



Republic of Turkey
Ministry of Transport, Maritime Affairs
and Communications



GENERAL DIRECTORATE
of HIGHWAYS

Benchmarking Transport Infrastructure Construction Costs

GENEVA

1 - 2 MAY 2018

6th Session

UNECE





OUTLINE

ROAD INFRASTRUCTURE CONSTRUCTION COSTS

- 1. TERMINOLOGY**
- 2. SUGGESTIONS AND CORRECTIONS ON QUESTIONNAIRE**
- 3. ILLUSTRATION OF THE COLLECTED DATA BY TABLES**
- 4. SUGGESTIONS ON THE CONTENT OF THE REPORT**
- 5. EXPECTED ACCOMPLISHMENTS AT THE END OF BENCHMARKING STUDY**





1. TERMINOLOGY

(SHORT SUMMARY WHAT HAVE BEEN
DONE UP TO DATE)





SHORT SUMMARY WHAT HAVE BEEN DONE UP TO DATE ON TERMINOLOGY

- Turkey as leader country for road sub-group prepared road terminology list for benchmarking study and presented during the meetings.
- During the fifth session of the meeting road terminology list prepared and finalized by Turkey were presented. Than group member countries discussed and made some corrections on the presented document. By this way the agreed terminology list was finalized by the group during fifth session.
- However the terminology list corrected during the fourth session was sent by secretary to UN member countries to make corrections, additions and suggestions on the list.
- Therefore during sixth session if any corrections and additions made by UN member countries will be discussed and finalized during sixth and seventh session.



2. SUGGESTIONS AND CORRECTIONS ON BENCHMARKING QUESTIONNAIRE (RECOMENDED DURING FOURTH SESSION OF THE MEETINGS BUT NOT APPROVED YET)





Social and Economic Indicators

GNP (US \$) (end of 2016)		
POPULATION (end of 2016)		
GNP Per Capita (US \$) (end of 2016)		
Surface Area (Km2)*		
Density (end of 2016) Person/m ² ←————→		
LENGTH OFROADS (end of 2016) (Km)	High Classified Roads (HCR)-MOTORWAYS	
	Medium Classified Roads (MCR)-PRIMARY ROADS	Single Carriageway
		Double Carraigeway
	Medium Classified Roads (MCR)- SECONDARY ROADS	Single Carriageway
		Double Carraigeway
OTHER ROADS	Single Carriageway	
	Double Carraigeway	
Length of Bridges (end of 2016) (m)		
Length of Tunnels (end of 2016) (m)**		
HCR_Motorways per 1000 Km2 (end of 2016)		
MCR_Primary Roads per 1000 Km2 (end of 2016)		
MCR_Secondary Roads per 1000 Km2 (end of 2016)		
ANNUAL INVESTMENT BUDGET OF ROADS (US \$) (2016 Fiscal Year)		
ANNUAL ROAD INVESTMENT BY PPP (US \$) (Average of the last five years 2012-2016)		
Annual Investment Budget of Roads as Percentage of GNP (%) (including yearly PPP investment)		
ANNUAL CONSTRUCTED ROADS IN LENGTH (KM) (end of 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)		

Unit for density should be changed from Person/m² to Person/Km²

* Lakes and dams are excluded from the surface area.

** All tunnels are converted to single tube tunnels.



Motorways and Expressways are High Capacity Roads therefore they are double carriageway roads. As Turkey our suggestion is to delete Motorways-Expressways rows from all work items. In addition Expansion (Capacity Improvement) work title row should be deleted from single carriageway roads benchmarking table sheets.

Construction Costs of Asphalt Roads

SINGLE CARRIAGEWAY ASPHALT ROADS					
ROAD INFRASTRUCTURE CONSTRUCTION COSTS (2016 Prices) (US \$/Km) (For Asphalt Roads)					
COUNTRIES					
Work Title	Road Class	MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (Km)
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				
Expansion (Capacity Improvement)	HCR_Motorways-Expressways				
	MCR_Primary Roads				
	MCR_Secondary Roads				
New Construction	HCR_Motorways-Expressways				
	MCR_Primary Roads				
	MCR_Secondary Roads				

Construction Costs of Asphalt Roads

SINGLE CARRIAGEWAY ASPHALT ROADS					
ROAD INFRASTRUCTURE CONSTRUCTION COSTS (2016 Prices) (US \$/Km) (For Asphalt Roads)					
COUNTRIES					
Work Title	Road Class	MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (Km)
Resurfacing	MCR_Primary Roads				
	MCR_Secondary Roads				
Resurfacing by Strengthening	MCR_Primary Roads				
	MCR_Secondary Roads				
Pavement Replacement	MCR_Primary Roads				
	MCR_Secondary Roads				
Reconditioning	MCR_Primary Roads				
	MCR_Secondary Roads				
Reconstruction	MCR_Primary Roads				
	MCR_Secondary Roads				
New Construction	MCR_Primary Roads				
	MCR_Secondary Roads				



3. ILLUSTRATION OF THE COLLECTED DATA BY TABLES





ILLUSTRATION OF THE COLLECTED DATA BY TABLES

- I. SOCIAL AND ECONOMIC INDICATORS
- II. TUNNEL AND BRIDGE CONSTRUCTION COSTS
- III. CONSTRUCTION COSTS OF ASPHALT ROADS
- IV. CONSTRUCTION COSTS OF CONCRETE ROADS



I- SOCIAL AND ECONOMIC INDICATORS

		COUNTRY1	COUNTRY2	COUNTRY3
GNP (US \$) (end of 2016)					
POPULATION (end of 2016)					
GNP Per Capita (US \$) (end of 2016)					
Surface Area (Km2)*					
Density (end of 2016) Person/Km2					
LENGTH OF ROADS (end of 2016) (Km)	High Classified Roads (HCR)-MOTORWAYS				
	Medium Classified Roads (MCR)-PRIMARY ROADS	Single Carriageway			
		Double Carraigeway			
	Medium Classified Roads (MCR)-SECONDARY ROADS	Single Carriageway			
		Double Carraigeway			
	OTHER ROADS	Single Carriageway			
Double Carraigeway					
Length of Bridges (end of 2016) (m)					
Length of Tunnels (end of 2016) (m)**					
HCR_Motorways per 1000 Km2 (end of 2016)					
MCR_Primary Roads per 1000 Km2 (end of 2016)					
MCR_Secondary Roads per 1000 Km2 (end of 2016)					
ANNUAL INVESTMENT BUDGET OF ROADS (US \$) (2016 Fiscal Year)					
ANNUAL ROAD INVESTMENT BY PPP (US \$) (Average of the last five years 2012-2016)					
Annual Investment Budget of Roads as Percentage of GNP (%) (including yearly PPP investment)					
ANNUAL CONSTRUCTED ROADS IN LENGTH (KM) (end of 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)					



