



CAREC Corridors for Seamless Connectivity

**CAREC Transport and Trade Facilitation:
Corridors Performance Measurement and
Monitoring**

Quarterly Report: April – June 2009

**8th Ministerial Conference on
Central Asia Regional Economic Cooperation
14-16 October 2009
Ulaanbaatar, Mongolia**

OVERVIEW AND KEY FINDINGS

Trade is critical for CAREC countries. Efficient borders and transport connectivity foster trade. These issues are core themes of CAREC's Transport and Trade Facilitation Strategy. Six transport corridors across the CAREC region will be upgraded and/or expanded by 2020.

The CAREC Corridors Performance Measurement and Monitoring (CPMM) program involves a network of road carrier and freight forwarder associations. The objective is to collect data on the time and cost of traveling along each of the six CAREC corridors. The data will provide the basis for actions to remove bottlenecks.

CPMM data collection started in April 2009. This report presents data from the April-June 2009 period. Preliminary findings suggest:

- Average speed for a 20-ton cargo unit along the six CAREC corridors, including time spent at stops, is 21.6 kilometers per hour. This is less than one-third of the speed recorded in intra-European transport corridors.
- Road stops reduce gross speeds in each corridor by 32 to 49 percent.
- The average delay at CAREC border crossing points is 25.3 hours. This is 13 times longer than the average delay at European borders. In the CAREC region, almost three-fourths of this delay is spent waiting to start border procedures.
- Average transport cost per kilometer for a 20-ton cargo unit along the six CAREC corridors is \$1.64, almost the same as along European corridors.

Key findings by corridor are presented in the *CPMM Executive Dashboard*.

Experience both inside and outside the CAREC region shows the benefits of focused action:

- Azerbaijan International Road Transport Carriers Association reports adoption of a single window approach has cut average border processing time from 3 hours to 33 minutes, and reduced paper work per shipment from 40 pages to 2 pages.
- Implementation of an automated customs processing system in Singapore in the 1980s reduced turn-around time from 3-4 days to 15 minutes, and cut paper work from 24 forms to 1 form.

The CPMM will provide data and insights for action to improve the flow of goods and people along the CAREC corridors. With a pragmatic approach, improved interaction with the private sector, and continuing goodwill and trust among the CAREC countries, this work will make a valuable contribution to cooperation.

CPMM Executive Dashboard

<p>CAREC Corridors</p> <table border="1" style="width: 100%; text-align: center; font-size: small;"> <thead> <tr> <th>Corridor</th> <th>Gross speed (km/h)</th> <th>Net speed (km/h)</th> <th>Delays (hours)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>37.80</td> <td>23.37</td> <td>(38.18)</td> </tr> <tr> <td>2</td> <td>29.34</td> <td>16.26</td> <td>(44.58)</td> </tr> <tr> <td>3</td> <td>43.66</td> <td>25.97</td> <td>(40.50)</td> </tr> <tr> <td>4</td> <td>40.04</td> <td>27.13</td> <td>(32.24)</td> </tr> <tr> <td>5</td> <td>27.81</td> <td>17.20</td> <td>(38.14)</td> </tr> <tr> <td>6</td> <td>38.76</td> <td>19.73</td> <td>(49.09)</td> </tr> </tbody> </table>	Corridor	Gross speed (km/h)	Net speed (km/h)	Delays (hours)	1	37.80	23.37	(38.18)	2	29.34	16.26	(44.58)	3	43.66	25.97	(40.50)	4	40.04	27.13	(32.24)	5	27.81	17.20	(38.14)	6	38.76	19.73	(49.09)	<p>Data Description</p> <ul style="list-style-type: none"> – 345 time/cost distance (TCD) observations received – 51% travel by road; rest equally shared by rail and multimodal transport – 253 observations cross borders – 109 observations travel under TIR – Commonly transported goods are: fruits and vegetables, foodstuffs, equipment and general merchandise for household consumption 	
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CONTENTS

	Page
I. INTRODUCTION	1
II. METHODOLOGY AND DATA DESCRIPTION.....	1
A. Time/Cost Distance method	1
B. Data Description	3
III. OVERVIEW OF RESULTS ACROSS CORRIDORS	5
A. Speed / Travel Time	5
B. Time and Stops for Inspection.....	6
C. Cost of Transport and Activities.....	8
IV. Preliminary Conclusions and Recommendations.....	11

I. INTRODUCTION¹

1. Improving trade facilitation and increasing transport connectivity help economic growth. Efficient and effective transport and logistics services stimulate economic activity and help the region to take advantage of its position as a land bridge between Europe and Asia. International trade flows account for about 80 percent of the region's gross domestic product (GDP).

The Central Asia Regional Economic Cooperation (CAREC) Transport and Trade Facilitation Strategy (TTFS) and its Action Plan focus on six corridors.

- 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.

2. The CAREC Corridors Performance Measurement and Monitoring (CPMM) program will report on the current situation along the links and nodes of each corridor, identify bottlenecks, and propose actions.

3. This report provides a preliminary assessment of the data collected for the corridors. This work was done from April to June 2009.

II. METHODOLOGY AND DATA DESCRIPTION

A. Time/Cost Distance method

4. The Time/Cost Distance (TCD) methodology² gathers time and cost data associated with transit transport. By examining the cost and time characteristics of every section along a route, inefficiencies and bottlenecks are identified. The methodology allows policy makers, road carriers, and freight forwarders to:

- analyze factors that affect the cost and time;
- compare changes in the costs and time;
- compare and evaluate competing modes of transport on the same route;
- consider alternative transit routes.

5. To establish CPMM baseline data, a modified TCD methodology was designed, including a new driver's form and TCD template. The one-page driver's form is simple and straightforward, allowing drivers to log the place of origin and destination, distance traveled between stops, and time and cost spent on activities, among others (Driver's Form attached as

¹ The full Quarterly Report: April-June 2009 is available at www.carecinstitute.org

² The United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) Time Cost Distance Method has been widely used for assessing the performance of the corridors. It was used by World Bank in its assessment of corridors in Africa and by the IRU-NELTI in Central Asian routes.

Appendix 1). Drivers submit completed forms to CPMM coordinators for entry into the modified TCD template. The TCD template is a multi-worksheet excel file that allows speed graphs and time and cost charts to be automatically generated. The modified TCD template includes a predefined list of activities with options for additional activities, selections to define costs as official or unofficial, corridor stop classifications, options for reporting cargo weight (in TEU and tons), and whether goods are perishable or not. The new template also makes use of dynamic charts to graph only those stops with sufficient information (Template attached as Appendix 2).

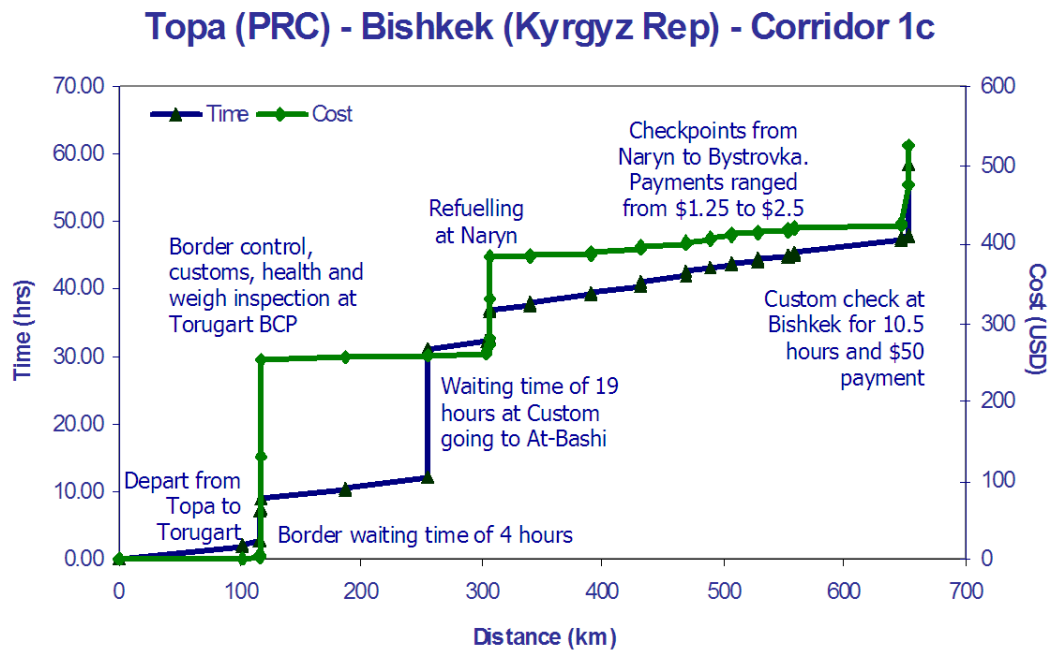
6. Associations of freight forwarders and road carriers in each CAREC country³ will collect time and cost data on a regular basis. Each partner association is to make 30 observations per month. The completed TCDs are submitted to ADB for further processing and analysis. Regular coordination with the partner associations will enable ADB to fill in data gaps.

