



Group of Experts on Benchmarking Transport Infrastructure Construction Costs - rail

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Małgorzata Kopczyńska
PKP Polish Railway Lines JSC
TER Deputy Manager

Leader – PKP Polish Railway Lines JSC

In cooperation with:

- **UNECE Trans-European Railway (TER)**
- **International Union of Railways (UIC)**
- **Economic Cooperation Organization (ECO)**

Source of information

- **individual countries** (Bulgaria, Croatia, Finland, Poland, Turkey)
- **TER** (data from annual reports)
- **ECO** (ECO-ECE-ISdB GIS project)

Questionnaires

	V<120	120<V≤160 km/h	160<V≤200 km/h	200<V≤250 km/h	V>250 km/h	other speed limit (please specify)	type of line (electrified, non- electrified, number of tracks, gauge)	organisation responsible for construction
1								
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Questionnaires

Project	Start date	End date	Construction costs of the project	Prices of Currency (year)	Line speed design	Rail work type	Type of line	Number of tracks	Length of the project excluding tunnels and bridges/viaducts in km	Number of tunnels	Length of tunnels in km	Number of bridges/viaducts	Length of bridges/viaducts in km	Costs of bridges/viaducts	Total length of the project in km	Number of active level crossings	Costs of level crossings	Number of stations	Costs of stations	Number of over/underpasses for pedestrians	Costs of over/underpasses
1															0						
2															0						
3															0						

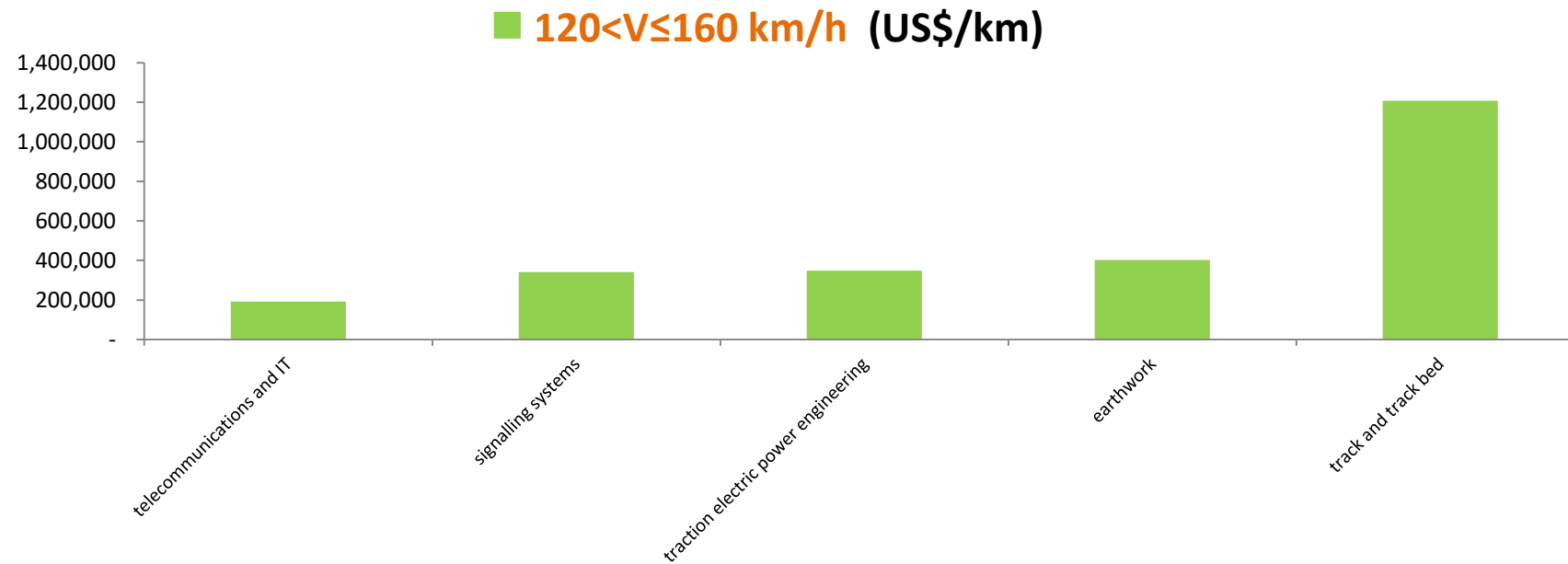
Content:

Project,
 Start date,
 End date,
 Construction costs of the project,
 Currency,
 Prices of (year),
 Line speed design,
 Rail work type,
 Type of line,
 Number of tracks,
 Length of the project excluding tunnels and bridges/viaducts in km,
 Number of tunnels,
 Length of tunnels in km,
 Costs of tunnels,

Number of bridges/viaducts,
 Length of bridges/viaducts in km ,
 Costs of bridges/viaducts,
 Total length of the project in km,
 Number of active level crossings,
 Costs of level crossings,
 Number of stations,
 Costs of stations,
 Number of over/underpasses for pedestrians,
 Costs of over/underpasses .

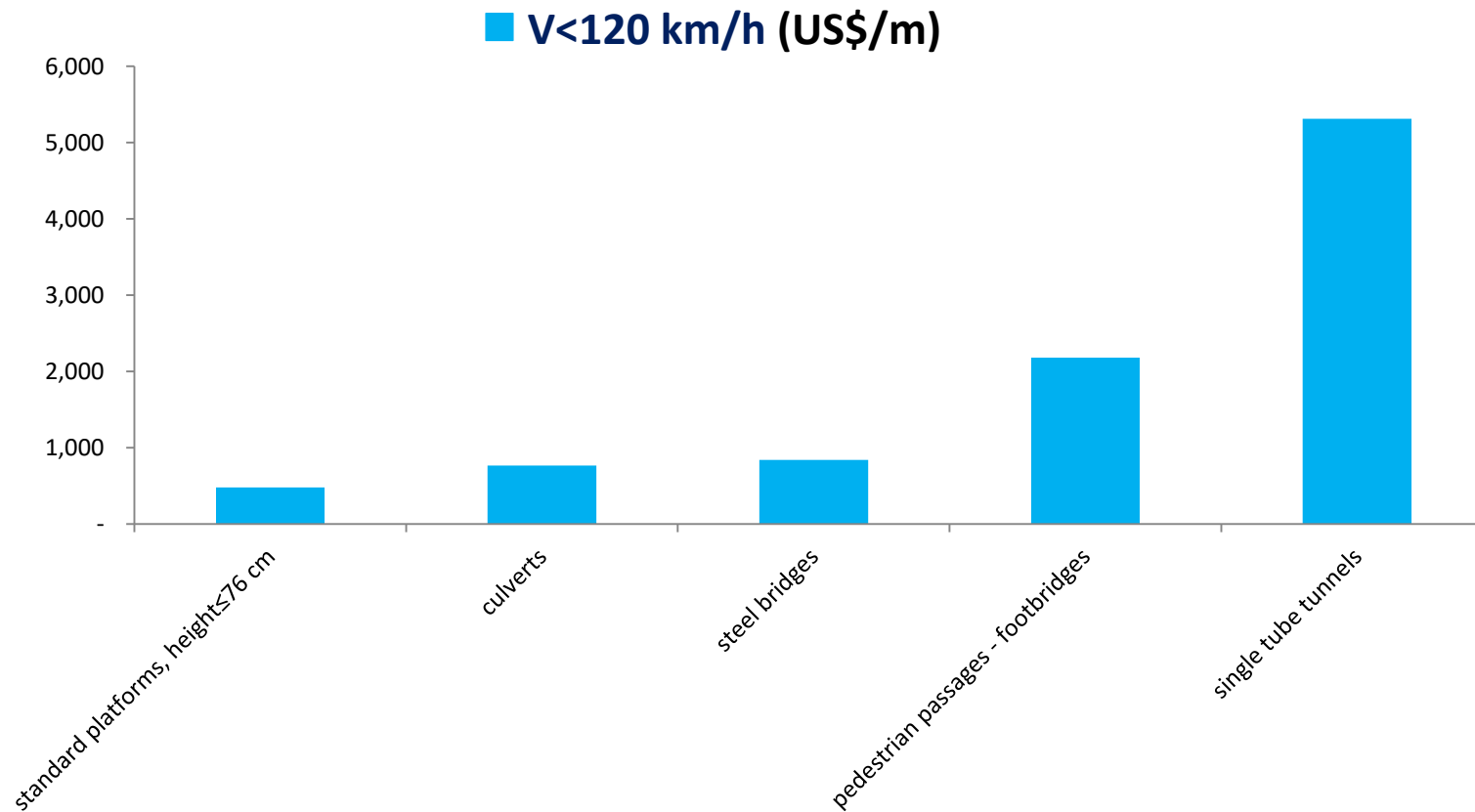
Data from individual countries - examples

