



Sustainable Transport Infrastructure Charging and Internalisation of Transport Externalities

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17 December 2018





Overview of the Study

- **Objective:**

To assess the extent to which the 'user pays' and the 'polluter pays' principles are implemented

- **Time frame:** September 2017 – May 2019
- **Project team:** CE Delft, Ricardo, Infras, TRT, Planco, ISL, PMR

Scope of the study

- **Transport modes:**
 - Road, rail, inland waterway (entire network)
 - Aviation, maritime (selected (air)ports)
- **Geographical scope:**
 - EU28/27 and all Member States
 - Selected countries (Norway, Switzerland, Japan, USA (California and Missouri), Canada (Alberta and British Columbia))
- **Base year:** 2016



Deliverables

Close to finalised:

- Handbook on the external costs of transport
- Overview of transport infrastructure expenditures and costs
- Transport taxes and charges in Europe

Work in progress:

- The state of play of internalisation in the European transport sector
(comparison of costs with taxes & charges)
- Summary report providing an overview of the main findings of the other four deliverables, policy applications and the potential for further internalisation of transport externalities

Handbook on external costs of transport

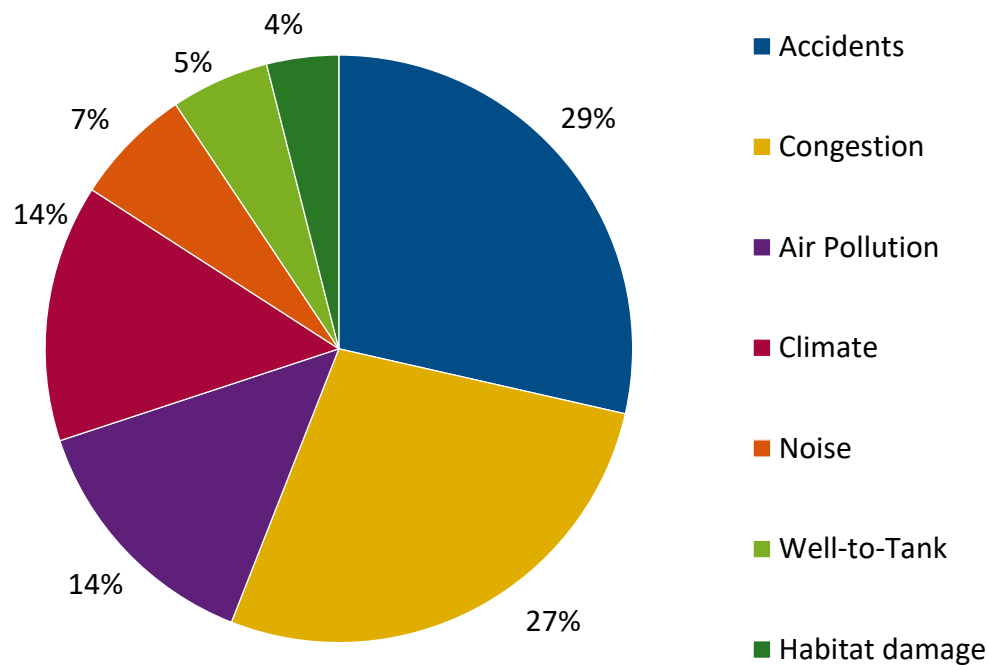
- Methodology and data for each cost category:
 - Based on latest available literature
 - Peer reviewed by external experts
 - Up-to-date input values (unit costs) and output values (cost per km)
- Previous Handbooks focused on *marginal* costs
- This Handbook *also* focuses on *total* and *average* costs
- Cost categories:
 - Accidents
 - Air pollution
 - Climate
 - Noise
 - Congestion
 - Well-to-tank
 - Habitat damage
 - Other



