



# Economic and Social Council

Distr.: General  
7 August 2017

Original: English

---

## Economic Commission for Europe

### Inland Transport Committee

#### Working Party on Transport Trends and Economics

##### Group of Experts on Benchmarking Transport Infrastructure Construction Costs

###### Fourth session

Geneva, 16-17 October 2017

Item 5 of the provisional agenda

###### Discussions on the structure of the final report of the Expert Group

## Revised Questionnaire on Benchmarking Road Transport Infrastructure Construction Costs

Note by the team of experts

### I. Mandate and main remarks

#### A. Mandate

1. In accordance with its Terms of Reference, the Group of Experts is expected to complete its work within two years (2016-2018) and to submit a full report of its accomplishments (ECE/TRANS/WP.5/GE.4/2016/1). The Group of Experts shall assist in:

- (a) Identify models, methodologies, tools and good practices for evaluating, calculating and analysing inland transport infrastructure construction costs;
- (b) Identify and list terminologies used in the United Nations Economic Commission for Europe (UNECE) region for construction costs of inland transport infrastructure, if possible, create a glossary of agreed terminologies and related explanations;
- (c) Collect and analyse data in order to prepare a benchmarking of transport infrastructure construction costs along the ECE region for each inland transport mode — road, rail, inland waterways, including intermodal terminals, freight/logistics centres and ports. Analyse and describe the conditions/parameters under which these costs have been calculated on.

GE.17-13511(E)



\* 1 7 1 3 5 1 1 \*

Please recycle The recycling symbol, consisting of three chasing arrows forming a triangle.



2. In carrying out its main tasks, the Group of Experts will, among others, also identify suitable methodological approaches, models and tools for gathering and disseminating information, i.e. conducting studies, distributing questionnaires, using existing studies and national strategies, existing best practices in calculating transport infrastructure construction costs, among others.

**B. Main Remarks**

3. The following remarks should be taken into consideration while considering the suggested questionnaire:

- (a) Currency is US\$;
- (b) Road related costs are preferably given excluding superstructures (tunnels, viaducts, bridges);
- (c) All costs and other data related with monetary units are as of 2016 prices;
- (d) All data are as of end of 2016;
- (e) If some data are not available, missing or not N/A (Not Applicable) should be noted;
- (f) The terminology used is based on the Glossary from the Texas Department of Transport (TxDOT). Experts should consider the terminology used and make relevant comments / amendments.

**II. Questionnaire**

4. Question 1: Provide the following social and economic indicators

---

GNP (US\$) (end of 2016)		
Population (end of 2016)		
GNP per capita (US\$) (end of 2016)		
Surface area (km <sup>2</sup> )		
Density (end of 2016) Person/m <sup>2</sup>		
Length of roads (end of 2016) (km)	High Classified Roads (HCR)-motorways	
	Medium Classified Roads (MCR)-primary roads	Singe Carriageway
		Double Carriageway
	Medium Classified Roads (MCR)-secondary roads	Singe Carriageway
		Double Carriageway
	Other Roads	Singe Carriageway
		Double Carriageway

---

---

Length of Bridges (end of 2016) (M)  
 Length of Tunnels (end of 2016) (M)  
 HCR\_Motorways per 1000 km<sup>2</sup> (end of 2016)  
 MCR\_Primary Roads per 1000 km<sup>2</sup> (end of 2016)  
 MCR\_Secondary Roads per 1000 km<sup>2</sup> (end of 2016)  
 Annual investment budget of roads (US\$) (2016 Fiscal Year)  
 Annual Road Investment by PPP (Average of the last five years (2012-2016) (US\$)  
 Annual Investment Budget of Roads as Percentage of GNP (%) (2016)  
 Annual constructed roads in length (km) (Average of the last five years (2012-2016))  
 Annual constructed double carriageway roads in length (km) (Average of the last five years (2012-2016))  
 Annual constructed single carriageway roads in length (km) (Average of the last five years (2012-2016))  
 Annual constructed tunnels in length (m) (Average of the last five years (2012-2016))  
 Annual constructed bridges in length (m) (Average of the last five years (2012-2016))  
 Design Cost as Percentage of Construction Cost (%) (end of 2016 Prices)