Bulgaria - cost of upgrades of infrastructure elements expressed in US\$/km



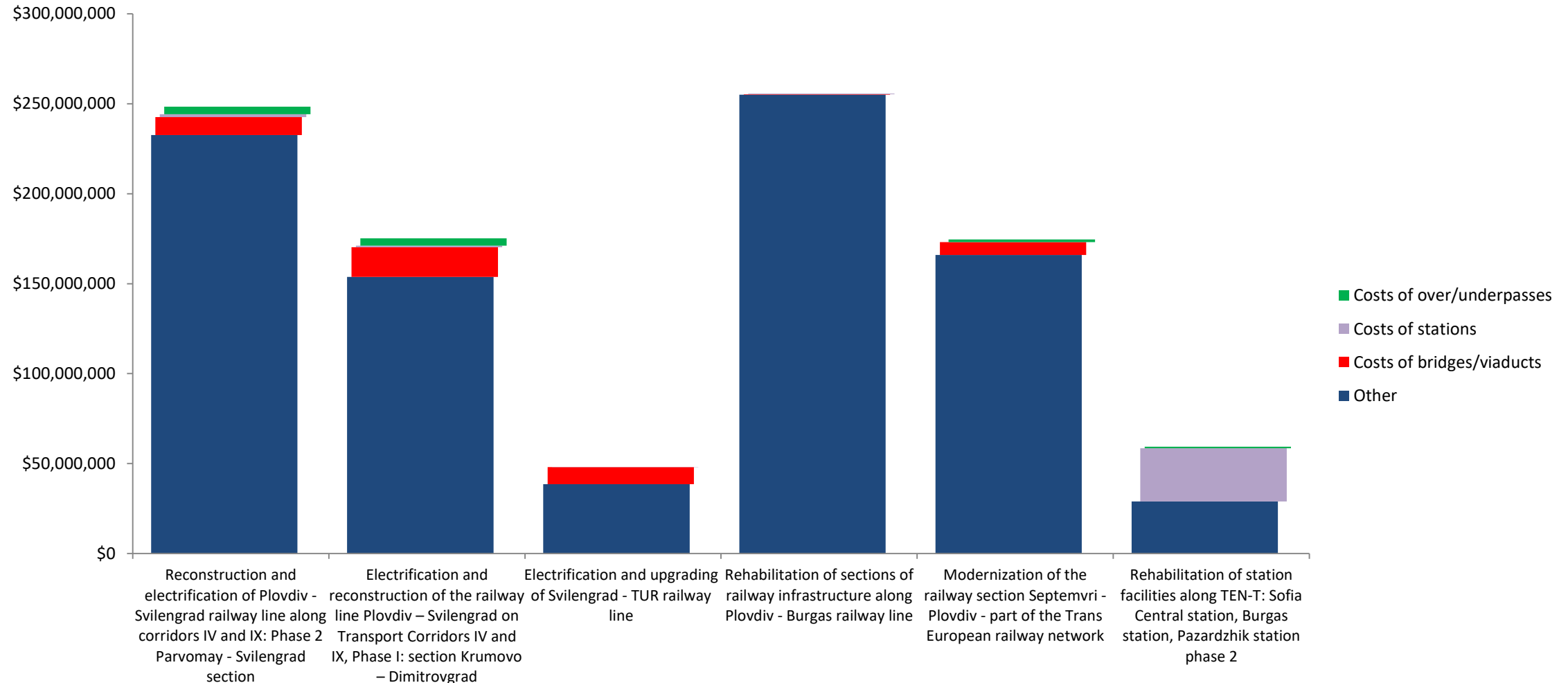
Data from individual countries - examples

Bulgaria - cost of renewal of infrastructure elements expressed in US\$/m



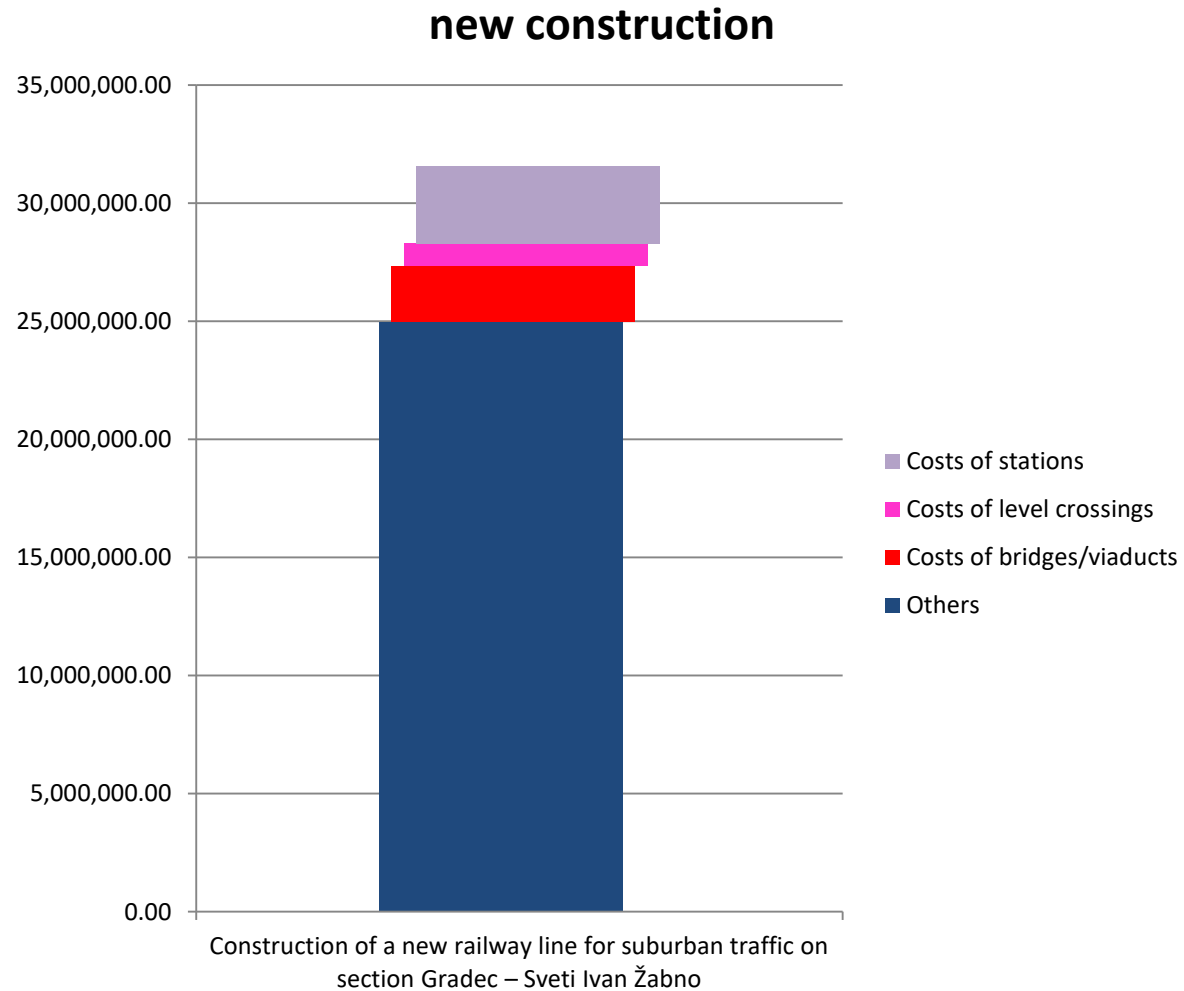
Data from individual countries - examples

Bulgaria - allocation of costs for projects



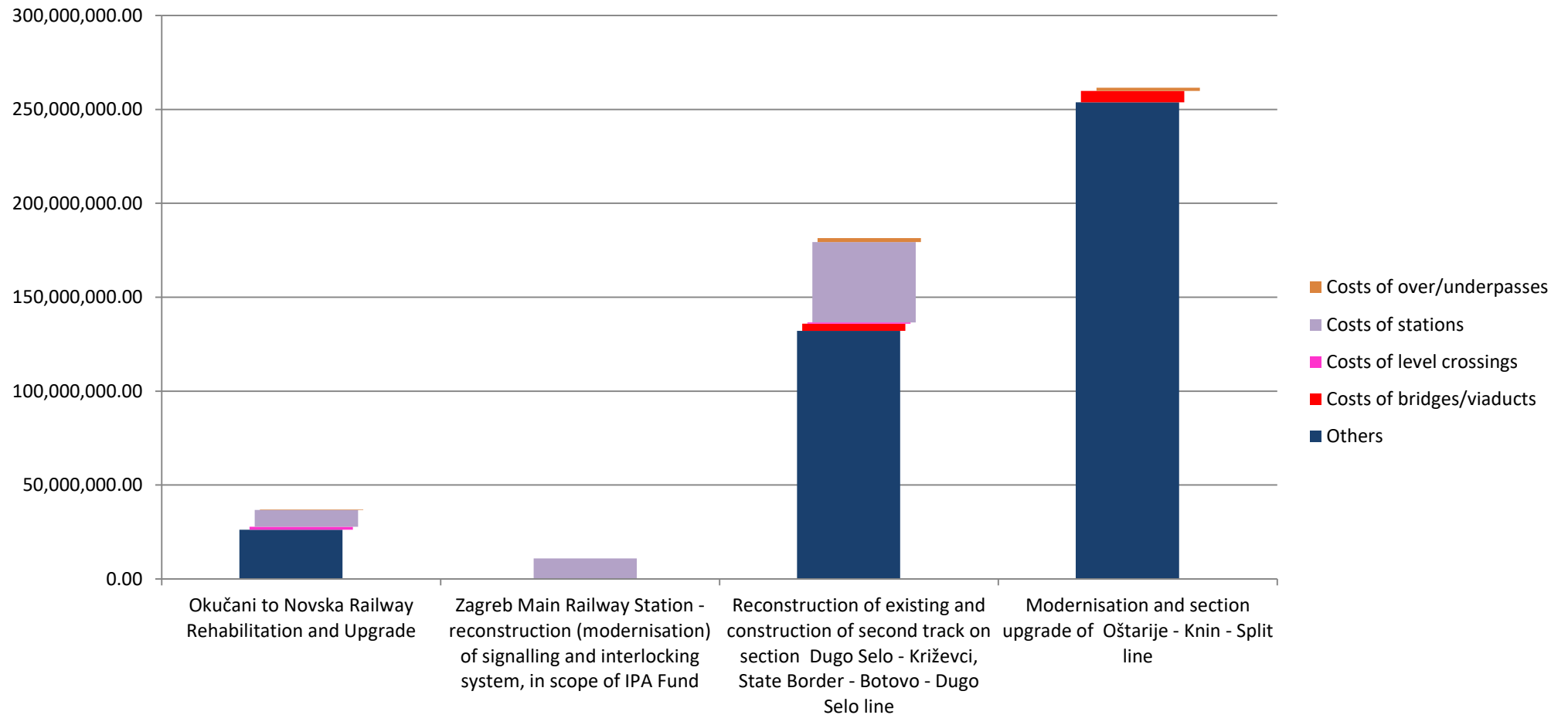
Data from individual countries - examples

