

Internalisation of External costs: an instrument for sustainable mobility

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Working Party on Transport Trends and Economics***

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What are Transport External Costs?

External costs are all costs related to the production and provision of a good or service, which are not accounted for in the production costs:

- air pollution,
- noise,
- congestion,
- accidents, etc

usually they are not paid by the consumers of a good or service.



Main externalities: 1. accidents

Social costs of traffic accident not covered by insurance premiums:

- ✓ costs depend on level of accidents and insurance system.
- ✓ They cover material damages, administrative costs, medical costs, production losses and the risk value (statistical value of life) for pain, grief and suffering caused by accidents.

Marginal accident costs:

- ✓ costs of an additional vehicle using the road and it causes positive (decrease of speed so less accidents and less severe) and negative effects (drivers are disturbed by growing traffic)



Main externalities: 2. climate change

Costs caused mainly by CO₂, N₂O and CH₄ emissions contributing to global warming

Long term global risks for climate

Differentiated approach necessary: damage control and avoidance strategy



Main externalities: 3. air pollution

Costs caused by the dominant air pollutants emissions:
PM (but also NO_x, SO₂).

Mainly health costs but also building material damages, crop losses and costs for further damages for the ecosystem such as biosphere, soil, water.

Marginal costs estimation is based on response functions related to mortality and human health.



Main externalities: 4. noise

Costs for annoyance (based on stated or revealed preference methods) and health due to increased risk of cardiovascular diseases (e.g. heart attack).

Main drivers: Time of the day, receptor density close to the emission source and existing noise levels.



How to tackle external costs?

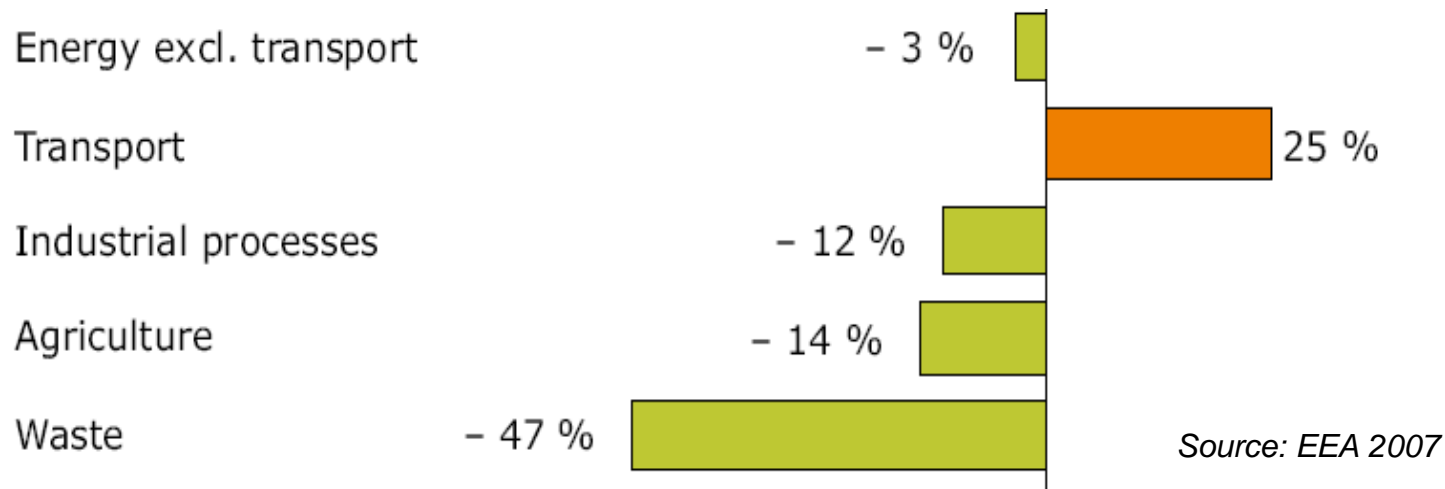
3 possible approaches:

- Total scale: all costs induced by each mode and by externality (unit: €)
- Average scale: total costs related to traffic volumes per mode and externality (unit: €/passkm or €/tkm)
- Marginal scale: additional costs per additional unit of transport (unit: €/vehiclekm)



The continuing problem with transport

Projected change in EU15 GHG emissions from 1990 to 2010 with existing policy measures

