

Brussels, 8th September 2008 | Markus Maibach

ETF AK Europa

inFRAS

External costs in the transport sector

The state of research in a Handbook (IMPACT)

The economic principle

Costs must be paid by the transport user

- › Additional costs per unit of transport
- › Infrastructure cost recovery

In order to

- › Show the right prices (economic efficiency)
- › To reduce transport nuisances (effectiveness)
- › To encourage modal shifts (fairness)

There is evidence

- › There are external costs such as congestion, safety and environment
- › Research has developed methods to estimate them (EU-level, national research)
- › There are values and ranges available.
- › The methodologies and values are most robust for the road sector.
- › ...as a basis for efficient transport pricing

IMPACT Handbook for external costs

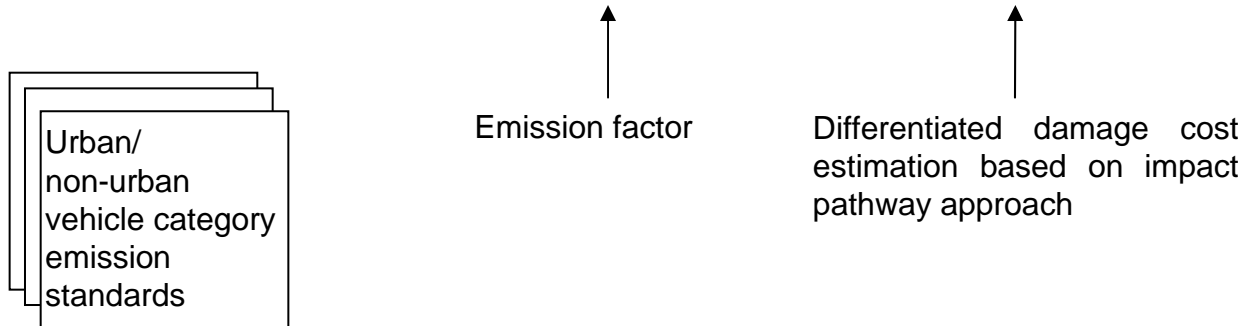
- › Overview of best practice
- › Basic approach, input values and output values per cost category
- › Coverage of all modes, focus on road
- › No own computation of values but comparison of studies/values
- › Final output harmonised with modelling work (REMOVE)

Three different type of costs

<i>Cost component</i>	<i>Social costs</i>	<i>External part</i>
Costs of scarce infrastructure (congestion and scarcity)	Time losses and decreased reliability Opportunity costs of scarce slots	Costs of additional demand above a certain traffic volume imposed to other users
Accident costs	Material damages Health costs Production losses Suffer and grief	Costs which are not covered by risk anticipation and insurance
Environmental costs	Environmental damages: air pollution, noise climate change Soil, water, energy production	Part which is not paid for

Example: Air pollution costs

External Air Pollution Costs = specific emission * Cost factor per pollutant



Value for a life year lost: 50'000 - 75'000 €

PM2.5 (€/tonne) HEATCO values	9'400 – 216'000 (urban) 7'500 – 96'000 (outside built-up areas)
NOx (€/tonne) CAFE CBA values	700 – 9'600
NMVOC (€/tonne) CAFE CBA values	200 – 2'700
SO2 (€/tonne) CAFE CBA values	1'000 – 13'000