II- TUNNEL CONSTRUCTION COSTS (US\$/M) END OF 2016 PRICES

COUNTRIES	SINGLE TUBE TUNNEL (US \$/M)		TWIN TUBE TUNNEL (US \$/M)		UNDER WATER TUNNELS (US \$/M)	
	AVERAGE	REGARDED LENGTH OF PROJECTS (KM)	AVERAGE	REGARDED LENGTH OF PROJECTS (KM)	AVERAGE	REGARDED LENGTH OF PROJECTS (KM)
COUNTRY1
COUNTRY2
COUNTRY3
COUNTRY4
COUNTRY5
....
....



II- BRIDGE CONSTRUCTION COSTS (US\$/M²) END OF 2016 PRICES

COUNTRIES	PRESTRESSED AND PRECASTED SIMPLE BEAM (US \$/M ²)		BALANCED CANTILIVER BRIDGE (US \$/M ²)		CABLE STAYED BRIDGE (US \$/M ²)	
	AVERAGE	REGARDED LENGTH OF PROJECTS (KM)	AVERAGE	REGARDED LENGTH OF PROJECTS (KM)	AVERAGE	REGARDED LENGTH OF PROJECTS (KM)
COUNTRY1						
COUNTRY2						
COUNTRY3						
COUNTRY4						
COUNTRY5						
....						
....						



II- BRIDGE CONSTRUCTION COSTS (US\$/M²) END OF 2016 PRICES

COUNTRIES	SUSPENSION BRIDGE (US \$/M ²)		PEDESTRIAN BRIDGE (US \$/M ²)		SUSPENSION + CABLE STAYED BRIDGE (US \$/M ²)	
	AVERAGE	REGARDED LENGTH OF PROJECTS (KM)	AVERAGE	REGARDED LENGTH OF PROJECTS (KM)	AVERAGE	REGARDED LENGTH OF PROJECTS (KM)
COUNTRY1						
COUNTRY2						
COUNTRY3						
COUNTRY4						
COUNTRY5						
....						
....						



FUNCTIONAL ROAD TYPES

HCR_Motorways-Expressway	<p>This type of roads are High Capacity Roads such as Motorways and Expressways. This class roads are full access controlled or half access controlled double carriageway highways. Full access controlled highways are generally tolled even there are free motorways in some European countries such as Germany and named as autobahn. Not only physical but also geometric capacity of this type of roads are high. The applied speed limits on this roads are also higher.</p>
MCR-Primary Roads	<p>This type of roads are Medium Capacity Roads such as Primary Roads. This class roads are not access controlled roads. They are free of charged roads. The financial source is taxes. They are double or single carriageway of highways. The geometric and physical capacity of this type of roads are medium. They are also main arterials and principal roads of national highways system of countries. The applied speed limits on this roads are lower than HCR.</p>
MCR-Secondary Roads	<p>This type of roads are Medium Capacity Roads such as Secondary Roads. This class roads are also not access controlled roads. They are also free of charged roads. The financial source is taxes. They are double or single carriageway of highways. The geometric and physical capacity of this type of roads are also medium but relatively lower than MCR_Primary Roads. They are important connectors of the national highways system to towns, connecting cities to towns also. The applied speed limits on this roads are lower than HCR.</p>



DEFINITIONS OF ROAD INVESTMENTS

Resurfacing	Placing a new surface of an existing road in order to service in good condition, to increase skid resistance, to seal by aiming to preserve road from negative atmospheric conditions, to increase driver comfort, to extend pavement life, etc. The aim is not to increase the bearing capacity of pavement however to extend lifetime by preserving the road from bad weather conditions.
Resurfacing by Strengthening	Renewing of road surface with reinstalling bituminous layer either by directly or by removing determined depth of pavement by milling in order to increase bearing capacity of road and to eliminate road defects.
Pavement Replacement	Renewing of the pavement either by removing the total thickness of all paving layers, existing asphalt layers from an existing roadway or not, and providing a new paved surface without changing capacity or geometry of the road, i.e. without changing subgrade.
Reconditioning	Reconditioning includes improvement of grades, curves, intersections or sight distances in order to improve traffic safety or changing the subgrade to widen shoulders or to correct structural problems in addition to resurfacing or pavement replacement.
Reconstruction	Total rebuilding of both pavement and subgrade of an existing highway. Work which either changes the location of the existing subgrade shoulder points or removes all of the existing pavement and base course for at least 50% of the length of the project. In other words it is the rebuilding of an existing roads' pavement and subgrade to correct road geometry, to increase road safety, to ease maintenance works and to increase preservation.
Expansion (Capacity Improvement)	Same as reconstruction and also involves the construction of additional through travel lanes beyond the work associated with reconstruction.
New Construction	There is not any existing road for this kind of project. It is totally new building of a road with all parts; subgrade, pavement, structures, etc.



