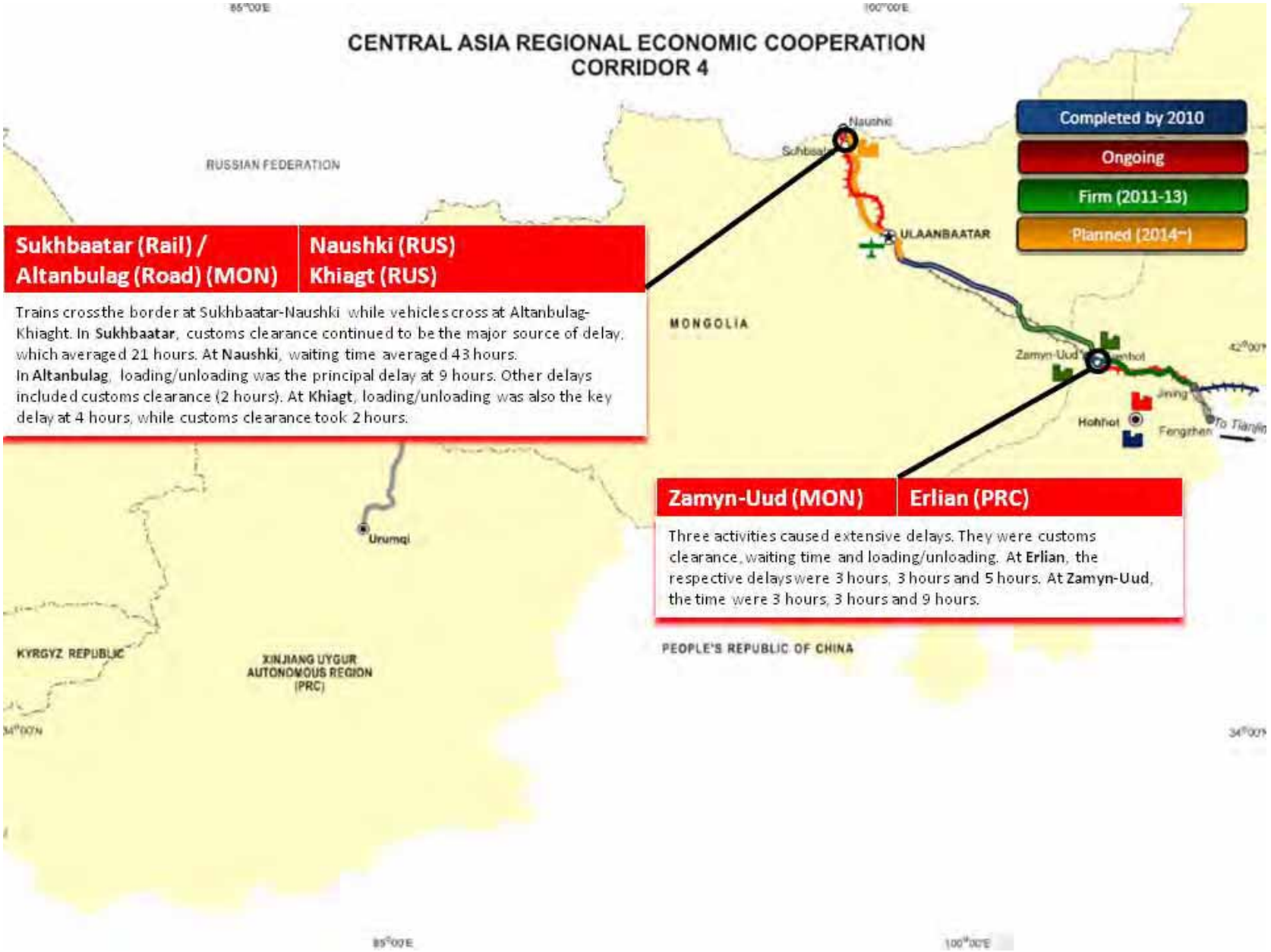
C. BCPs and Bottlenecks

70. **Naushki-Sukhbaatar (RUS-MON)** presented one of the longest railway delays among the six CAREC corridors. At Naushki, waiting time in queue could be as long as 43 hours. Customs clearance at Sukhbaatar contributed 21 hours of delay. **Khiagt-Altanbulag (RUS-MON),** which handles road-based movements, also posed problems for truck drivers. Loading/unloading was the main cause of delay at the two sites, resulting in 9 hours at Altanbulag and 4 hours at Khiagt.

71. In the south, delays at **Zamyn-Uud–Erlian** varied. Loading/unloading at Erlian took 5 hours, while customs clearance and waiting time in queue each required 3 hours. At Zamyn-Uud, loading/unloading took close to ten hours. Customs clearance and waiting time took 3 hours each.

72. Appendix Table 4a showed that shipment of a 20' container (TEU) by rail from Tianjin to Ulaanbaatar was $2,052 per 500km, while the return journey from Ulaanbaatar to Tianjin was $667.60 per 500km. This suggests that the import was three times higher than the export cost from Mongolia's perspective. Interviews with IFFC (the largest Mongolian international freight forwarder) validated this observation. The reason was the greater difficulty in finding shipments moving from Tianjin to Mongolia due to the small demand size in Mongolia. For exports of Mongolian products, shippers could use those containers that came in, which were usually priced competitively.

73. Some positive developments are happening in Zamyn-Uud. Mongolia's government is developing a single electronic window. When implemented, it should reduce the customs clearance time and therefore lower the waiting time in queue. PRC companies are also negotiating with the government to construct logistics centres and improve the physical infrastructure in the Special Economic Zone in Zamyn-Uud.


CENTRAL ASIA REGIONAL ECONOMIC COOPERATION
CORRIDOR 4
Completed by 2010
Ongoing
Firm (2011-13)
Planned (2014~)
RUSSIAN FEDERATION
Naushki
Suhbaatar
ULAANBAATAR
MONGOLIA
Zamyn-Uud
Hohhot
Jining
Fengzhen
To Tianjin
Urumqi
KYRGYZ REPUBLIC
XINJIANG UYGUR AUTONOMOUS REGION (PRC)
PEOPLE'S REPUBLIC OF CHINA
Sukhbaatar (Rail) / Altanbulag (Road) (MON)
Naushki (RUS) Khiagt (RUS)
Trains crossthe border at Sukhbaatar-Naushki while vehicles cross at Altanbulag-Khiaght. In Sukhbaatar, customs clearance continued to be the major source of delay, which averaged 21 hours. At Naushki, waiting time averaged 43 hours.
In Altanbulag, loading/unloading was the principal delay at 9 hours. Other delays included customs clearance (2 hours). At Khiagt, loading/unloading was also the key delay at 4 hours, while customs clearance took 2 hours.
Zamyn-Uud (MON)
Erlian (PRC)
Three activities caused extensive delays. They were customs clearance, waiting time and loading/unloading. At Erlian, the respective delays were 3 hours, 3 hours and 5 hours. At Zamyn-Uud, the time were 3 hours, 3 hours and 9 hours.

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

A. Speed Indicators

74. Corridor 5 is served exclusively by road-based transport. In 2010, drivers reported SWOD and SWD of 31.6 kph and 19.7 kph, respectively, showing a drop in speed due to stop activities of only about 38%, the lowest drop among the 6 corridors. The CVs were likewise not so high, indicating a more predictable travel time along this corridor.