7. A TCD chart is shown in Figure 1. The vertical axis represents the time and cost incurred. The horizontal axis shows distance traveled. The methodology is based on the premise that unit cost of transport may vary between modes, with the steepness of the cost/time curves reflecting actual cost, price, or time. At border crossings and intermediate stops, delays occur and charges and other fees are usually collected without any material progress or movement of goods. This is represented by a vertical step in the cost or time curve. The height of the step is proportional to the cost or time delay.

8. Figure 1 shows a road transport TCD from Topa, People's Republic of China (PRC), to Bishkek, Kyrgyz Republic. At the PRC Torugart BCP, border waiting time was 4 hours (represented by the blue line). At the border, the cost line (green line) rises vertically as a result of payments for border control, customs inspection, health and quarantine, and weight inspection. In this case, delays at the Kyrgyz Republic customs post lasted 19 hours. The cost of refueling at Naryn created another vertical cost line. Between Naryn to Bystrovka, a number of other payments ranged from \$1.25 to \$2.50. The driver then spent 10.5 hours at the customs checkpoint in Bishkek.

³ The freight forwarders and road carriers are: Association of Afghanistan Freight Forwarders Companies, Azerbaijan International Road Carriers Association, Kazakhstan Freight Forwarders Association, Kyrgyz Freight Operators Association, National Road Transport Association of Mongolia, Mongolia National Chamber of Commerce and Industry, China International Freight Forwarders Association, Inner Mongolia Autonomous Region Logistics Association, Xinjiang Uygur Autonomous Region Freight Forwarders Association, Association of International Automobile Carriers of Tajikistan, Association of International Road Carriers of Uzbekistan, Business Logistics Development Association of Uzbekistan

Figure 1. Time/Cost Distance model



9. The TCD chart is designed for a distinct transport movement from a point of origin to a destination using a particular transport mode (rail, road, ship, or multimodal transport). A single chart would not be adequate to portray the performance of a corridor given the several routes possible within the same corridor. In its place, a database of specific routes was created, with corresponding data on corridor numbers, mode of transport, reason of stops, distance between routes, transport time and cost, and the time and cost of each specific activity.

B. Data Description

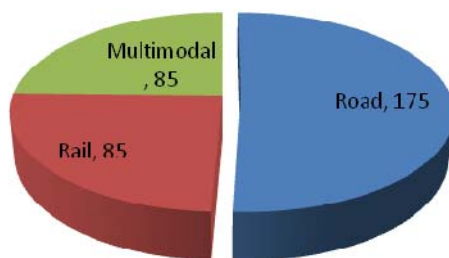
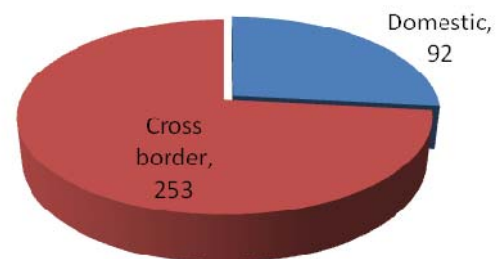
10. TDC submissions for April to June 2009 covered only certain sections of each corridor. A difficulty in determining whether or not the partner associations are using the CAREC corridors/sub-corridors or certain sections of the corridors/sub-corridors is inconsistency in the use of place names for some stops. To address this, a database of all possible stops using all possible names along each corridor is being developed.

11. From April to June 2009, 345 survey forms were submitted, mostly by partner associations from Mongolia, PRC, and Kazakhstan (Table 1).

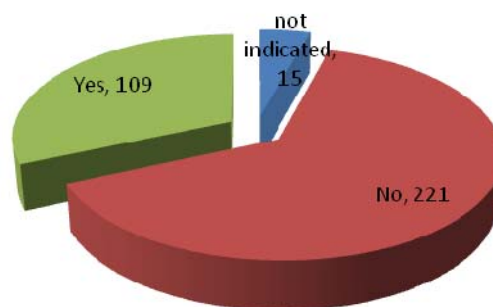
Table 1. Observations by association and month of submission

Association	Month						Total
	January	February	March	April	May	June	
AFG	0	0	0	0	6	0	6
AZE	0	0	0	0	6	0	6
CIFA	4	18	15	3	3	27	70
IMAR	0	0	10	17	0	0	27
KAZ	0	0	19	15	20	11	65
KGZ	9	2	0	13	0	0	24
MON	0	0	0	30	43	17	90
TAJ	0	0	0	0	4	10	14
UZB	0	0	13	25	0	0	38
XUAR	0	0	0	5	0	0	5
Total	13	20	57	108	82	65	345

12. Road was the mode for half of the survey forms submitted (175, or 51 percent). The remaining trips were equally split between rail and multimodal transportation (rail and road). Almost three-fourths (73.3 percent) of trips reported cross-border movement.

Figure 2. Number of observations by mode of transport**Figure 3. Number of observations by scope of transport**

13. Less than half of total trips were conducted under the Transport Internationaux Routiers (TIR) transport system. PRC, a major CAREC trading partner, is not a TIR member.

Figure 4. Number of observations traveling with TIR

14. Fruits and vegetables, foodstuffs, and general merchandise for household consumption are the most commonly reported goods transported along the corridors. Other high-value items such as electrical and electronic parts and equipment, motor parts and motor vehicles, and home appliances are also transported. Specific goods are predominant in particular corridors; wood and furniture on Corridor 4 from Sukhbaatar, Mongolia, to Tianjin, PRC; cotton on Corridors 2, 3 and 6.

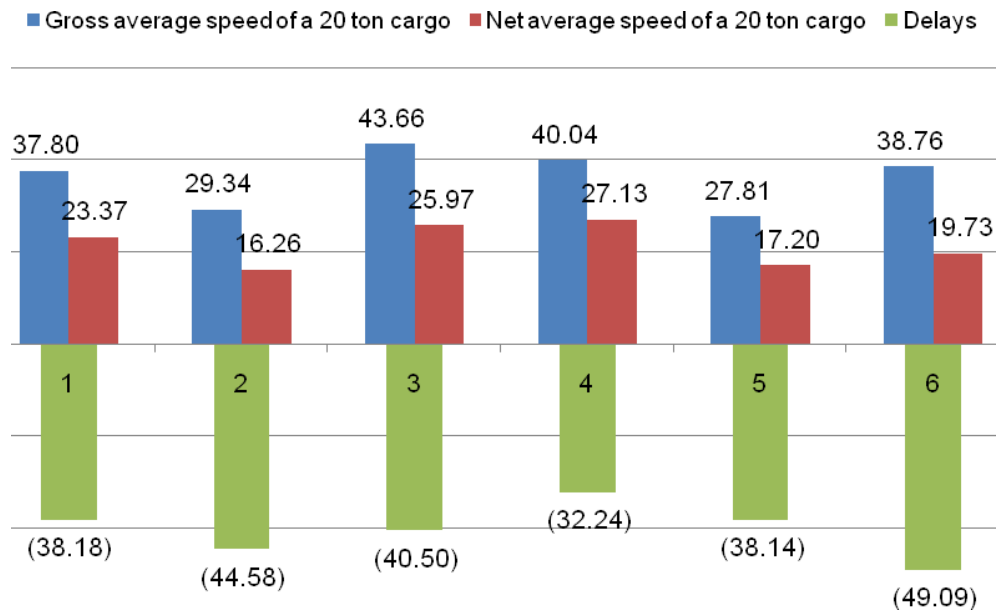
Table 2. Goods transported

Type of Goods	Frequency	Percent
Building and construction materials	18	5.22
Chemicals	7	2.03
Electrical and electronics equipment	21	6.09
Equipment (general)	45	13.04
Food items	38	11.01
Fruits and vegetables (inc juices)	56	16.23
Furniture	14	4.06
General merchandise	30	8.70
Home appliances	13	3.77
Minerals	6	1.74
Motor parts and motor vehicle	18	5.22
Not specified	5	1.45
Others	10	2.90
Textiles and clothing (inc. wool and cotton)	34	9.86
Wood	30	8.70
Total	345	100.00

III. OVERVIEW OF RESULTS ACROSS CORRIDORS

A. Speed / Travel Time

15. Figure 5 shows the average speed of a 20-ton cargo and the delays related to monitored activities when traveling by road and rail. On each corridor, stops reduce gross speed by between 32 percent and 49 percent.