III -CONSTRUCTION COSTS OF ASPHALT ROADS

SINGLE CARRIAGEWAY ASPHALT ROADS INFRASTRUCTURE CONSTRUCTION COSTS (US \$/KM) END OF 2016 PRICES

1. Resurfacing

COUNTRIES	MCR_PRIMARY ROADS				MCR_SECONDARY ROADS			
	MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)	MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)
COUNTRY1								
COUNTRY2								

2. Resurfacing by Strengthening

COUNTRIES	MCR_PRIMARY ROADS				MCR_SECONDARY ROADS			
	MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)	MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)
COUNTRY1								
COUNTRY2								

3. Pavement Replacement

COUNTRIES	MCR_PRIMARY ROADS				MCR_SECONDARY ROADS			
	MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)	MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)
COUNTRY1								
COUNTRY2								



III -CONSTRUCTION COSTS OF ASPHALT ROADS

SINGLE CARRIAGEWAY ASPHALT ROADS INFRASTRUCTURE CONSTRUCTION COSTS (US \$/KM) END OF 2016 PRICES

4. Reconditioning

COUNTRIES	MCR_PRIMARY ROADS				MCR_SECONDARY ROADS			
	MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)	MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)
COUNTRY1								
COUNTRY2								

5. Reconstruction

COUNTRIES	MCR_PRIMARY ROADS				MCR_SECONDARY ROADS			
	MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)	MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)
COUNTRY1								
COUNTRY2								

6. New Construction

COUNTRIES	MCR_PRIMARY ROADS				MCR_SECONDARY ROADS			
	MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)	MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)
COUNTRY1								
COUNTRY2								



III -CONSTRUCTION COSTS OF ASPHALT ROADS

DOUBLE CARRIAGEWAY ASPHALT ROADS INFRASTRUCTURE CONSTRUCTION COSTS (US \$/KM) END OF 2016 PRICES

WORK TITLE	ROAD CLASS	COUNTRIES					
		COUNTRY1				COUNTRY2
		MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)		
Resurfacing	HCR_Motorways-Expressways						
	MCR_Primary Roads						
	MCR_Secondary Roads						



III -CONSTRUCTION COSTS OF ASPHALT ROADS

DOUBLE CARRIAGEWAY ASPHALT ROADS INFRASTRUCTURE CONSTRUCTION COSTS (US \$/KM) END OF 2016 PRICES

WORK TITLE	ROAD CLASS	COUNTRIES					
		COUNTRY1				COUNTRY2
		MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)		
Resurfacing by Strengthening	HCR_Motorways-Expressways						
	MCR_Primary Roads						
	MCR_Secondary Roads						



III -CONSTRUCTION COSTS OF ASPHALT ROADS

DOUBLE CARRIAGEWAY ASPHALT ROADS INFRASTRUCTURE CONSTRUCTION COSTS (US \$/KM) END OF 2016 PRICES

WORK TITLE	ROAD CLASS	COUNTRIES					
		COUNTRY1				COUNTRY2
		MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)		
Pavement Replacement	HCR_Motorways-Expressways						
	MCR_Primary Roads						
	MCR_Secondary Roads						



III -CONSTRUCTION COSTS OF ASPHALT ROADS

DOUBLE CARRIAGEWAY ASPHALT ROADS INFRASTRUCTURE CONSTRUCTION COSTS (US \$/KM) END OF 2016 PRICES

WORK TITLE	ROAD CLASS	COUNTRIES					
		COUNTRY1				COUNTRY2
		MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)		
Reconditioning	HCR_Motorways-Expressways						
	MCR_Primary Roads						
	MCR_Secondary Roads						



III -CONSTRUCTION COSTS OF ASPHALT ROADS

DOUBLE CARRIAGEWAY ASPHALT ROADS INFRASTRUCTURE CONSTRUCTION COSTS (US \$/KM) END OF 2016 PRICES

WORK TITLE	ROAD CLASS	COUNTRIES					
		COUNTRY1				COUNTRY2
		MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)		
Reconstruction	HCR_Motorways-Expressways						
	MCR_Primary Roads						
	MCR_Secondary Roads						



III -CONSTRUCTION COSTS OF ASPHALT ROADS

DOUBLE CARRIAGEWAY ASPHALT ROADS INFRASTRUCTURE CONSTRUCTION COSTS (US \$/KM) END OF 2016 PRICES

WORK TITLE	ROAD CLASS	COUNTRIES					
		COUNTRY1				COUNTRY2
		MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)		
Expansion (Capacity Enlargement)	HCR_Motorways- Expressways						
	MCR_Primary Roads						
	MCR_Secondary Roads						



III -CONSTRUCTION COSTS OF ASPHALT ROADS

DOUBLE CARRIAGEWAY ASPHALT ROADS INFRASTRUCTURE CONSTRUCTION COSTS (US \$/KM) END OF 2016 PRICES

WORK TITLE	ROAD CLASS	COUNTRIES					
		COUNTRY1				COUNTRY2
		MAXIMUM	AVERAGE	MINIMUM	LENGTH OF REGARDED PROJECTS (KM)		
New Construction	HCR_Motorways-Expressways						
	MCR_Primary Roads						
	MCR_Secondary Roads						



4. SUGGESTIONS ON THE CONTENT OF THE REPORT





TABLE OF CONTENTS

- **Introduction**

The introduction sets the scene for the main body of the report. The aims and objectives of the report should be explained in detail. Any problems or limitations in the scope of the report should be identified, and a description of research methods should be included

- **Literature Review (National and International Experiences)**

(All countries and national organizations who made presentation is supposed to sent 1 page or at list several paragraphs which explains their experience about the study they are doing on benchmarking transportation infrastructure construction costs to secretary)

Also survey of publications similar to benchmarking study should be summarized

- **Methodology (Way of work)**

Information under this heading may include: a list of main terminology, how it is structured and agreed, and also information on detailed terminology covering list; explanations of procedures how the data is collected and relevant questionnaire is structured, including sources of data and details of any necessary data collection procedures; reference to any problems encountered and subsequent changes in procedure.



TABLE OF CONTENTS

- **Results (Collected Data and Findings)**

This section should include a summary of the collected data and findings of the benchmarking together with any necessary diagrams, graphs or tables of gathered data.

- **Discussion**

- **Conclusions**

- Recommendations for action
- Suggestions for further research

- **References**

- **Appendices**



- The questionnaire results allow to create a database for road infrastructure construction costs according to road classification and work type. However there is a question how these data should be presented and illustrated. Also other question is how these data should be analyzed.
- Data would be presented as a list of benchmarking costs according to countries by work type and by road type.
- These data also would be presented as a table or graph showing the list of averages of all countries.
- Other presentation may be list of averages of investment costs by work and road class type according to UN regions or UNECE regions according to study covering geographical area such as Europe, Asia, America, Central Europe, Central Asia, Africa, North America, South America, Baltic Countries, Caucasian Counties, etc.
- Data also allow us to check whether there is a relation between per km costs and countries population, density, land square, GNP and other economic and social indicators.

