



Session 5

Data Aggregation, Analysis, and Indicators

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**CAREC Corridor Performance Measurement and Monitoring
Methodology Workshop**
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CPMM Methodology Recommendations

1. Indicators (Session 5)

2. Sampling (Session 2)

3. Data collection (Session 3)

4. Data aggregation (Session 5)

**5. Dissemination of CPMM data and findings
(Session 8)**



Active CPMM Partners

Association	Country
Association of Afghanistan Freight Forwarding Companies (AAFFCO)	Afghanistan
Xinjiang Uygur Autonomous Region Logistics Association (XULA)	People's Republic of China
Georgia International Road Carriers Association (GIRCA)	Georgia
Mongolia Logistics Associations (MLA)	Mongolia
Pakistan International Freight Forwarders Association (PIFFA)	Pakistan
Association of Road Transport Operators of Republic of Tajikistan (ABBAT)	Tajikistan
Association of International Road Carriers of Uzbekistan (AIRCUZ)	Uzbekistan



Sampling and Weights

BIG QUESTIONS:

How is the sample determined? Is it representative of trade in CAREC? Does it change from year to year?

IDEAL SCENARIO:

Complete and comprehensive regional cross-border trade flow data is available to influence sample and assign weights.

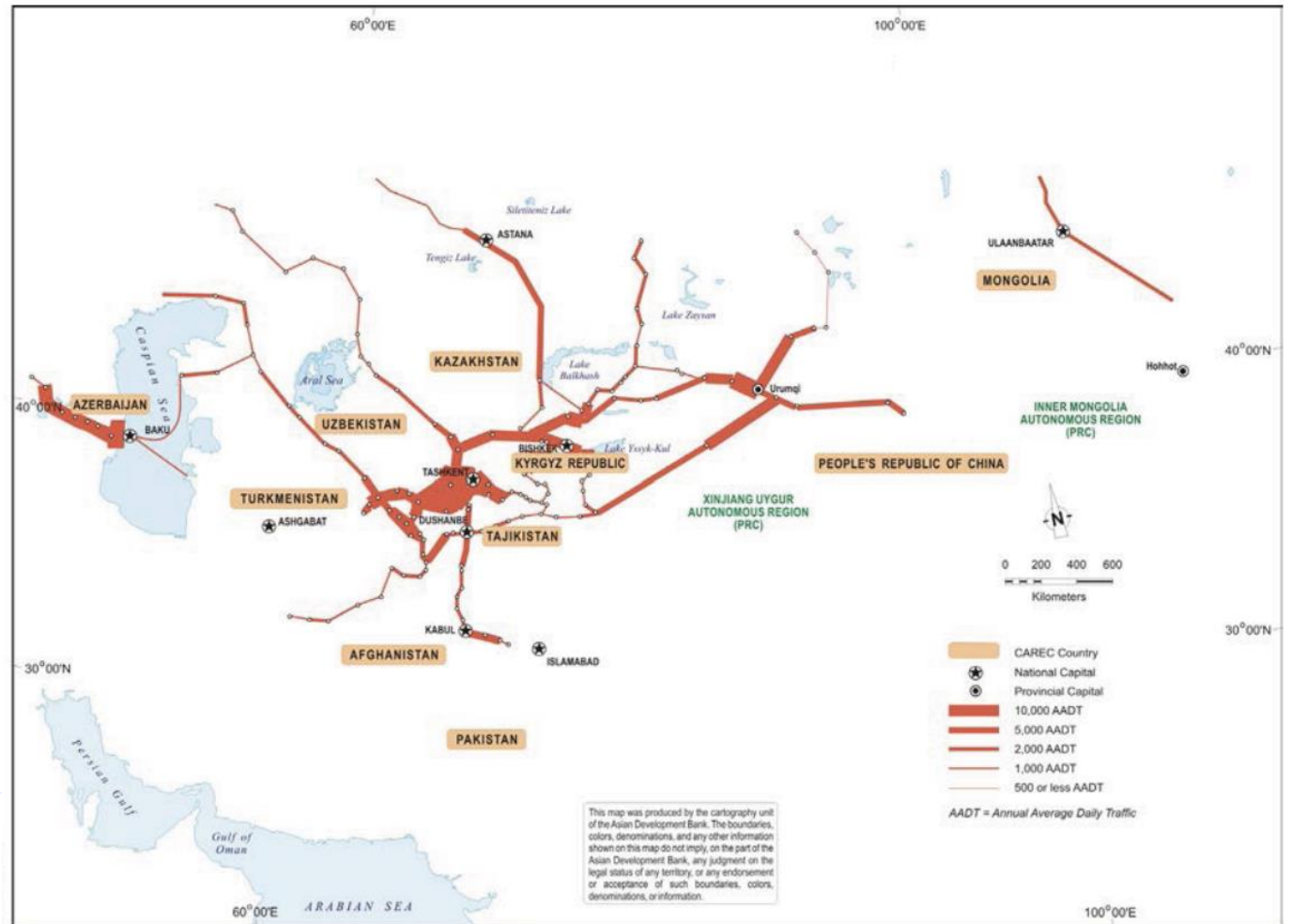
- **The lack of a complete and comprehensive regional cross-border trade flow, which is the ideal basis to assess the *representativeness* of the sample, limits the estimation and assignment of weights.**
- **The current methodology assigns no fixed weights from one sample to another. The data is assumed to represent the trade flow each year.**