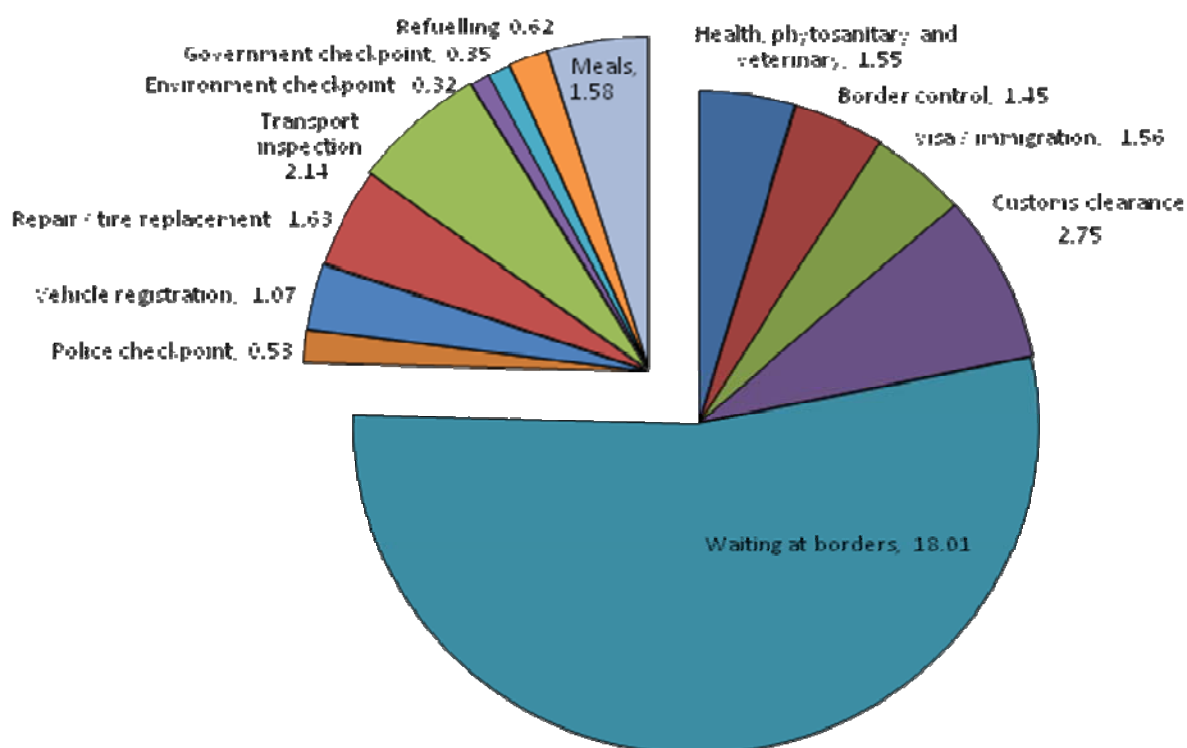
Figure 5. Speed and delays in CAREC corridors

16. The average speed including stops of 21.6 kph for a 20-ton cargo across the corridors is approximately a third of the 75 kph intra-European speed. It would take a cargo truck traveling the CAREC corridors about three times as long to travel the same distance as a truck traveling along European routes.

B. Time and Stops for Inspection

17. Frequent and lengthy checks and inspections on each side of border points and ad-hoc checks from a variety of agencies along routes add to non-physical barriers to trade and significantly reducing travel time. Figure 6 shows the average time spent on major activities often undertaken along all the corridors. About 75 percent of time on activities is at border points, including: customs inspection; visa/immigration; health, phytosanitary, and veterinary inspection. About 25 percent of time on activities is spent along routes, including: transport inspection; police checkpoints; meals; and vehicle repair.

Figure 6. Duration of activities (hours) per 500 kilometers



18. The greatest cause of delay is waiting time at borders. This accounts for about 50 percent of total time delays, or an average 18-hour wait. Long waiting time at borders seems to be a consequence of inefficient processing of documents by border control authorities, leading to long queues and delays. A number of TCDs indicate that drivers take detours to use more remote BCPs known to have faster processing time.

19. For non-BCP activities, transport inspection is the most time consuming—averaging about 2.14 hours per 500 km of travel. Vehicle registration takes an average of 1.07 hours. Total police stops per 500 km average about one hour.

20. A number of initiatives are being launched in the region to improve travel speed along CAREC corridors. Box 1 describes a trilateral agreement among Kyrgyz Republic, Tajikistan and PRC for sealed container trucks traveling between Kashi and Dushanbe to transit through Kyrgyz Republic in winter months when the Kara Suu BCP between PRC and Tajikistan is closed.

Box 1: Trilateral Permits

CAREC Corridors 2a, 3b and 5 are priority corridors linking the PRC, Kyrgyz Republic, Tajikistan, and Uzbekistan. Corridor 2a is one of the shortest routes from PRC to Europe.

In 2008, Kyrgyz Republic, Tajikistan, and PRC concluded a trilateral agreement that allows sealed container trucks traveling between Kashi and Dushanbe to transit through the Kyrgyz Republic during the harsh winter months of October to April, when the Kara Suu BCP between PRC and Tajikistan is closed. These trucks bear special Kyrgyz Republic license plates. This arrangement avoids wasting several days of transloading at the borders from one nation's trucks to another nation's trucks, where as much as 20% of cargo has been reported stolen. It is a good example of reducing logistics costs and improving services to importers and exporters through regional cooperation.

Kyrgyz Republic, Uzbekistan, and PRC will meet in September 2009 to discuss the implementation mechanism for a similar trilateral agreement signed in 1998. This would allow road carriers of the three countries to carry cargo along the Irkeshtam-Sary Tash-Osh-Andijan road improved with ADB assistance. In addition, it would provide a multimodal link between the PRC rail network and the Uzbekistan rail network by connecting Kashi with Andijan.



Kyrgyz Republic truck at Kashi logistics center for loads to Dushanbe

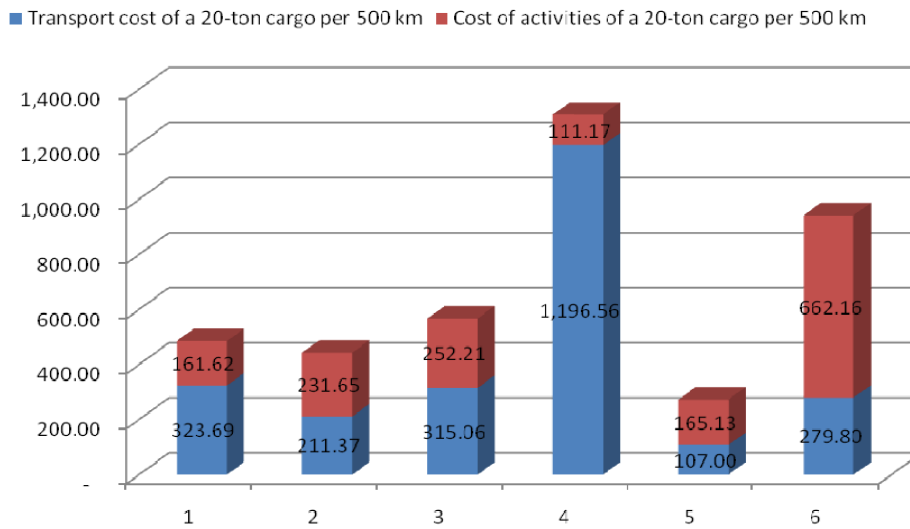
C. Cost of Transport and Activities

21. Transport costs include labor, licenses, freight, insurance, depreciation, and overhead paid by trucking companies, road carriers, and forwarders.⁴ Activities costs include payments for all border crossing activities and non-BCP activities such as repairs, vehicle registration, police checkpoints, and weight inspection. Both costs are standardized with respect to distance traveled.