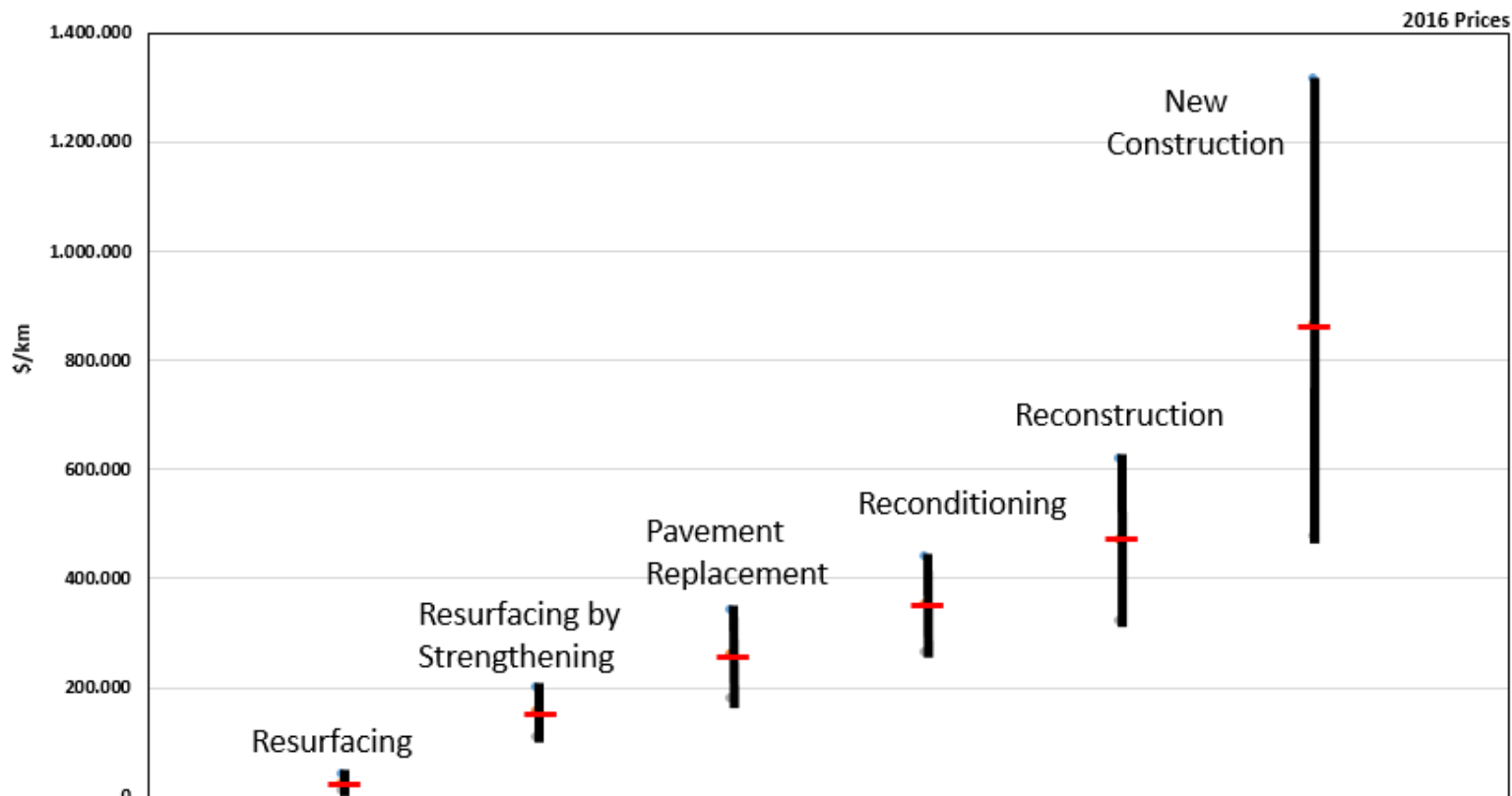


SAMPLE GRAPHS

(AVERAGE AND RANGE OF ACTUAL
ROADS WORKS COSTS)