Shares of external cost categories in total cost EU28

Including estimate for aviation and maritime

Including road congestion: total delay costs

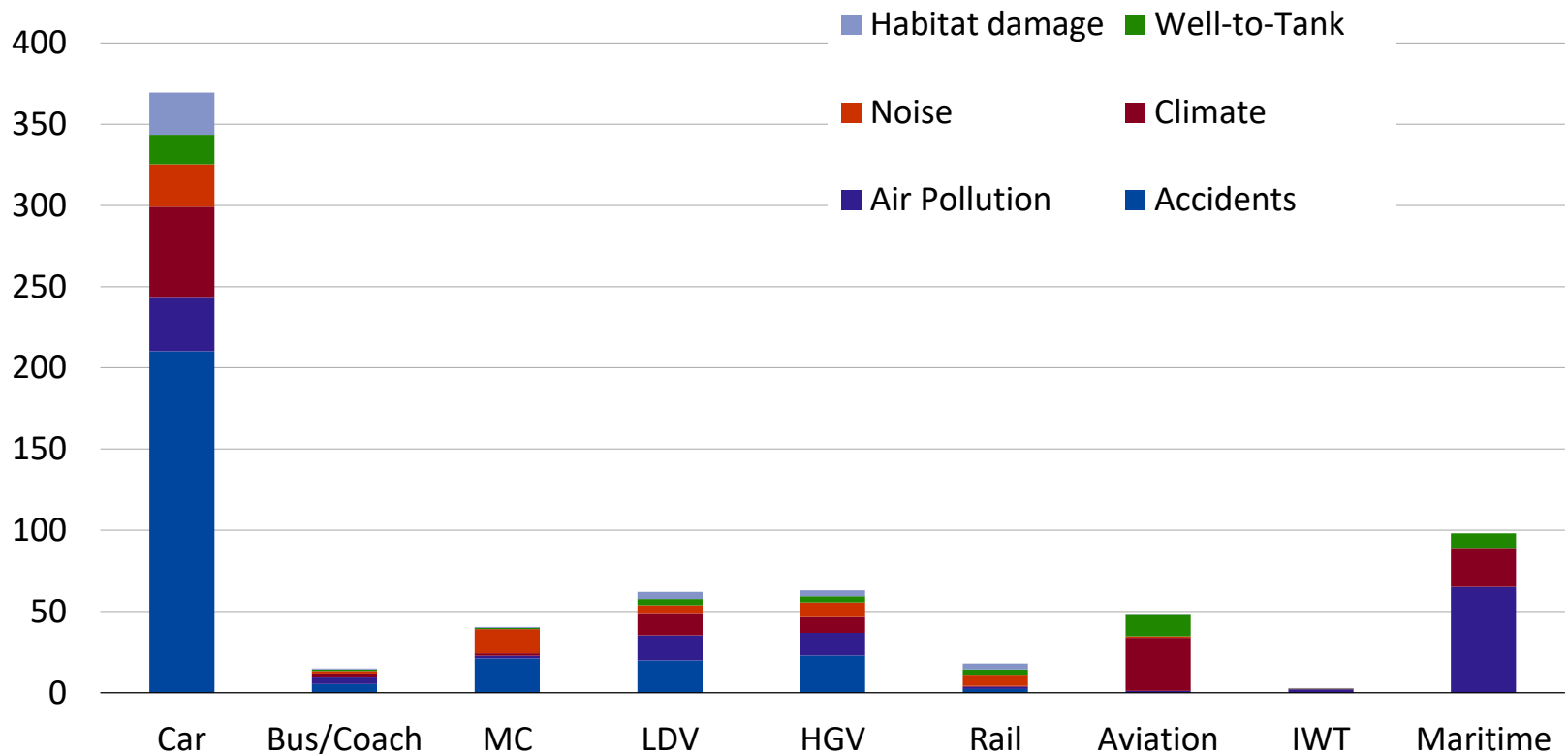


Total external costs transport for the EU28 in 2016

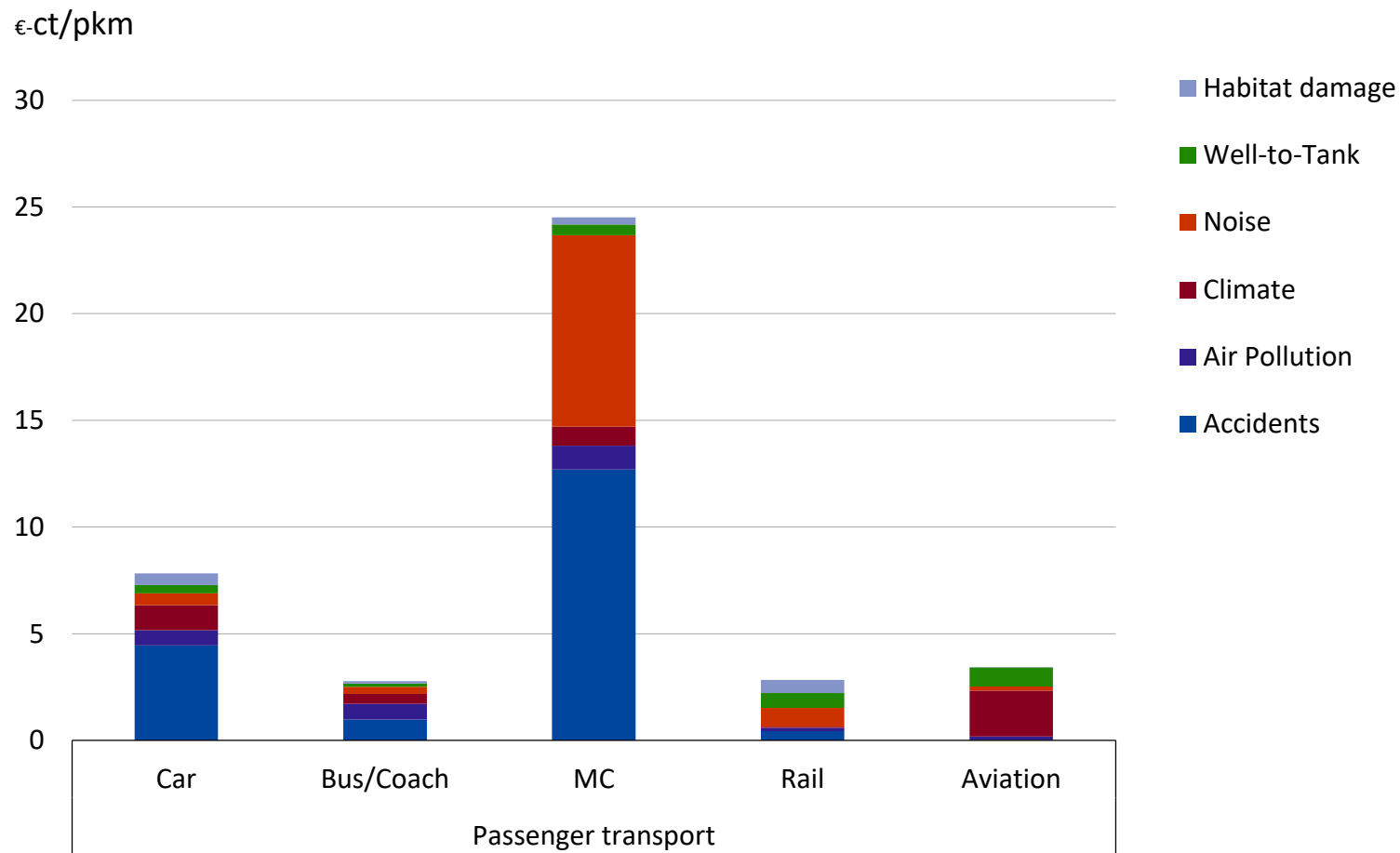
- Total external costs in EU28 for **road, rail and IWT**:
 - **€ 571 billion**, excl. road congestion
 - + € 270 billion (total delay costs) = **€ 841 billion** incl. road congestion
 - **Aviation** (50% allocated to origin; 50% to destination):
 - **€ 33 billion** for all traffic to/from selected 33 EU airports
 - *Indicative estimate*: **€ 48 billion** for all traffic to/from all EU airports
 - **Maritime shipping** (50% allocated to origin; 50% to destination):
 - **€ 44 billion** for all traffic to/from selected 34 EU ports
 - *Indicative estimate*: **€ 98 billion** for all traffic to/from all EU ports
 - *Indicative estimate* all external cost **all modes** EU28: **€ 987 billion** (6.6% of GDP)
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Total external costs per transport mode for EU28 in 2016