⁴ Transport costs are provided by the associations as total cost without disaggregating since some partner associations want to keep detailed costing confidential. In some cases, partner associations do not provide even total cost. As a result, transport cost in this report might be highly underestimated.

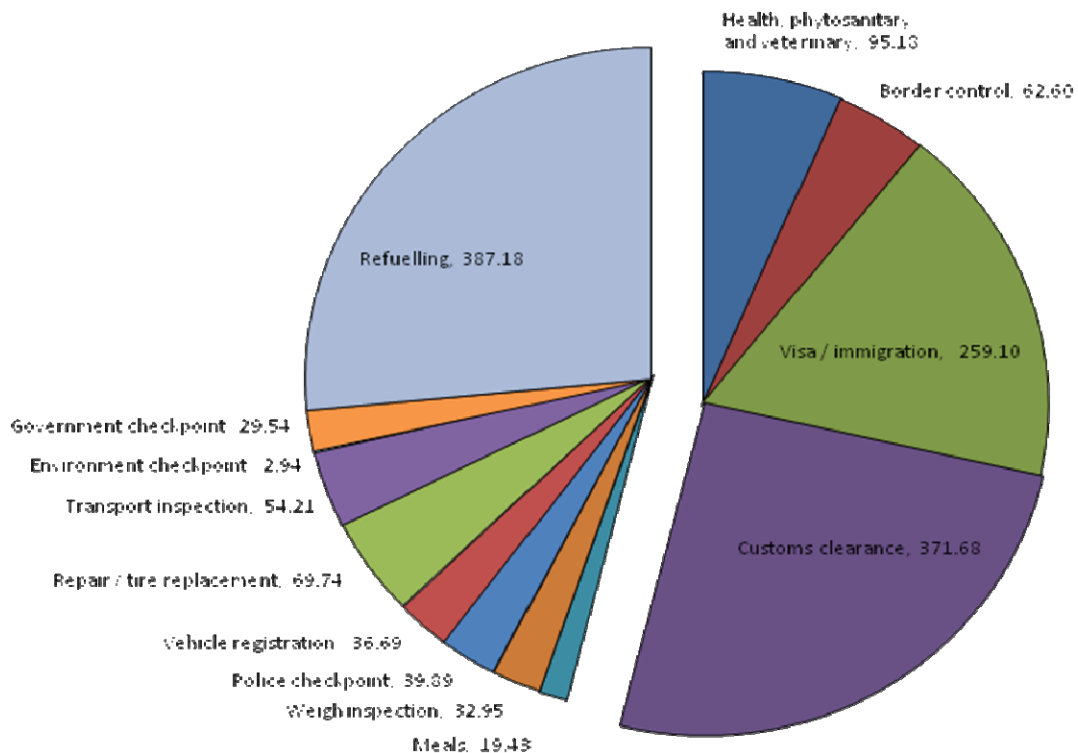
22. Across corridors, the average cost of transport and the average cost of activities is estimated at \$405 and \$264, respectively, per 500 kilometers normalized by 20-ton load. Cost of transport is about 61 percent of total cost; cost of activities is 39 percent. Overall cost is highest on Corridor 4, with transport cost averaging \$1,196 per 20-ton load per 500 km (Figure 7). Cost of activities is highest on Corridor 6 at an average of \$662 per 20-ton load per 500 km. Average transport costs per 500 km in France, Spain, Germany and Poland, is about \$875 (World Bank, 2009), 54 percent higher than the transport cost along the CAREC corridors.

Figure 7. Cost of a 20-ton cargo per 500 kilometers (US\$)



23. Across all corridors, border-related costs are about 50 percent of total activities costs. Taking out fuel cost, border-related activities costs rise to about 75 percent of total cost (Figure 8). Obtaining customs clearance is the most expensive activity, followed by the cost of health, phytosanitary, and veterinary inspection. For activities undertaken at intermediate stops, vehicle repair and tire replacement is most costly averaging \$69.74 per 500 km. Environmental and ecological checkpoint is the least expensive activity at \$2.94 per 500 km. Payments to police averaged \$39.89 per 500 km.

Figure 8. Average activities costs (US\$) per 500 kilometers



24. As CPMM implementation progresses, a regional information database will be created to support in-depth analysis and assist decision making related to the removal of impediments and improvement of the performance of CAREC corridors.

Box 2: CAREC Regional Information Database

CPMM data collection provides valuable information beyond the time and cost of transport. This information will be retained in a centralized database and non-sensitive information will be shared with CAREC participants. Examples of such information include the:

- Location, condition and charges at secured parking sites along CAREC corridors
- Location, condition, storage rates, available space and contact information of bonded and ordinary warehouses near CAREC corridors
- Location, repair rates, contact information of emergency road service, and repair shops
- Location, contact information and facility description of integrated truck service centers (food, rest area, fuel, repair and maintenance services)
- Location and contact information of police posts

The database will also compile other useful trade, transport, and customs information such as, customs regulations and procedures, and trade document templates. This database will be valuable to transport and logistics providers, importers, exporters, manufacturers, as well as potential investors.

IV. Preliminary Conclusions and Recommendations

25. Preliminary findings indicate:

- The average speed for a 20-ton cargo unit along the six CAREC corridors, including time spent at stops, is 21.6 kph. This is less than one-third of the speed on intra-European transport corridors. Given the same distances travelled, it would take a cargo truck approximately 3 times as long to reach its final destination travelling along the CAREC corridors than it would travelling along European routes.
- Activities at stops reduce gross speed on each corridor by 32 to 49 percent. Fewer delays are observed on corridor 4; greater delays occur on corridor 6.
- Average delay of 25.3 hours at BCPs in the region is approximately 13 times longer than the average 2-hour wait at European borders. In the CAREC region, almost 75 percent of this time is spent idle waiting to start border procedures.
- The average total cost per 500 km of a 20-ton load along the CAREC corridors is \$669.57, including \$405.58 of transport costs and \$263.99 of activities costs. Transport cost per kilometer amounts to \$1.64, which is almost the same as the \$1.75 per kilometer cost along European corridors.

26. Trade facilitation initiatives such as BCP infrastructure improvement, customs modernization, and single window schemes will significantly reduce delay and cost along corridors. Singapore reduced turn-around time from 3 -4 days to 15 minutes and reduced paper work from 24 forms to 1 form once they automated their system. According to a recent report from the Azerbaijan CPMM partner association, average processing time at BCPs was reduced from 3 hours to 33 minutes and paper work from 40 pages to 2 pages after the adoption of a single window approach.

27. The rich data and insights generated by the CPMM program will allow detailed analysis of corridor efficiency and help CAREC decision makers and private sector participants identify priority measures to address constraints and barriers to trade.

28. A key challenge lies in creating an environment in which issues can be pragmatically addressed. National laws and regulations need to be implemented and streamlined to provide regulatory institutions a set of standards for processing documents, physical inspection, fees collection and discharge. More importantly, it is vital for CAREC countries to display goodwill and trust—to be good neighbors and good partners.

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Appendix 1: Drivers Form

Cargo Manifest No.

Control No.

Please fill up and return to your respective Association upon completion of the trip.