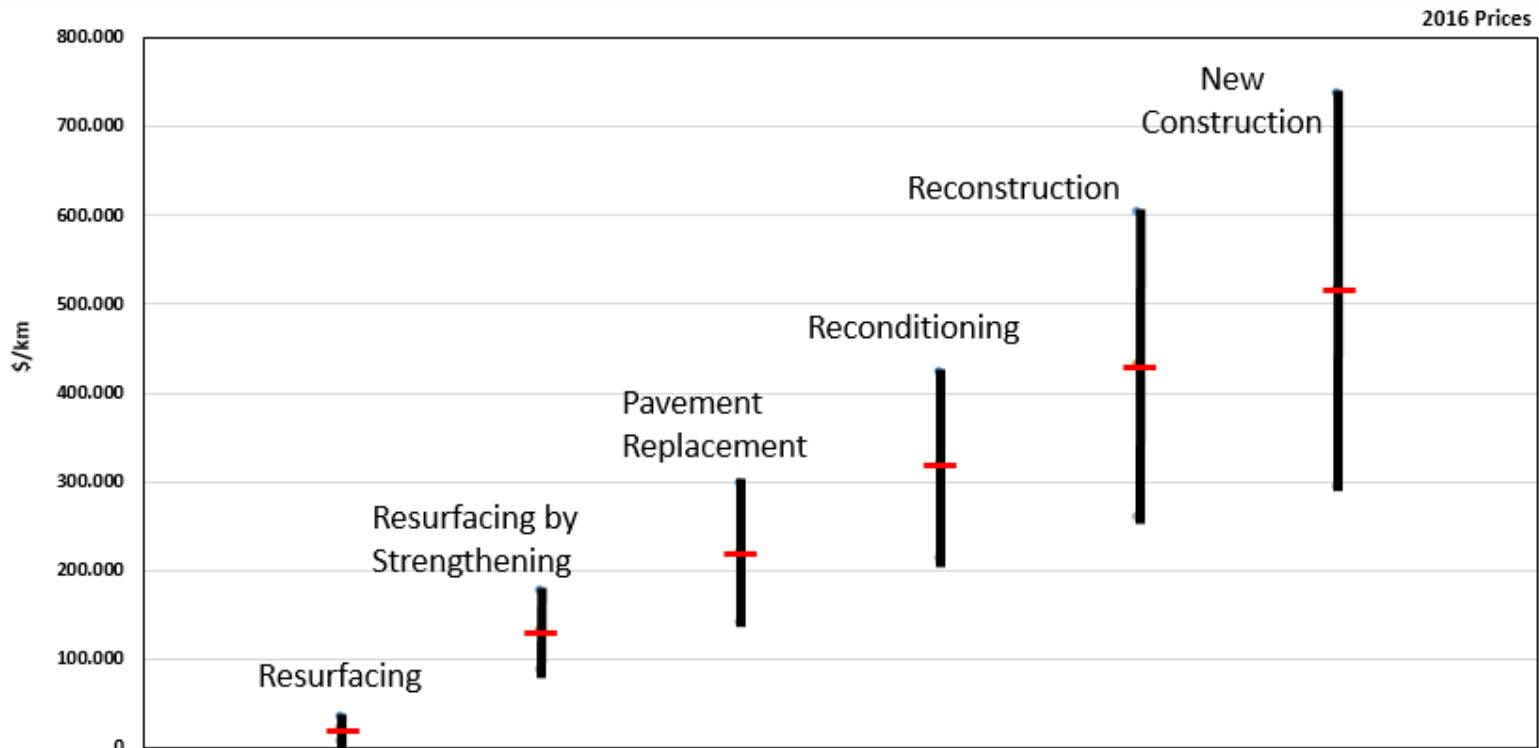
CONSTRUCTION COSTS OF SINGLE CARRIAGEWAY ASPHALT ROADS (US \$/Km) PRIMARY ROADS



MAXIMUM	38.768	198.862	341.566	437.571	616.823	1.314.653
AVERAGE	23.615	153.628	258.958	350.850	467.679	864.903
MINIMUM	8.461	108.394	176.349	264.130	318.534	475.697



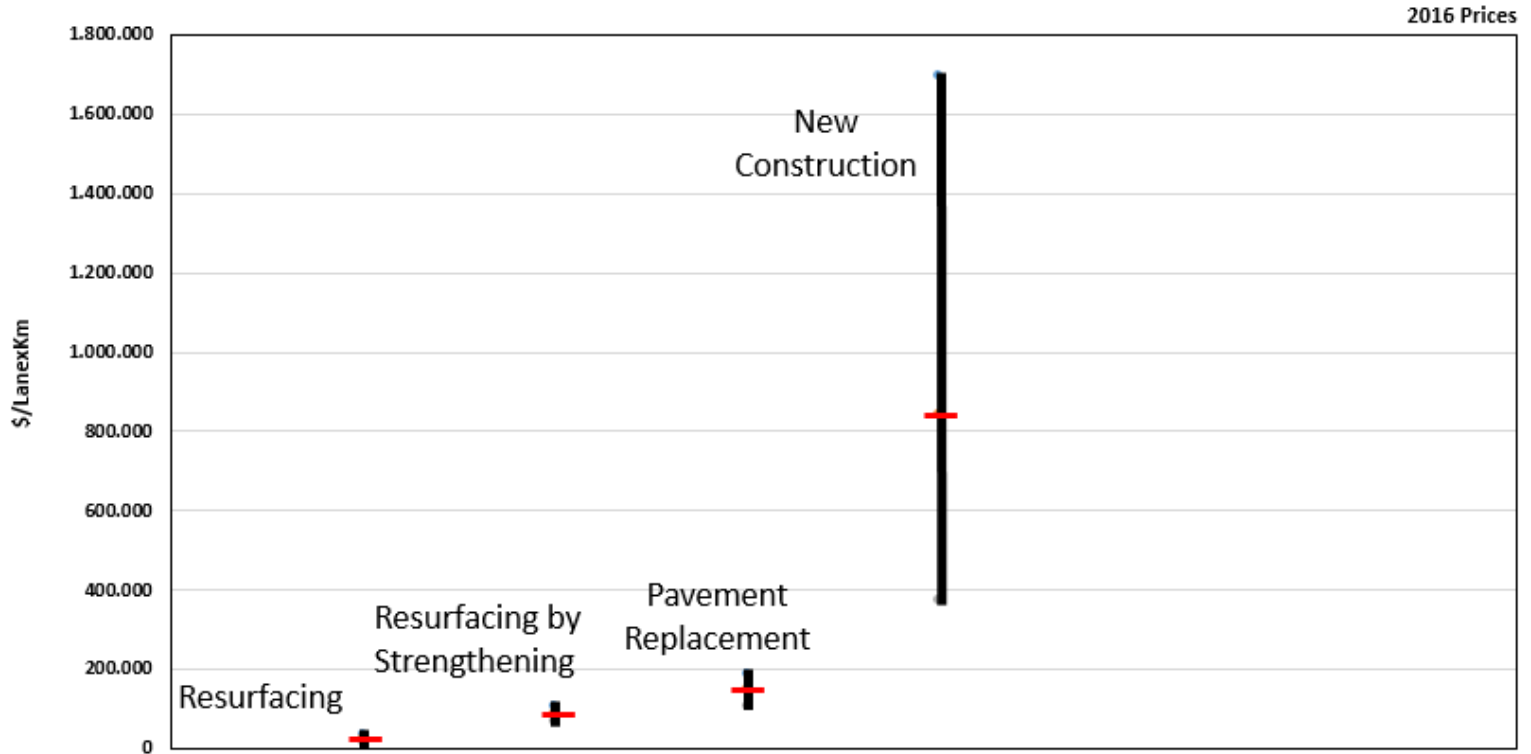
CONSTRUCTION COSTS OF SINGLE CARRIAGEWAY ASPHALT ROADS (US \$/Km) SECONDARY ROADS



