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A perspective from the rail sector

CEPS Task-Force meeting, 17 May 2011

Edward Christie & Matthew Ledbury

The White Paper on how to reach the -60% target (SEC(2011) 391 final, page 19)

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38. (…) three broad components: transport activity levels, the energy intensity of transport activity and the greenhouse gas intensity of the energy used in transport.

Deep cuts in emissions will require acting on all three factors as it is unlikely that technological improvement alone will allow for the 60% reduction by 2050.

39. (…) Traffic volumes can be curbed through demand management instruments (…)

40. The energy efficiency component can be improved by **using the most efficient (combination of) modes and by improving the efficiency within each mode** (…) Improving the attractiveness (and thus modal share) of the most efficient modes, deepening modal integration and improving load factors would all reduce energy use (…)

41. The third element requires action on the GHG intensity of the energy used in transport. (…) This can involve either adopting lower carbon fuels in existing engines or introducing new types of engine technologies that can use low-carbon energy. **Decarbonisation can only be ultimately achieved if alternative, low-carbon fuels are widely used by ever more efficient vehicles together with appropriate infrastructure and systems.**

Decarbonisation: all modes, all distance classes, all combinations of modes

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- *Technological improvements* are essential for decarbonisation of short-distance and urban travel (which potentially could be almost total)
- *Technological improvements* are essential to achieve limited decarbonisation of intercontinental transport (aviation / maritime shipping)
- *Modal shift to rail* is a major potential solution for intermediate distances for distances / weight classes where road electrification may reach certain limits
- The development of a 'multimodal core network' is a key condition
- There are *few inherent conflicts* between transport modes when looking at their "natural advantages" by weight & distance class
- CER supports electrification of surface transport as the way of the future

Evolution of total rail freight 2003-2008
Source: Eurostat. EU27 excl. GR, BG, CY, MT, BE

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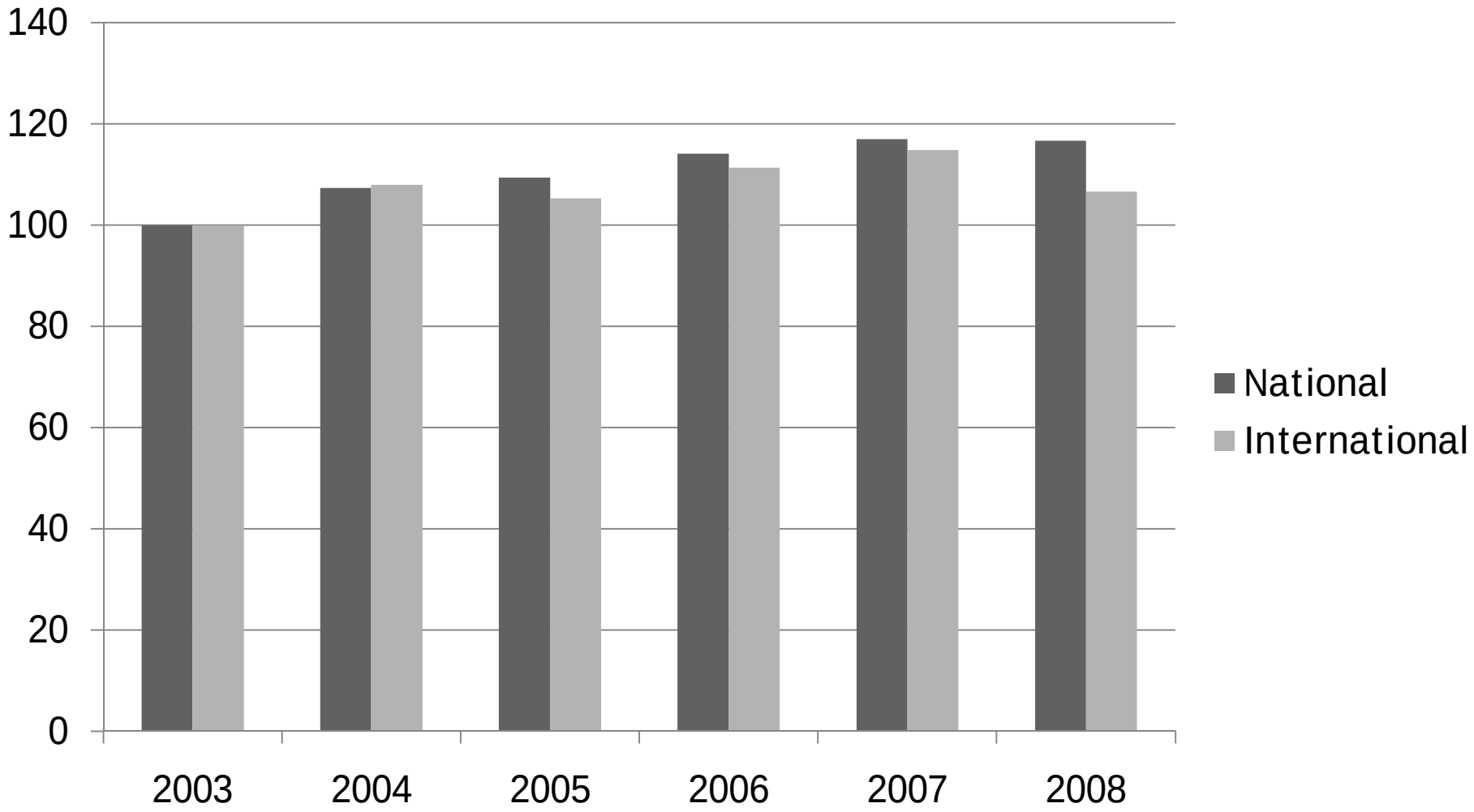