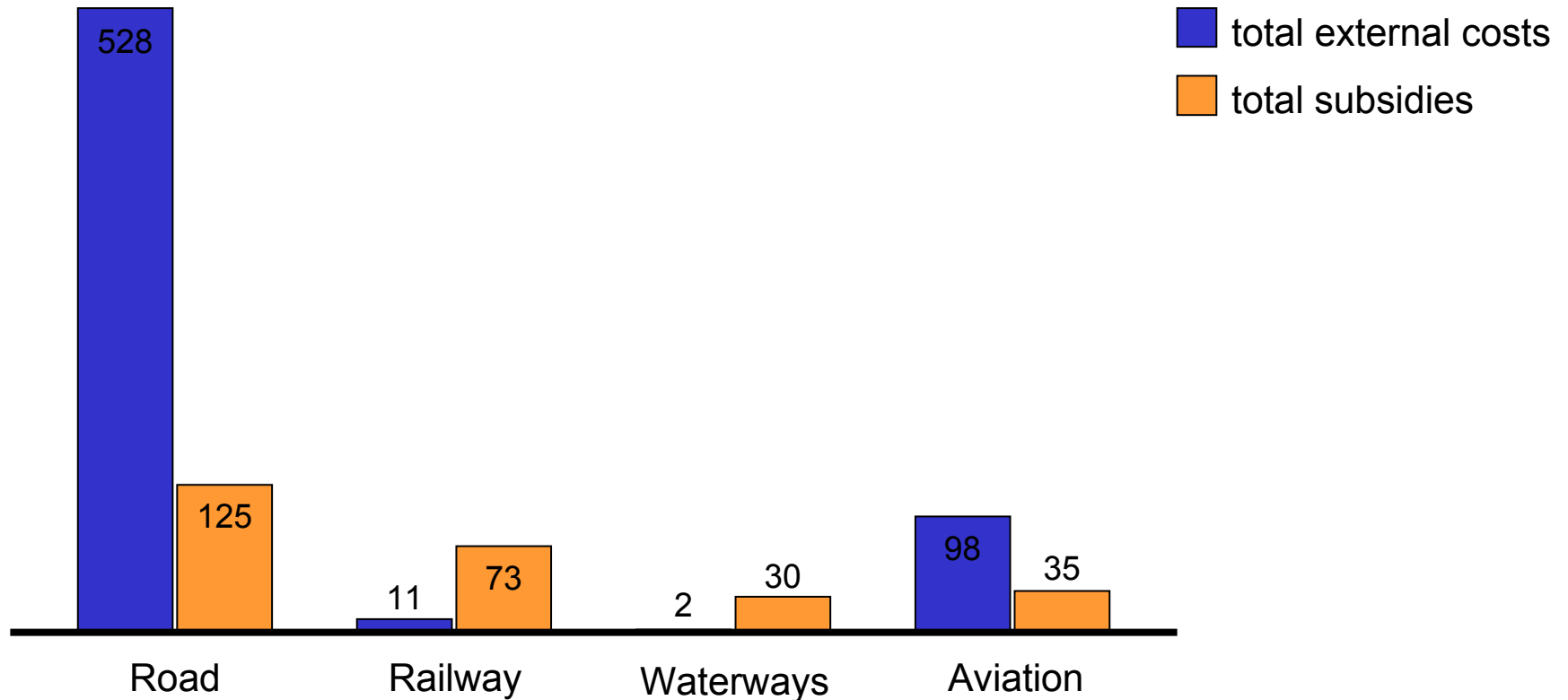


- Transport responsible for **22% of GHG emissions in EU-27** (*EEA 2008*)
- If transport followed trends in other sectors, EU-27 GHG emissions (1990-2005) would have **fallen by 14%** instead of **actual drop of 7.9%** (*EEA 2008*)



External Cost of Traffic in EU

in billion Euro per year

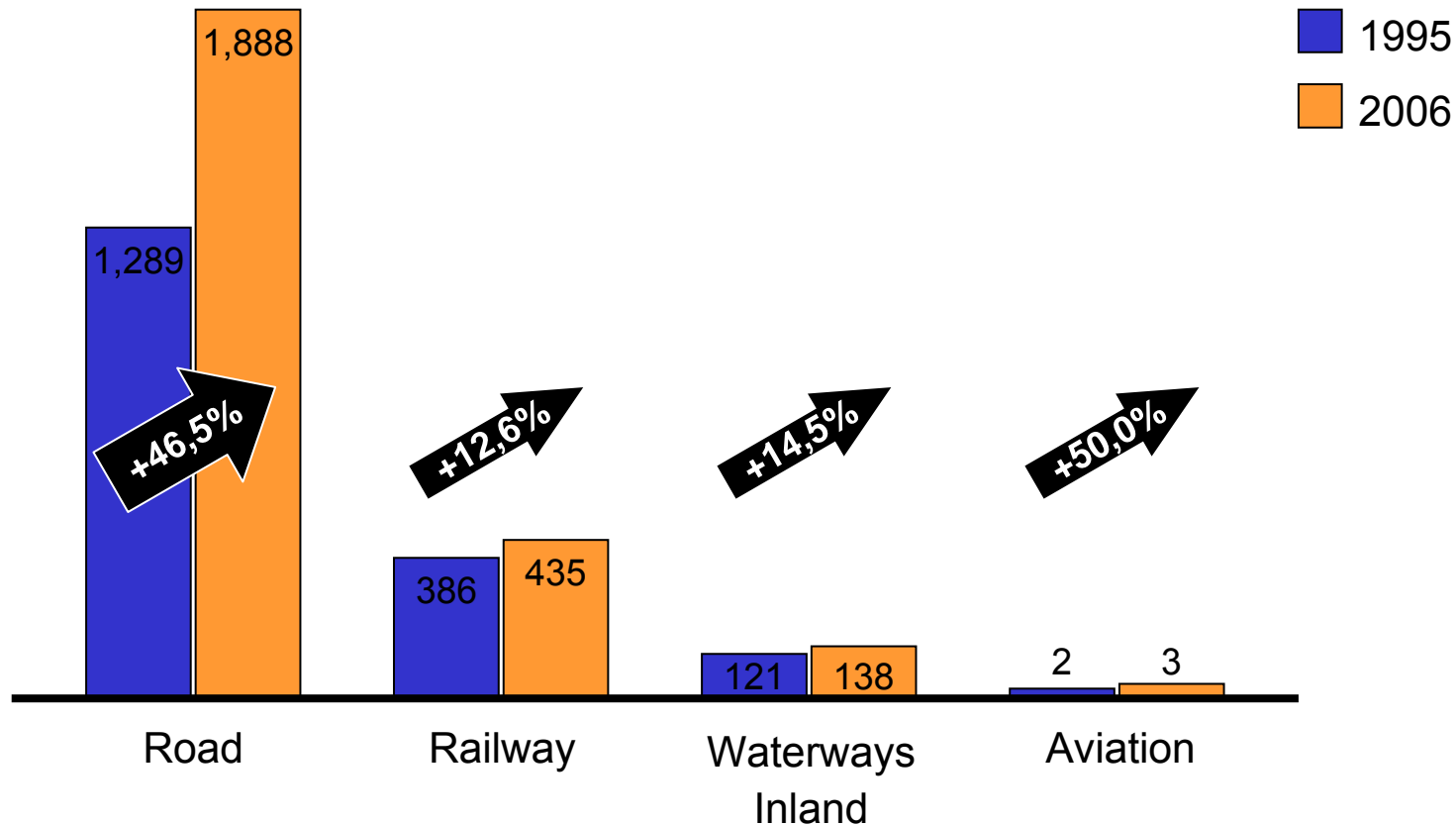


Sources: External costs of transport: update study, INFRAS and IWW; Size, structure and distribution of transport subsidies in Europe, European Environment Agency



