



# **Reducing Transport Greenhouse Gas Emissions: How Much, How Fast and at What Cost?**

Mr. Jack Short, Secretary General, International Transport Forum

## The International Transport Forum




- A global platform for transport, logistics, mobility
- A meeting place for the transport sector at the highest level
- A forum run by governments, open to business, research and civil society
- 51 Countries





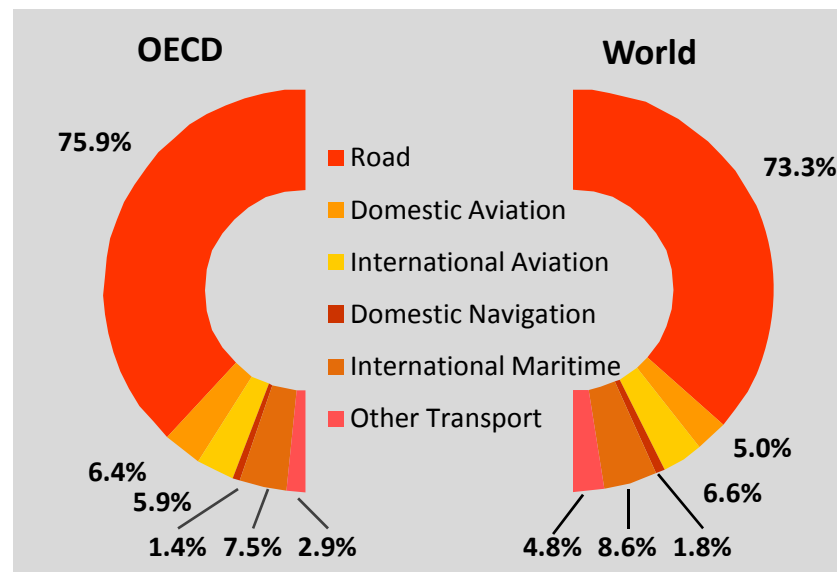
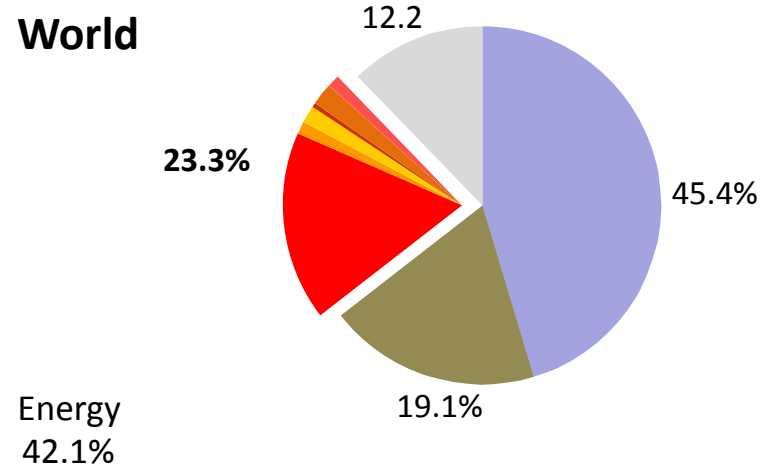
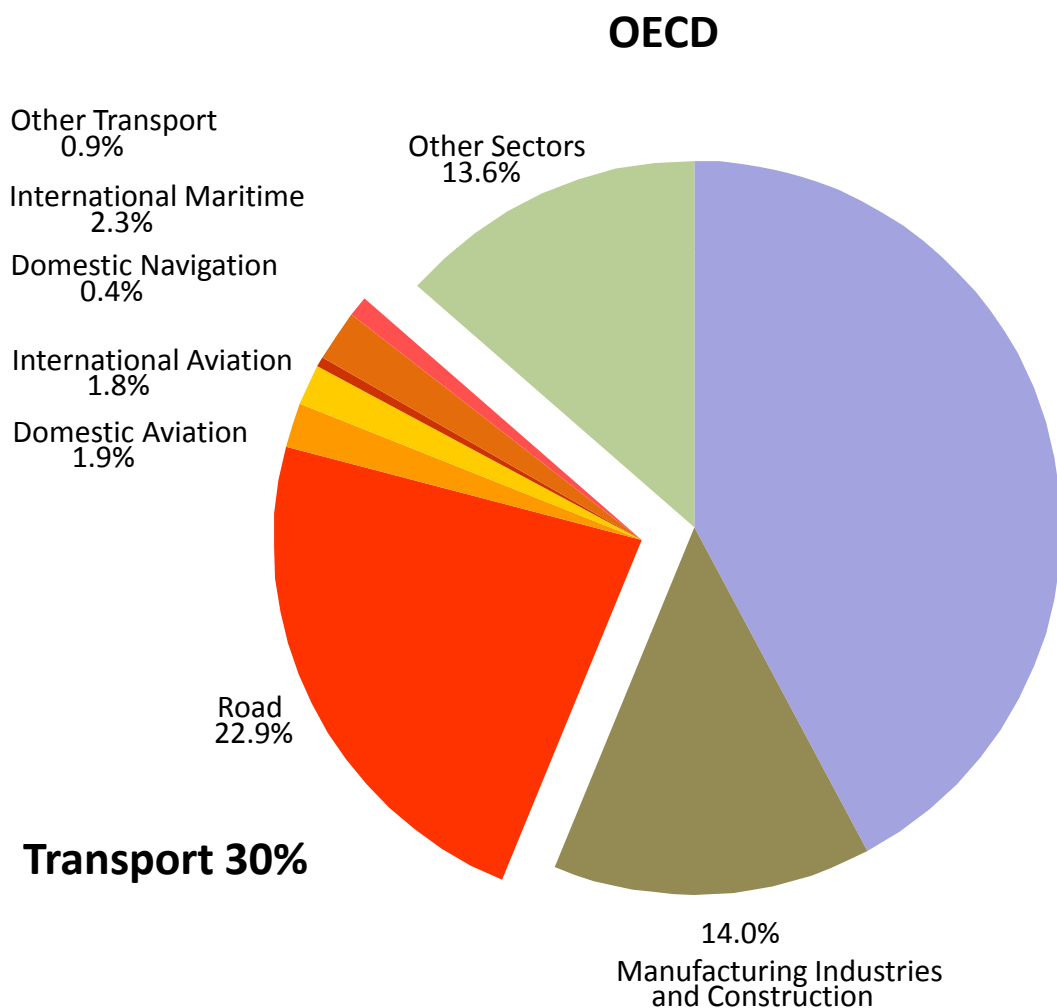
- 1<sup>st</sup> Forum in May 2008 in Leipzig: “Transport and Energy: The Challenge of Climate Change”