Place of Origin Final Destination Route

Gender Quantity Odometer Reading - Start Odometer Reading End Date start Time start

Step No.	1				2				3				4				5				6				7				8				9				10				11				12							
Town/City																																																				
Odometer reading																																																				
Transit Card																																																				
Date of Stop																																																				
Time Stop																																																				
Rearran for Stop (encircle one)	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Activities	Barali	Cool	Barali	Cool	Barali	Cool	Barali	Cool	Barali	Cool	Barali	Cool	Barali	Cool	Barali	Cool	Barali	Cool	Barali	Cool	Barali	Cool	Barali	Cool	Barali	Cool	Barali	Cool	Barali	Cool	Barali	Cool	Barali	Cool	Barali	Cool	Barali	Cool	Barali	Cool	Barali	Cool										
Health/Quarantine																																																				
Phyta-Sanitary																																																				
Veterinary Inspection																																																				
Border Security / Control																																																				
Visa / immigration																																																				
Customs Clearance																																																				
Detour																																																				
Waiting/Queue																																																				
Loading / Unloading																																																				
Overnight Stay/Port																																																				
Meal																																																				
Escort/Convey																																																				

Appendix 2: Revised TCD Template

		STOP 1				STOP 2				STOP 3				STOP 4				STOP 5				STOP 6				STOP 7			
Place of stop	Name of city:																												
	Name of country:																												
	CAREC Corridor:																												
Mode of transport																													
Distance to next stop (km)																													
Duration of travel (hours)		hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz
Transport cost (US\$)																													
Reason for stop																													
Description of stop	Activities	Duration		Cost (US\$)	Off-ici	Duration		Cost (US\$)	Off-ici	Duration		Cost (US\$)	Off-ici	Duration		Cost (US\$)	Off-ici	Duration		Cost (US\$)	Off-ici	Duration		Cost (US\$)	Off-ici	Duration		Cost (US\$)	Off-ici
		hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz	hrz	minz
Description of stop	Health / quarantine	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz		
	Phytosanitary	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz		
	Veterinary inspection	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz		
	Border security / control	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz		
	Visa / immigration	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz		
	Customs clearance	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz		
	Duties	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz		
	Waiting / queue	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz		
	Loading / unloading	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz		
	Overnight stay / rest	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz		
	Meal	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz		
	Escort / convey	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz		
	Weight / standard inspection	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz		
	Police checkpoint / stop	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz		
	Vehicle registration	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz		
Repair / tire replacement	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			
Other 1	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			
Other 2	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			
Other 3	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			
Other 4	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			
Other 5	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			
Other 6	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			
Other 7	hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			hrz	minz			
Description of actions taken (e.g. procedures, formalities applicable to the section of the route).																													

Appendix 3: CAREC Corridors Performance Indicators

The following charts present data collected for each CAREC corridor based on speed, time and cost shares and bottlenecks indicators.

Chart 1-Speed Indicators. The average speed of a 20-ton cargo expressed in kilometers per hour. Gross speed is the average speed along corridor with no stops while net speed is the average speed along the corridor including the stops.

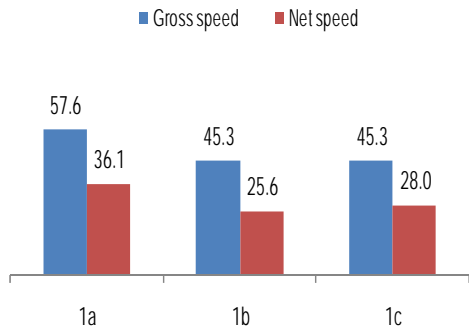
Chart 2-Time shares. Average time (in minutes) of delay by activity

Chart 3-Cost shares. Average cost (in US\$) by activity

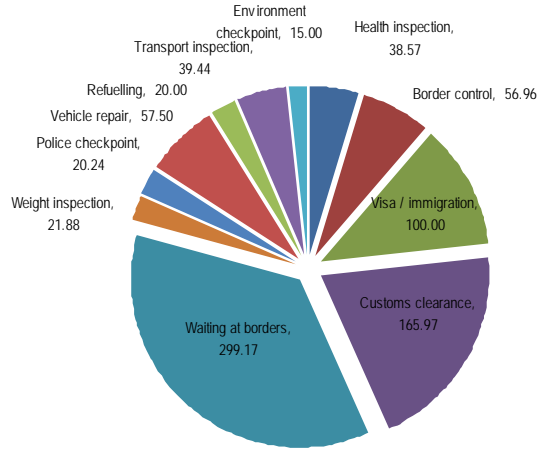
Chart 4-Time and Cost Bottlenecks. This chart shows the time and cost incurred when traveling along a particular road section of the corridor. Cost is expressed as the average cost of doing the activities per 20-ton-km by corridor segment. Delays (in minutes) are defined as average time spent on activities per kilometer by corridor segment.