Croatia - allocation of costs for new construction projects



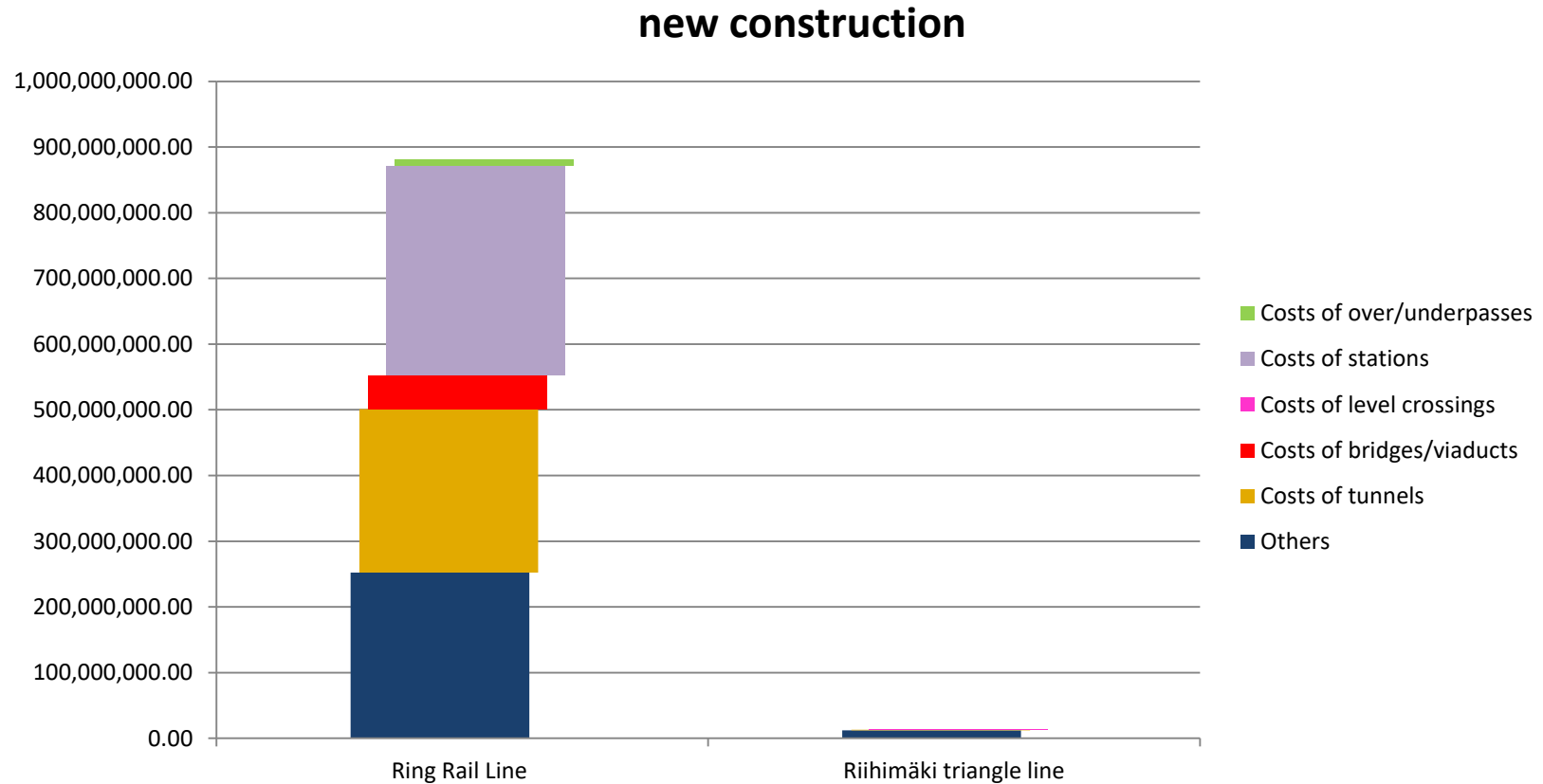
Data from individual countries - examples

Croatia - allocation of costs for upgrade projects upgrade



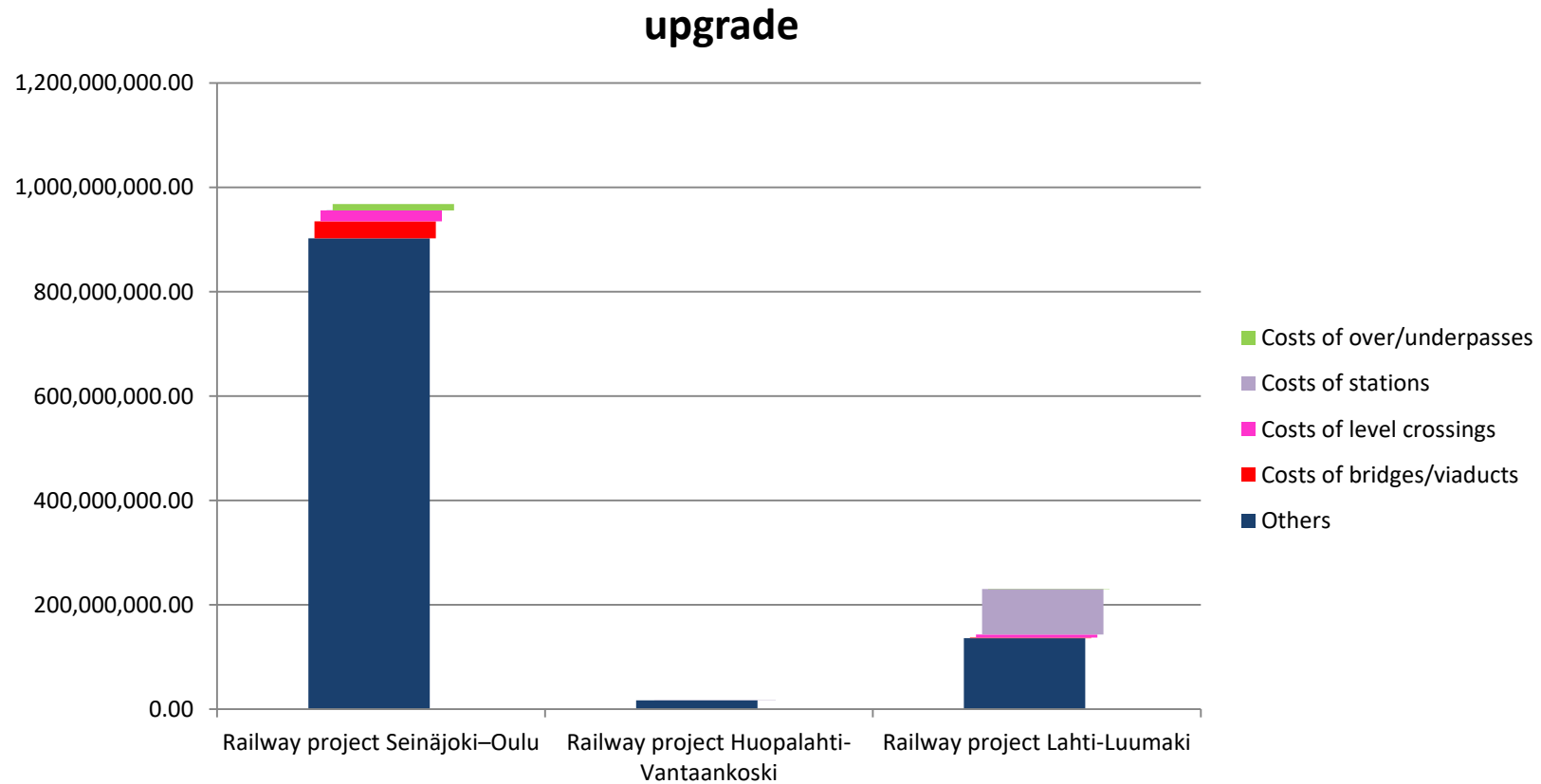
Data from individual countries - examples