Figure 16a : Road Speed (per 20 ton)

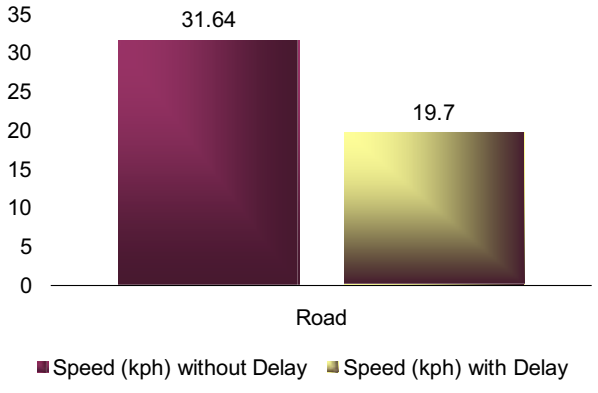
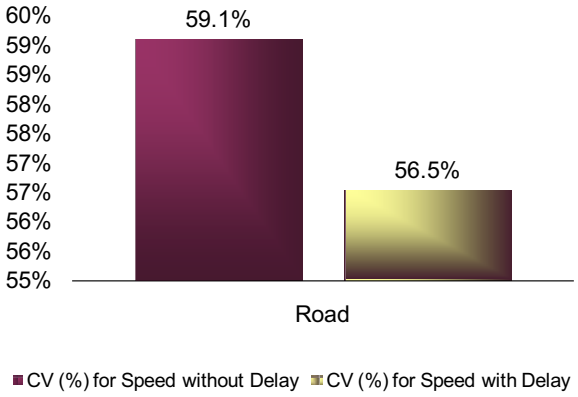


Figure 16b : Coefficient of Variation (Road)



B. Cost and Time Spent on Delays

75. The delay activities in Corridor 5 are caused primarily by waiting time and loading/unloading. The average duration of delays was comparatively lower than that observed in other corridors.

76. Major cost items included loading/unloading, customs clearance, and border security.

Table 8: Average Duration and Cost of Activities by Mode of Transport (Corridor 5)

Activity	Duration (hours per 500 km)	Cost ($ per 500 km)
	Road	
	5	5
Health / quarantine	0.3	6.2
Phyto-sanitary	0.2	6.2
Veterinary inspection	0.3	4.9
Border security / control	0.4	21.5
Visa / immigration		18.9
Customs clearance	0.5	24.9
Detour	0.5	12.0
Waiting/ queue	2.7	8.9
Loading / unloading	2.1	203.0
Escort / convoy		
Weight/standard inspection		
Police checkpoint / stop	0.4	15.8
Transport/GAI inspection	0.2	6.0

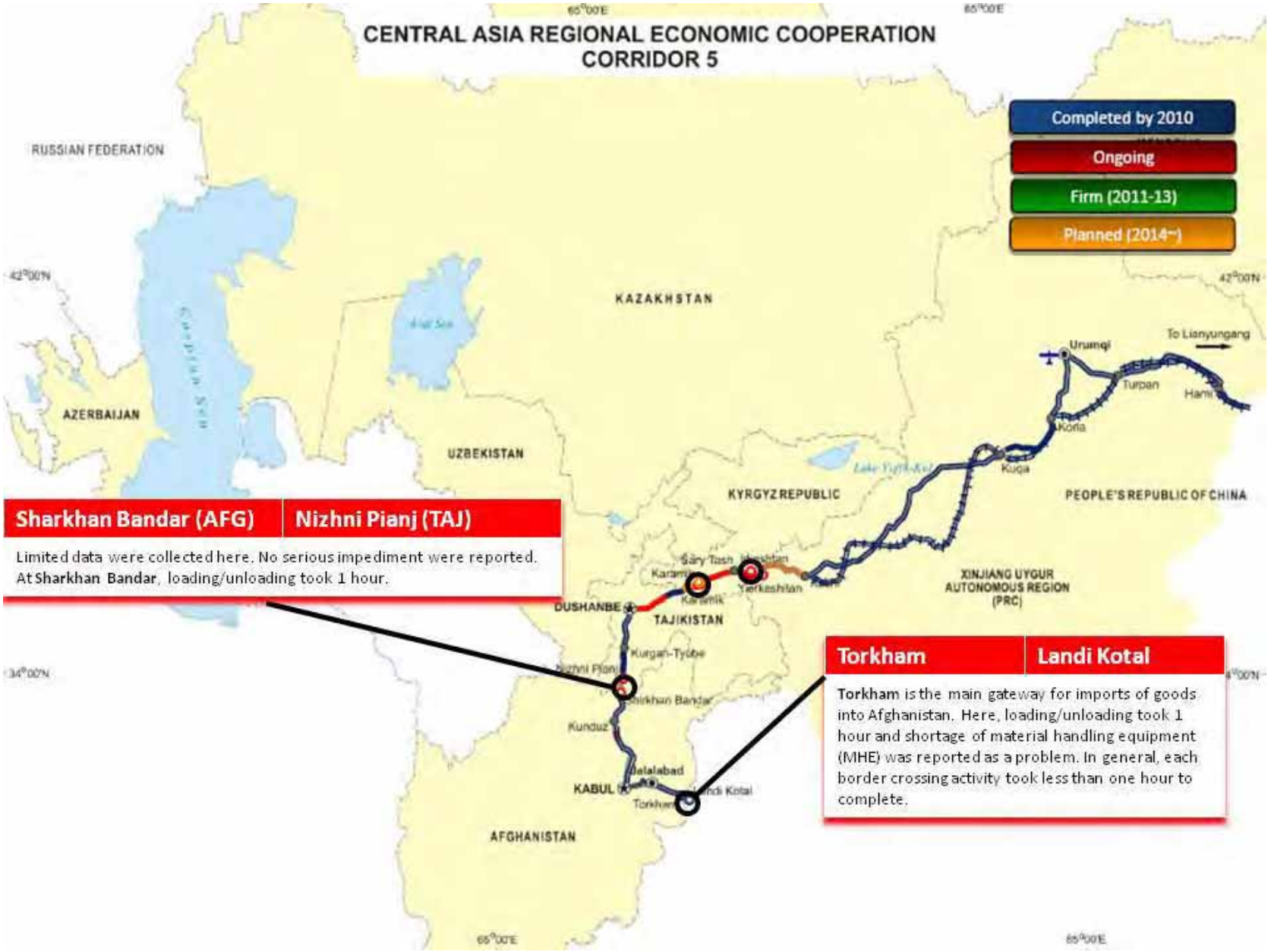
Activity	Duration (hours per 500 km)	Cost ($ per 500 km)
	Road	
	5	5
Environment/ecology checkpoint		
Vehicle registration	0.3	13.9
Repair / tire replacement	0.3	8.0
Trans-shipment		
Meals	0.8	11.5
Rest/overnight stay	6.0	10.6
Other activities	0.2	15.2

C. BCPs and Bottlenecks

77. In general, no major problems were reported at the **Shirkhan Bandar-Nizhni Pianj (TAJ-AFG)** and **Landi Kotal – Torkham (PAK-AFG)** BCPs.

78. Loading/unloading constituted only a slight delay at the border crossings. On average, it took one hour to complete. Other border crossing activities could also be completed within one hour.

79. Within Afghanistan, drivers cited a common unofficial payment problem in cities such as **Jalalabad** and **Pulkhumri**. The mayors of those cities imposed a 'municipal charge' for delivery vehicles entering the city. Although the central government in Kabul does not sanction those fees, the cities continue to impose this levy on drivers. If the drivers refused to pay, they may not pass through the city. The charges ranged from $30 to $50 per entry, and delayed the journey by 30 minutes on average.


CENTRAL ASIA REGIONAL ECONOMIC COOPERATION
CORRIDOR 5
Completed by 2010
Ongoing
Firm (2011-13)
Planned (2014~)
RUSSIAN FEDERATION
KAZAKHSTAN
AZERBAIJAN
UZBEKISTAN
KYRGYZ REPUBLIC
TAJIKISTAN
AFGHANISTAN
PEOPLE'S REPUBLIC OF CHINA
XINJIANG UYGUR AUTONOMOUS REGION (PRC)
DUSHANBE
KABUL
Urumqi
To Lianyungang
Turpan
Hami
Korla
Kuqa
Kurgan-Tyube
Kunduz
Jalalabad
Sharkhan Bandar
Nizhni Pianj
Torkham
Landi Kotal
Sharkhan Bandar (AFG)
Nizhni Pianj (TAJ)
Limited data were collected here. No serious impediment were reported. At Sharkhan Bandar, loading/unloading took 1 hour.
Torkham
Landi Kotal
Torkham is the main gateway for imports of goods into Afghanistan. Here, loading/unloading took 1 hour and shortage of material handling equipment (MHE) was reported as a problem. In general, each border crossing activity took less than one hour to complete.