Example: Air pollution costs

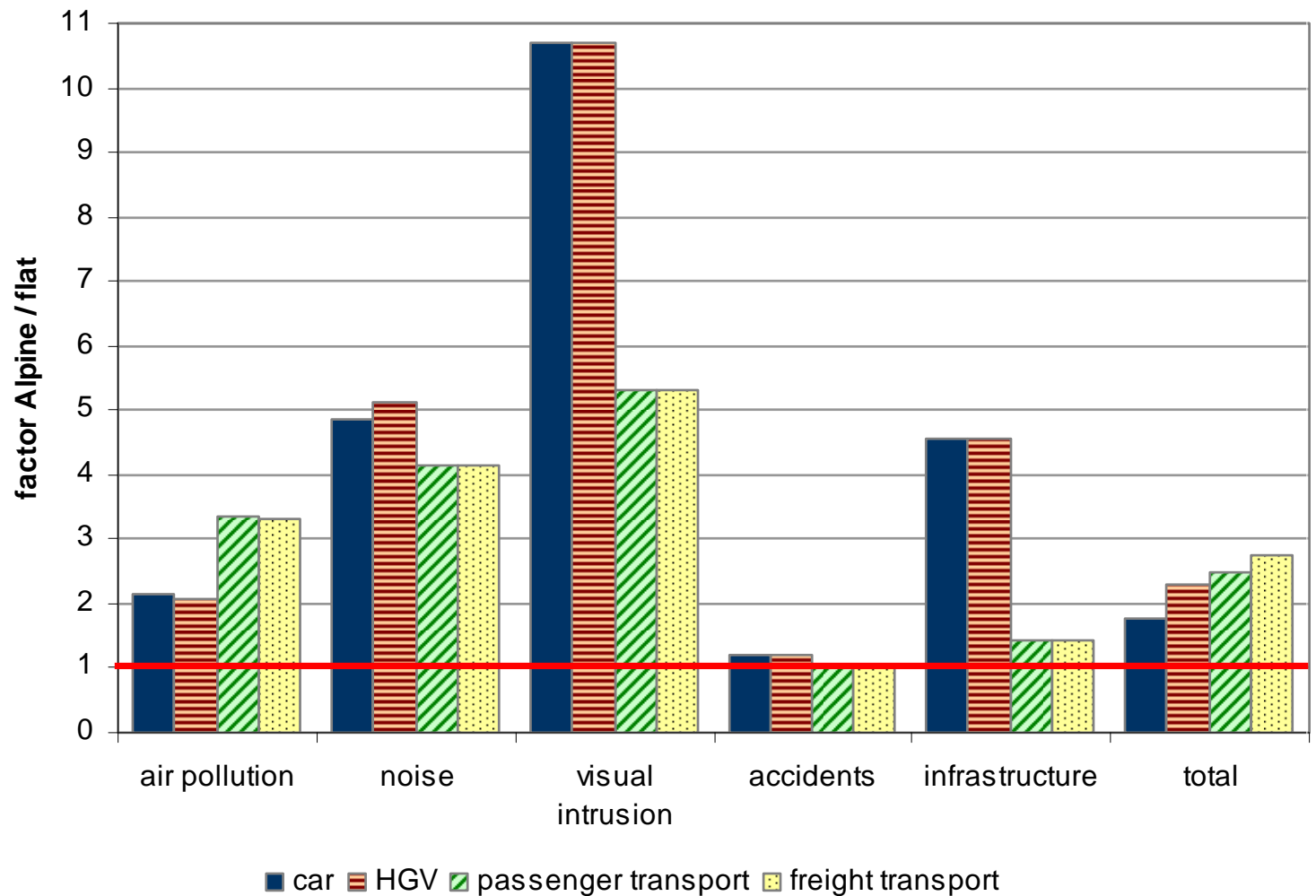
Vehicle (€ ct / vkm)	EURO-Class	Metropolitan	Motorways	Average
Car Petrol	EURO-1	1.7	0.8	0.9
1,4-2L	EURO-2	0.9	0.4	0.4
	EURO-3	0.3	0.1	0.1
	EURO-4	0.3	0.1	0.1
Car Diesel	EURO-1	4.8	1.3	1.4
1,4-2L	EURO-2	4.0	0.9	1.1
	EURO-3	3.1	1.0	1.1
	EURO-4	1.7	0.5	0.6
Trucks	EURO-1	28.1	10.6	10.9
>32t	EURO-2	18.9	9.6	9.8
	EURO-3	14.6	7.6	7.7
	EURO-4	7.4	4.5	4.6