Freight Transport in EU27: Mostly by Road

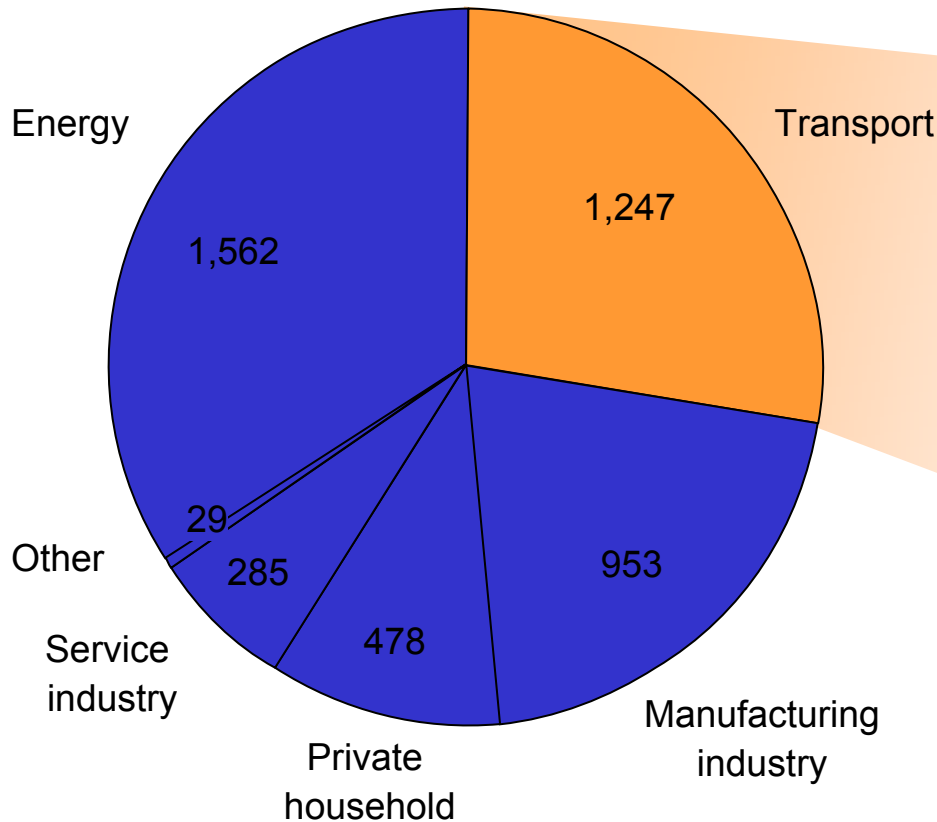
in 1,000 million ton-kilometers



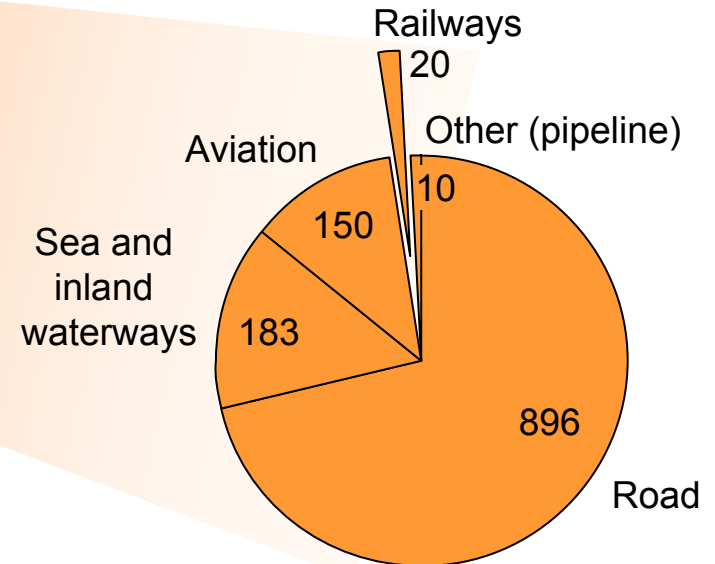
Source: Energy & Transport in figures, Directorate-General Energy and Transport