Corridor 6 : Europe – Middle East and South Asia

A. Speed Indicators

80. Corridor 6a continued to be a favorite corridor among drivers. With a SWOD of 59.5 kph, this value is the highest among all sub-corridors. Unfortunately, delays during border crossing lowered the SWD to 21.3 kph and also introduced more unpredictability on the transport time (as can be seen from the high CV for SWD). Corridor 6 remained challenging as the speeds reported are much slower and the CVs for both SWOD and SWD are relatively high.

Figure 17a : Road Speed (per 20 ton)

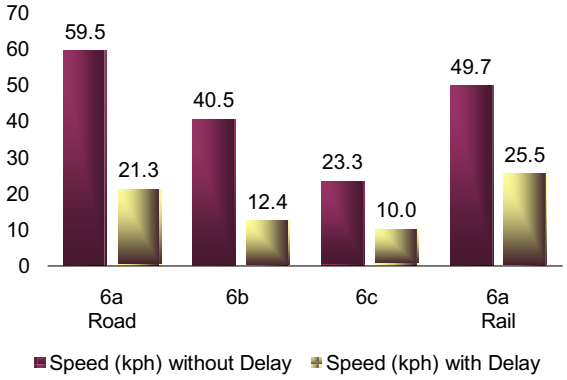
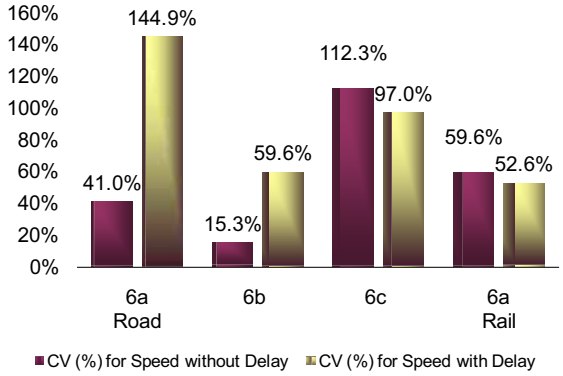


Figure 17b : Coefficient of Variation (Road)



B. Cost and Time Spent on Delays

81. Key activities that delay drivers in Corridor 6 are customs clearance, waiting time, loading/unloading, and weight inspection. These activities are also the main cost drivers in Corridor 6.

Table 9 : Average Duration and Cost of Activities by Mode of Transport (Corridor 6)

Activity	Duration (hours per 500 km)				Cost ($ per 500 km)			
	Road			Rail	Road			Rail
	6a	6b	6c	6a	6a	6b	6c	6a
Health / quarantine	1.6		0.7		62.1		60.8	
Phyto-sanitary	1.9		1.1		66.0		36.7	
Veterinary inspection	1.5		1.9		66.0		60.8	
Border security / control	2.7		1.4		161.0		38.0	
Visa / immigration	1.1				38.8			
Customs clearance	9.5	5.6	3.8	2.4	516.0		506.7	
Detour								
Waiting/ queue	12.3		5.7	3.9	164.9			
Loading / unloading	2.3	11.1	38.2	3.3	206.6			
Escort / convoy								
Weight/standard inspection	2.1				87.3			
Police checkpoint / stop	1.9		1.0		31.0		17.9	
Transport/GAI inspection	1.9		0.4		155.2		10.1	
Environment/ecology checkpoint								

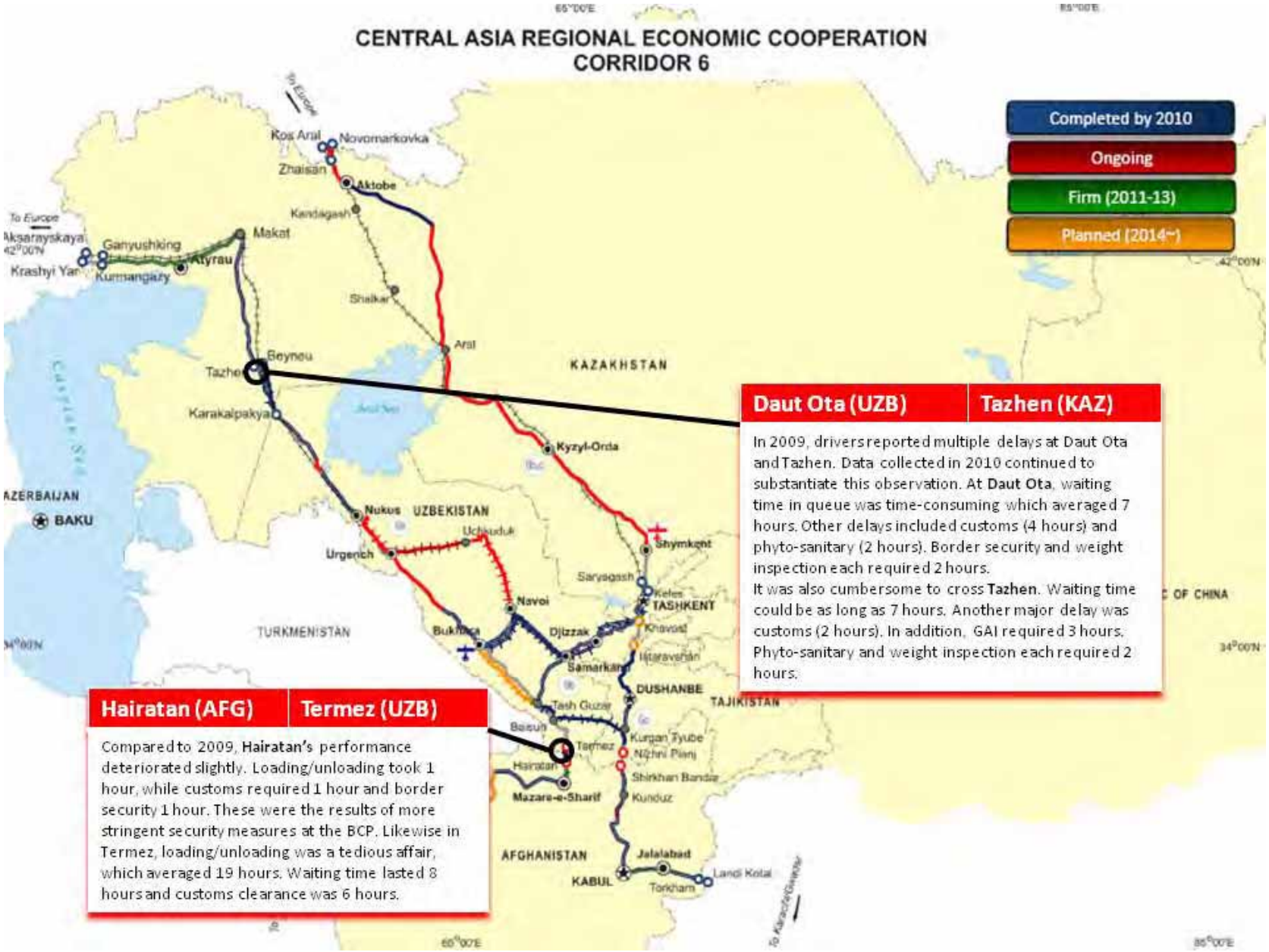
Activity	Duration (hours per 500 km)				Cost ($ per 500 km)			
	Road			Rail	Road			Rail
	6a	6b	6c	6a	6a	6b	6c	6a
Vehicle registration	1.0		1.9		128.0		95.0	
Repair / tire replacement	1.9		0.2		117.8			
Trans-shipment								
Meals	3.9	2.8	5.7		48.5	13.9	26.8	
Rest/overnight stay	15.5	11.1	5.4		10.3		6.7	
Other activities	1.6	2.4	22.0	4.3	229.9		8.9	

C. BCPs and Bottlenecks

82. At **Hairatan-Termez (AFG-UZB),** border crossing became more challenging. New data at **Termez** revealed a serious bottleneck due to loading/unloading, averaging 19 hours. Waiting time to cross the border was 8 hours and customs clearance required 6 hours. The long delay was due to the inability of Afghan drivers to drive the vehicle directly from Hairatan to Termez. They must stop at the border near Hairatan and trans-load the goods from vehicles onto boats operated by Uzbek ferry companies. These boats then send the goods across the river to be trans-loaded onto Uzbek vehicles. The loading/unloading time was particularly long due to the lack of material handling equipment.