Example: Climate change costs

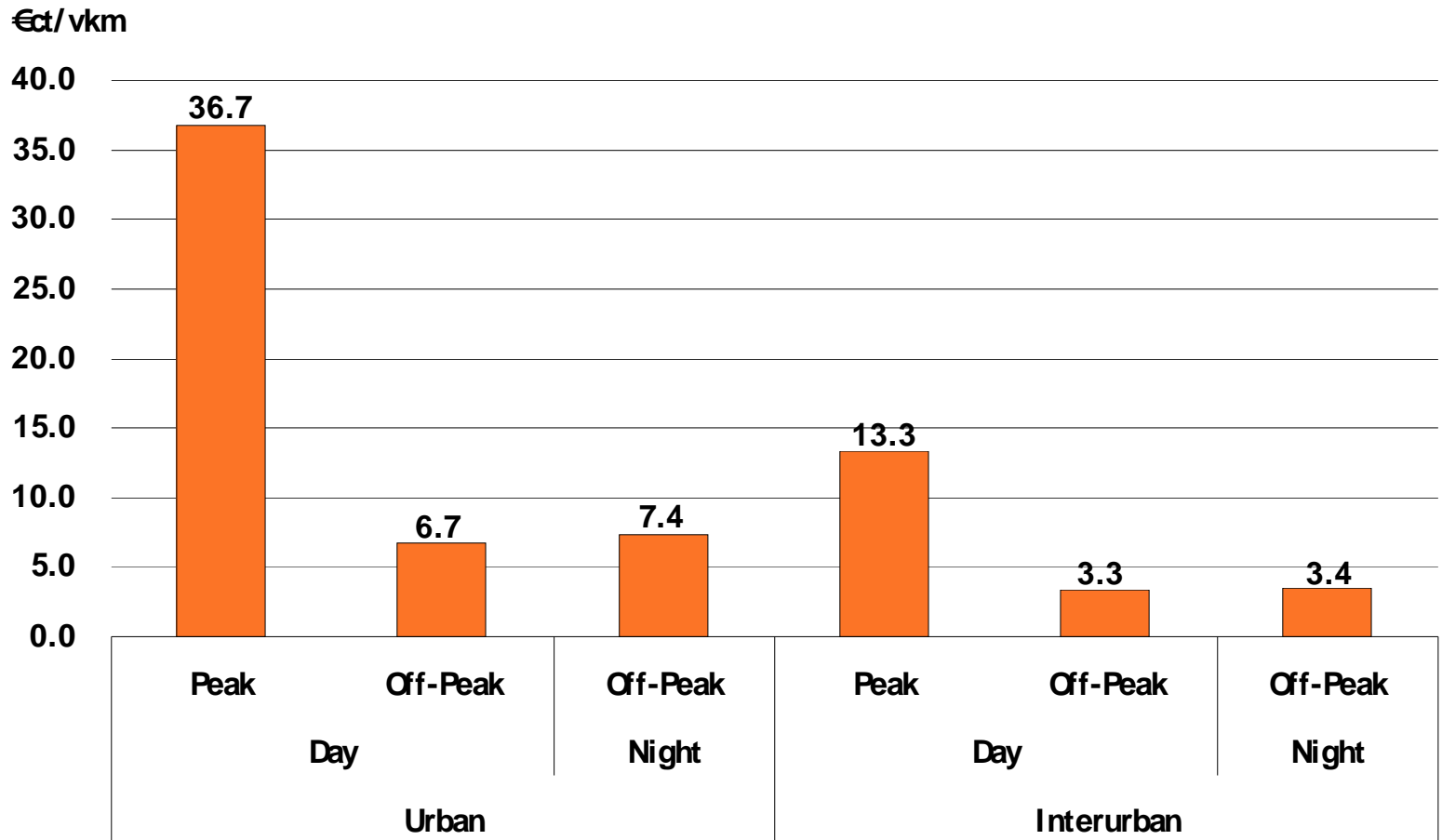
- › Damage costs as a central first best approach: recent studies estimate higher values.
- › Avoidance costs could be higher in the transport sector (up to 200€/t CO₂)
Average values in EU Member States:
50-100€/t CO₂

	Central values (€/tonne CO ₂)		
Year of application	Lower value	Central value	Upper value
2010	7	25	45
2030	25	55	100
2050	40	85	200