Corridor 1 Performance

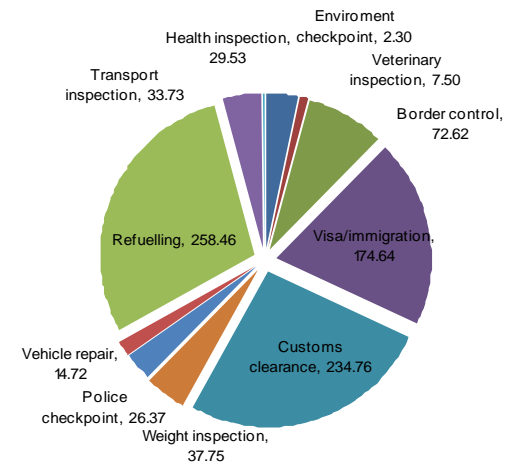
Speed Indicators



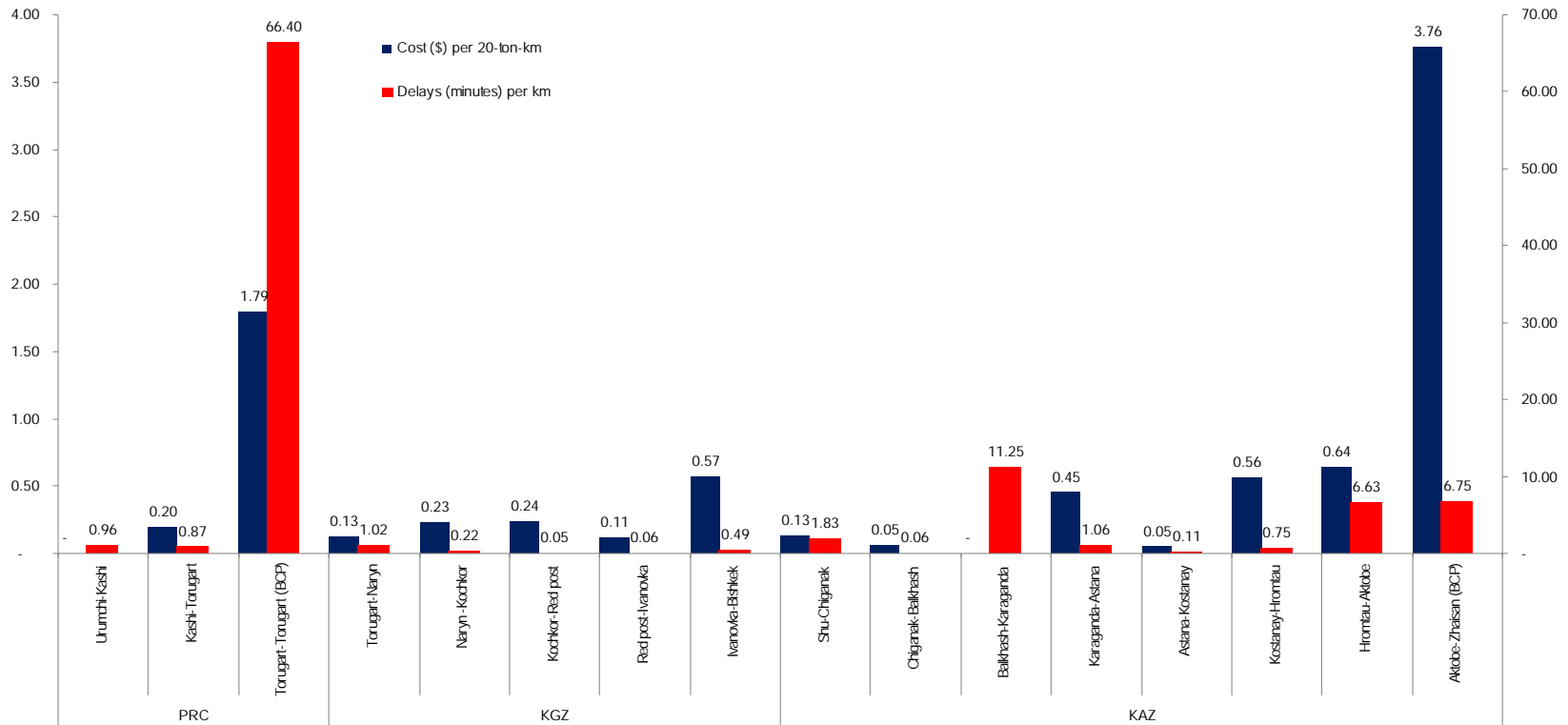
Time Shares



Cost Shares

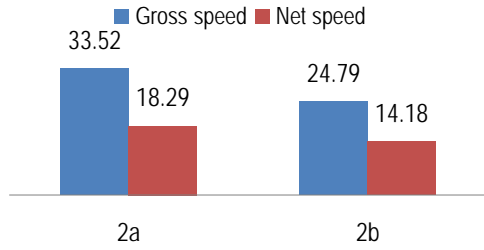


Time and Cost Bottlenecks

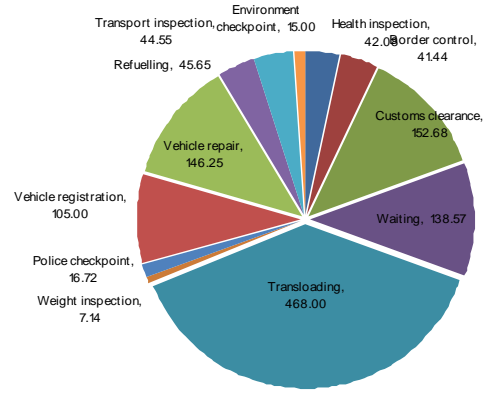


Corridor 2 Performance

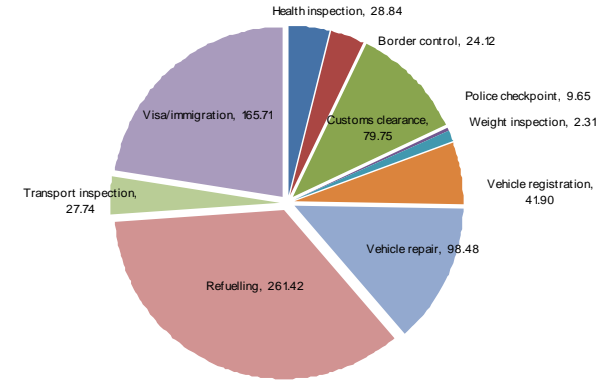
Speed Indicator



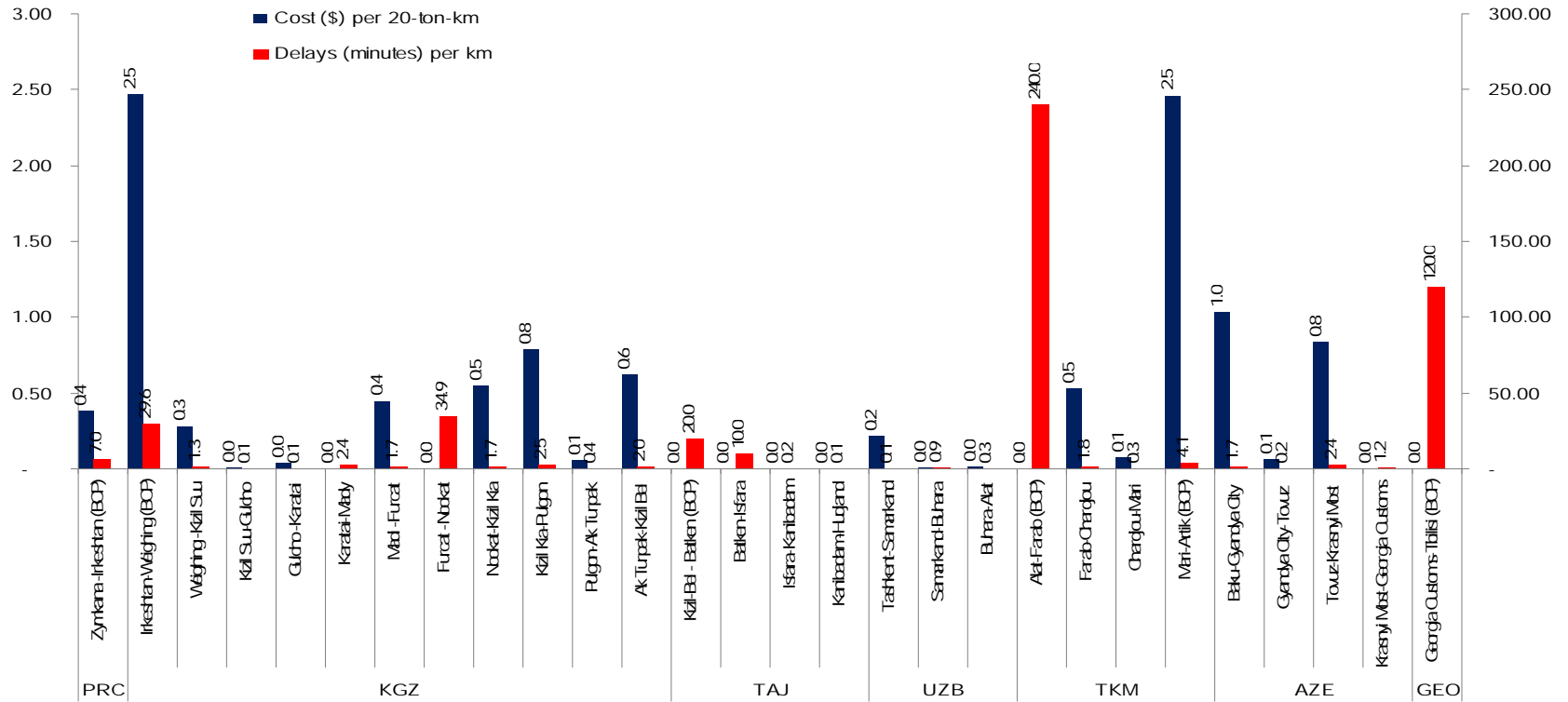
Time Shares



Cost Shares

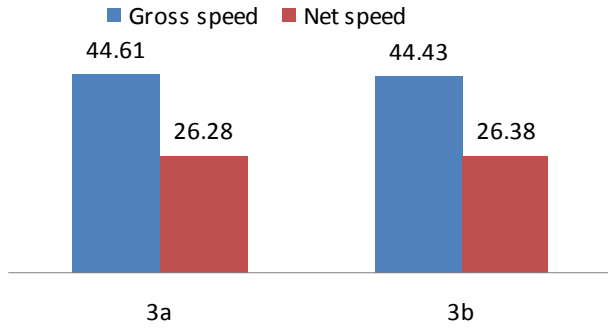


Time and Cost Bottlenecks