83. For cargoes coming from Termez to Hairatan, the goods move on rail which extends 2 km into Afghan territory. The freight trains stop at **Hairatan** and are unloaded by machines. These factors explain the shorter time in loading/unloading and waiting time at Hairatan.

84. Multiple factors plagued border crossing at **Daut Ota-Tazhen (UZB-KAZ)**. At **Daut Ota**, the waiting time in queue required 7 hours. Subsequently, drivers spent 4 hours in customs clearance and 2 hours for phyto-sanitary inspection. The drivers also needed to go through border security and weight inspection, which averaged 2 hours each. At **Tazhen**, the waiting time was longer (7 hours). Customs clearance took 2 hours, and GAI averaged 3 hours. Other activities, such as phyto-sanitary and weight inspection, took 2 hours each.


CENTRAL ASIA REGIONAL ECONOMIC COOPERATION
CORRIDOR 6
Completed by 2010
Ongoing
Firm (2011-13)
Planned (2014~)
Kos Aral
Novomarkovka
Zhaisan
Aktobe
Kandagash
Makat
Atyrau
Ganyushkino
Krasnyi Yar
Kurmangazy
Shalkar
Aral
Beyneu
Tazhen
KAZAKHSTAN
Karakalpakya
Kyzyl-Orda
AZERBAIJAN
BAKU
Nukus
UZBEKISTAN
Urgench
Uchkuduk
Shymkent
Sarysagash
Keles
TASHKENT
Khavast
Navoi
Bukhara
Djizzak
Samarkand
Istaravshan
TURKMENISTAN
DUSHANBE
TAJIKISTAN
Tash Guzar
Baisun
Termez
Kurgan Tyube
Nizhni Piani
Hairatan
Shirkhan Bandar
Mazare-e-Sharif
Kunduz
AFGHANISTAN
Jalalabad
KABUL
Landi Kotal
Torkham
Daut Ota (UZB)
Tazhen (KAZ)
In 2009, drivers reported multiple delays at Daut Ota and Tazhen. Data collected in 2010 continued to substantiate this observation. At Daut Ota, waiting time in queue was time-consuming which averaged 7 hours. Other delays included customs (4 hours) and phyto-sanitary (2 hours). Border security and weight inspection each required 2 hours.
It was also cumbersome to cross Tazhen. Waiting time could be as long as 7 hours. Another major delay was customs (2 hours). In addition, GAI required 3 hours. Phyto-sanitary and weight inspection each required 2 hours.
Hairatan (AFG)
Termez (UZB)
Compared to 2009, Hairatan's performance deteriorated slightly. Loading/unloading took 1 hour, while customs required 1 hour and border security 1 hour. These were the results of more stringent security measures at the BCP. Likewise in Termez, loading/unloading was a tedious affair, which averaged 19 hours. Waiting time lasted 8 hours and customs clearance was 6 hours.

V. CONCLUSION

85. The CPMM project has completed its second year. The number of data has increased from 2,627 in 2009 to 4,062 in 2010. The increase in samples also mirrored the general increase in traffic due to elevated regional cross-border trade, as economies recover gradually from the global financial crisis in 2008.

86. The CPMM 2010 report shows that there are still several challenges in the region. Traversing CAREC corridors continues to be a time-consuming and expensive affair. Key BCPs such as *Dostyk-Alashankou, Daut Ota-Tazhen, Alat-Farap, Zamyn Uud-Erlian, Hairatan-Termez* constrain the flow of trade for various reasons such as burdensome customs related clearance procedures, GAI inspection, loading and unloading, and change in rail gauge. Police checkpoints along certain sections of the corridor and waiting for escort/convoy services before proceeding with a journey further contribute to the delays. Unofficial payments present another serious impediment that raises the cost of trade in the region.

87. Efforts are being made to address the inefficiencies of CAREC corridors. For instance, the PRC and the Kazakhstan governments have increased the opening hours at the Khorgos BCP and are negotiating a 24x7 operating mode that could reduce the long waiting time at Corridor 1. For Corridor 4, ADB is planning a multi-tranche financing facility to develop the western road networks at Corridor 4a, while a regional logistics development project (ADB Loan 2719-MON) to improve cargo handling at Zamyn-Uud could reduce time spent at the border along Corridor 4b. Following the successful launch of a single electronic window in Azerbaijan, Mongolia is also fast-tracking preparations for a master plan for its single window facility. Afghanistan Customs is rolling out ASYCUDA following initial implementation at key border posts such as Torkham. While all these developments are happening, the CAREC program continues to provide a regional platform for further cooperation between member countries, including continuous dialogue between the public and private sector. The CAREC Federation of Carrier and Forwarder Associations (CFCFA) has been tasked to look into recommendations for enhancing the industrial capacity of the private transport sector through education and training, as well as exploring the possibility of a regional transit system.

88. Looking forward, it is expected that the yearly sample size will increase as the member countries in CAREC expand from eight to ten. Turkmenistan and Pakistan joined CAREC in 2010 and CPMM coverage will expand to include these two countries. This expansion will benefit the project by providing additional insights on transporting cargoes along Corridors 2, 3, 5, and 6.

89. In addition, work will also start on Corridor 4a. This is a transit corridor that offers a route for shipments between the PRC and Russian Federation. This road-only corridor which passes through Tsaagaannuur, Olgii, and Hovd in Mongolia allows cargoes from Urumqi in XUAR to move to Russian towns and cities bordering the northwestern region of Mongolia. It is also being used increasingly by Kazakh traders to access Mongolian markets.

90. As all these developments take place and changes are made, ADB continues to support regional cooperation and development in the region. Central to the improvements in trade facilitation and transport is the CPMM project, which will continue to provide crucial data for policy makers. Over time, the database will provide more and better information about transit time and costs, and will document the success of efforts to reduce bottlenecks. This information

will guide the actions of ADB and CAREC members in prioritizing and assessing the impact of investments and programs.

VI. APPENDIX

APPENDIX 1 : CPMM Partner Associations

Partner associations 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 the CAREC Trade Facilitation team.

At present, there are 14 CPMM partners working closely with CAREC.

List of CPMM Partners

	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 involves four major stakeholders, namely the drivers, CPMM partners/coordinators, field consultants and ADB's CAREC Trade Facilitation team.

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. When 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 for 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 for each partner association randomly selects drivers who would transport cargoes passing through the 6 CAREC priority corridors to fill up the drivers' forms. The data from the drivers' forma are enterd 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.