Sampling and Weights

IDEAL SCENARIO:

Updated, complete and comprehensive regional cross-border trade flow data is available to influence sample and assign weights.

Includes border-level export, import, and transit statistics.



AADT = annual average daily traffic, CAREC = Central Asia Regional Economic Cooperation.

Source: TERA International Group.

Data Aggregation

Does CPMM need country-level estimates?
How about corridor-level?



New

Aggregation level	TFI1	TFI2	TFI3	TFI4	SWOD
BCPs	For the inbound, outbound and all shipments in the sample		Not applicable		
CAREC corridors and corridor sections	For all shipments in the sample				
CAREC countries	For the inbound, outbound and all shipments in the sample	For all shipments in the sample	For the inbound, outbound and all shipments in the sample	For all shipments in the sample	For the inbound, outbound and all shipments in the sample
CAREC region	For all shipments in the sample				
Specific Routes (Origin-Destination)					

Gaps and limitations	Recommendations
Simple averages are used at all stages of aggregation of CPMM data due to lack of data needed for using weighted averages. This causes considerable measurement errors and fluctuations in the TFIs due to (i) the significant differences in the duration and the cost of many border crossing procedures for shipments of diverse types and (ii) the cross-sectional differences and the intertemporal changes in the size and the composition of the sample of shipments for individual BCPs and corridor sections.	In the absence of sufficiently comprehensive data and proper weights, compute and report the TTFIs at low levels of aggregation (e.g., various categories of shipments, BCPs and ports) and avoid using the TTFIs at prominent levels of aggregation (i.e., corridors, CAREC countries and the CAREC region).

How are data transformed into indicators?

1 Data Spreadsheets (TCDs)

2 Excel Link (database format)

3 Final Database (SAS Software)

The screenshot shows a detailed data spreadsheet with columns for 'FILED' (1-6) and rows for 'Route', 'Commodity Classification', 'Perishable', 'Cargo Weight (tons)', 'Container?', 'Transit System', 'Date of questionnaire completion', 'Fuel Cost (US\$)', 'Fuel Cost US\$M', and 'Fuel Liter/km'. Below the spreadsheet is a 'ROAD ACTIVITIES' table and a 'DASHBOARD' section with various charts and graphs.

The screenshot shows an 'Excel Link File' with a directory structure. It includes a 'Country' section with 'PAK' and 'PIFFA' entries, and an 'Association Data File Directory' section for the year 2018, listing monthly files (JAN to MAY) and their corresponding filenames (e.g., PIFFA-201801-JAN.xlsx).

The screenshot displays SAS code for data processing, including commands like '/*Run: Global commands 201704*/', '/*Run: Data Cleanup 2011 new template', and '/*Requirements:'. Below the code is a data table with columns: 'Obs', 'Region', 'Product', 'Subsidiary', 'Stores', 'Sales', 'Inventory', and 'Returns'. The table lists various products like 'Boat', 'Men's Casual', 'Women's Dress', and 'Sport Shoe' across different regions.