Costs in sensitive areas are higher

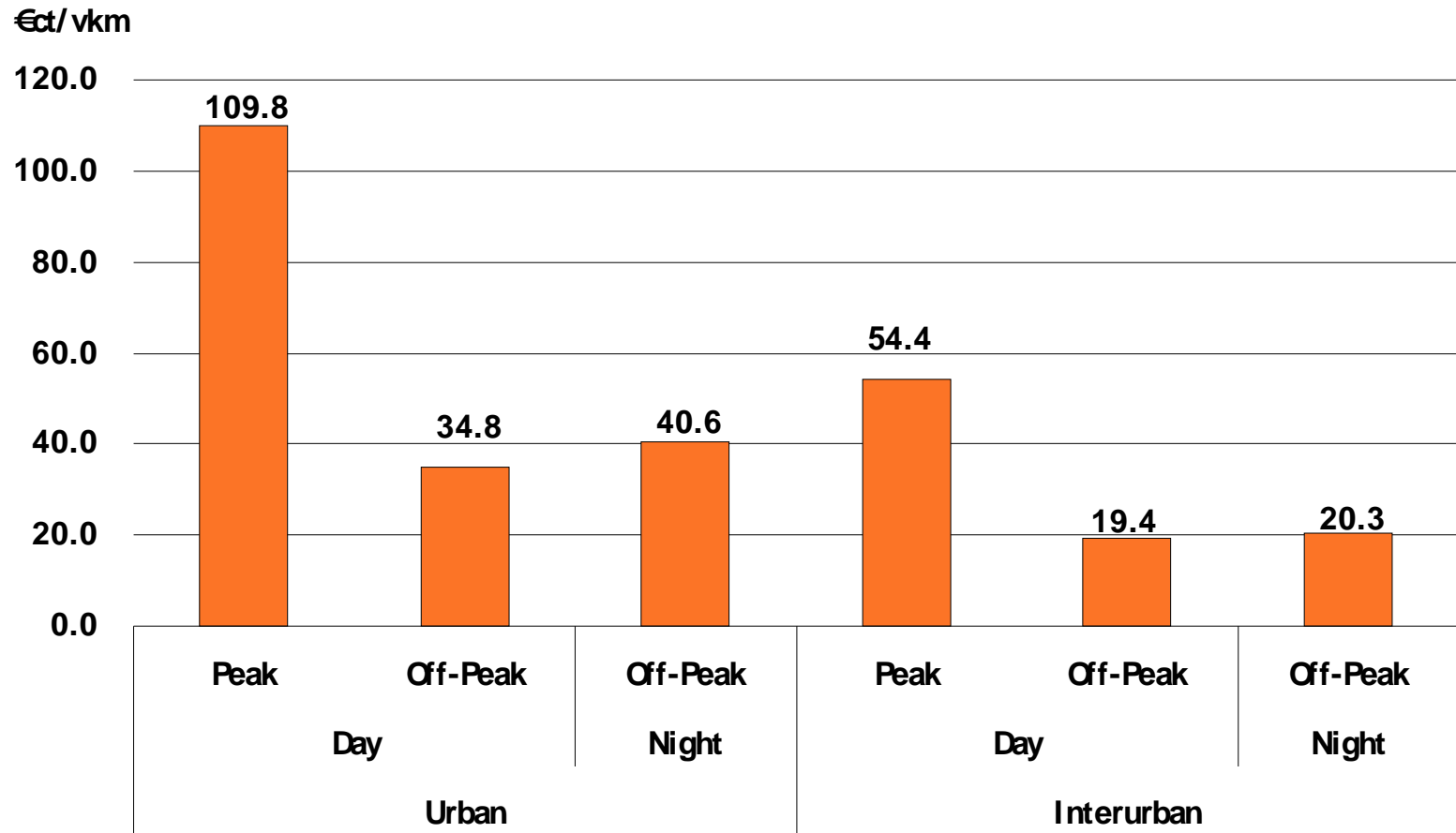


Exemplary values: Passenger cars