External Costs in EU27: CO2-Emissions

by sector in 2005
in million tons



in the transport sector in 2005
in million tons

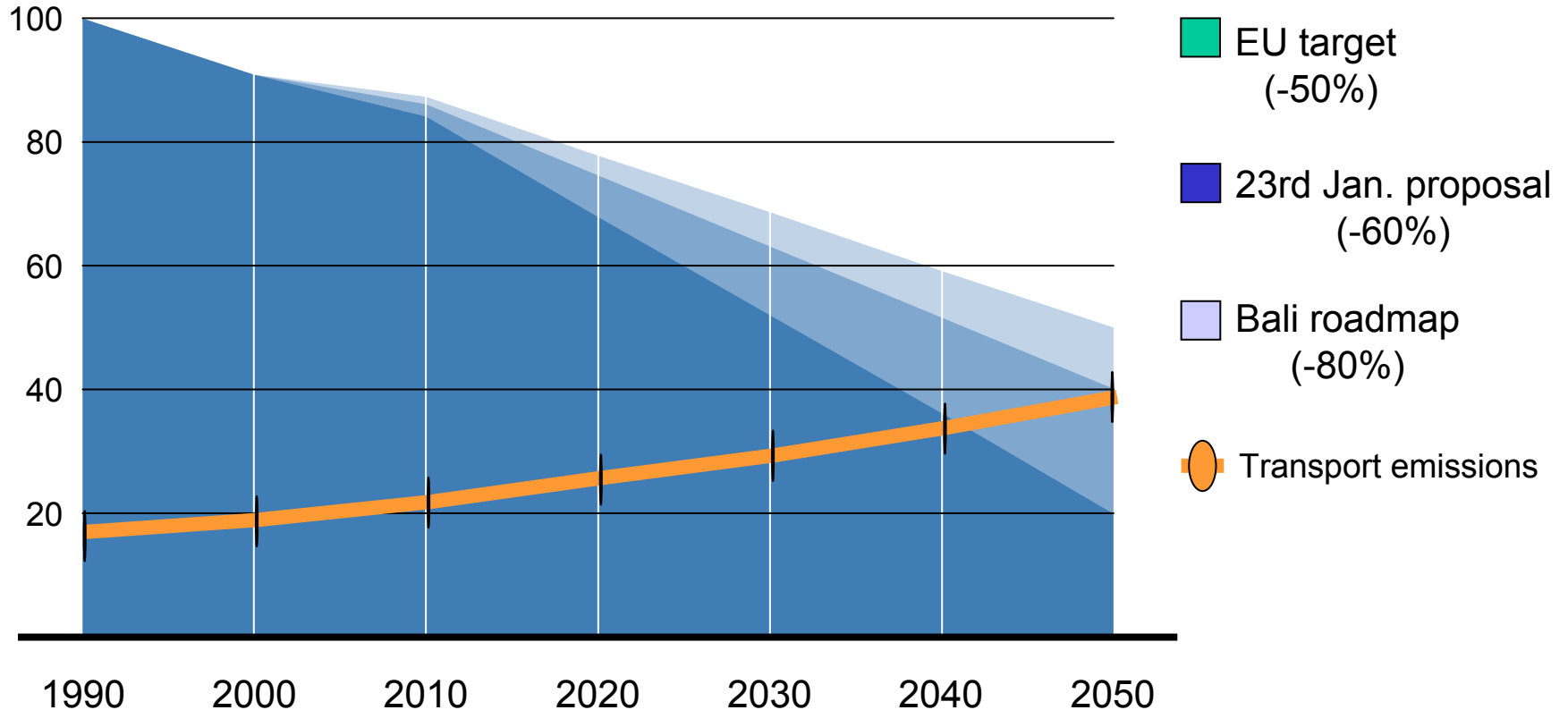


Source: Energy & Transport in figures, Directorate-General Energy and Transport; UIC Energy CO₂ database



Greenhouse gas-emissions in EU27 in 2050: Transport Accounts Probably for All

(1990=100)



Source: European Environment Agency 2008

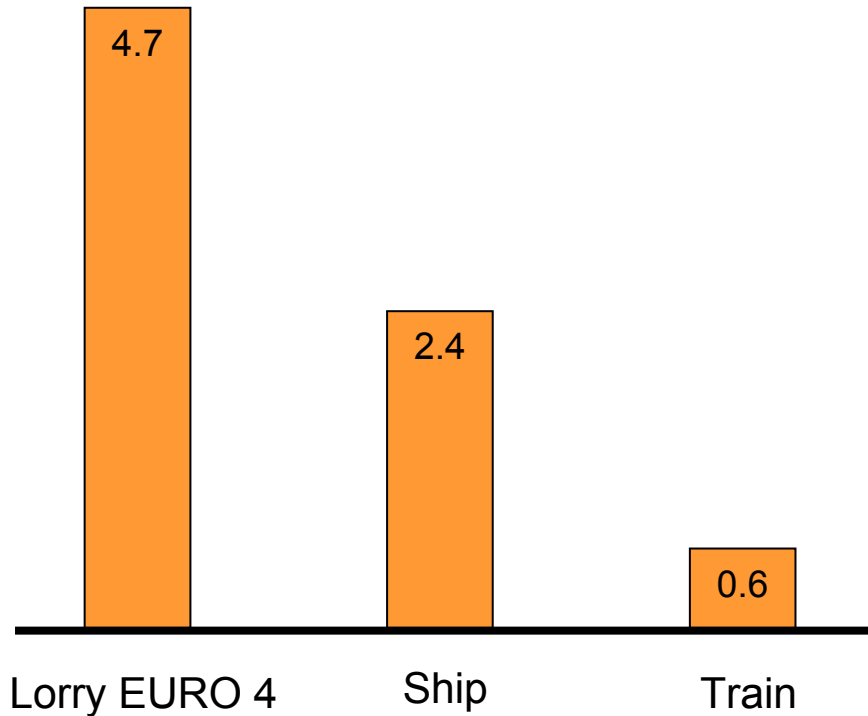


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The Voice of European Railways

CO2-Emissions: Advantage for the Rail

Emissions related to 100 tons freight transport from Basel to Rotterdam
(700 kilometers) in tons



Source: Ecological Transport Information Tool



Bold proposals needed!

No single solution to transport and climate change → technology improvements needed, but policy changes are key



“All of the current trends in transport fly in the face of what science tells us is required. Present political action in the transport sector is woefully inadequate.”