Billion € per year

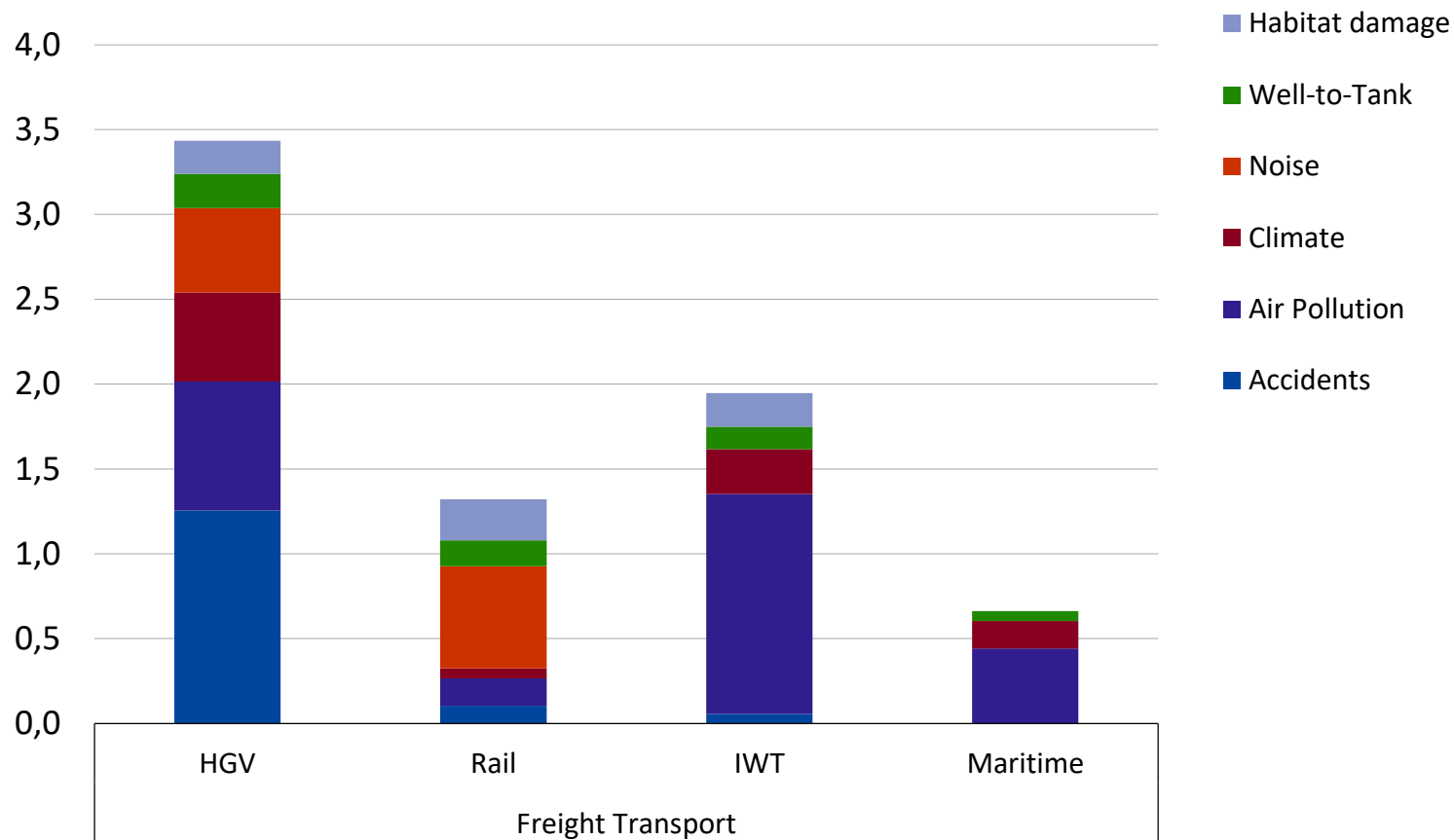


Average external costs per mode at EU28 level - Passenger



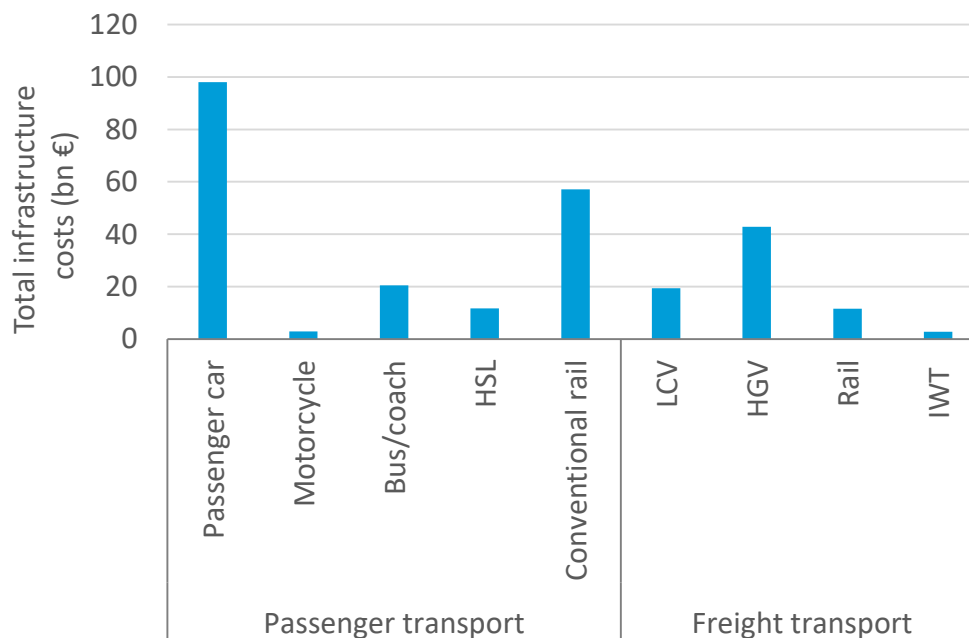
Average external costs per mode at EU28 level - Freight