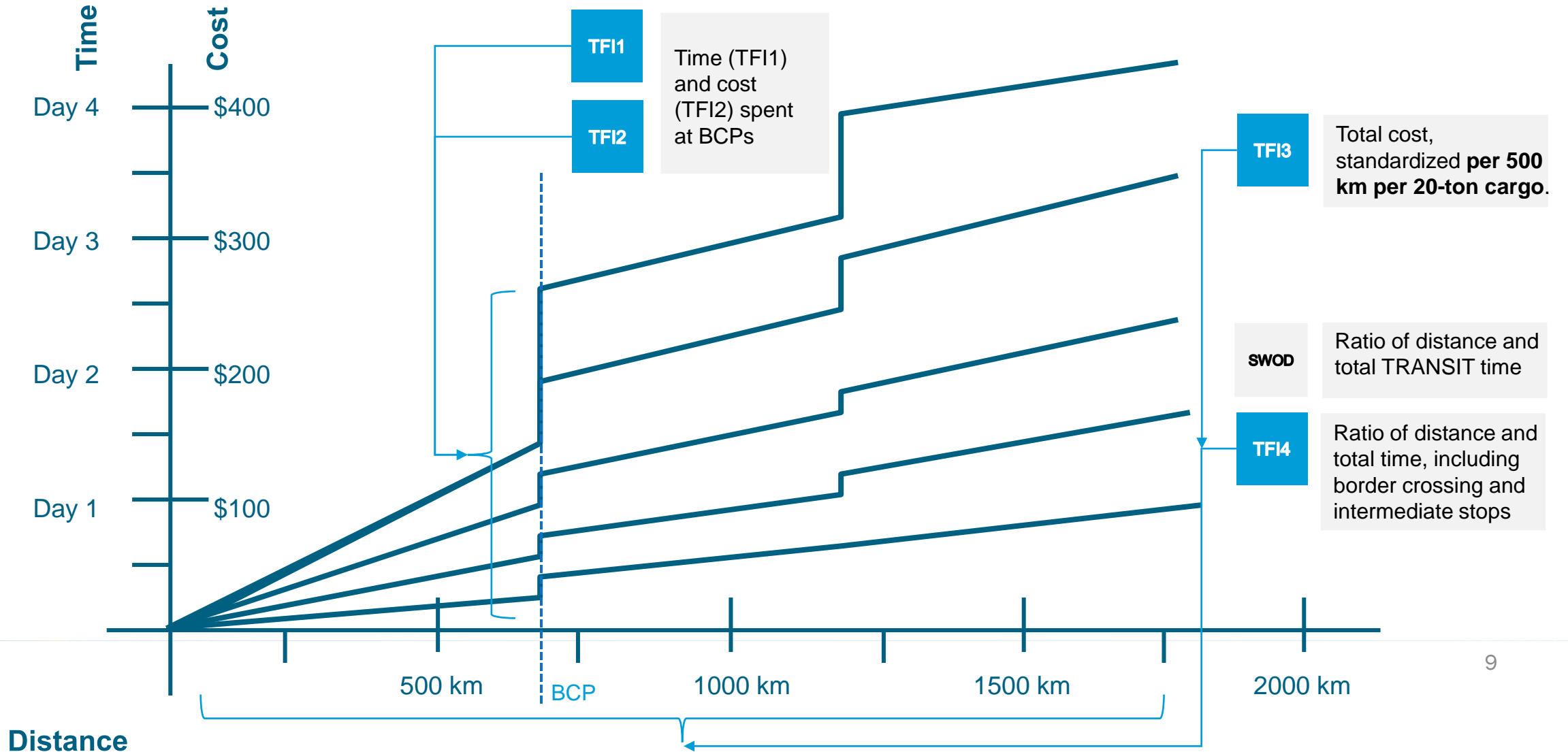
Data Collection Form

Please select mode of transport by checking the tick-boxes. Press "FALSE". Press OK to apply changes.