Finland - allocation of costs for new construction projects



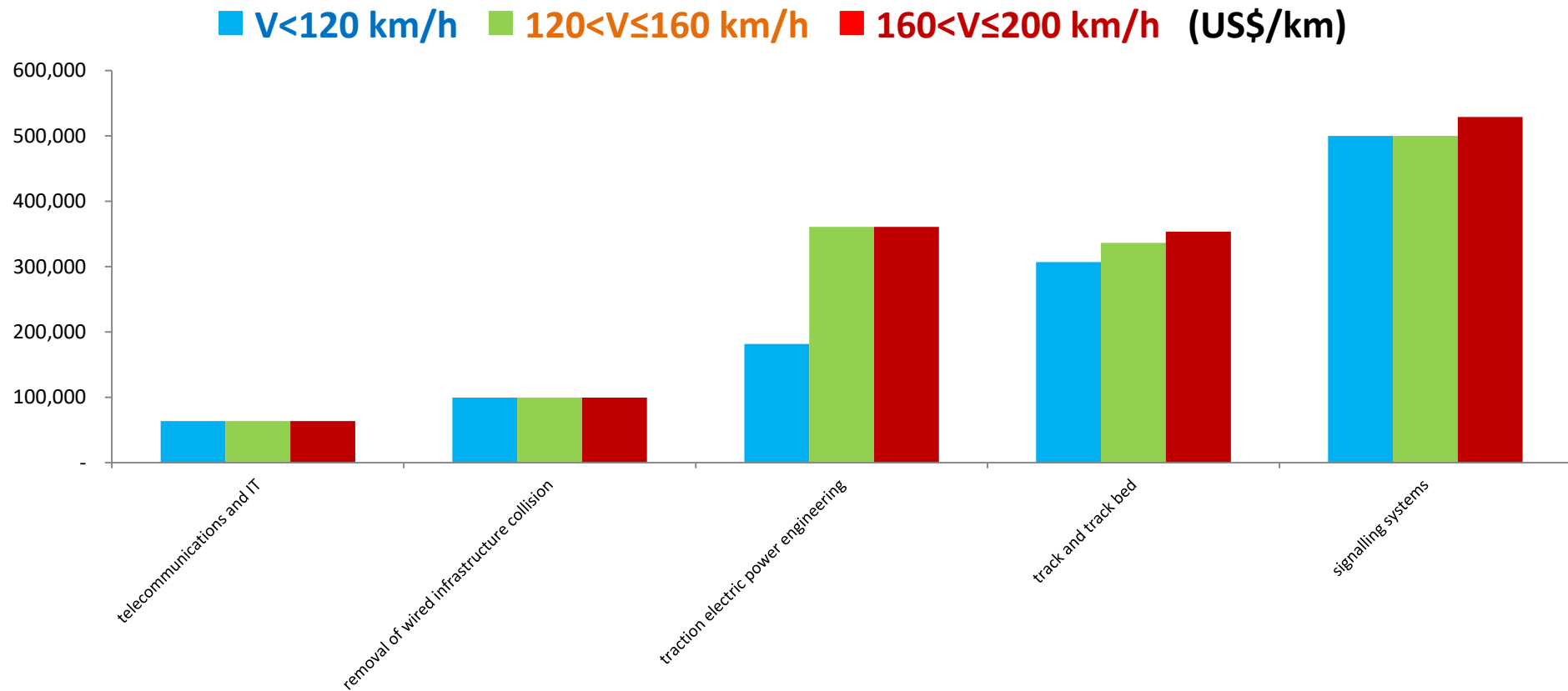
Data from individual countries - examples

Finland - allocation of costs for upgrade projects



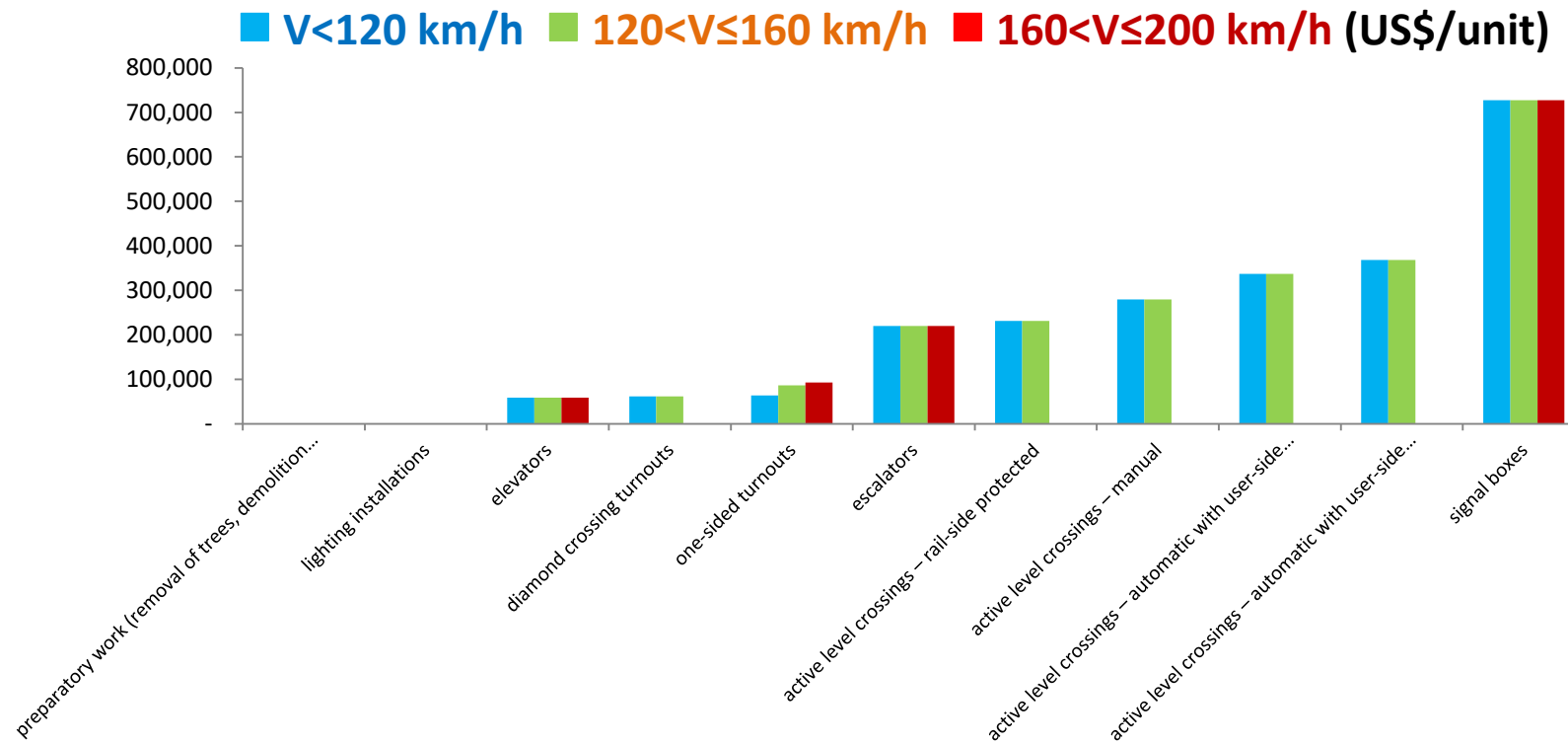
Data from individual countries - examples

Poland - cost of upgrades of infrastructure elements expressed in US\$/km



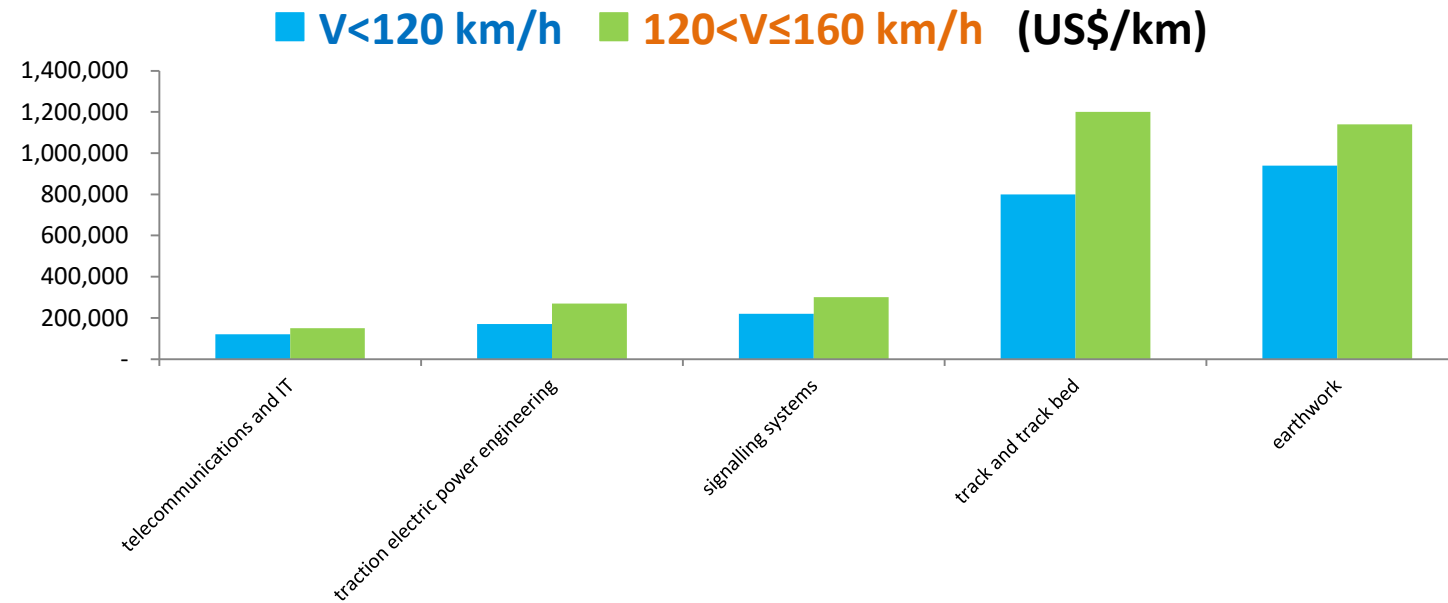
Data from individual countries - examples