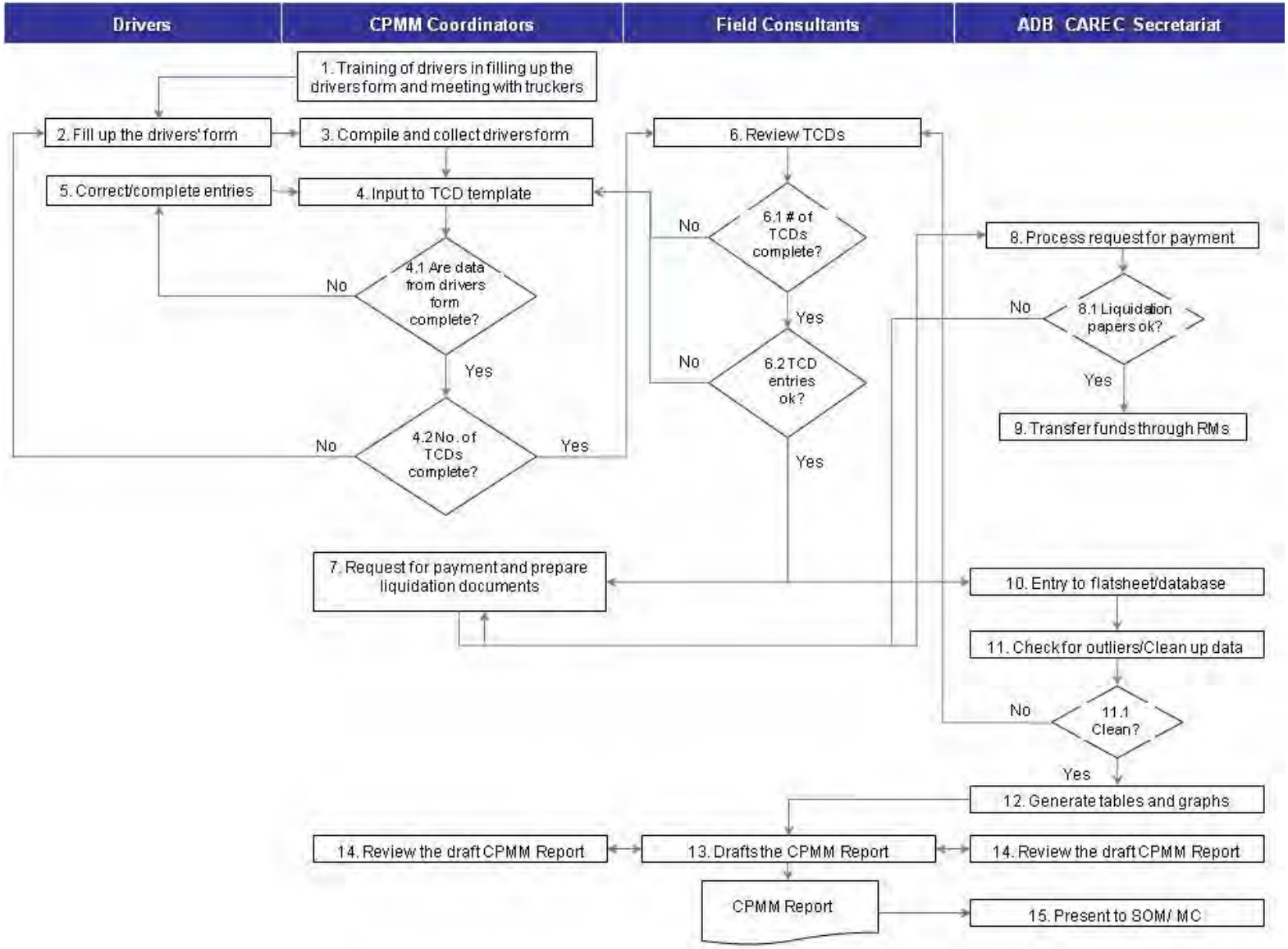
The normalization is done at the level of a 20 ton truck in the case of road transport or a twenty-foot equivalent unit (TEU) in the case of rail traveling 500 kilometers (km). The number of border crossing points (BCPs) on the sub-corridor level is also normalized for each 500 km segment.

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

(i) Each TCD is split between non-BCP portion and BCP portion in case the shipment crossed borders.
(ii) 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.
(iii) 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.
(iv) 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 Figure 1 : Overview of CPMM Methodology



Appendix Table 1a: Major routes in CAREC Corridor 1

ROUTE	COUNTRY	MODE	SWOD (kph)	SWD (kph)	TOTAL COST (US$ per 20 tons per 500km)	ACTIVITIES COST (US$ per 20 tons per 500km)	TRANSIT COST (US$ per 20 tons per 500km)
Almaty-Karaghandy	KAZ-KAZ	Road	45.9	36.5	481.3	8.0	473.3
Almaty-Troitsk	KAZ-RUS	Road	42.7	31.8	259.4	36.4	248.0
Almaty-Uralsk	KAZ-KAZ	Road	59.5	32.9	681.7	23.3	658.3
Astana-Uralsk	KAZ-KAZ	Road	57.8	32.9	840.4	40.4	800.0
Kostanai-Aktobe	KAZ-KAZ	Road	31.6	11.9	5250.0		5250.0
Troitsk-Almaty	RUS-KAZ	Road	62.0	36.9	599.4	38.3	542.9
Troitsk-Astana	RUS-KAZ	Road	57.7	19.9	849.5	380.4	469.1
Troitsk-Karaghandy	RUS-KAZ	Road	53.2	31.9	1043.7	99.8	1018.8
Troitsk-Ust Kamenogorsk	RUS-KAZ	Road	64.5	48.1	547.9	243.4	304.6

Appendix Table 1b : Average Duration and Cost of Activities in CAREC Corridor 1

ROUTE	A		B		C		D		E		F		G		H		I		J		K		L		M		N		O		P	
	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C
Almaty-Karaghandy															2		2								0	9						
Almaty-Troitsk	0	9					0	35			1	66											0		0	34					0	2
Almaty-Uralsk															4		3								0	11					0	7
Astana-Uralsk																	2								0	15						
Kostanai-Aktobe																	12															
Troitsk-Almaty	0	9	0	4			0	15			1	308			5	10	3						0	66	0	9					0	
Troitsk-Astana	0	4					2	40			1	330			1		3						0	70	0	48						
Troitsk-Karaghandy							0	44			1	198					3						0	44	0	64						
Troitsk-Ust Kamenogorsk	0		0	4			0	4			1	308			0								0	75	0	21						

A. Health/Quarantine, **B**. Phyto-sanitary, **C**. Veterinary Inspection, **D**. Border Security/Control, **E**. Visa/Immigration, **F**. Custom clearance, **G**. Detour, **H**. Waiting/Queue, **I**. Loading/Unloading, **J**. Escort/Convoy, **K**. Weight/Standard Inspection, **L**. Police checkpoint, **M**. Transport/GAI Inspection, **N**. Environment/Ecology Checkpoint, **O**. Vehicle Registration, **P**. Repair/Tire Replacement

Appendix Table 1c : Average Duration and Cost of Activities of BCPs in CAREC Corridor 1

BCP	Country	Count	A		B		C		D		E		F		G		H		I		J		K		L		M		N		O		P	
			D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C
Dostyk	KAZ	576	0	3	0	3	0	3	0	5	0		2	33			32		1	13			0	7	0	7	0	7			0			
Alashankou	PRC	437						3	3	13			1	117			16		3	242	29			7										
Torugart	KGZ	114	0	13	0	2	0	4	1	19	0	3	1	40	0	2	1		6				0	34	0	1	0	1	0		0		2	
Topa	PRC	94	3	13	0		0	4	0	3	0	35	0	95	0		4		4	35			0	40	0	1	0	3	0		0	3	2	17
Khorgos	KAZ	83	1	4	0	4	0	3	0	41	0	79	0	56			4	8	7				0	10	0	6							9	36
Kordai	KAZ	69	0	7	0	7	0		0	16			0	18			9	3	9				0		0	37	0	8			0			
Ak Jol	KGZ	54	0	4	0	4	0	10	0	8			0	49			10		5				0	26	0	2	0	4			0	3		
Jana Jol	KAZ	54	0	3	0	3	0		0	11			2	26			4						0	8	0	10	0	8	0		0	8	0	8
Kairak	KAZ	52	0	4	0	4	0		0	8	0		1	22	5		1						0	8	0	66	0	8			0	55		
Korgas	PRC	39	0	4	0	3	0	3	0	41	0	56	1	18			9		6				0		0	54	0	12					16	17
Merke	KAZ	31	0	7	0	8	0	8	1	20			2	112			1						0	6	0	10	0	24			0	16		
Troitsk	RUS	30	0	4	0	4	0	6	0	9			2	26			1						0	12	0	29	0	79						
Chaldovar	KGZ	26	0	8	0	8	0	6	0	25			0	234			5		133				0	6	0	3	0	20						
Shanghai	PRC	20							3	13			1																					
Sipatay Batir	KAZ	17	0	10	0	10	0		0	25	0	7	0	536			10						0		0	8								
Petuchovo	RUS	15	0	4	0	4	0		0	4			4	32											0	8								
Suzhou	PRC	15															32		1	13														
Iletsk	KAZ	14						18						17																				
Zhaisan	KAZ	12	0	4	0	5			0	37			0	16			0								0	52	0	56						
Bugristoe	RUS	10	0	4	0	4	0		0	4			3	59											0									
Tianjin	PRC	10												242																				
Turgat	KGZ	10						11	1	24			1	117			4							28										