€-ct/tkm



Infrastructure costs

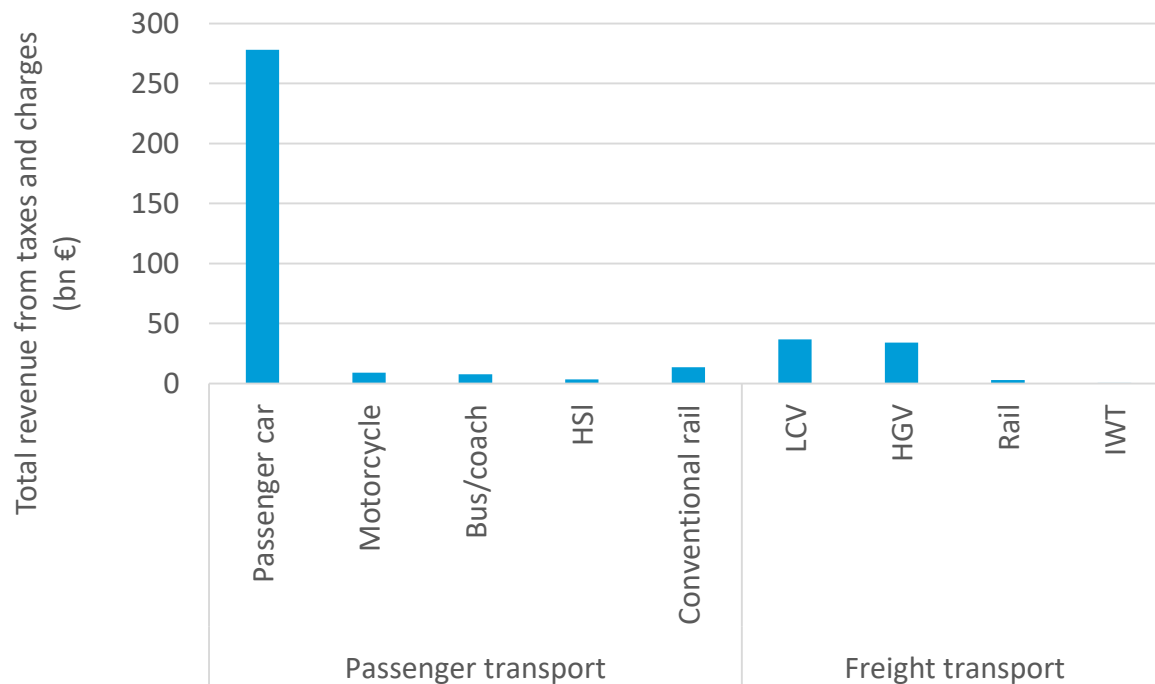
- Detailed data gathering on expenditures for all modes and all Member States
- Translated to costs (capital costs and running costs)
- Total infrastructure costs for road, rail and IWT in 2016 amount 267 billion €



- Total infrastructure costs for 33 airports: 14 billion €; for 34 ports: 1.4 billion €

Taxes and charges EU28

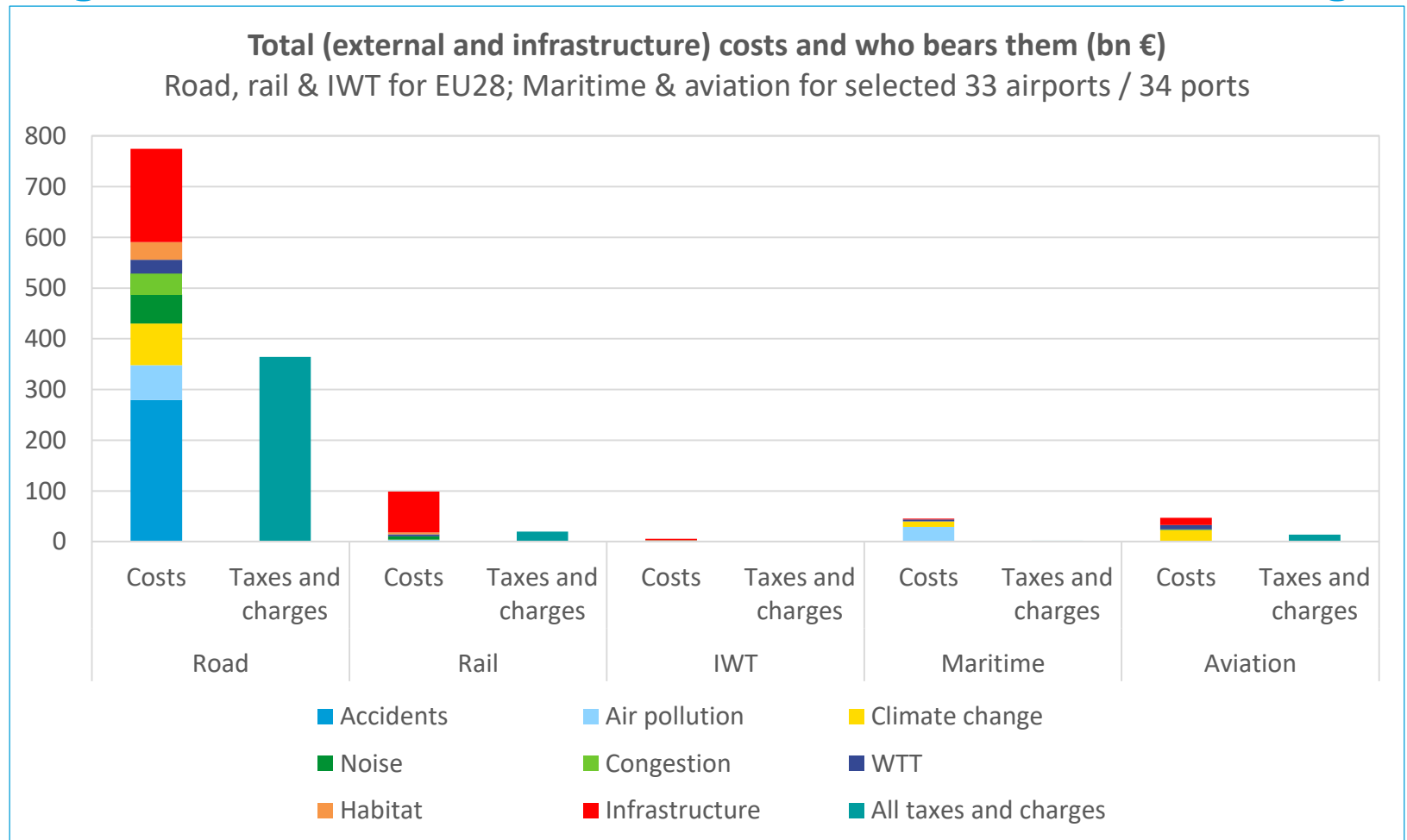
- Detailed data gathering for all modes and all Member States
- Taxes and charges on energy, vehicles, infrastructure use, insurance, other
- Total revenues for road, rail and IWT in 2016 amount 385 billion €