Rail freight evolution: major national differences
Source: Eurostat, national + international, 2003=100

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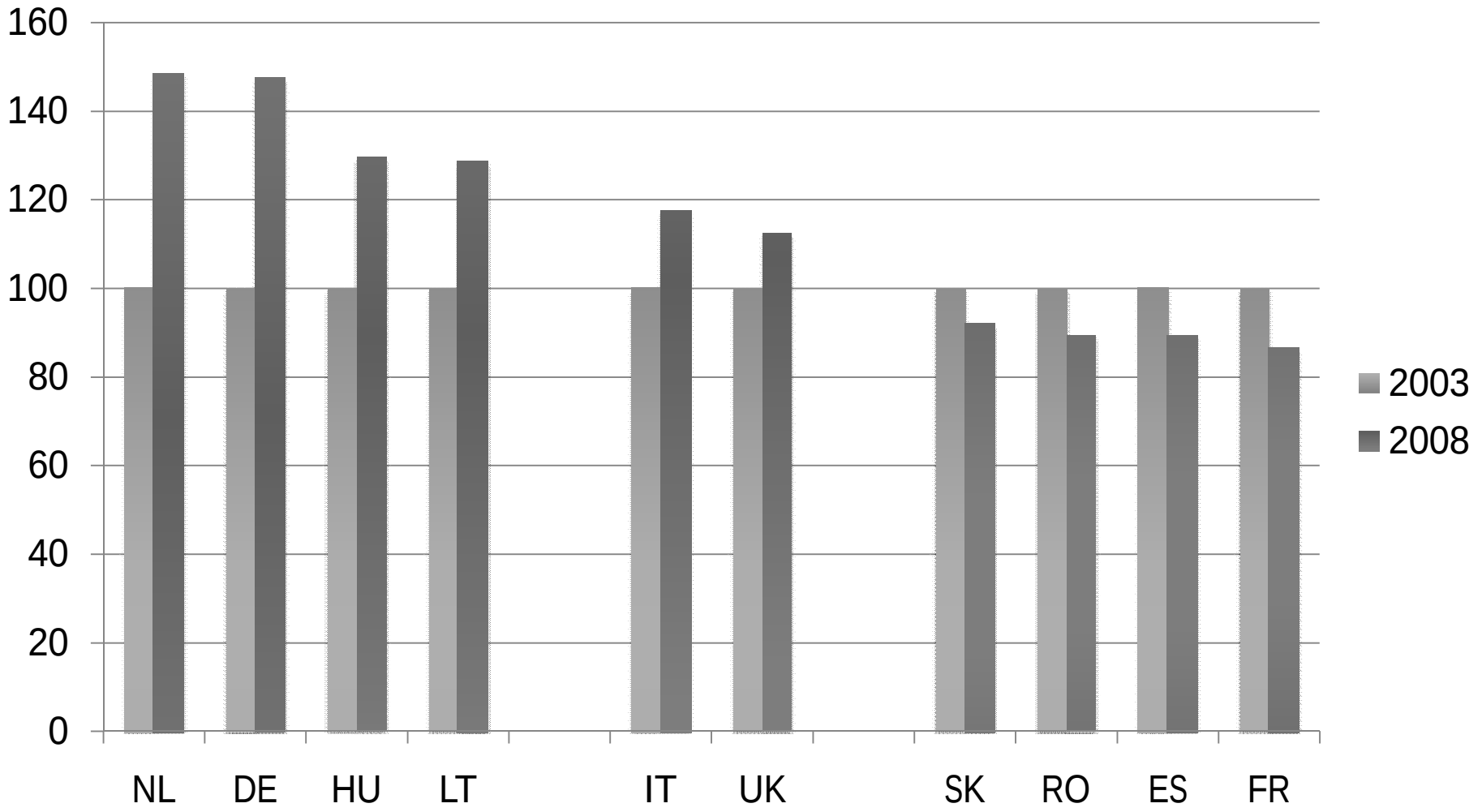