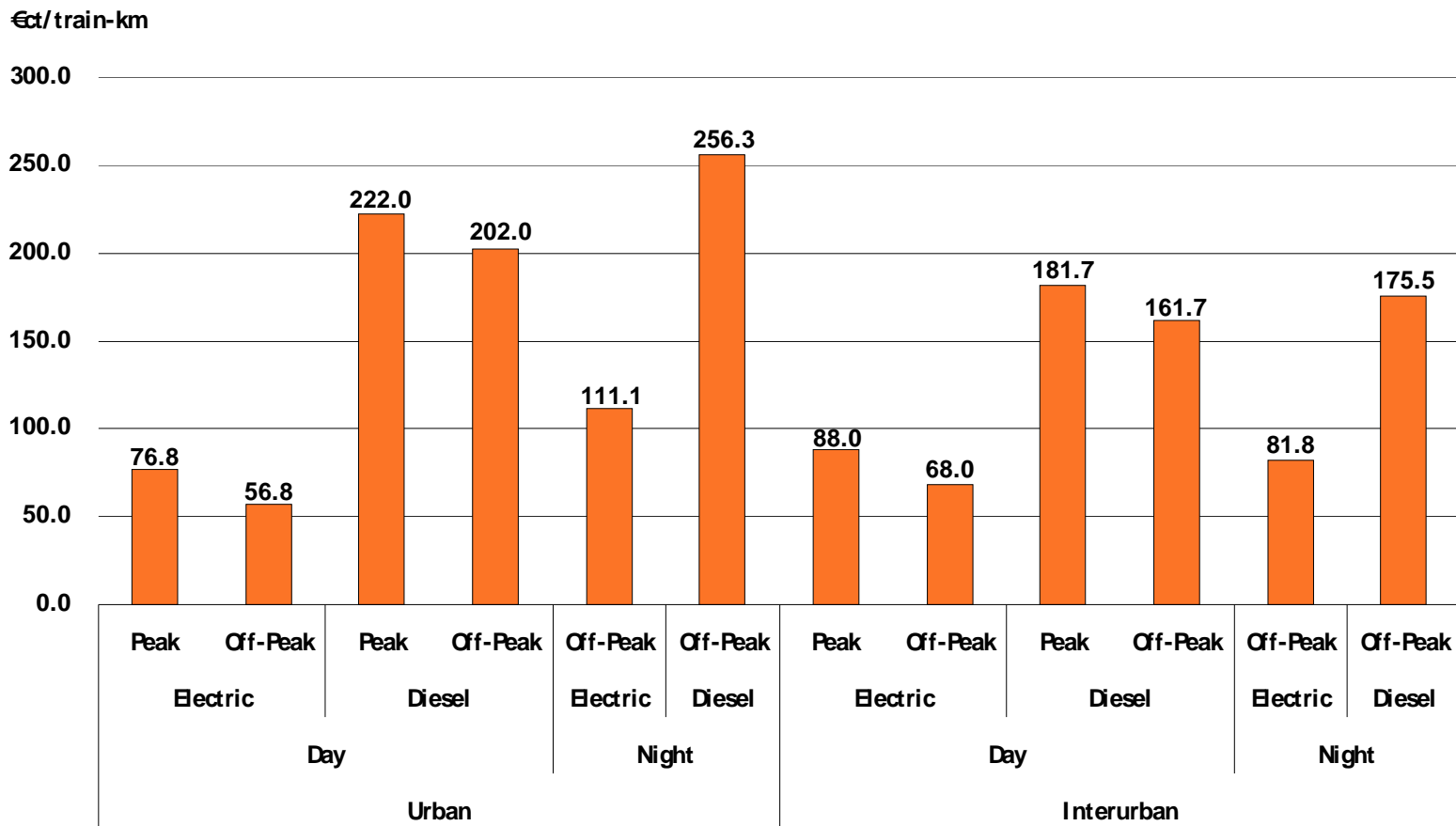
Passenger car, medium vehicle (1.4-2L), EURO 3, petrol