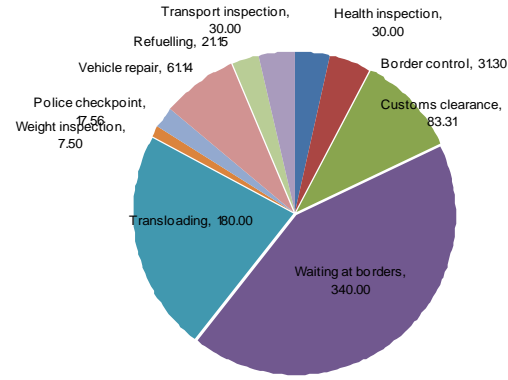


Corridor 3 Performance

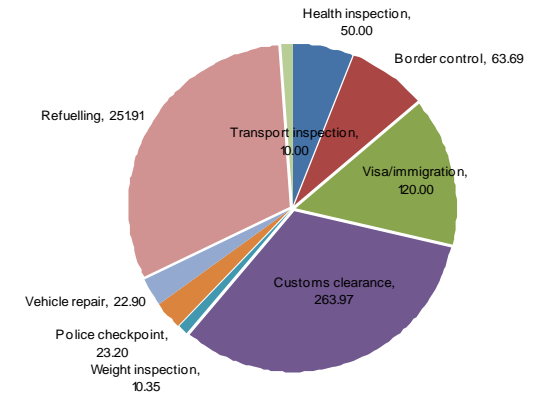
Speed Indicators



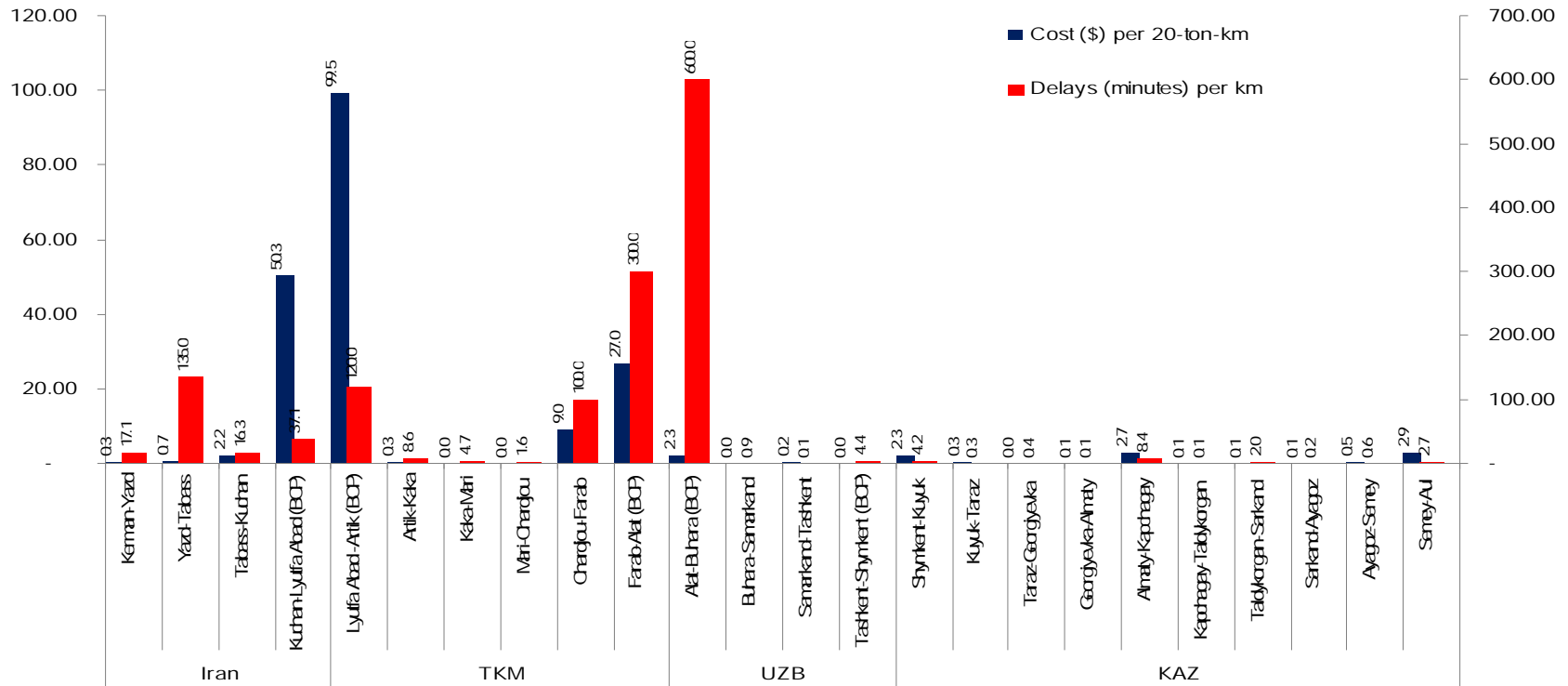
Time Shares



Cost Shares

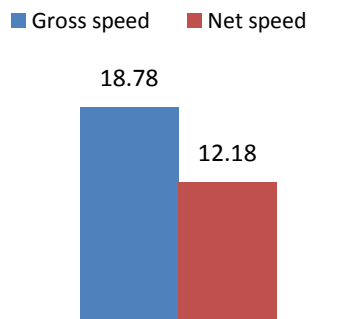


Time and Cost Bottlenecks

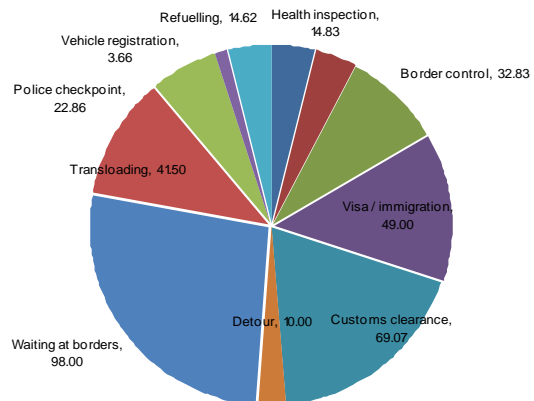


Corridor 4 Performance

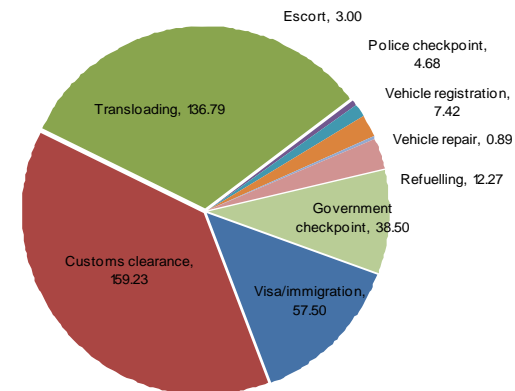
Speed Indicators



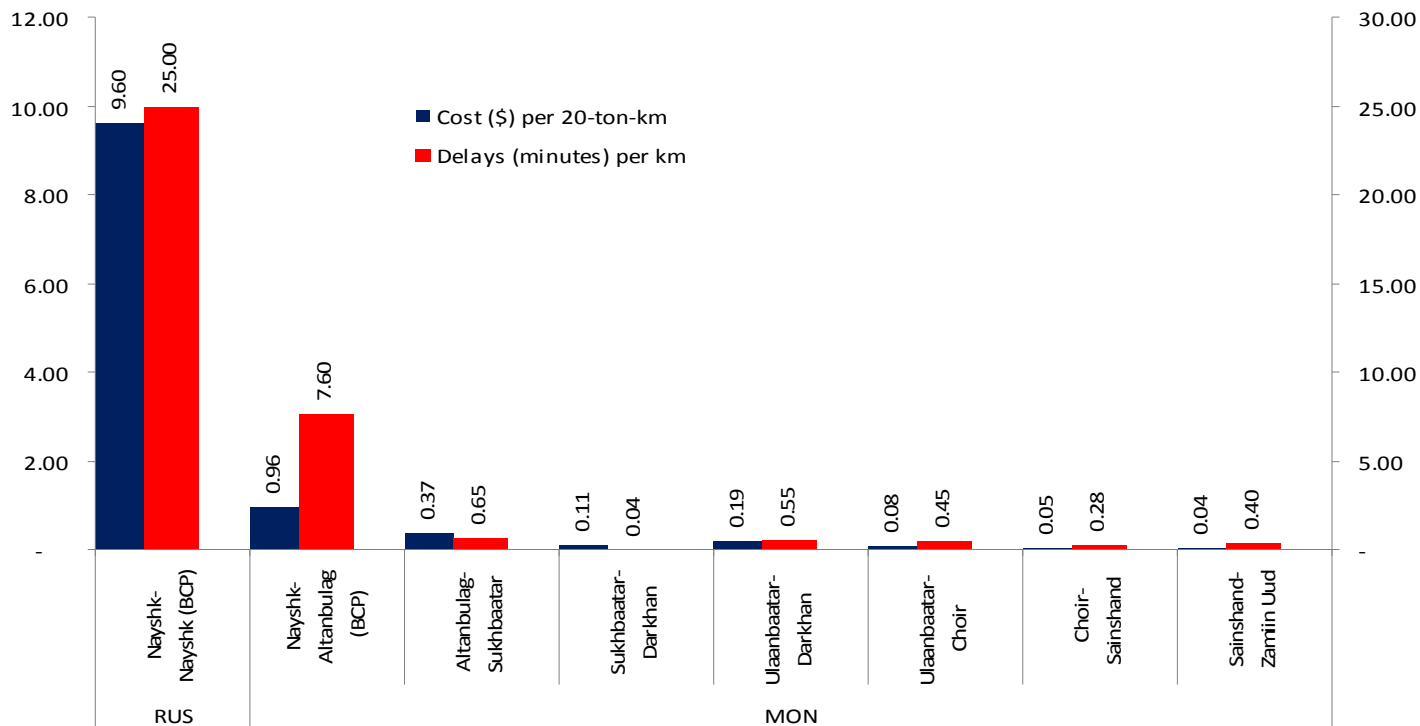
Time Shares



Cost Shares

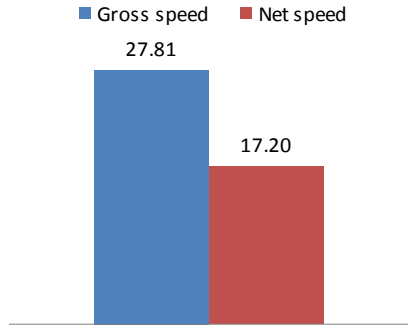