Appendix Table 2a : Major routes in CAREC Corridor 2

ROUTE	COUNTRY	MODE	SWOD (kph)	SWD (kph)	TOTAL COST (US$ per 20 tons per 500km)	ACTIVITIES COST (US$ per 20 tons per 500km)	TRANSIT COST (US$ per 20 tons per 500km)	
Irkeshtam-Osh	KGZ-KGZ	Road	22.8	9.7	834.7	543.9	1208.1	1302.7
Osh-Irkeshtam	KGZ-KGZ	Road	29.7	20.1	1891.9	1574.2	1796.3	1796.3
Urumqi-Osh	PRC-KGZ	Road	32.7	11.0	3576.2	281.7	2471.0	3307.3
Tianjin-Bukhara	PRC-UZB	Rail	1.3	1.3	959.5	35.6	889.7	923.9
Tianjin-Bukhara	PRC-UZB	Road	3.2	3.2				
Novosibirsk-Tashkent	RUS-UZB	Road	7.4	0.6	404.8	95.2	317.1	309.5
Karshi-Osh	UZB-KGZ	Road	30.0	11.9	341.6	181.3	158.3	155.3
Namangan-Novosibirsk	UZB-RUS	Road	8.2	2.1	44.3		44.3	44.3
Tashkent-Ashgabat	UZB-TKM	Road	50.8	13.9	340.5	159.0	375.3	86.4

Appendix Table 2b : Average Duration and Cost of Activities in CAREC Corridor 2

ROUTE	A		B		C		D		E		F		G		H		I		J		K		L		M		N		O		P	
	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C
Irkeshtam-Osh											1	2					3	79	23	22	4	19	0	9			0	9			1	159
Karshi-Osh	1	73	1	73	1	73	1	51			4	145																				
Namangan-Novosibirsk	1		0		1		1				1										1											
Novosibirsk-Tashkent											80						140															
Osh-Irkeshtam							0	2			0	79					3	79			3	28	0	4			0	6			9	28
Tashkent-Ashgabat	0		0		0		1	9			2	23			4		8	24		65												
Tianjin-Bukhara																																
Urumqi-Osh	6	44					1	35	1	1579	1	218			2	17	8				0	15			3	33					11	

A. Health/Quarantine, **B**. Phyto-sanitary, **C**. Veterinary Inspection, **D**. Border Security/Control, **E**. Visa/Immigration, **F**. Custom clearance, **G**. Detour, **H**. Waiting/Queue, **I**. Loading/Unloading, **J**. Escort/Convoy, **K**. Weight/Standard Inspection, **L**. Police checkpoint, **M**. Transport/GAI Inspection, **N**. Environment/Ecology Checkpoint, **O**. Vehicle Registration, **P**. Repair/Tire Replacement

Appendix Table 2c : Average Duration and Cost of Activities of BCPs in CAREC Corridor 2

BCP	Country	Count	A		B		C		D		E		F		G		H		I		J		K		L		M		N		O		P	
			D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C
Daut Ata	UZB	229	0		0		0	11	1		1		2	160			3	2	1				1	12										
Tazhen	KAZ	229	1	25	1	25	0	11	1	73	1	32	4	138			6	48				653	1	12	1	36	1	109			1	96		
Irkeshtam	KGZ	106	6	44	0	2	0	8	0	29	0		0	75			12		4	79	17	20	0	20	1								6	26
Beyneu	KAZ	64						11						107									0	12	1	22	0	34		5			1	2
Yierkeshitan	PRC	32	6	44				7	0	6	0		1	145			1							18	0									
Yallama	UZB	31	0		0		0	11	1				1	135			3						1	12										
Alat	UZB	28	0		0		0	3	0		0		0	41			0		17				0	6										
Farap	TKM	26	0	1	0	1	0	3	0	6	0	39	1	32			3		5			65	0	19	0			11			0	2		
Krasny Most	AZE	23						7					1	145										80										
Baku	AZE	22						20						145										36	1								1	36
Aktau	KAZ	21	0	10					0	184			4	45			9		3	198					0	97								
Krasny Most	GEO	20						12					0	134										15										
Samur	AZE	20						12					1	193			1							44										
Kara Suu	KGZ	18						22					1	73			8	2	4				1	62	0	1			0					

Appendix Table 3a : Major routes in CAREC Corridor 3

ROUTE	COUNTRY	MODE	SWOD	SWD	TOTAL COST	ACTIVITIES COST	TRANSIT COST
			(kph)		(US$ per 20 tons per 500km)		
Almaty-Navoi	KAZ-UZB	Road	20.0	14.8	1370.7	1066.7	304.0
Almaty-Samarkand	KAZ-UZB	Road	63.8	10.9	644.3	270.6	304.3
Almaty-Tashkent	KAZ-UZB	Road	68.4	8.8	589.6	211.2	288.0
Aul-Navoi	KAZ-UZB	Road	30.7	13.1	4234.2	2093.7	2140.5
Bishkek-Almaty	KGZ-KAZ	Road	23.5	3.0	1149.3	268.5	880.8
Dushanbe-Aktau	TAJ-KAZ	Road	34.9	2.1	3552.5	1384.9	2167.7
Dushanbe-Almaty	TAJ-KAZ	Road	14.4	4.8	753.9	388.0	365.9
Khorgos-Tashkent	KAZ-UZB	Road	27.5	3.2	1079.7	652.8	4366.9
Konysbaeva-Novosibirsk	KAZ-RUS	Road	25.1	10.9	1386.2	1066.5	319.7
Korgas-Samarkand	KAZ-UZB	Road	21.9	14.6	724.7	519.0	205.8
Korgas-Tashkent	KAZ-UZB	Road	18.7	9.6	1589.5	1110.2	479.3
Navoi-Sarahs	UZB-TKM	Road	56.8	10.5	413.0	270.5	142.5
Sarakhs-Dushanbe	IRN-TAJ	Road	62.2	5.9	830.6	431.0	399.6
Sarakhs-Tashkent	IRN-UZB	Road	41.6	7.3	2838.9	2236.5	602.5
Tashkent-Bandar Abbas	UZB-IRN	Road	61.7	10.1	2333.3	1836.1	416.9
Tashkent-Bishkek	UZB-KGZ	Road	3.5	1.0	3065.0	399.8	2665.2
Tashkent-Dushanbe	UZB-TAJ	Road	52.3	7.0	6940.2	3841.6	3701.0
Tashkent-Novosibirsk	UZB-RUS	Road	14.8	3.6	383.5	92.7	497.5
Tashkent-Turkmenbashi	UZB-TKM	Road	28.8	7.5	488.4	322.6	165.9
Urumqi-Ashgabat	PRC-TKM	Road	79.8	10.0	862.1	428.8	549.9
Urumqi-Bukhara	PRC-UZB	Road	55.8	10.0	1270.5	753.0	517.6
Urumqi-Samarkand	PRC-UZB	Road	57.6	8.6	2172.6	1560.3	612.4
Urumqi-Shymkent	PRC-KAZ	Road	70.7	9.9	487.1	32.3	454.7
Zhaisan-Tashkent	KAZ-UZB	Road	11.5	6.9	1385.5	685.1	700.4