***Yvo de Boer, Executive Secretary UNFCCC,
- speaking to International Transport Forum,
Leipzig, 29 May 2008***



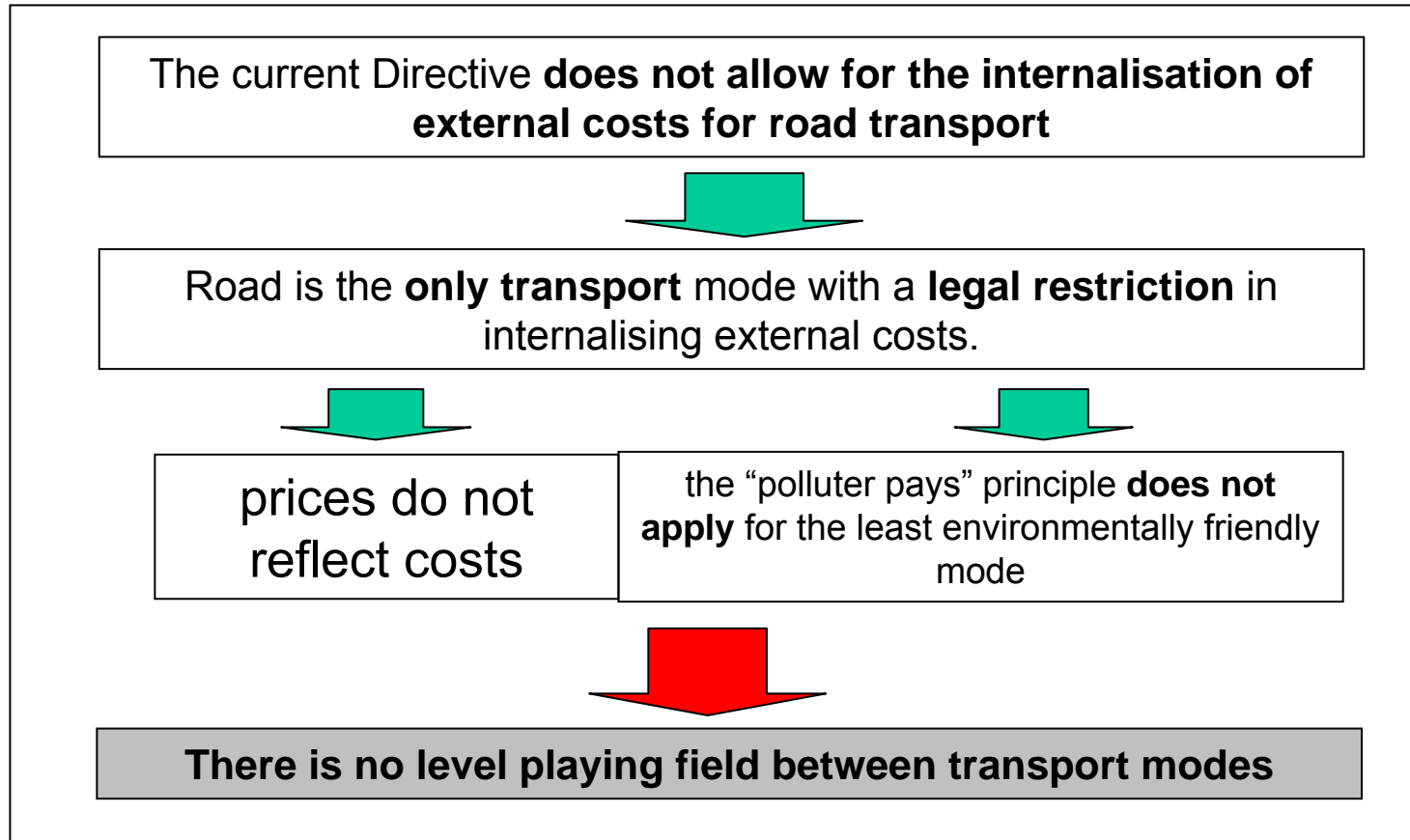
The way forward: Eurovignette



The revised Eurovignette Directive is an important further step for the internalisation of external costs in production prices.
It should therefore pass the legislative process



Arguments for Eurovignette revision



CER view

Eurovignette Directive revision: CER position



CER welcomes that the “polluter pays principle” is finally put into action to get prices right:

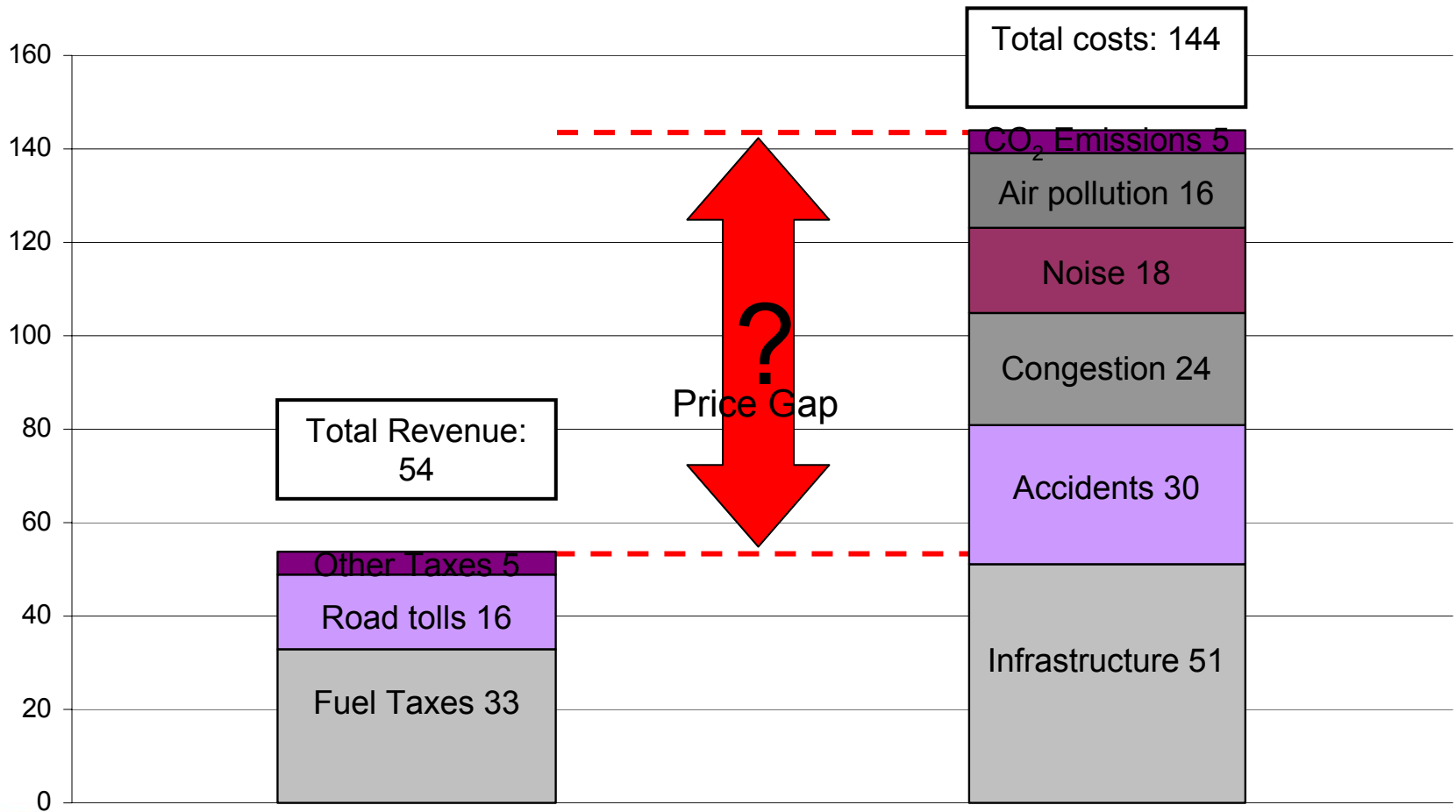
- Allows prices for heavy goods vehicles to reflect costs more closely
- Improves environment and reduces congestion
- Allows each Member State to raise money for investment in transport

BUT

Leaving out CO2 is inconsistent:
failure to address climate change!

Road does not cover its costs – government revenue hardly covers infrastructure cost

EU 27 – HGV Revenues and Costs in billion Euro

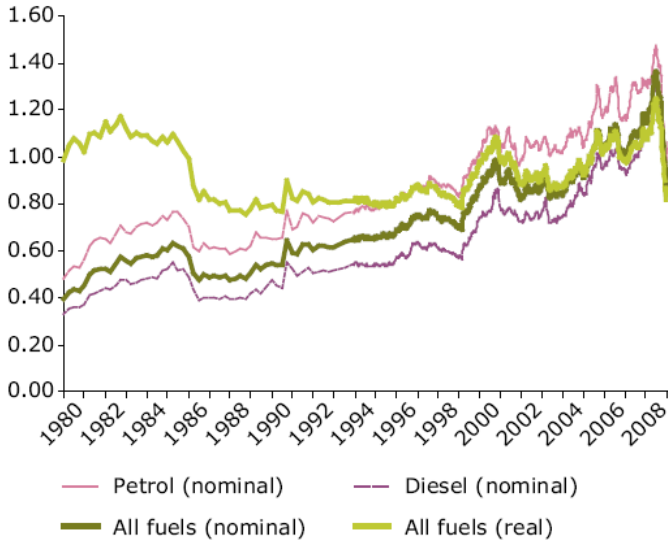


Source: Are Trucks taking their toll? (CE Delft, 2009)



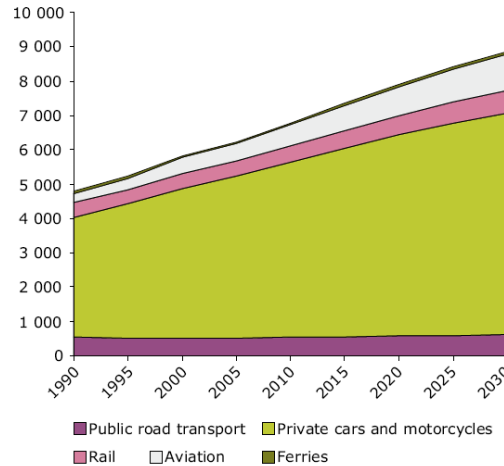
Low prices for road transport have led to significant increase in traffic volume and thus CO2 emissions

EUR per litre petrol equivalent



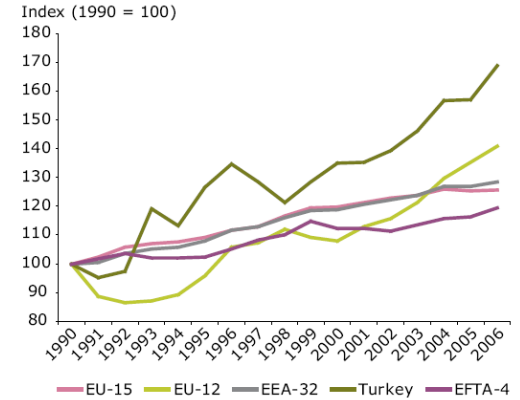
Source: DG TREN, 2008

Gfkm (Freight Transport activity)



Source: European Commission, 2007

Transport sector Greenhouse Gas Emissions



Source: European Topic Centre for Air and Climate Change, 2008.