## Outline

-  “Mind the Gap”: Trends in the Transport Sector
-  Which Policies at What Cost?
-  Transport Policy Implications and Priorities

# Transport's Share of CO2 emissions from fuel combustion

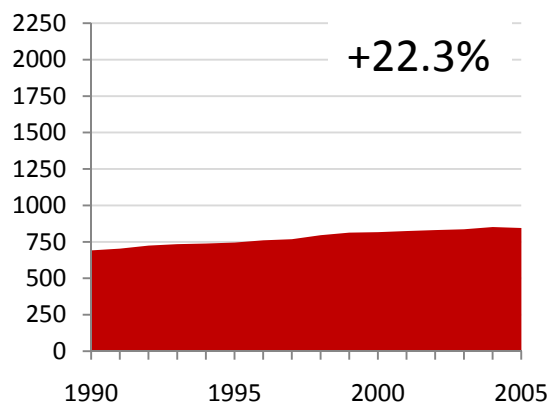
(2005 IEA data, including international aviation and maritime)



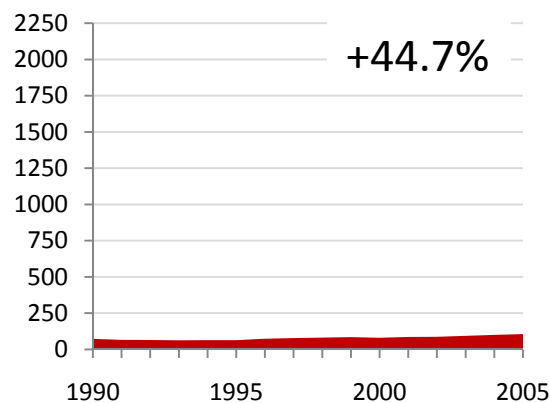
## Transport Sector CO2 Emissions by Region: 1990-2005

(excluding international aviation and shipping)