Exemplary values: Heavy goods vehicles



HDV > 32 t, EURO 3, Diesel

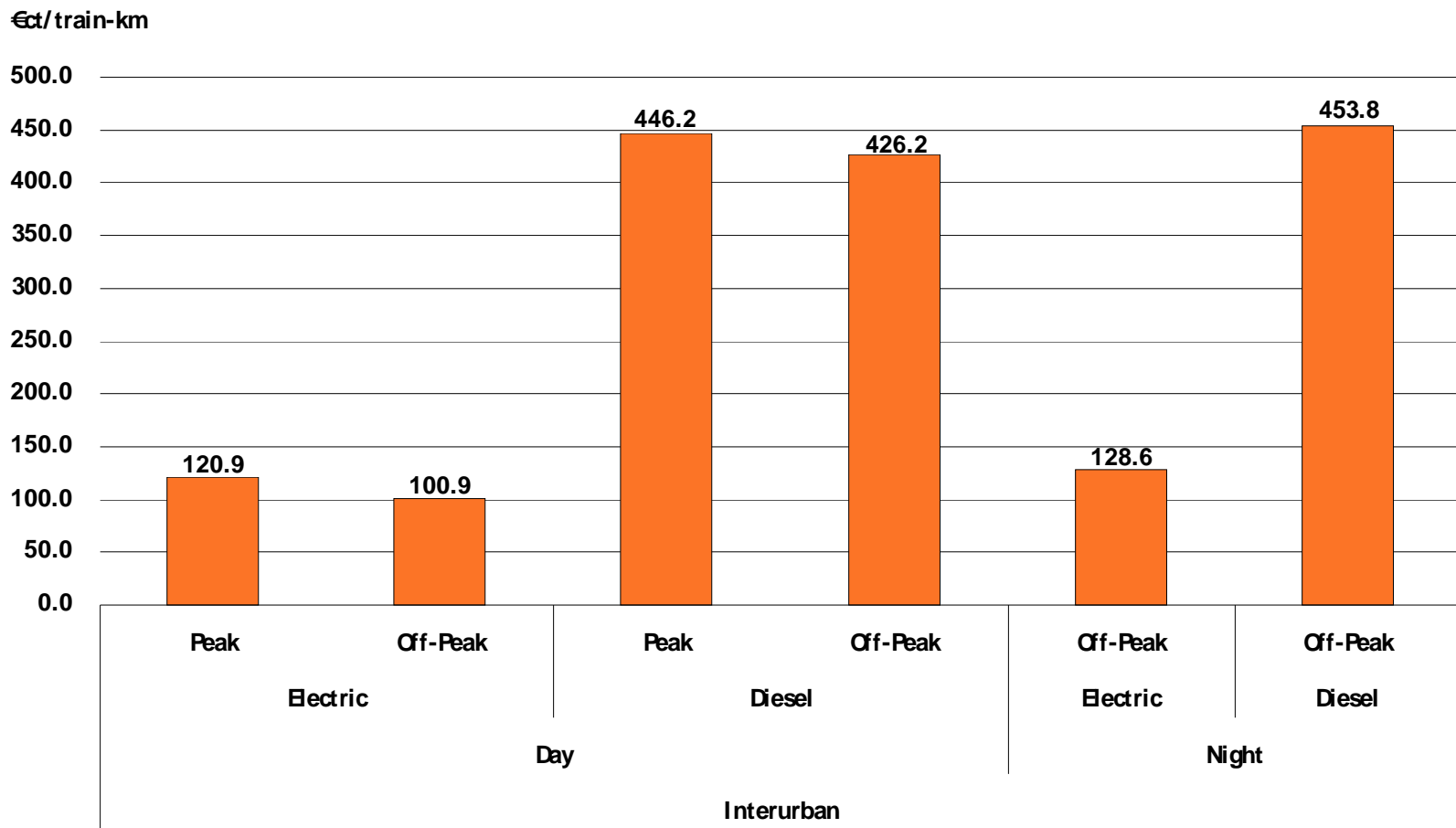
Exemplary values: Rail passenger