MAXIMUM	35.000	175.932	298.250	423.395	602.647	737.087
AVERAGE	20.885	131.324	219.665	318.076	430.926	515.563
MINIMUM	6.769	86.716	141.079	212.757	259.204	294.040



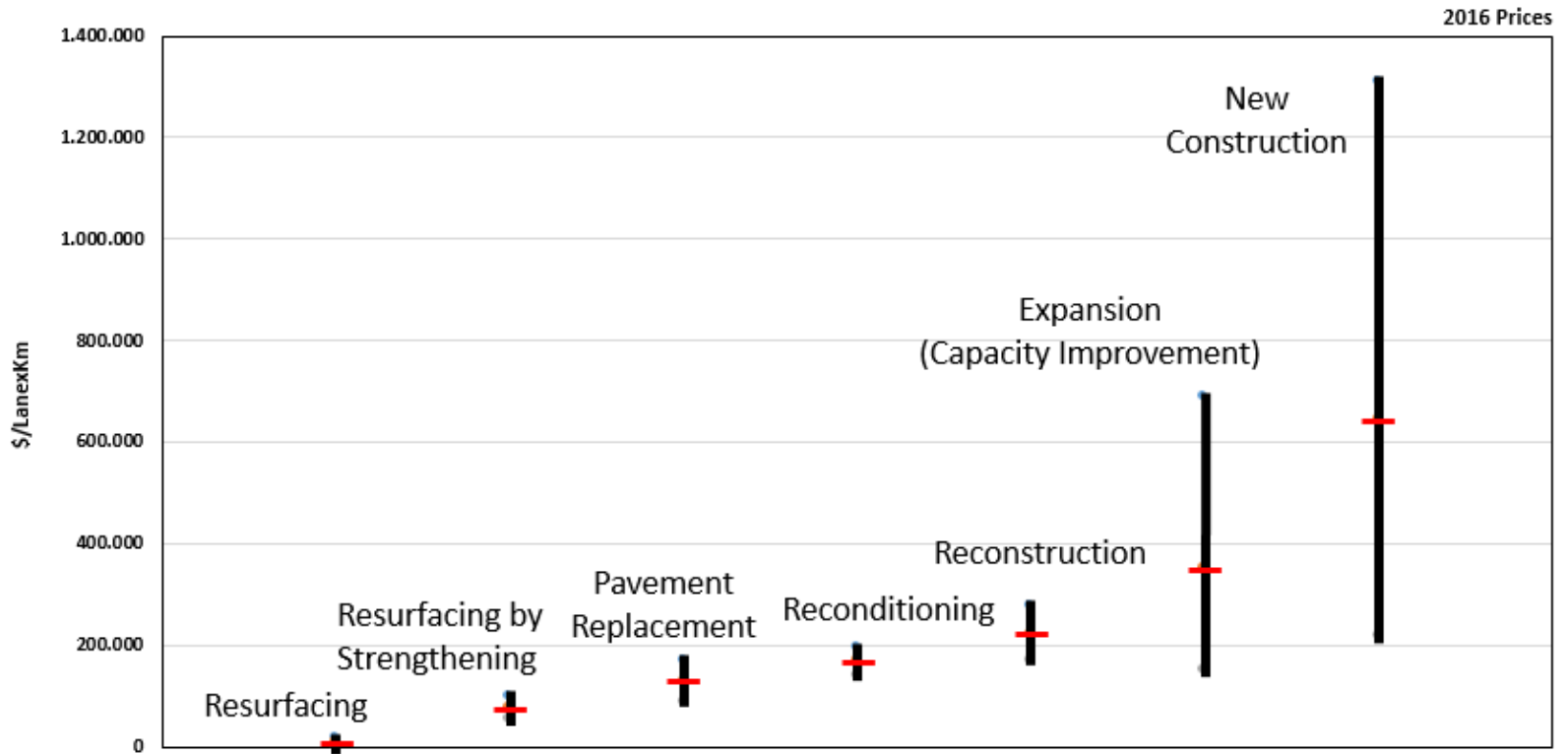
CONSTRUCTION COSTS OF DOUBLE CARRIAGEWAY ASPHALT ROADS (US \$/LanexKm) MOTORWAYS-EXPRESSWAYS