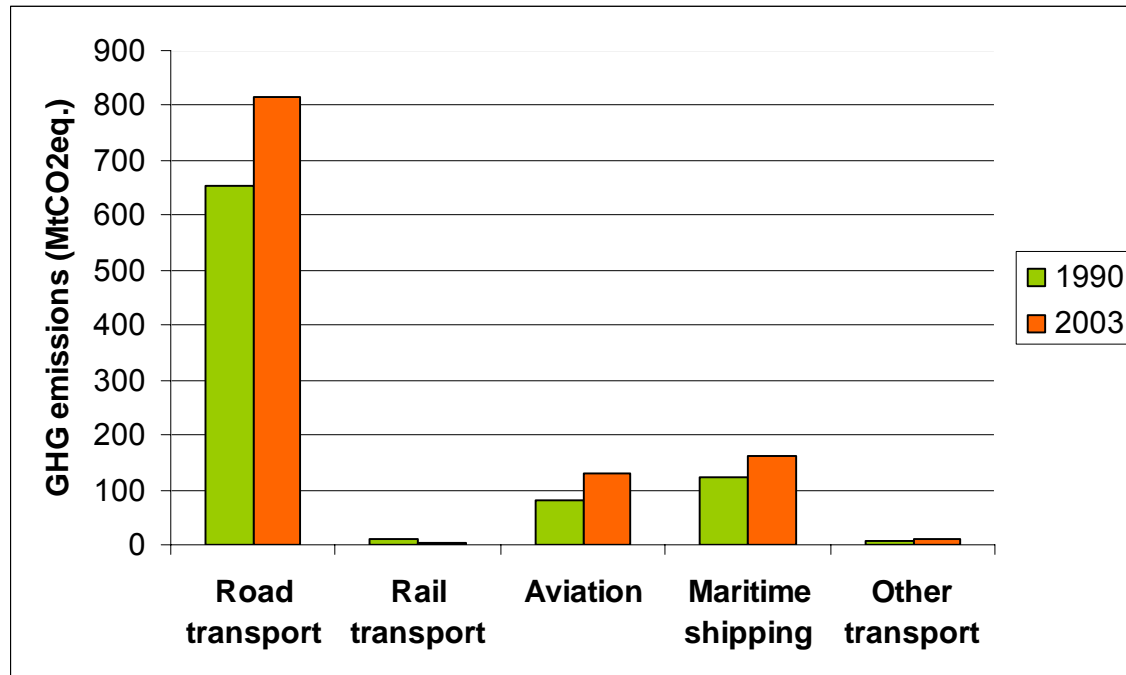
Road is perceived as the cheapest transport mode:

- Fuel prices largely stable (corrected for inflation)
- Productivity gains due to modern technology and logistics concepts
- Important costs are externalized to society

If prices are not adjusted, traffic volumes will continue to grow uncontrollable

Strengths of the railway sector 1

Change in greenhouse gas (GHG) transport emissions by mode, 1990-2003 (EU27)



- Rail is the only mode that has decreased GHG emissions since 1990 – **all other modes have increased.**



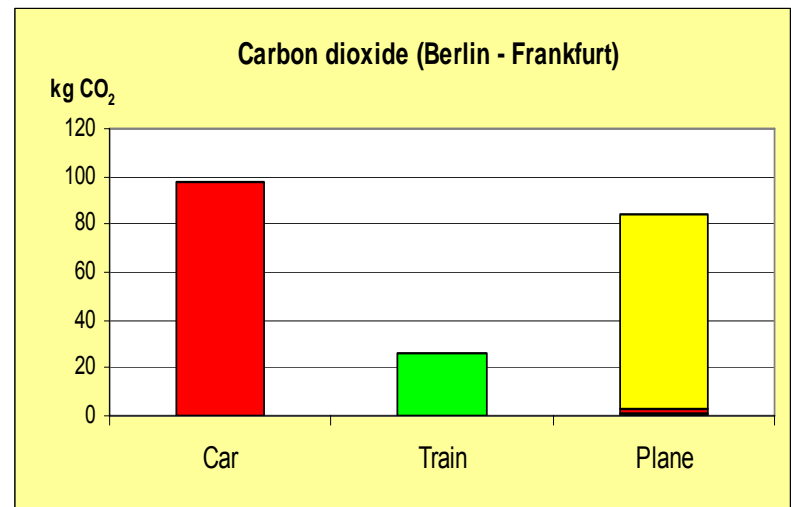
Strengths of the rail sector 2

Climate change and CO2 emissions

Travelling by rail is on average **3-10 times less CO2 intensive** compared to road or air transport

With 7-10% of market share, rail still contributes **less than 2%** of the EU transport sector's **CO2 emissions**

80% of European rail traffic uses electric power for traction: through use of renewable energy it is possible for rail travel to be emission free



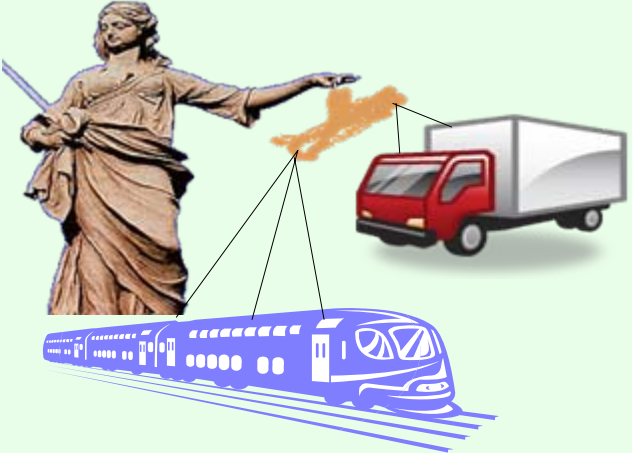

Comparison of CO2 emissions: one passenger transported between Berlin and Frankfurt city centres