Poland - cost of upgrades of infrastructure elements expressed in US\$/unit



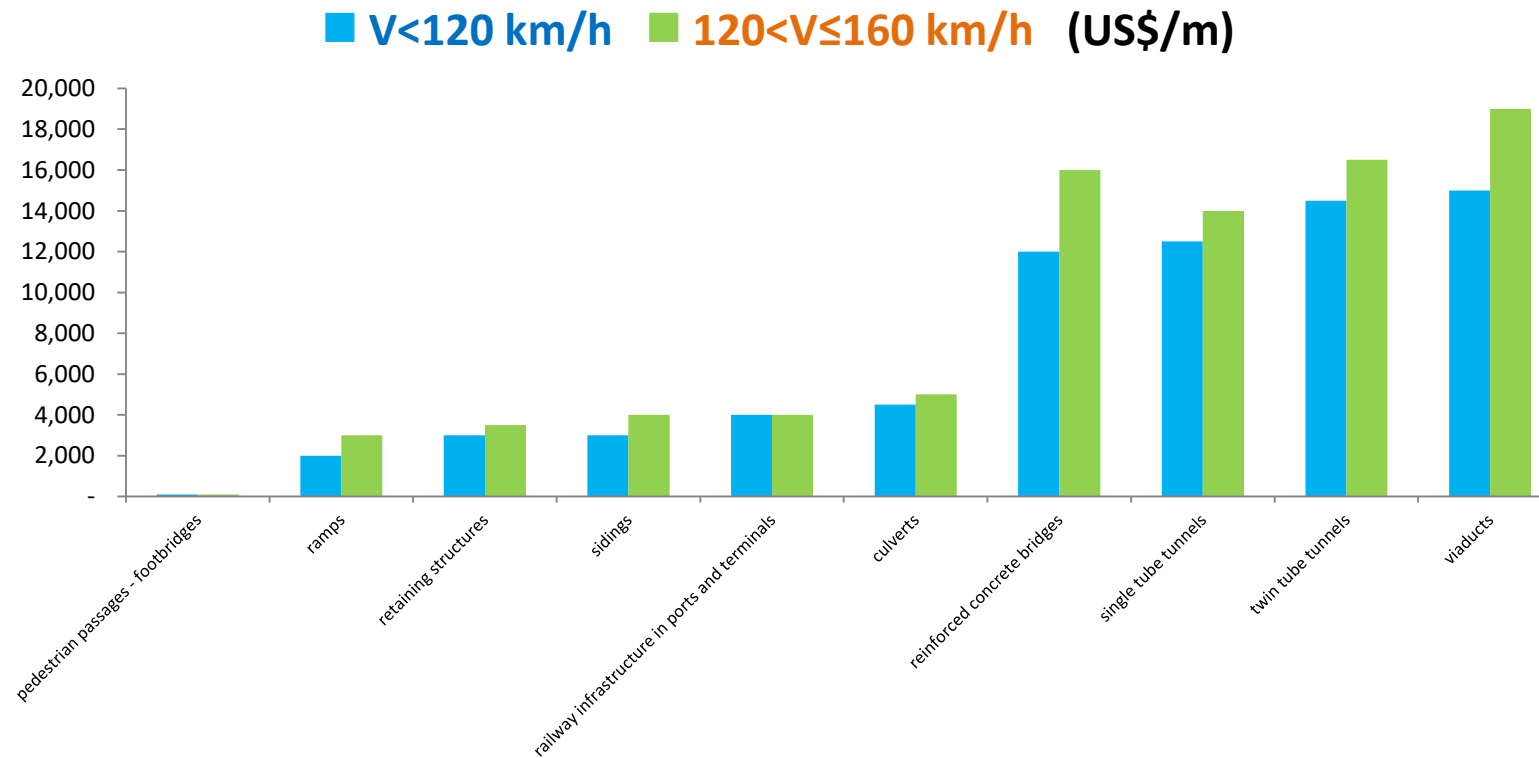
Data from individual countries - examples

Turkey - cost of new construction of infrastructure elements expressed in US\$/km



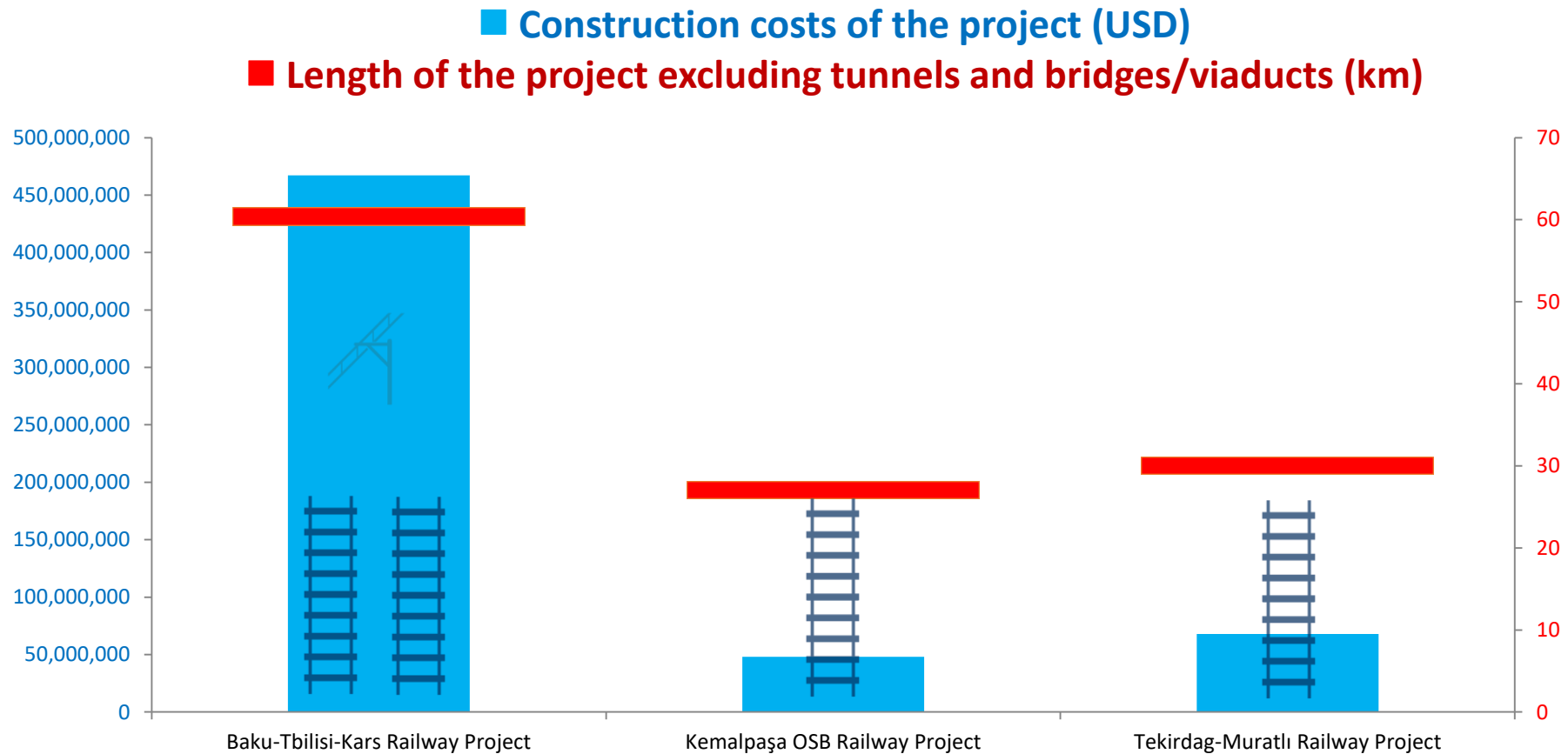
Data from individual countries - examples