MAXIMUM	32.045	105.163	186.709	1.696.339
AVERAGE	23.726	85.100	146.259	841.578
MINIMUM	15.684	65.037	105.809	371.013



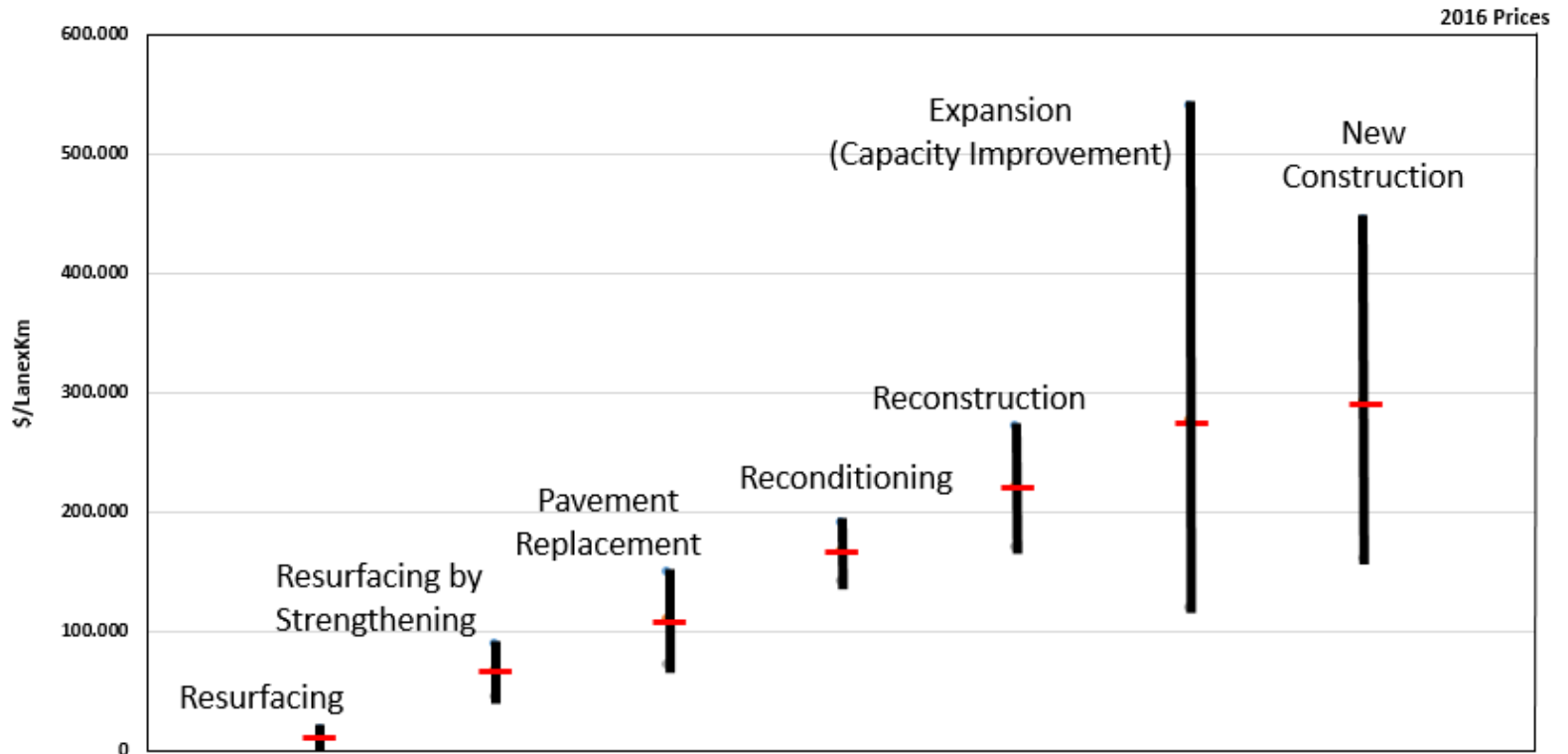
CONSTRUCTION COSTS OF DOUBLE CARRIAGEWAY ASPHALT ROADS (US \$/LanexKm) PRIMARY ROADS



MAXIMUM	19.384	99.431	170.783	196.907	277.571	690.907	1.310.338
AVERAGE	11.807	76.814	129.479	169.275	223.638	352.232	644.577
MINIMUM	4.231	54.197	88.174	141.643	169.705	150.879	216.472



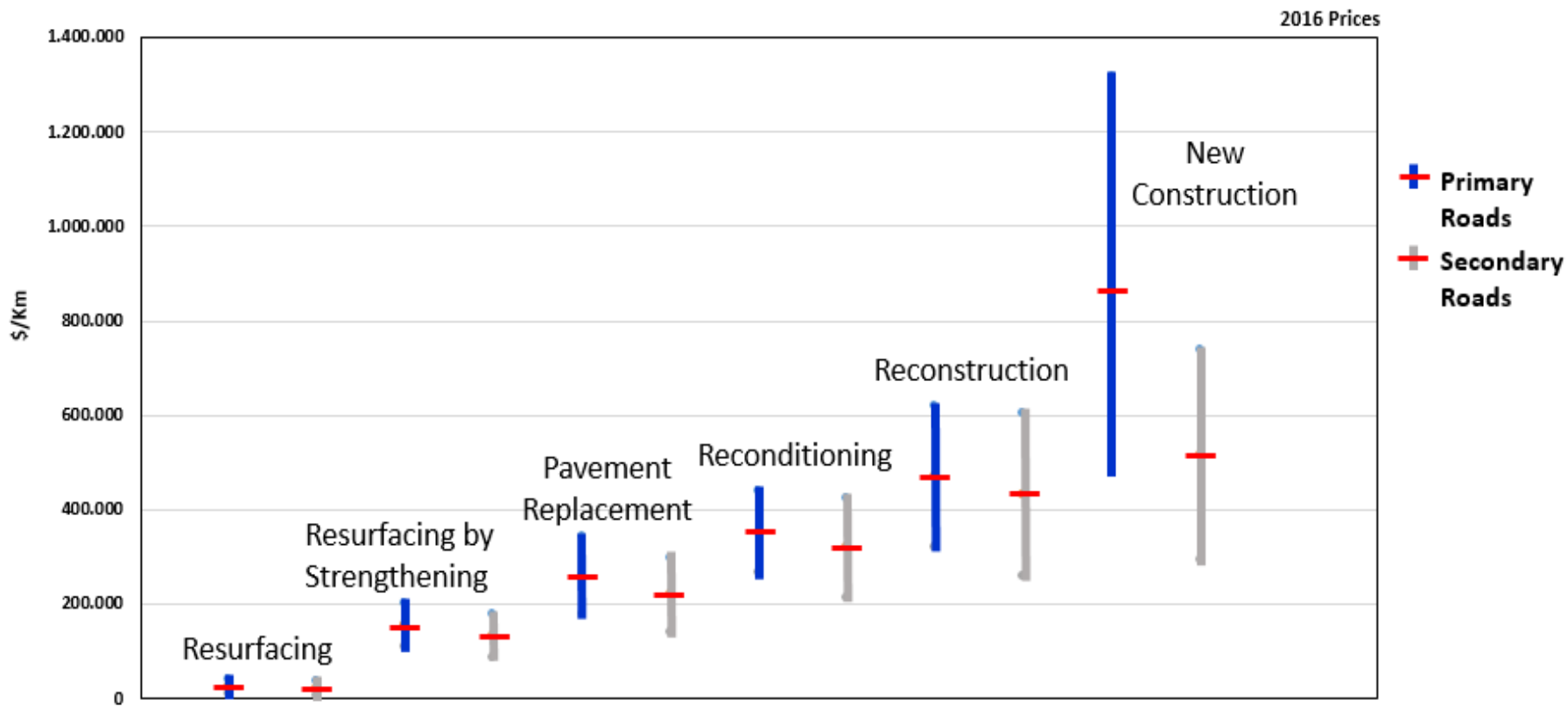
CONSTRUCTION COSTS OF DOUBLE CARRIAGEWAY ASPHALT ROADS (US \$/LanexKm) SECONDARY ROADS