---

5. Question 2: Construction costs of bridges and tunnels

---

Unit Construction Cost Of Tunnels (2016 prices)

- single tube tunnel (US\$/m)
- twin tube tunnel (US\$/m)
- Under water tunnels (US \$/M)

Unit Construction Cost Of Bridges (2016 prices)

- Precasted and pre-stressed simple beam (US\$/m<sup>2</sup>)
- balanced cantiliver bridge (US\$/m<sup>2</sup>)
- cable stayed bridge (US\$/m<sup>2</sup>)
- suspension bridge (US\$/m<sup>2</sup>)
- Pedestrian bridge (US\$/m<sup>2</sup>)

---

6. Question 3: Construction costs of asphalt roads — Single Carriageway Asphalt Roads

---

*Road infrastructure construction costs (2016 prices) (US\$/ km) (for asphalt roads)*

*Countries*

<i>Work title</i>	<i>Road class</i>	<i>Maximum</i>	<i>Average</i>	<i>Minimum</i>
Resurfacing	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
Resurfacing by	HCR_Motorways-Expressways			

---

---

*Road infrastructure construction costs (2016 prices) (US\$/km) (for asphalt roads)*
*Countries*

<i>Work title</i>	<i>Road class</i>	<i>Maximum</i>	<i>Average</i>	<i>Minimum</i>
strengthening	MCR_Primary Roads			
	MCR_Secondary Roads			
Pavement Replacement	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
Reconditioning	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
Reconstruction	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
Expansion (capacity improvement)	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
New construction	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			

---

**7. Question 4: Construction costs of asphalt roads — Double Carriageway Asphalt Roads**


---

*Road infrastructure construction costs (2016 prices) (US\$/lane x km) (for asphalt roads )*
*Countries*

<i>Work title</i>	<i>Road class</i>	<i>Maximum</i>	<i>Average</i>	<i>Minimum</i>
Resurfacing	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
Resurfacing by strengthening	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
Pavement	HCR_Motorways-Expressways			

---

---

*Road infrastructure construction costs (2016 prices) (US\$/lane x km) (for asphalt roads )*

*Countries*

<i>Work title</i>	<i>Road class</i>	<i>Maximum</i>	<i>Average</i>	<i>Minimum</i>
replacement	MCR_Primary Roads			
	MCR_Secondary Roads			
Reconditioning	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
Reconstruction	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
Expansion (capacity improvement)	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
New construction	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			

---

8. Question 5: Construction costs of concrete roads — Single Carriageway Concrete roads

*Road infrastructure construction costs (2016 prices) (US\$/ km) (for concrete roads)*

*Countries*

<i>Work title</i>	<i>Road class</i>	<i>Maximum</i>	<i>Average</i>	<i>Minimum</i>
Resurfacing	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
Resurfacing by strengthening	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
Pavement replacement	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
Reconditioning	HCR_Motorways-Expressways			
	MCR_Primary Roads			

---

---

*Road infrastructure construction costs (2016 prices) (US\$/km) (for concrete roads)*
*Countries*

<i>Work title</i>	<i>Road class</i>	<i>Maximum</i>	<i>Average</i>	<i>Minimum</i>
	MCR_Secondary Roads			
Reconstruction	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
Expansion (capacity improvement)	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
New construction	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			

---

**9. Question 6: Construction costs of concrete roads — Double Carriageway Concrete Roads**


---

*Road infrastructure construction costs (2016 prices) (US\$/lane x km) (for concrete roads )*
*Countries*

<i>Work title</i>	<i>Road class</i>	<i>Maximum</i>	<i>Average</i>	<i>Minimum</i>
Resurfacing	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
Resurfacing by strengthening	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
Pavement replacement	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
Reconditioning	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
Reconstruction	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			

---

---

*Road infrastructure construction costs (2016 prices) (US\$/lane x km) (for concrete roads )*

*Countries*

<i>Work title</i>	<i>Road class</i>	<i>Maximum</i>	<i>Average</i>	<i>Minimum</i>
Expansion (capacity improvement)	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			
New construction	HCR_Motorways-Expressways			
	MCR_Primary Roads			
	MCR_Secondary Roads			

---