*May 2008: CER members agreed to a further **cut in specific emissions of average 30%** over 1990-2020*



Intermodal competition bringing advantage for society: Balanced conditions necessary

Eurovignette: End Road-Privilege

<p>Today</p>  <p>Only Rail can be charged for external costs</p>	<p>Tomorrow?</p>  <p>Fair competition between modes</p>
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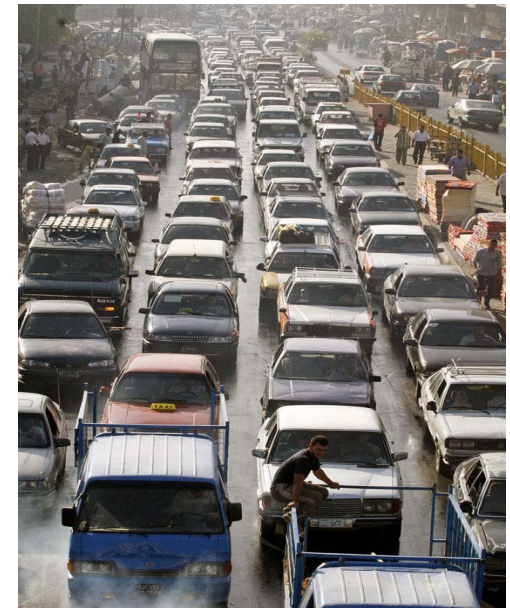
Eurovignette proposal – first step in the right direction!



Short-term measures

Revision of the Eurovignette Directive to allow internalisation of external costs for road transport is **URGENT** and top priority

- *All studies clearly show the high external costs of road transport*
- *Internalisation of external costs for road transport is not allowed*
- *Competition between rail and road is fundamentally distorted*



Medium term measures

- **Organisational changes**: Better combining of transport modes to use strengths of each

Swiss example: introduction of the Heavy Vehicles Fee

- ✓ **Combined transport** => +17 million tons
- ✓ *Reduced vehicles crossing Alps by 16% (2000-2006)*
- ✓ *2/3 of the revenue => financing major rail projects*
- ✓ *Modal split => transalpine rail freight reached 66% in 2006*



- **Leverage effect**: Use of revenues in cleaner transport will boost investment, including public-private partnership (PPP)

- **PPP example: Perpignan – Figueras**: *project linking the Spanish network with the rest of Europe (to open in 2009)*



Long term measures

Use of market-based instruments to make more rational choices of transport modes



**Pricing systems that reflects costs => modal shift
=> greener and more efficient transport system**



The sustainable mobility: prices reflecting real costs!

Environment / climate change debate

- Copenhagen conference in December 2009
- transport will have to limit CO2 emissions
- transport prices will have to reflect real costs, including external costs

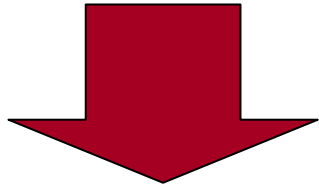
Economic debate

- internalisation of external costs ⇒ modal shift ⇒ new production and distribution structure (focus on combined transport)
- capacity limits of urban infrastructure ⇒ public railbound transport



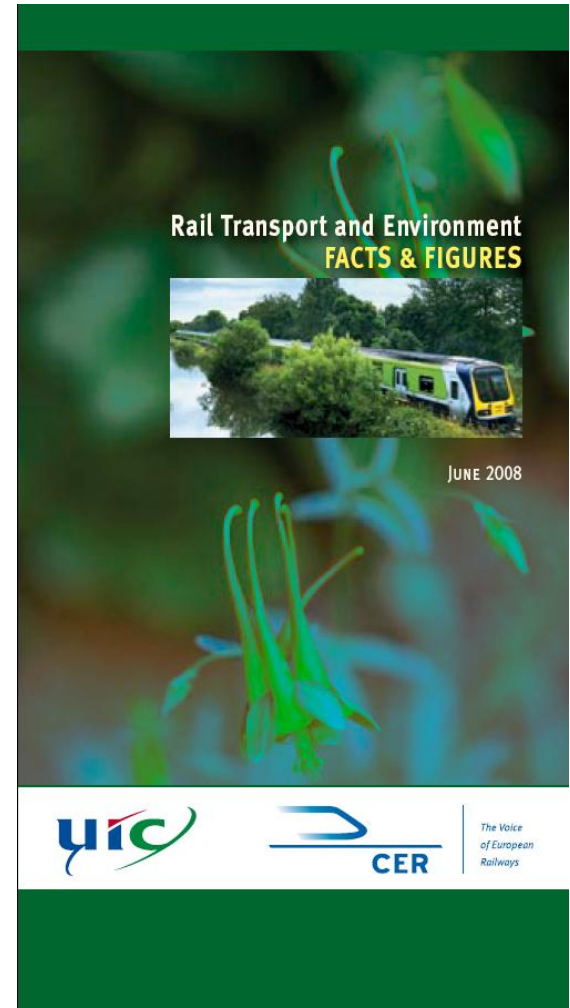
Facts and Figures

Need for accurate, independent data outlining case for rail has led to:



‘Rail Transport and Environment:
FACTS AND FIGURES’

Published by CER and UIC, June 2008





Thank you for listening!

www.cer.be

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The Voice of European Railways