Turkey - cost of new construction of infrastructure elements expressed in US\$/m



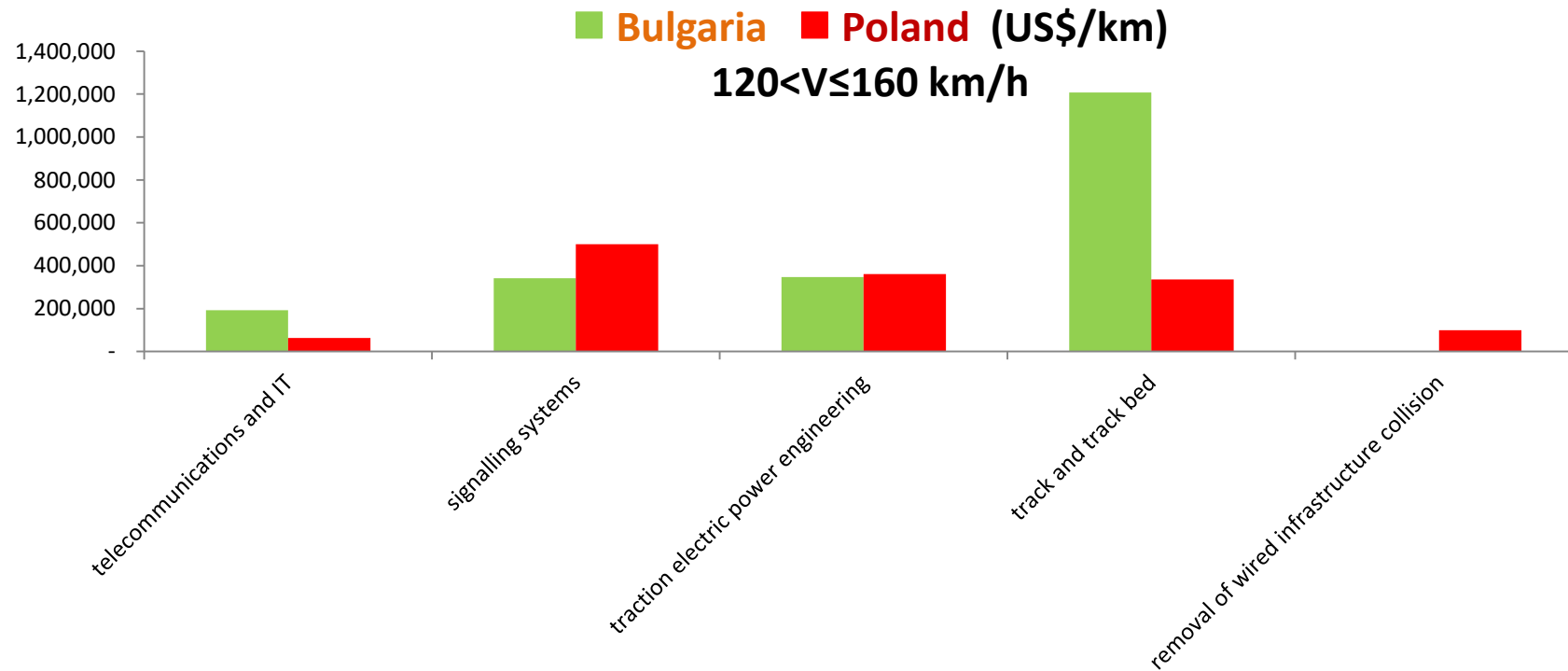
Data from individual countries - examples