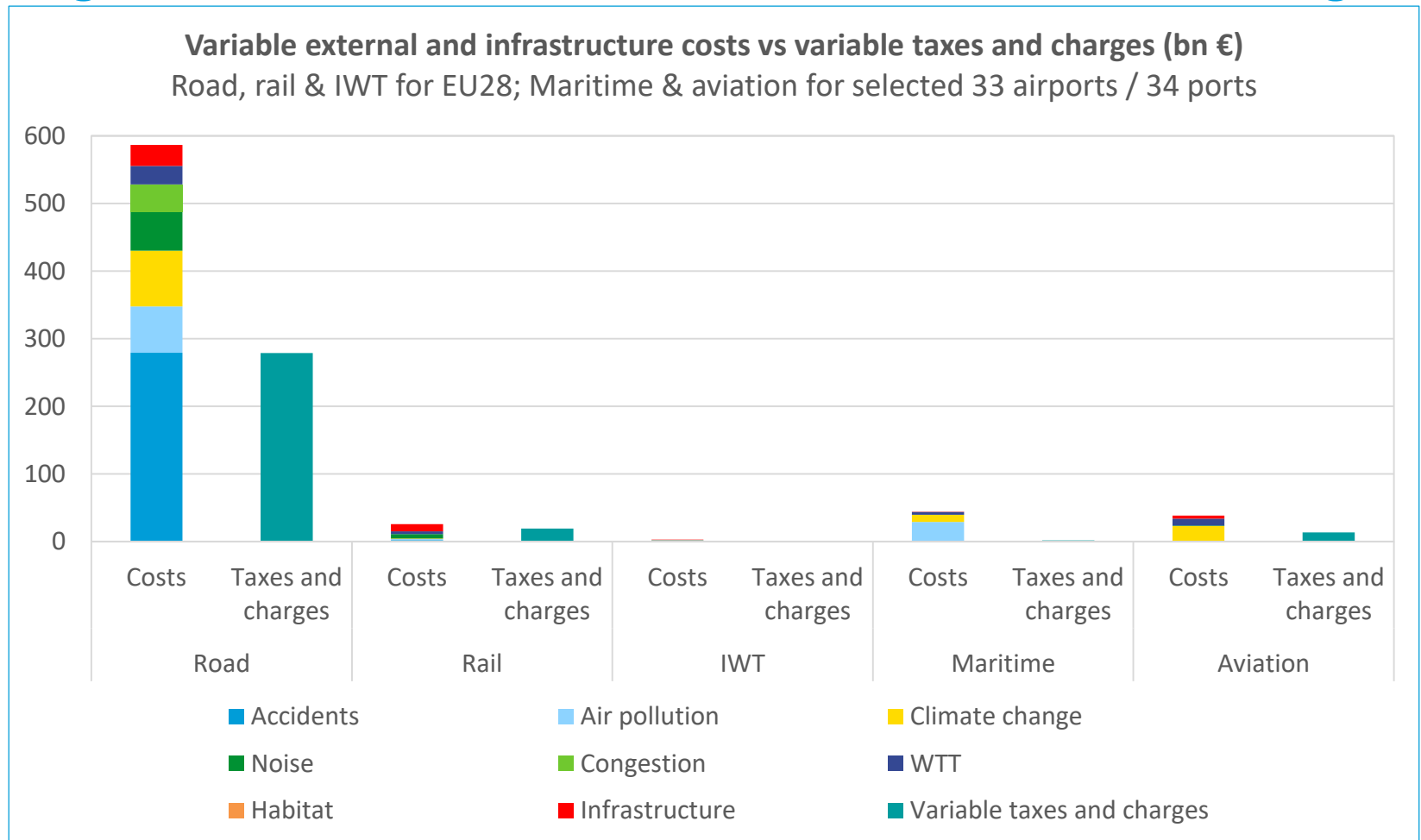
12 Total revenues for 33 airports: 13.5 billion €; for 34 ports: 1.8 billion €