Urban: Electric/Diesel railcars

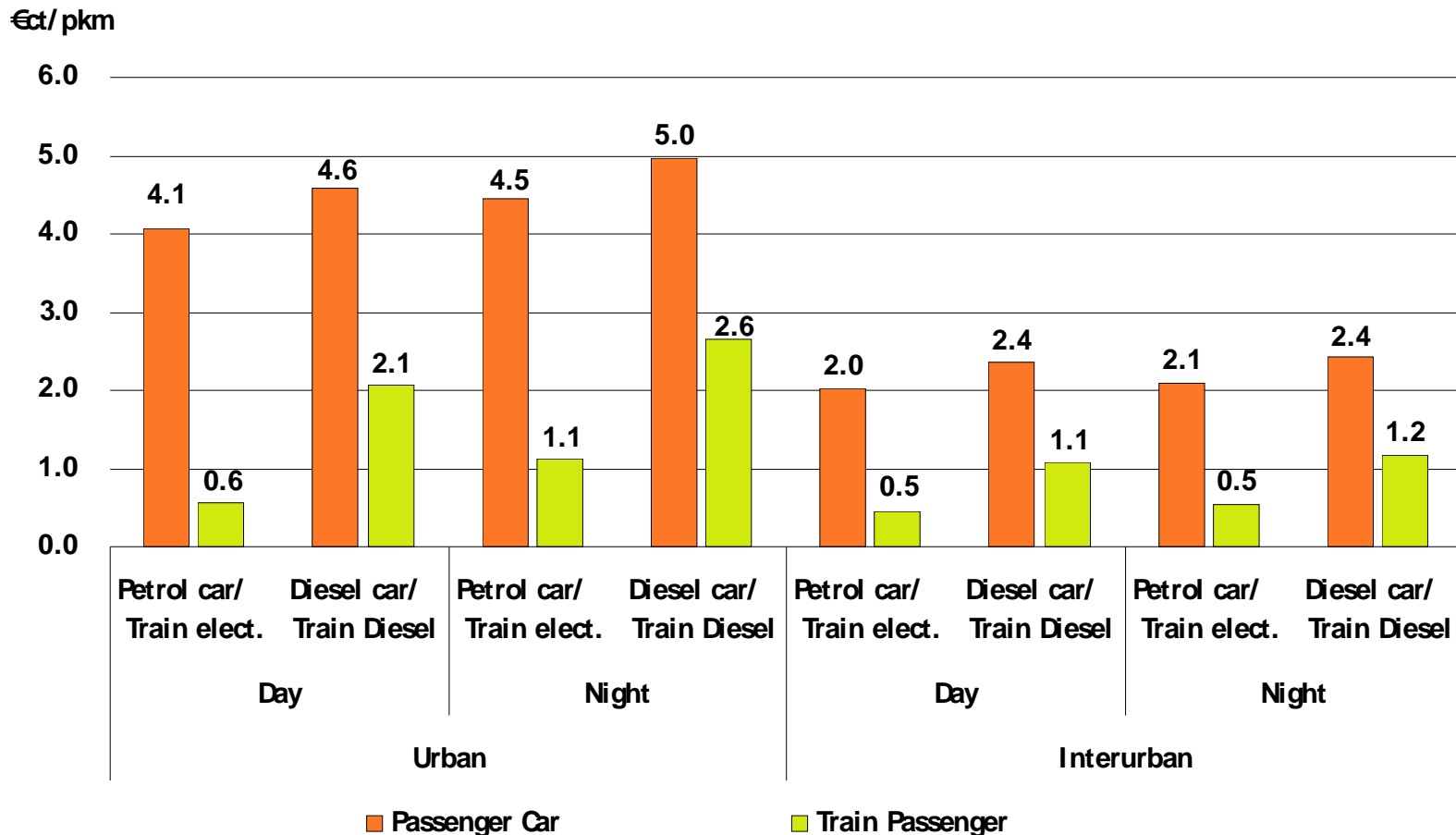
Interurban: Electric/Diesel locomotive trains