Turkey - cost of new construction projects vs. length



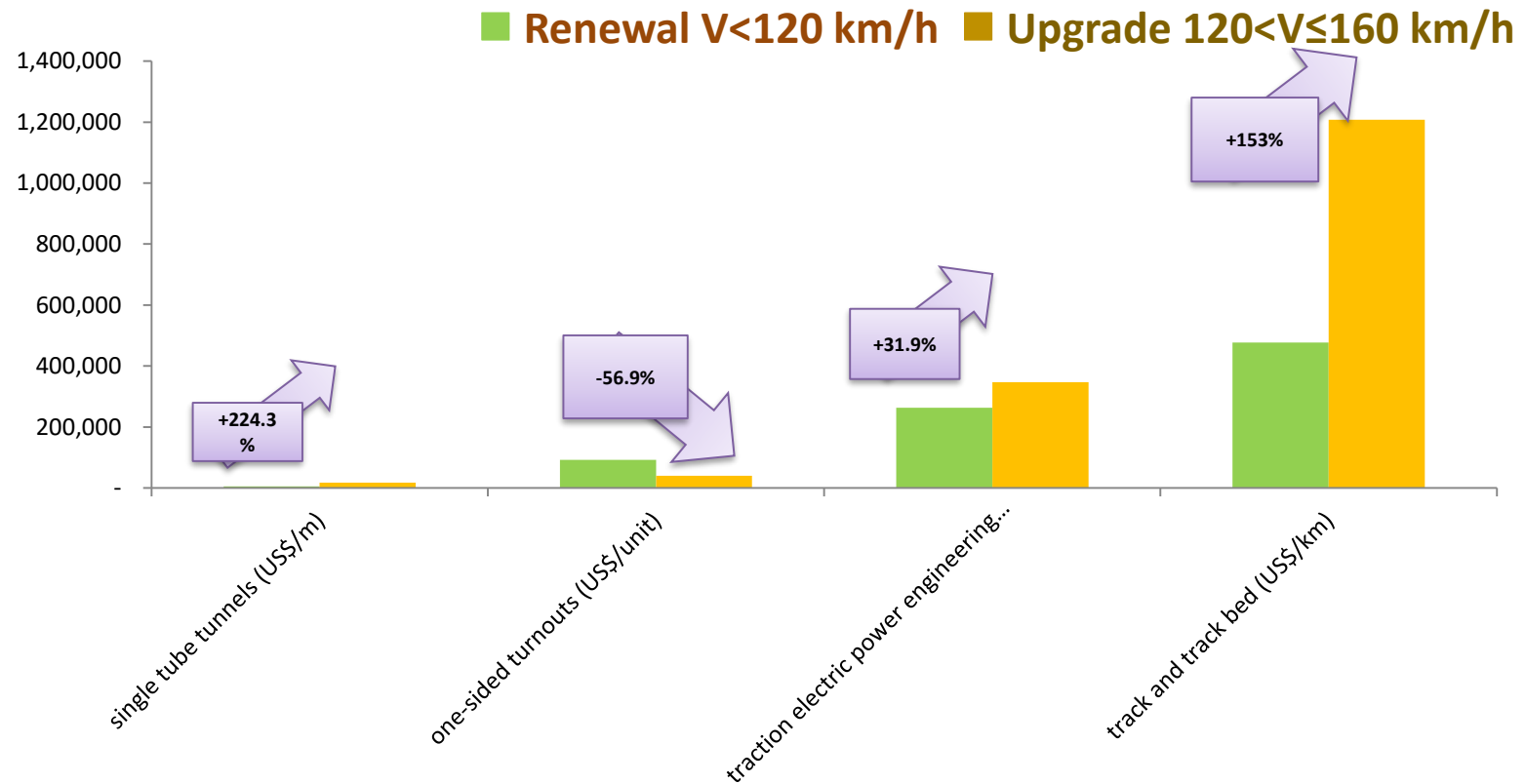
Comparison of data - examples

Comparison of upgrade of infrastructure elements in Bulgaria and Poland



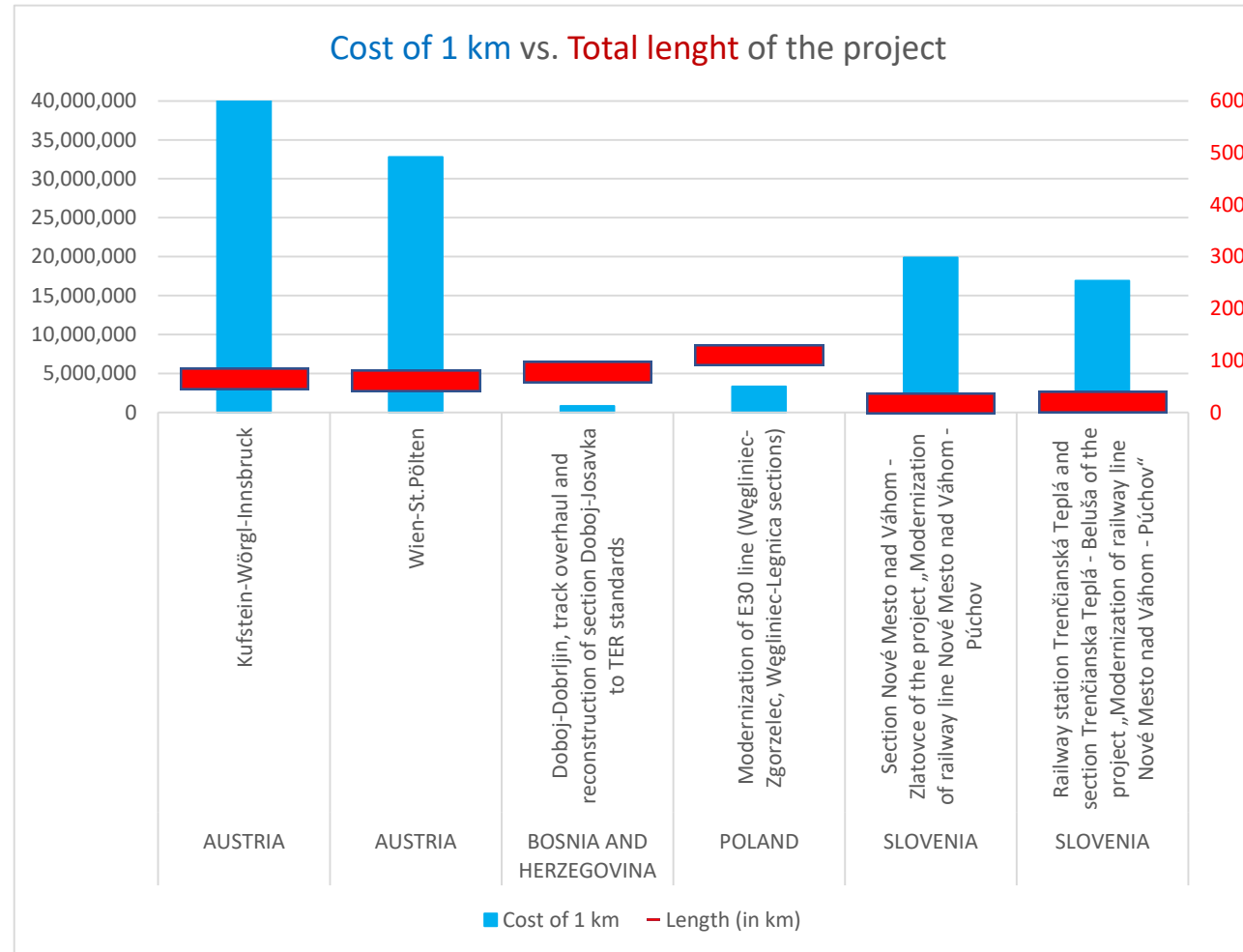
Comparison of data - examples

Bulgaria - comparison of cost of infrastructure elements for renewal and upgrade



Data from TER - examples

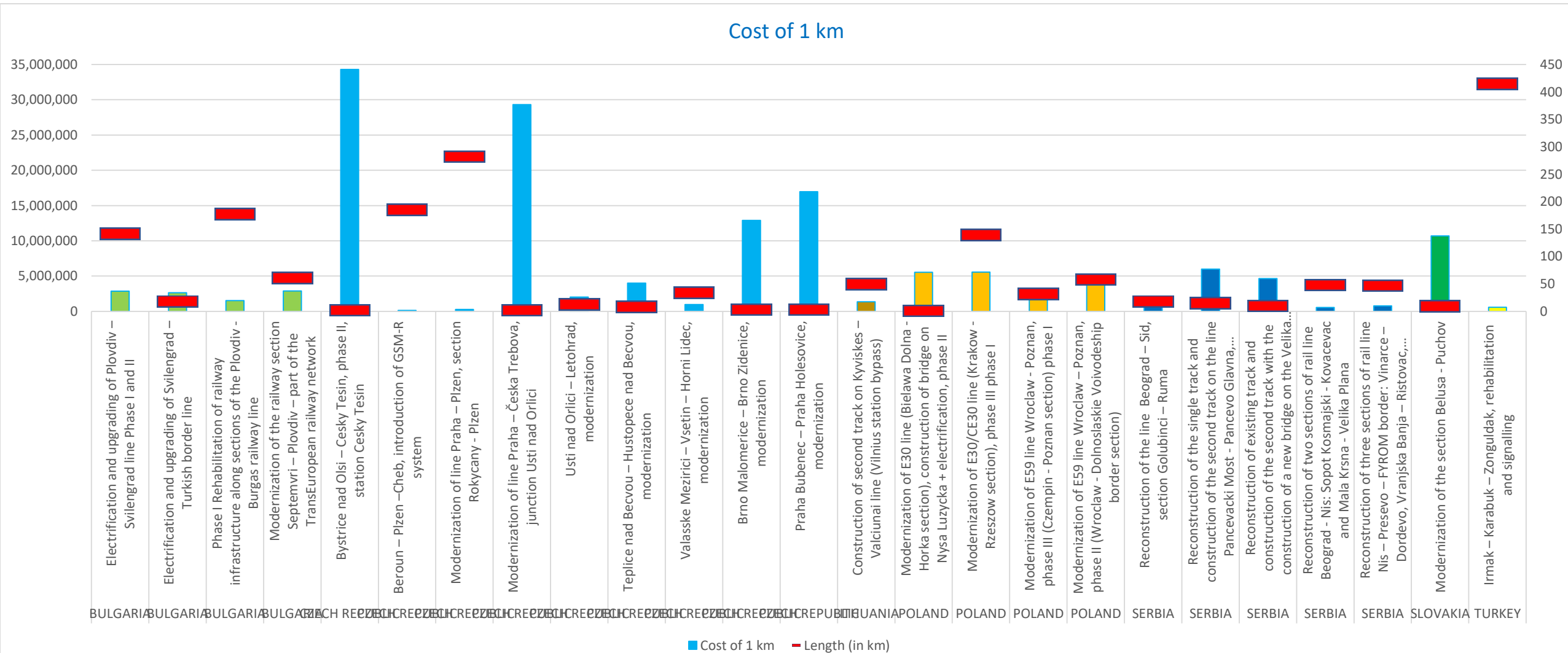
Cost of projects vs. length, data of 2012



Data from TER - examples

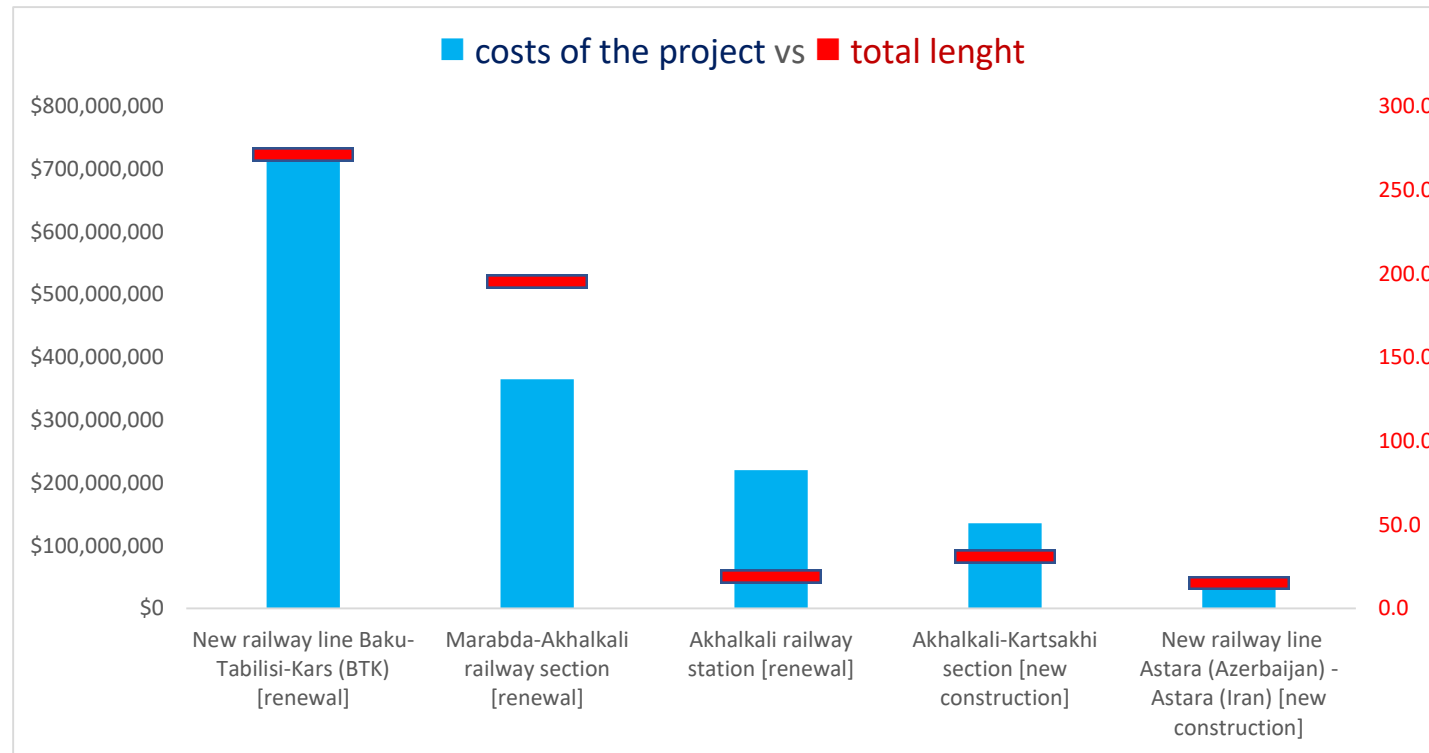
Cost of projects vs. length, data of 2016