Degree of internalisation for EU28 – total cost, taxes, charges



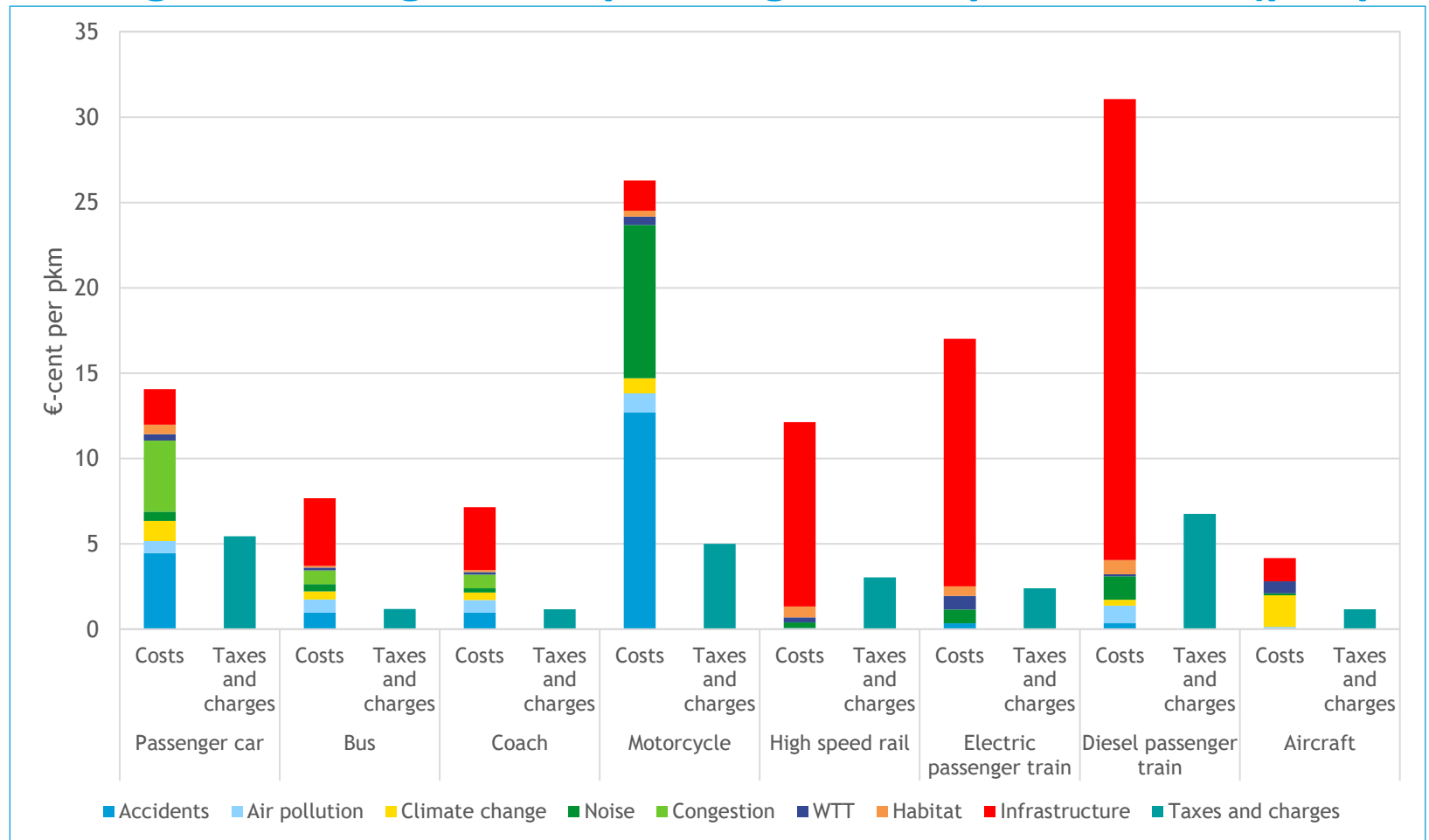
Degree of internalisation EU28 – variable cost, taxes, charges