Exemplary values: Rail freight



Interurban: Electric/Diesel locomotive trains

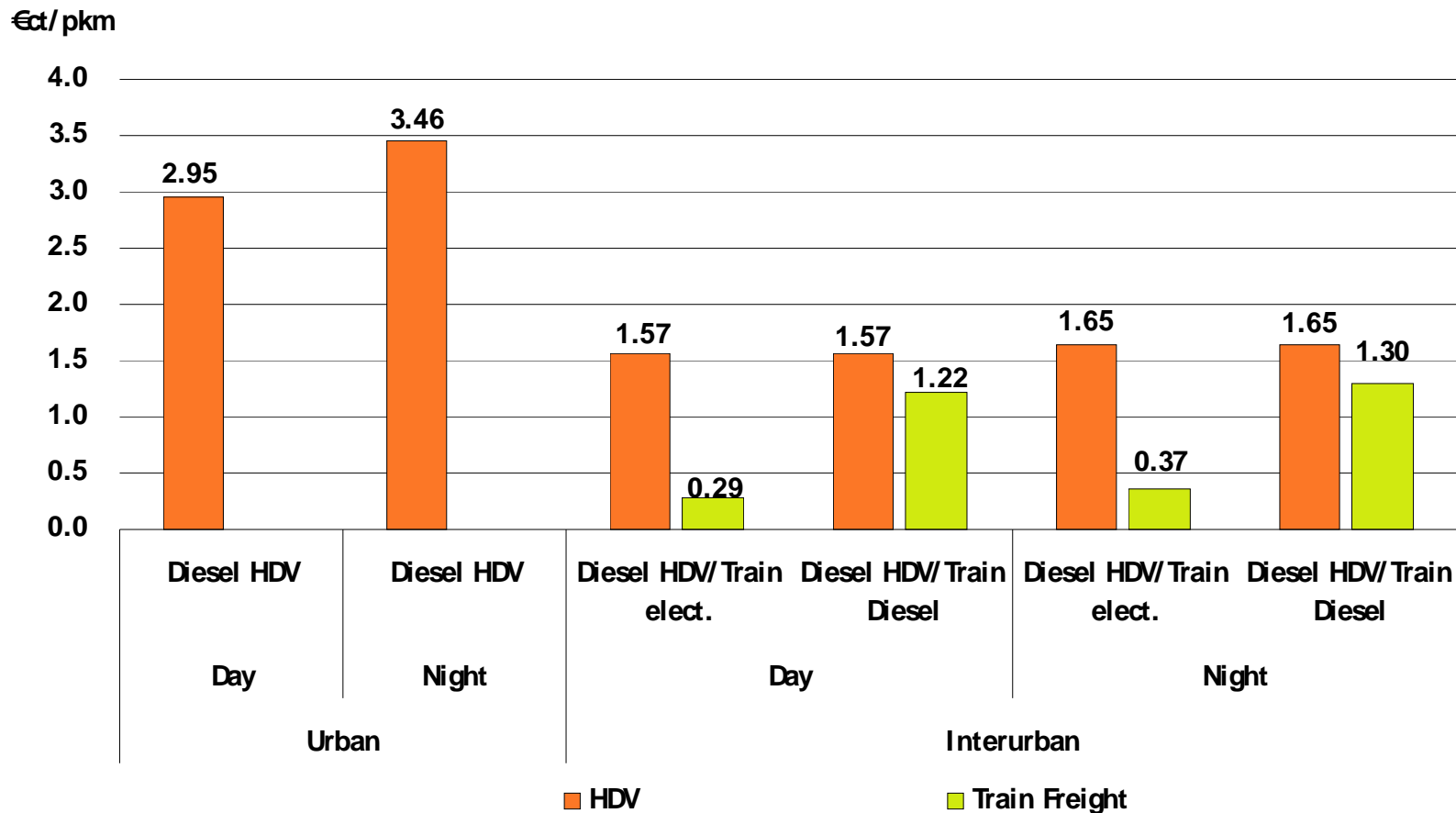
Comparison Road – Rail Passenger



Passenger car: urban: 1.65 pass./car, interurban: 1.62 pass./car.

Passenger train: urban: 96 passengers/train, interurban: 149 passengers/train.

Comparison Road – Rail Freight



HDV: >32 t, EURO 3, urban: 11.4 tons/vehicle, interurban: 11.7 tons/vehicle.

Freight train: 348 tons/train.

IMPACT and the Draft Directive

- › The Directive focuses on congestion, air pollution and noise only
- › The cap leads to maximum levels
- › There might be other ways of internalisation than road pricing
- › Link to cost recovery important