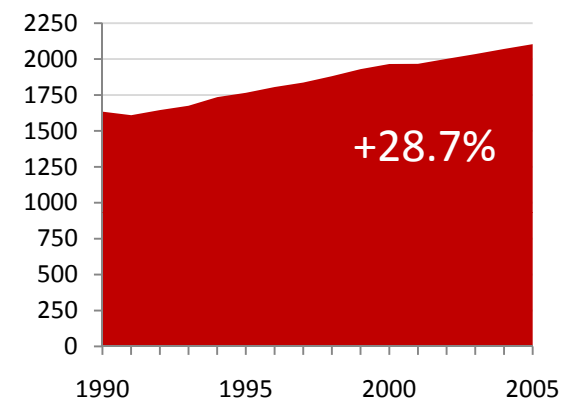
**EU-15**



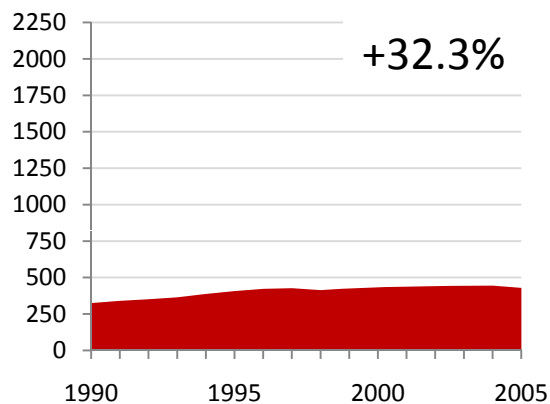
**New EU (EU27-EU15)**



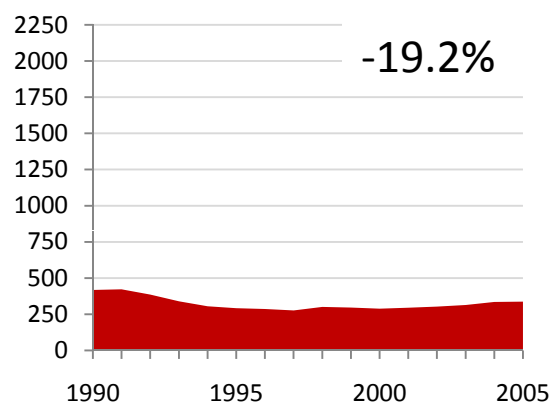