ROAD RAIL WATER

STOP		STOP 2			STOP 3			STOP 4			STOP 5			STOP 6			STOP 7								
Place of stop	Name of city:	Kashi			Yierkeshtan			Irkeshtan			Dostyk			Dustyk			Tashkent								
	Name of country:	PRCX			PRCX			KGZ			KGZ			UZB			UZB								
	CAREC Corridor	1c			1c			1c			1c			1c			1c								
	Mode of transport	Road			Road			Road			Road			Road			Road								
	Distance from previous stop (km)	4187.52			250			7			283			3			400								
	Duration of travel (hr:min)	46 hrs	28 mins		4 hrs	28 mins		hrs	10 mins		5 hrs	50 mins		hrs	5 mins		8 hrs	36 mins							
	Transport Rate	\$5,713.39			\$340.00			\$9.52			\$384.88			\$4.08			\$544.00								
	Stop Category	Intermediate Stop			BCP			BCP			BCP			BCP			Inland Depot								
	BCP?	No			No			No			No			Yes			Yes								
	Reason for stop	Intermediate Stop			Intermediate Stop			Intermediate Stop			Intermediate Stop			Border Management			Final Destination								
ROAD Activities		Duration	Official Cost	Total Cost	Duration	Official Cost	Total Cost	Duration	Official Cost	Total Cost	Duration	Official Cost	Total Cost	Duration	Official Cost	Total Cost	Duration	Official Cost	Total Cost						
Description of stop																									
Border Security / Control		hrs	mins		hrs	10 mins	\$0.00	\$0.00	hrs	10 mins	\$0.00	\$0.00	hrs	10 mins	\$0.00	\$0.00	hrs	10 mins	\$0.00	\$0.00					
Customs Controls		hrs	mins		1 hrs	45 mins	\$0.00	\$0.00	1 hrs	35 mins	\$0.00	\$0.00	2 hrs	10 mins	\$0.00	\$0.00	1 hrs	50 mins	\$0.00	\$0.00					
Commercial Inspection		hrs	mins		hrs	mins			hrs	mins			hrs	mins			hrs	mins							
Health / Quarantine		hrs	mins		hrs	mins			hrs	mins			hrs	mins			hrs	mins							
Phytosanitary		hrs	mins		hrs	mins			hrs	mins			hrs	mins			hrs	mins							
Veterinary Inspection		hrs	mins		hrs	mins			hrs	mins			hrs	mins			hrs	mins							
Visa / Immigration		hrs	mins		hrs	10 mins	\$0.00	\$0.00	hrs	10 mins	\$0.00	\$0.00	hrs	10 mins	\$0.00	\$0.00	hrs	10 mins	\$0.00	\$0.00					
Transit Conformity		hrs	mins		hrs	mins			hrs	mins			hrs	mins			hrs	mins							
GAI/Traffic Inspection		hrs	mins		hrs	mins			hrs	mins			hrs	mins			hrs	mins							
Police Checkpoint / Stop		hrs	mins		hrs	mins			hrs	mins			hrs	mins			hrs	mins							
Transport Inspection		hrs	mins		hrs	mins			hrs	mins			hrs	mins			hrs	mins							
Weight/Standard Inspection		hrs	mins		hrs	mins			hrs	mins			hrs	mins			hrs	mins							
Vehicle Registration		hrs	mins		hrs	mins			hrs	mins			hrs	mins			hrs	mins							
Emergency Repair		hrs	mins		hrs	mins			hrs	mins			hrs	mins			hrs	mins							
Escort / Convoy		hrs	mins		hrs	mins			hrs	mins			hrs	mins			hrs	mins							
Loading / Unloading		hrs	mins		hrs	mins			hrs	mins			hrs	mins			hrs	mins							
Road / Bridge Toll		hrs	15 mins	\$900.00	\$900.00	hrs	mins		hrs	mins			hrs	mins			hrs	mins							
Waiting/ Queue		hrs	mins		hrs	mins			hrs	mins			hrs	mins			hrs	mins							
Other Activities																									
Activity 1		hrs	mins		hrs	mins			hrs	mins			hrs	mins			hrs	mins							
Activity 1 (Specify here.)																									
Activity 2		hrs	mins		hrs	mins			hrs	mins			hrs	mins			hrs	mins							
Activity 2 (Specify here.)																									
TOTAL		0 hrs	15 mins	900	900	1 hrs	65 mins	0	0	1 hrs	55 mins	0	0	2 hrs	30 mins	0	0	1 hrs	70 mins	0	0	3 hrs	45 mins	330	330
Description of actions taken (e.g. procedures, formalities applicable to the section of the route).		This is the cumulative highway toll from Zhengzhou to Kashgar.																							