High-speed rail: cost and impact
Source: UIC 2010

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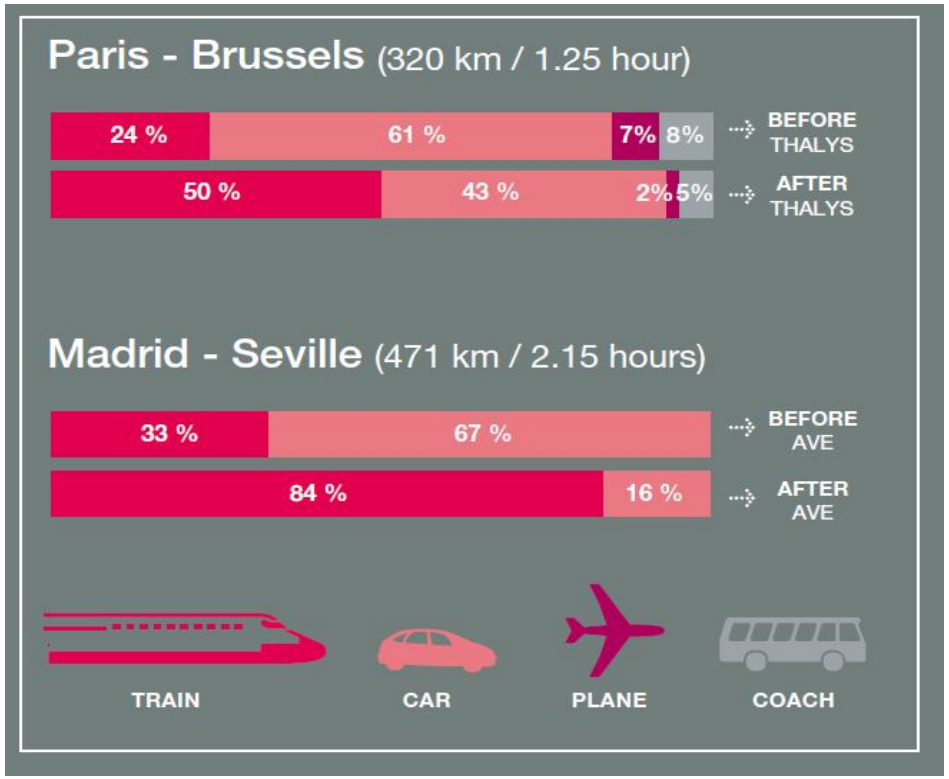
- Average cost of construction of 1km of new high speed line in Europe: €12-30m
- Pronounced modal shift on routes where new high speed lines are constructed:



High-speed rail: Carbon footprint of traffic modes on average routes Source: SYSTRA 2011