**North America**



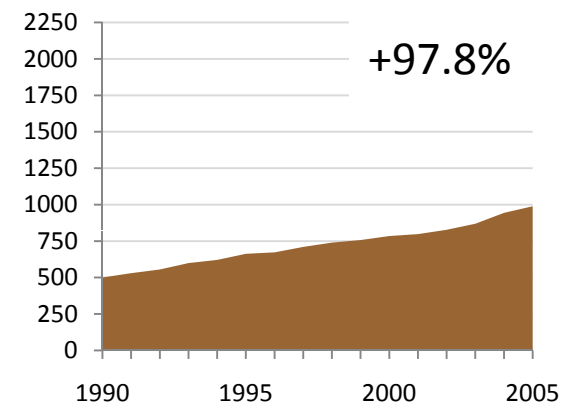
**OECD Asia**



**Other ITF**

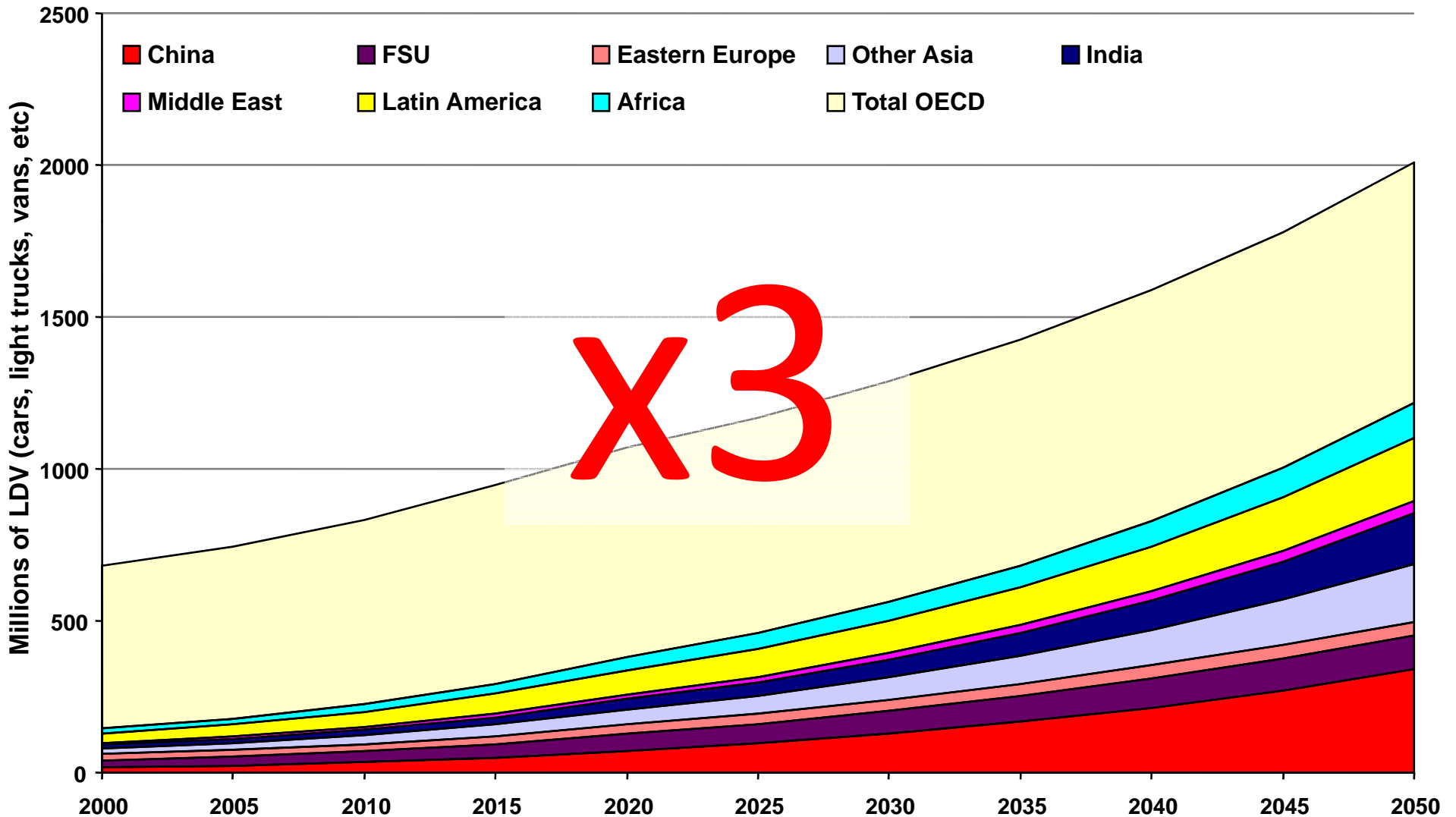


**Top 10 non ITF**