Time and Cost Bottlenecks

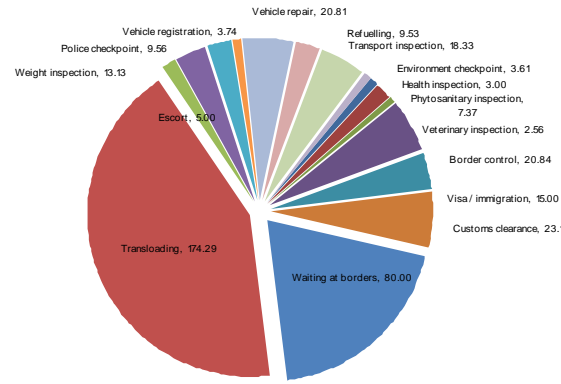


Corridor 5 Performance

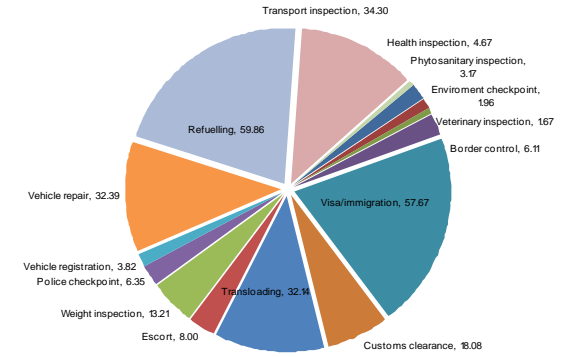
Speed Indicators



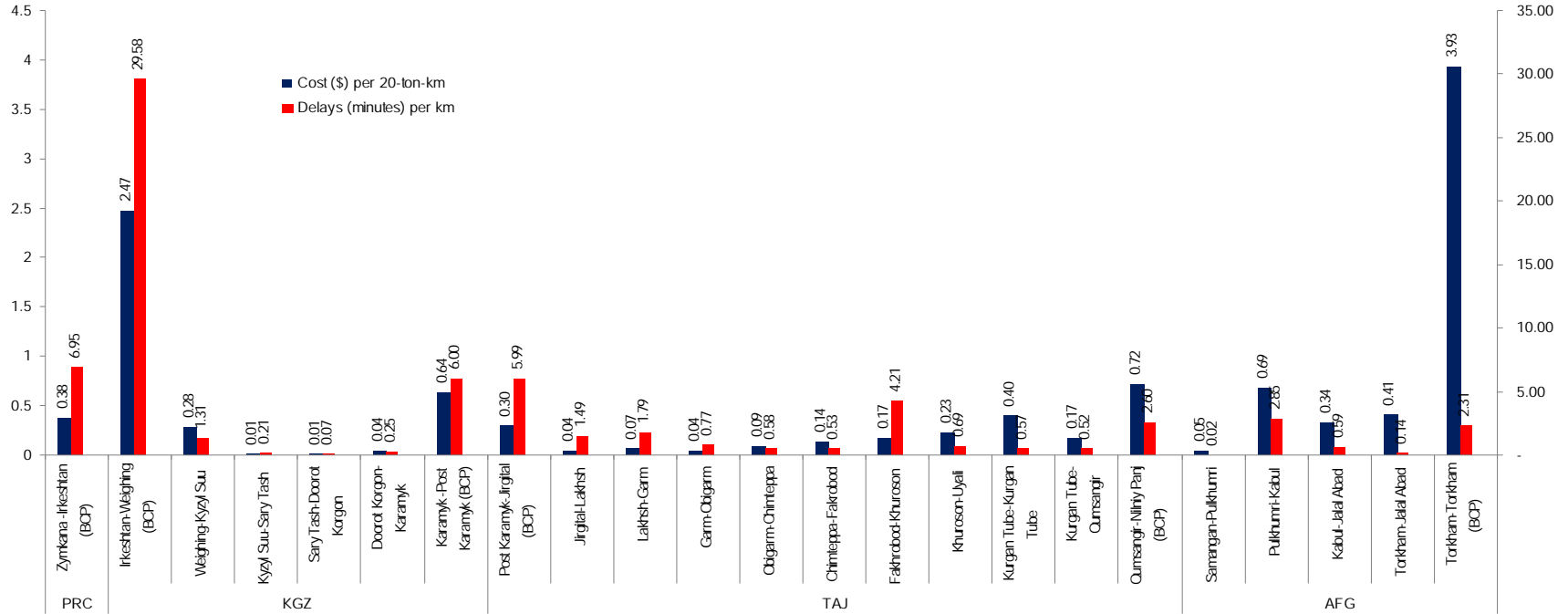
Time Shares



Cost Shares

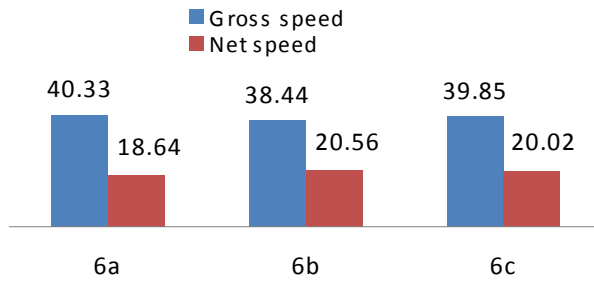


Time and Cost Bottlenecks

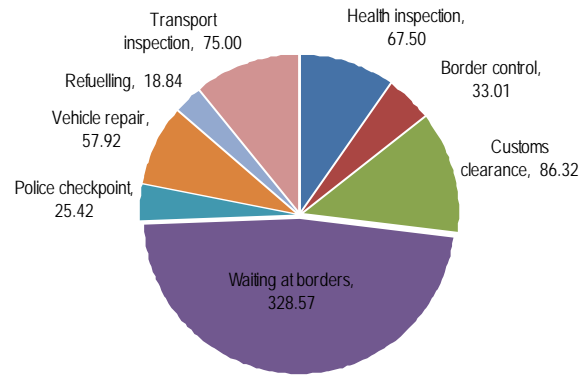


Corridor 6 Performance

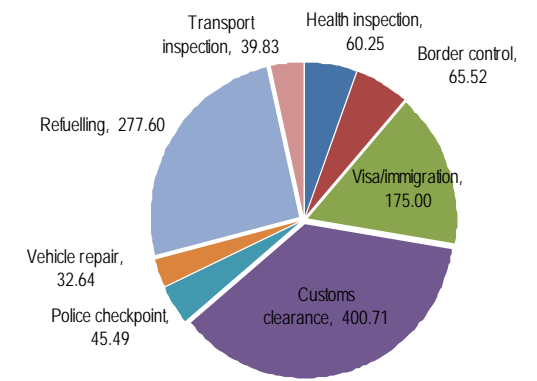
Speed Indicators



Time Shares



Cost Shares



Time and Cost Bottlenecks