CPMM Indicators



*These are computed from TCDs submitted by CPMM partners

Indicators: Performance of BCPs and ports

Gaps and Limitations	Current Indicators	Proposed Indicators		
<p>Coverage of a wide range of operation activities in a single indicator limits identification of the nature of delay and cost drivers at the borders.</p> <p>Waiting time persist to be the primary contributor of delay which warrants a dedicated indicator which could reveal the border traffic management at the BCPs.</p> <p>The indicators do not differentiate shipments assigned to different channels under risk management in border controls.</p>	<p>TFI1: Time taken to clear a BCP. This TFI refers to the average length of time (in hours) taken to move cargo across a border from the entry to exit point of a BCP.</p>	<p>TTFI1: Waiting time to enter a BCP/port (in hours).</p>		
	<p>TFI2: Cost incurred at a BCP. This is the average total cost, in United States dollars, of moving cargo across a border. Both official and unofficial payments are included.</p>	<p>TTFI3: Duration of border controls (in hours).</p>		
		<p>TTFI5: Duration of operational transport activities (in hours).</p>		
		<p>TTFI2: Payments related to waiting in queue to enter a BCP/port (in US\$).</p>	<p>TTFI2a: Official payments related to waiting in queue to enter a BCP/port (in US\$).</p>	<p>TTFI2b: Unofficial payments related to waiting in queue to enter a BCP/port (in US\$). Refers to unofficial payments for shortening the waiting time to enter a BCP.</p>
		<p>TTFI4: Payments related to border controls (in US\$).</p>		
		<p>TTFI4a: Official payments related to border controls (in US\$).</p>	<p>TTFI4b: Unofficial payments for border controls (in US\$).</p>	
		<p>TTFI6: Payments related to operational transport activities (in US\$).</p>		
		<p>TTFI6a: Official payments related to operational transport activities (in US\$).</p>	<p>TTFI6b: Unofficial payments related to operational transport activities (in US\$).</p>	

Indicators: Performance of corridor sections

Gaps and Limitations	Current Indicators	Proposed Indicators	
<p>Transport rates comprise most of the indicators, limiting analysis of performance of corridor sections. They also vary considerably across corridor sections and fluctuate over time for reasons unrelated to corridor performance.</p> <p>TFI3 is also normalized by 20 tons when cost of transporting cargo does not in general increase proportionally with its weight.</p>	<p>TFI3: Cost incurred to travel a corridor section. This comprises average total costs, in United States dollars, incurred for one unit of cargo traveling along a corridor section. One unit of cargo refers to 20 tons. A corridor section is defined as a stretch of road or railway that is 500 kilometers (km) long. Both official and unofficial payments are included. The official payments include the transport rates (for shipments by road) or the railway tariffs (for shipments by rail).</p>	<p>TTFI11: Payments related to checks and controls at intermediate stops (in US\$ per 100 km).</p>	
	<p>TFI4: Speed to travel along CAREC corridors. This is the average speed, in kilometers per hour (km/h), at which a unit of cargo travels along a corridor section.</p>	<p>TTFI11a: Official payments related to checks and controls at intermediate stops (in US\$ per 100 km).</p>	<p>TTFI11b: Unofficial payments related to checks and controls at intermediate stops (in US\$ per 100 km).</p>
	<p>Speed without delay (SWOD). This is the ratio of the distance traveled to the time spent by a vehicle in motion between origin and destination (actual traveling time).</p>	<p>TTFI12: Speed with intermediate stops (in km/hour).</p>	<p>TTFI8: Number of stops for emergency repair (per 100 km).</p>
		<p>TTFI9: Number of intermediate stops for checks and controls (per 100 km).</p> <p>TTFI10: Duration of intermediate stops for checks and controls (in hours per 100 km).</p>	<p>TTFI9: Number of intermediate stops for checks and controls (per 100 km).</p> <p>TTFI10: Duration of intermediate stops for checks and controls (in hours per 100 km).</p>
		<p>TTFI7: Speed without delays (in km/hour).</p>	

Changes in Data Collection Forms



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Guide Questions

1. What indicators are useful for your associations? What indicators are not useful?
2. Have you used CPMM data or findings? If so, how?
3. If not, what could CPMM provide to be useful to CPMM associations and to policy formulation.
4. Is publication of informal payments necessary?

Thank you!