MAXIMUM	17.500	87.966	149.125	190.528	271.191	539.963	443.721
AVERAGE	10.442	65.662	109.832	165.836	220.198	275.279	291.922
MINIMUM	3.385	43.358	70.540	141.143	169.205	117.917	160.557



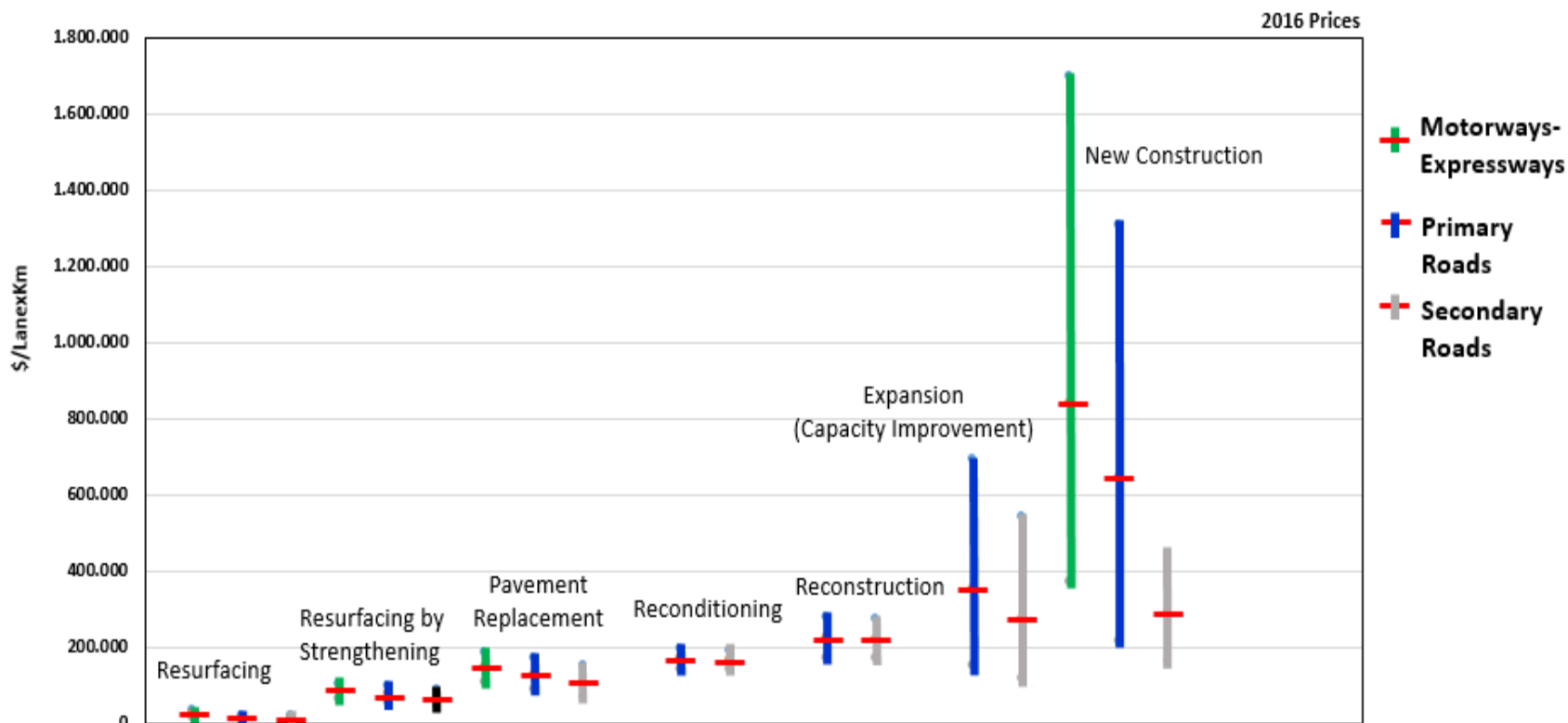
CONSTRUCTION COSTS OF SINGLE CARRIAGEWAY ASPHALT ROADS (US \$/Km)



MAXIMUM	38.768	35.000	198.862	175.932	341.566	298.250	437.571	423.395	616.823	602.647	1.314.653	737.087
AVERAGE	23.615	20.885	153.628	131.324	258.958	219.665	350.850	318.076	467.679	430.926	864.903	515.563
MINIMUM	8.461	6.769	108.394	86.716	176.349	141.079	264.130	212.757	318.534	259.204	475.697	294.040



CONSTRUCTION COSTS OF DOUBLE CARRIAGEWAY ASPHALT ROADS (US \$/LanexKm)



MAXIMUM	32.045	19.384	17.500	105.163	99.431	87.966	186.709	170.783	149.125	N.A	196.907	190.528	N.A	277.571	271.191	N.A	690.907	339.963	1.696.339	1.310.338	443.721
AVERAGE	23.726	11.807	10.442	85.100	76.814	65.662	146.259	129.479	109.832	N.A	169.275	165.836	N.A	223.638	220.198	N.A	352.232	275.279	841.578	644.577	291.922
MINIMUM	15.684	4.231	3.385	65.037	54.197	43.358	105.809	88.174	70.540	N.A	141.643	141.143	N.A	169.705	169.205	N.A	150.879	117.917	371.013	216.472	160.557



5. EXPECTED ACCOMPLISHMENTS AT THE END OF BENCHMARKING STUDY





EXPECTED ACCOMPLISHMENTS

- The agreed terminology allow to the UNECE region countries to understand each other mutually and to set out a classification list of road infrastructure projects
- By this study a common terminology will be in hand for the follow-up studies and for sector
- The benchmarking questionnaire results allow to create a database for road infrastructure construction costs according to road classification and work type. By this way sector will have a good database in hand
- The questionnaire result allow us to have database for the regional construction costs benchmarks
- Transport infrastructure cost data could be the basis for carrying out financial and economical feasibility studies



THANK YOU FOR YOUR ATTENTION

Mücahit ARMAN (Presented By)
Gökhan Macit
Leyla ÜNAL
Fatma ORHAN

GENERAL DIRECTORATE OF TURKISH HIGHWAYS
Ministry of Transport, Maritime Affairs and
Communications