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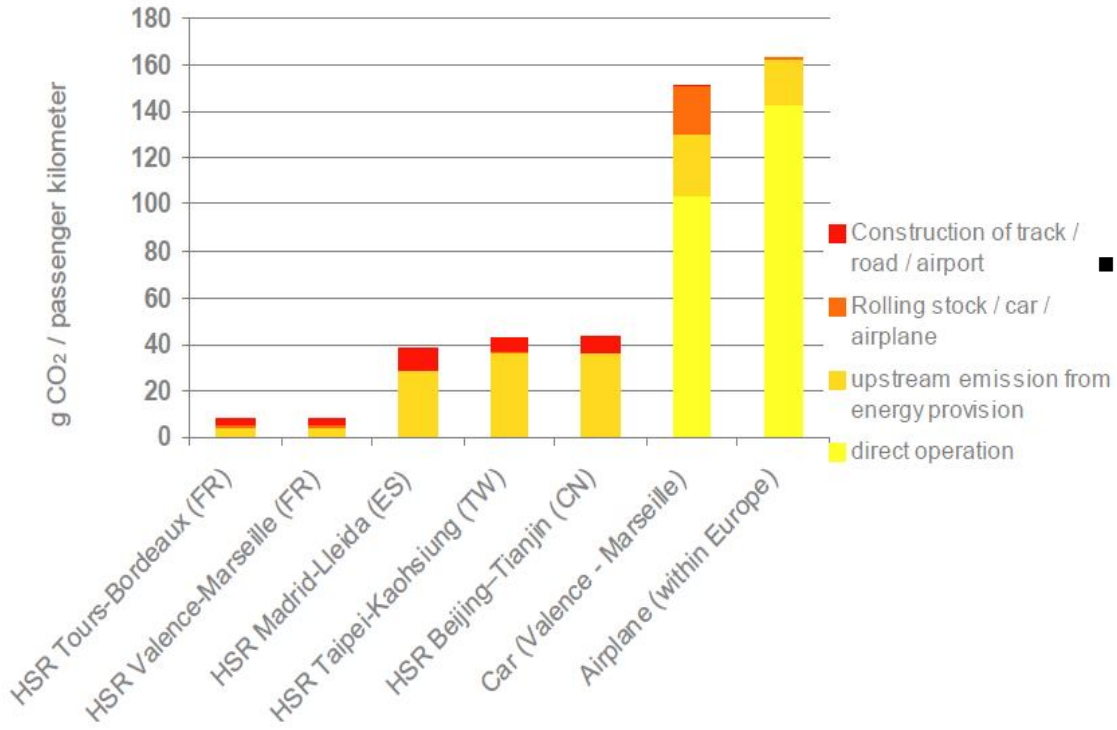
- *Carbon footprint of traffic modes on new high speed routes*



- The carbon footprint of high speed rail, including track construction and rolling stock, is **up to 20 times less** than similar transport by private car or airplane.
- Taking into account avoided emissions, the environmental benefit of the Valence-Marseille high speed line is about 107,000 tonnes of CO2 per year. Compared with the total emission during the initial construction, **the "CO2 pay back time" is calculated at 9.7 years.**

‘Low-hanging fruit’ in the rail sector

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- **Parked train management**
- **Eco-driving**

‘Low-hanging fruit’ - details

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- **Parked train management**
  - Parked train management is a very promising operational measure with a high saving potential and comparably low investment costs. It mainly focuses on a more efficient load and temperature management for parked trains.
  - It can be realized as a first stage by low tech measures. More complex solutions that produce higher savings require higher organisational effort because established processes and habits have to be changed.
- **Eco-driving**
  - At a low level, eco-driving covers driver training and driver advice systems
  - Best results are achieved through a high degree of cooperation between the different stakeholders: infrastructure managers, train operating companies, rolling stock and signalling equipment manufacturers and standardisation bodies and safety authorities.

‘Low-hanging fruit’ - savings

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- **Parked train management**
  - potential saving of **4-8%**

- **Eco driving**
  - significant reductions - **up to 15%**

Source for data: - the EU funded FP6 project ’Railenergy’ project (2006-2010). The project looked at how to achieve a 6% reduction of the specific energy consumption of the European rail system by 2020.

Railenergy

http://www.railenergy.eu/

Thank you for your attention!

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→ For further information, visit our website: **www.cer.be**