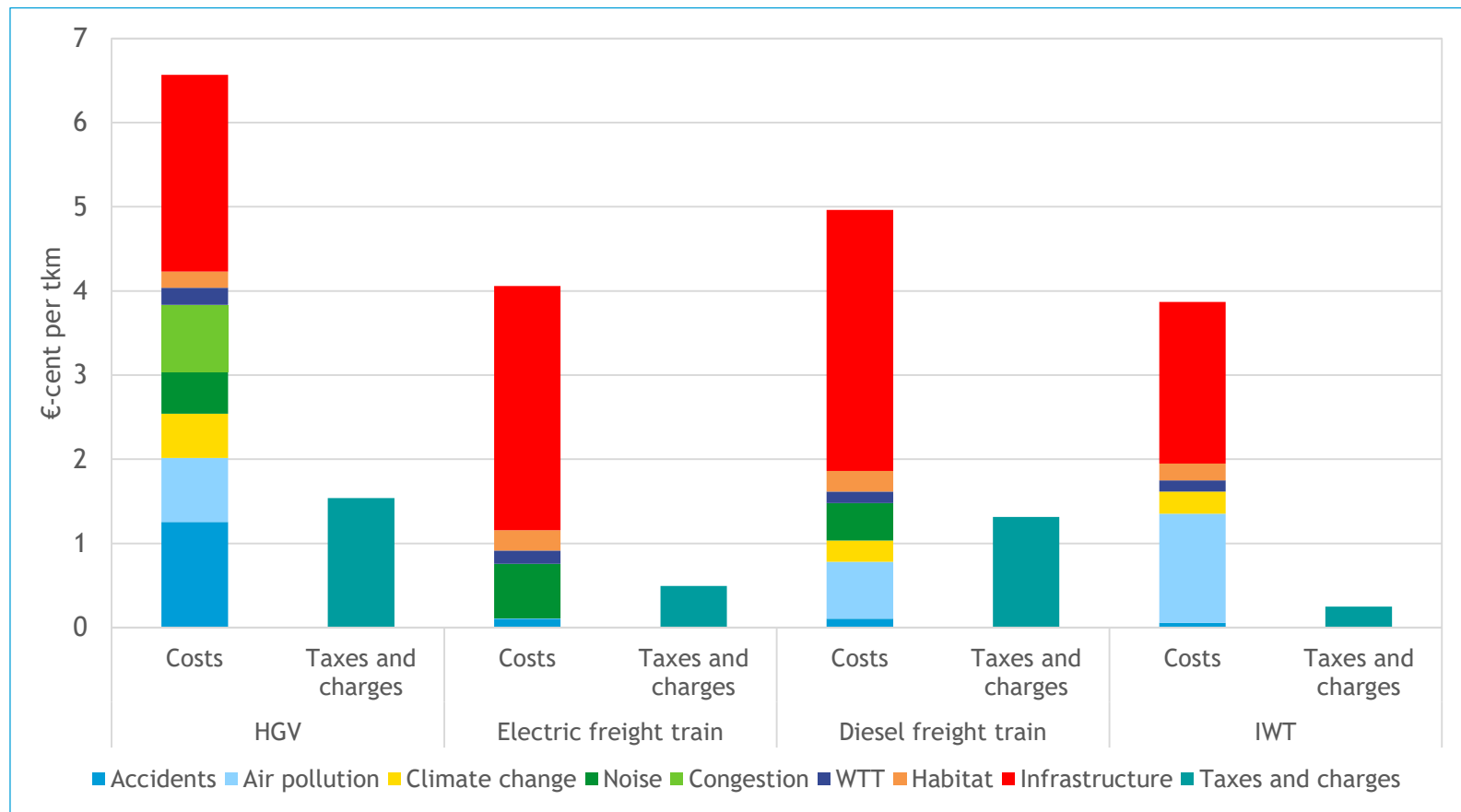
Comparing transport modes on degree of internalisation

- For passenger transport: cost per passenger-km (pkm)
- For freight transport: cost per tonne-km (tkm)
- Relative costs also affected by type of load (e.g. heavy bulk has much lower cost per tkm than containers)
- Transport modes compete in specific markets

Coverage of average cost - passenger transport modes (per pkm)



Coverage of average cost - freight transport modes (per tkm)



- Light commercial vehicles: cost 22.0 €-ct/vkm; taxes & charges 6.8 €-ct/vkm

Robustness and limitations

- External costs:
 - Methodologies are very mature but continuously evolving
 - Data limitations in some countries and for some cost; assumptions needed
 - Just impacts included that are fully proven
- Infrastructure costs
 - Extensive data search in all countries
 - Still many data gaps which have been filled by extrapolation
 - Some cost data is very sensitive, particularly for (air)ports
- Transport data:
 - Data limitations for some modes and vehicle categories: motorcycles, light commercial vehicles, aviation, and particularly maritime shipping

Thank you for your attention!

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