Appendix Table 3b : Average Duration and Cost of Activities in CAREC Corridor 3

ROUTE	A		B		C			D		E		F		G		H		I		J		K		L		M		N		O		P	
	D	C	D	C	D	C		D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C
Almaty-Navoi	0	13						1	358			1	294											1	90								
Almaty-Samarkand	0	9	0	9	0	8	9	0	10			4	288			13	13	12	12			1	19	1	133	1	61					3	
Almaty-Tashkent	0	19	0	19	0	15	19	0	29			1	96	1		16	17	28	28	8	417	0	19	2	29	1	48			0	10	4	96
Aul-Navoi	1	28						1	96			4	538			0	0							2	307	1	64						
Bishkek-Almaty								1	10			1	10									1	19										
Dushanbe-Aktau								5	26			5	26			13	13																
Dushanbe-Almaty								8	26			8	51			8	8																
Khorgos-Tashkent	1	19	1	19	1	19	19	1	134	1	192	34	197			55	48	14	12	12						1	13			1		4	67
Konysbayeva-Novosibirsk	0	3	1	69				1	92			1	255			0	0							0	148	0	16						
Korgas-Samarkand	0							1	115			2	640											1	154	1	105						
Korgas-Tashkent	0	13						2	448			2	730			1	1							1	166	9	91						
Navoi-Sarahs			1	29				6	58			5	58			8	6					2	19	1	4					1	48		
Sarakhs-Dushanbe	0	7	0	7	0	7	7	3	27			13	61			38	21	18	18														
Sarakhs-Tashkent	0	19	0	19	0	19	19	2	29			7	125			13	13													29	62		
Tashkent-Bandar Abbas	2	13	2	9	2	41	17	4	77			10	144			48	58	2	2			1	29	1						0			
Tashkent-Bishkek												4				8	8	4	4														
Tashkent-Dushanbe	3	18	3		3			8	38			10	51			61	10	36	33	500													
Tashkent-Novosibirsk	2	15	2	15	2	10	8	3	61	1	96	4	58			6	4	2	1			1	19			1	42					0	11
Tashkent-Turkmenbashi			2	29				2	48			3	48			5	5					2	19	1						1	58		
Urumqi-Ashgabat	1	7	1	7	1	7	7	1	7			6	386			22	28	2	2			1	10	0	10	0	5						
Urumqi-Bukhara	1	48	1	48	1	58	58	1	58	2	48	26	557									2	19										
Urumqi-Samarkand	4	27	2	27	2	27	27	3	27	2	480	36	864									1											
Urumqi-Shymkent																										1	19						
Zhaisan-Tashkent	0	13						1	141			2	730			2	2							0	230	0	30						

A. Health/Quarantine, **B**. Phyto-sanitary, **C**. Veterinary Inspection, **D**. Border Security/Control, **E**. Visa/Immigration, **F**. Custom clearance, **G**. Detour, **H**. Waiting/Queue, **I**. Loading/Unloading, **J**. Escort/Convoy, **K**. Weight/Standard Inspection, **L**. Police checkpoint, **M**. Transport/GAI Inspection, **N**. Environment/Ecology Checkpoint, **O**. Vehicle Registration, **P**. Repair/Tire Replacement

Appendix Table 3c : Average Duration and Cost of Activities of BCPs in CAREC Corridor 3

BCP	Country	Count	A		B		C		D		E		F		G		H		I		J		K		L		M		N		O		P	
			D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C
Alat	UZB	259	0	10	1	10	0	33	2	19	2	101	2	288			6	23	12				1	40	1		0	17	2				6	134
Farap	TKM	259	0	10	1	23	0	23	2	48	1	10	3	230			4		21	29			1	15	1	4	1	48	2		1	48	4	96
Sarahs	TKM	66	0	6	1	27	0	31	2	48	1	230	3	182			7						2	15	1	4					1	48		
Yallama	UZB	64	0	10	0	10	0		0	18	1	96	3	230			13		15				1	19	1	29	1	10			1	10	4	96
Sariagash	KAZ	56	0	10	0	10	0	13	1	10	0		13	174			3						1	20	1	24	0	15			1	10	6	77
Merke	KAZ	55	0	10	0	10	0	96	0	10			9	324			17		12				9		1	10	1	48					2	77
Kaplanbek	KAZ	43	2	29	2	29		38	2	67			4	199			4						1	67	1	10	1	48			1	38	2	96
Navoi	UZB	43	1		1			64	2				3	140			7						1	167	1						1		4	115
Konysbayeva	KAZ	38	0	13	1	43	0		1	100			2	58			2						1		1	128	1	86			1	86		
Sarakhs	IRN	22	0	10	1	10	0	17	1	19	1	288	3	298			29						0	15	1	4					1	134		
Artik	TKM	19	1		1	29		24	2	48			2	140			8						1		1	4					1	67		
Aul	KAZ	17	1	30	1	33	1		1	134	1	96	5	1140			6						1		1	154	2	211			2	211		
Sariasia	UZB	16	1		1		0	19	2		3		3	222			4						1	20	1						1			
Korgas	PRC	11	0	14	0	14	0		1	77	1	192	21	259	1		61		12		12			33							1		4	67
Veseloyarsk	RUS	9	1	67	1	48	1	12	2	134			6	167			5						1	15			2	269						
Khorgos	KAZ	10	0	14	0	14	0		1	29	1	288	35	53			38		19		17		1				1				38		4	48
Termez	UZB	10	1		1		1		1		1		3	512			23		5															

Appendix Table 4a : Major routes in CAREC Corridor 4

ROUTE	COUNTRY	MODE	SWOD (kph)	SWD (kph)	TOTAL COST (US$ per 20 tons per 500km)	ACTIVITIES COST (US$ per 20 tons per 500km)	TRANSIT COST (US$ per 20 tons per 500km)
Altanbulag-Ulaanbaatar	MON-MON	Road	42.5	16.0	247.6	17.9	197.5
Erlian-Ulaanbaatar	PRC-MON	Road	21.8	11.9	721.8	10.3	711.5
Irkutskaya-Ulaanbaatar	RUS-MON	Road	47.9	12.6	464.4	38.2	438.4
Khiyagt-Ulaanbaatar	RUS-MON	Road	27.2	12.7	176.7	28.6	148.0
Naushki-Erlian	RUS-PRC	Rail	19.8	8.3	940.6	368.6	577.5
Naushki-Tianjin	RUS-PRC	Rail	17.7	8.0	346.7	279.5	268.9
Novosibirsk-Ulaanbaatar	RUS-MON	Road	25.1	14.9	886.3	32.0	1708.8
Tianjin-Ulaanbaatar	PRC-MON	Rail	15.0	5.4	2052.1	71.6	1980.5
Ulaanbaatar-Altanbulag	MON-MON	Road	45.0	16.3	441.2	17.1	437.9
Ulaanbaatar-Tianjin	MON-PRC	Rail	9.5	5.3	667.6	153.9	519.3
Ulaanbaatar-Zamiin Uud	MON-MON	Road	34.0	20.5	1181.6	13.7	1171.4
Ulan Ude-Ulaanbaatar	RUS-MON	Road	4.3	17.6	391.3	41.8	305.4
Zamiin Uud-Ulaanbaatar	MON-MON	Road	23.9	12.1	1112.6	10.3	1102.3

Appendix Table 4b : Average Duration and Cost of Activities in CAREC Corridor 4

ROUTE	A		B		C		D		E		F		G		H		I		J		K		L		M		N		O		P	
	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C
Altanbulag-Ulaanbaatar																	9				1		0		0	8	2		0		4	15
Erlian-Ulaanbaatar	0		0		0		1				2				2		3				1		0		0	5	0		0		1	7
Irkutskaya-Ulaanbaatar	1		1		1		2				4				3		6						1	9	1	8	0	8	1		4	14
Khiyagt-Ulaanbaatar	1		1		1		2				4				2		9				1		1		1	9			1		3	14
Naushki-Erlian																	43	546														565
Naushki-Tianjin	1		1		1						21				43		12	528							0	9			1			322
Novosibirsk-Ulaanbaatar	1		1		1						3				1		8								1				1			
Tianjin-Ulaanbaatar											43				43			66														
Ulaanbaatar-Altanbulag																	5						1		1	8	1		0		4	13
Ulaanbaatar-Tianjin															12			179														77
Ulaanbaatar-Zamiin Uud																	2						0		0	3	0		0		1	5
Ulan Ude-Ulaanbaatar	1		1		1		2				4				4		8						1	18	1	8			1		1	
Zamiin Uud-Ulaanbaatar																	6						0		0	3	0		0			

A. Health/Quarantine, **B**. Phyto-sanitary, **C**. Veterinary Inspection, **D**. Border Security/Control, **E**. Visa/Immigration, **F**. Custom clearance, **G**. Detour, **H**. Waiting/Queue, **I**. Loading/Unloading, **J**. Escort/Convoy, **K**. Weight/Standard Inspection, **L**. Police checkpoint, **M**. Transport/GAI Inspection, **N**. Environment/Ecology Checkpoint, **O**. Vehicle Registration, **P**. Repair/Tire Replacement

Appendix Table 4c : Average Duration and Cost of Activities of BCPs in CAREC Corridor 4