Cost of 1 km



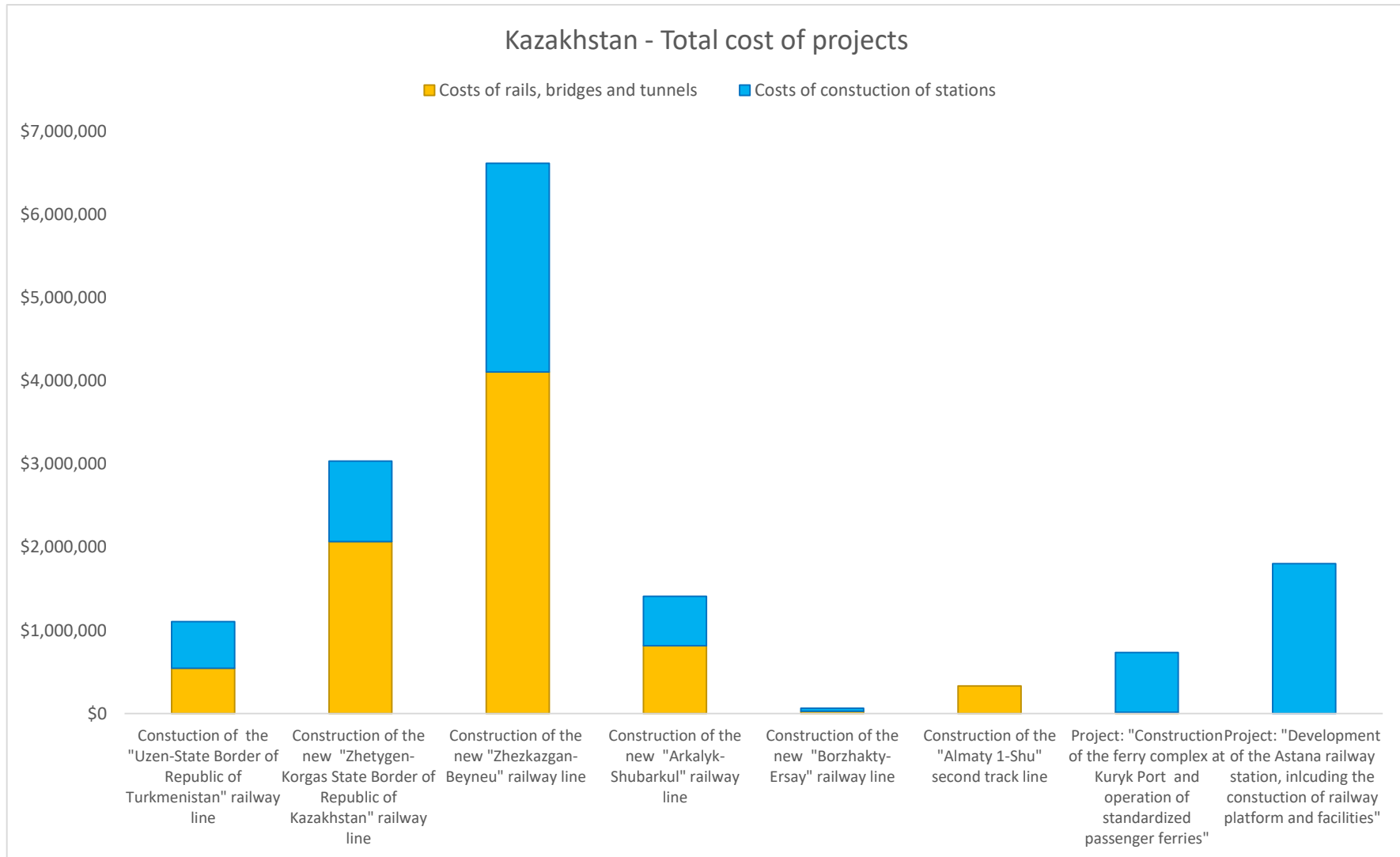
Data from GIS - examples

Azerbaijan - cost of projects vs. length



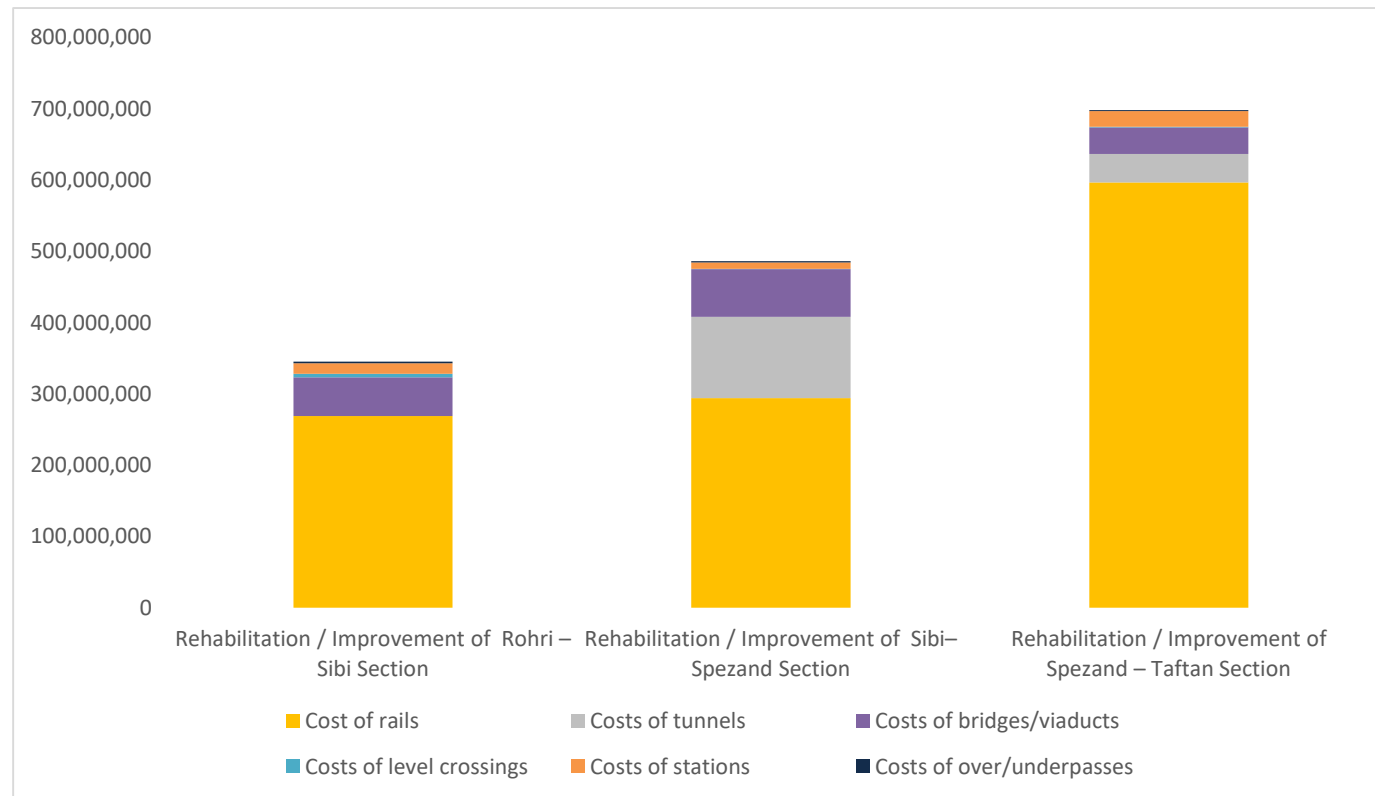
Data from GIS - examples

Kazakhstan - cost of projects



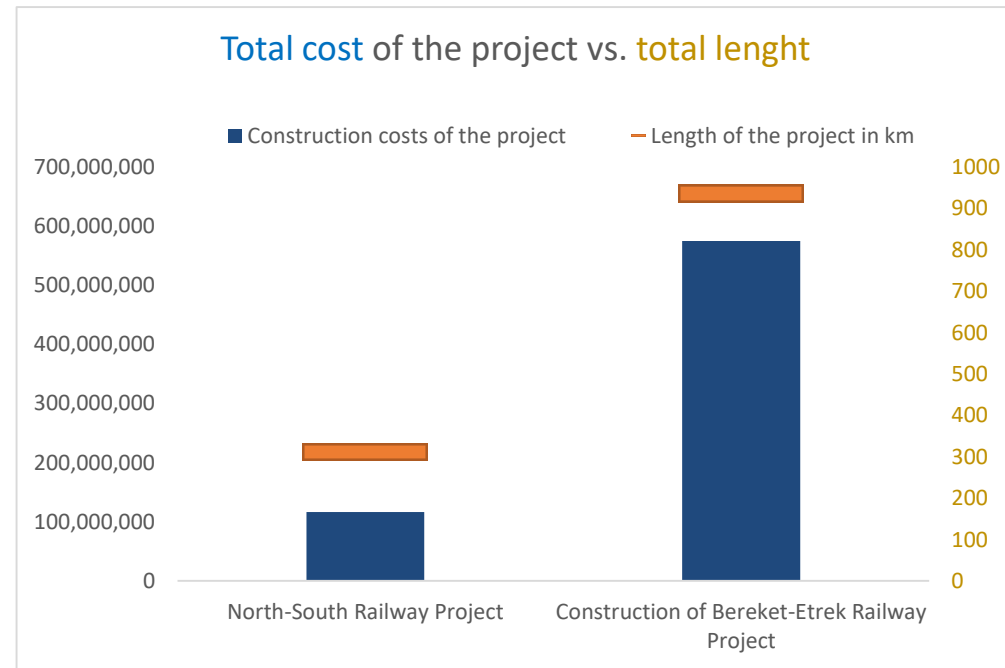
Data from GIS - examples

Tajikistan - cost of projects



Data from GIS - examples

Turkmenistan - cost of projects vs. length



Conclusions

- **Complexity of the railway system;**
- **Different technical parameters;**
- **Data difficult to compare.**

Conclusions

- **Excellent example of cooperation (TER, ECO, UIC);**
- **Very good basis for extending the scope of the costs analysis;**
- **More focused research on individual projects in the future.**



PKP POLSKIE LINIE KOLEJOWE S.A.

Zarządca narodowej sieci linii kolejowych

Thank you for your attention