BCP	Country	Count	A		B		C		D		E		F		G		H		I		J		K		L		M		N		O		P	
			D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C
Altanbulag	MON	206	0		0		0		1				2	57			1		9				1	17	0	9	0	9	1		0		4	14
Erlian	PRC	620	1	13	1	13	1	30	1		0		3	81			3		5	77			0	14	0	27				1	0		1	41
Khiyagt	RUS	171	1		0		0		1				2	54			1		4				1	18	0		0	11			0			
Naushki	RUS	109						27						63			43							18										
Sainshand	MON	39			0		0		1				2	89			2							45	1		0	5			0		2	14
Sukhbaatar	MON	301						61					21	63					2				0	14	0	9	0	9	1	1	0		1	14
Zamiin Uud	MON	609	1	16	1		1	24	1		0		3	90			3		9	361				18	0		0	5		3	0		1	196

Appendix Table 5a : Major routes in CAREC Corridor 5

ROUTE	COUNTRY	MODE	SWOD	SWD	TOTAL COST	ACTIVITIES COST	TRANSIT COST
			(kph)		(US$ per 20 tons per 500km)		
Kirgiziya-Dushanbe	KGZ-TAJ	Road	13.3	9.5	198.8	194.2	226.3
Torkham-Shirkhan Bandar	AFG-AFG	Road	30.6	18.7	200.9	159.9	33.7

Appendix Table 5b : Average Duration and Cost of Activities in CAREC Corridor 5

ROUTE	A		B		C		D		E		F		G		H		I		J		K		L		M		N		O		P	
	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C
Kirgiziya-Dushanbe	0	6	0	5	0	5	0	8			0	23											2	32					0	14		
Torkham-Sharkhan Bandar			1	19			0	26			0	26			3	9	2	207					0	16							1	10

A. Health/Quarantine, **B**. Phyto-sanitary, **C**. Veterinary Inspection, **D**. Border Security/Control, **E**. Visa/Immigration, **F**. Custom clearance, **G**. Detour, **H**. Waiting/Queue, **I**. Loading/Unloading, **J**. Escort/Convoy, **K**. Weight/Standard Inspection, **L**. Police checkpoint, **M**. Transport/GAI Inspection, **N**. Environment/Ecology Checkpoint, **O**. Vehicle Registration, **P**. Repair/Tire Replacement

Appendix Table 5c : Average Duration and Cost of Activities of BCPs in CAREC Corridor 5

BCP	Country	Count	A		B		C		D		E		F		G		H		I		J		K		L		M		N		O		P	
			D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C
Jalal Abad	AFG	2						9						65											0.2	5								
Sharkhan Bandar	AFG	84						17						172					1	104			30											
Torkham	AFG	331			0.5	28		15	0.5	26		19	0.5	155					1	103			30		0.2	5								

Appendix Table 6a : Major routes in CAREC Corridor 6

ROUTE	COUNTRY	MODE	SWOD	SWD	TOTAL COST	ACTIVITIES COST	TRANSIT COST
			(kph)			(US$ per 20 tons per 500km)	
Aktau-Atyrau	KAZ-KAZ	Road	33.9	22.5	734.9	17.8	650.0
Aktau-Pavlodar	KAZ-KAZ	Road	18.1	15.8	304.4	14.4	290.0
Hairatan-Torkham	AFG-AFG	Road	33.7	20.8	191.5	144.0	44.5
Torkham-Hairatan	AFG-AFG	Road	29.1	17.8	202.6	103.2	45.4
Akzhigit-Ekaterenburg	KAZ-RUS	Road	24.1	10.1	595.2	38.1	557.1
Akzhigit-Moscow	KAZ-RUS	Road	51.3	20.2	1747.8	926.4	589.2
Kotyayevka-Ashgabat	KAZ-TKM	Road	50.1	22.6	850.2	636.0	214.2
Samara-Navoi	RUS-UZB	Road	27.3	5.0	1172.7	937.3	251.1
Samara-Tashkent	RUS-UZB	Road	27.7	6.2	1012.9	824.5	212.0
Karshi-Osh	UZB-KGZ	Road	23.8	5.7	219.7	15.9	203.4
Andijan-Moscow	UZB-RUS	Road	33.0	6.5	1606.4	1252.8	407.0
Andijan-Orsk	UZB-RUS	Road	25.4	6.9	793.0	538.4	266.3
Karshi-Moscow	UZB-RUS	Road	27.5	5.4	2000.1	1668.6	384.3
Namangan-Krasny Yar	UZB-RUS	Road	34.1	7.7	1815.1	1396.4	418.7
Tashkent-Astrakhan	UZB-RUS	Road	42.3	7.9	2485.8	2176.3	309.5

Appendix Table 6b : Average Duration and Cost of Activities in CAREC Corridor 6

ROUTE	A		B		C		D		E		F		G		H		I		J		K		L		M		N		O		P	
	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C
Aktau-Atyrau	1	129					1	375			1	440			1		1						1		0	7						
Aktau-Pavlodar																									0	7						
Akzhigit-Ekaterenburg																									0	7						
Akzhigit-Moscow	1	68					1	32			1	447											0	86	0	10					0	
Andijan-Moscow	2	58	2	55	2	48	3	179			10	533			15						1	64	1	98	1	136			2	161		
Andijan-Orsk	2	39	3	29			3	87			4	155			4						1		2	27	2	87						
Hayratan-Torkham			0	22			0	26			1	26	0	12	1	8	2	206					0	10							0	10
Karshi-Moscow	1	87	1	78	1	72	3	194			14	844			12						1	152	1	49	2	258			2	349		
Karshi-Osh											6						10															
Kotyayevka-Ashgabat	0						1	87			1	464											1	87	0	36						
Namangan-Krasny Yar	4	126	5	131			7	223			12	747			17						1	81	1	10	3	184			1	78	0	
Samara-Navoi	2	39					4	83			7	301			15						3	91	2	39	4	165			1	116		
Samara-Tashkent	2	39	2	49			4	97			5	233			12						3	68	2	19	2	116			1	97	6	155
Tashkent-Astrachan	3	81	3	81	3	81	4	398			12	1086			6										2	291			2	340		
Torkham-Hayratan			0	28		28	0	26		19	1	27			3	10	2	170					0	13	0	6					0	7

A. Health/Quarantine, **B**. Phyto-sanitary, **C**. Veterinary Inspection, **D**. Border Security/Control, **E**. Visa/Immigration, **F**. Custom clearance, **G**. Detour, **H**. Waiting/Queue, **I**. Loading/Unloading, **J**. Escort/Convoy, **K**. Weight/Standard Inspection, **L**. Police checkpoint, **M**. Transport/GAI Inspection, **N**. Environment/Ecology Checkpoint, **O**. Vehicle Registration, **P**. Repair/Tire Replacement

Appendix Table 6c : Average Duration and Cost of Activities of BCPs in CAREC Corridor 6

BCP	Country	Count	A		B		C		D		E		F		G		H		I		J		K		L		M		N		O		P	
			D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C
Hairaton	AFG	241			0	22		15	1	26			1	172					1	103				30	0	5								
Kurmangazy	KAZ	155	1	33	1	39	1	15	1	128	1		6	191			8	92					1	16	1	64	1	78	39	1	136	27		
Beyneu	KAZ	144						49						194			4	23						33	1	10	1	49					1	
Krasny Yar	RUS	141	1	49	1	49	1	14	1	101	0	39	8	184			8	7					1	16	1	64	2	194		1	136			
Daut Ata	UZB	132	1		2		0	39	1				2	143			5						1	64	1		1			1		4	262
Tazhen	KAZ	104	1	39	2	49	1	45	2	87			4	143			7	39					2	49	1	14	3	146		1	68	2	155
Aksarayskaya	RUS	24												56																			
Kotyaevka	KAZ	24	1	53	1	49		49	1	99			2	316			5						1	49	1	29	1	49		1	29			
Tedjen	TKM	24	1	39	2	39		56	2	83			3	146			7						2	64	1	29	3	136		1	68	2	68	
Ganyushkino	KAZ	18											2	70			5																	
Karaozek	RUS	15	1	49	2	58		58	2	78			4	189			5						1		1	10	2	87		3	58			
Sirim	KAZ	15	1	33	1	33	1	13	1	97			8	85			8						1	72	1	178				1	132			
Termez	UZB	12						21					6	170			8		19					14										