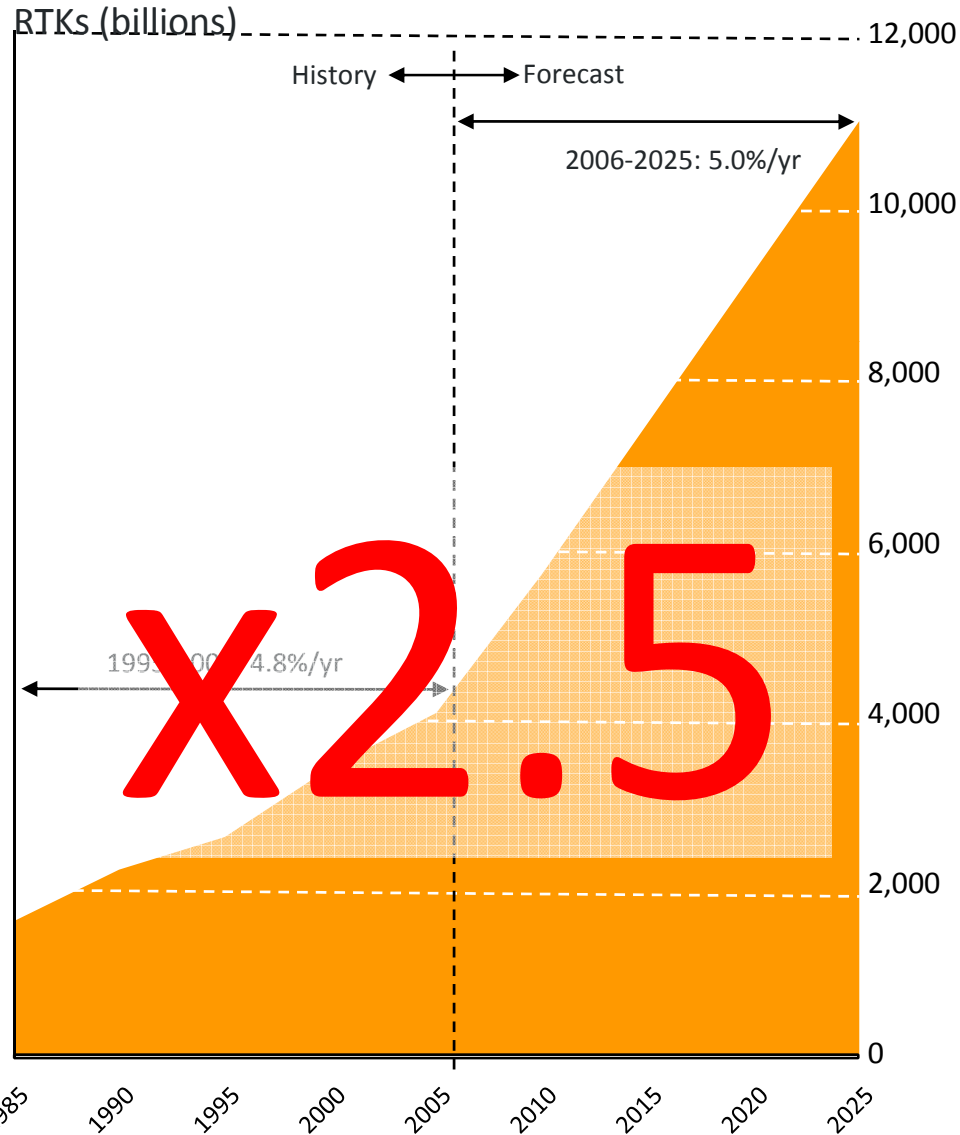
# World Motorization: WBCSD Projections



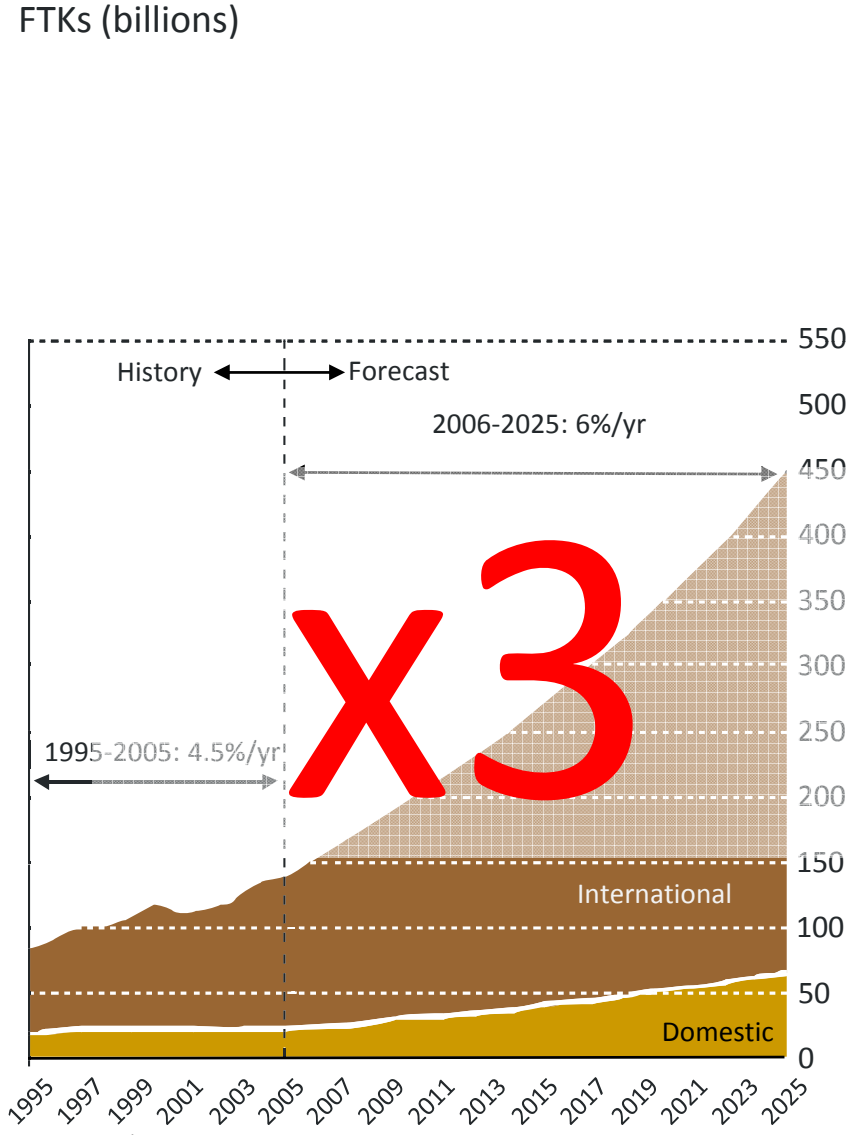


## Air Passenger Traffic Development

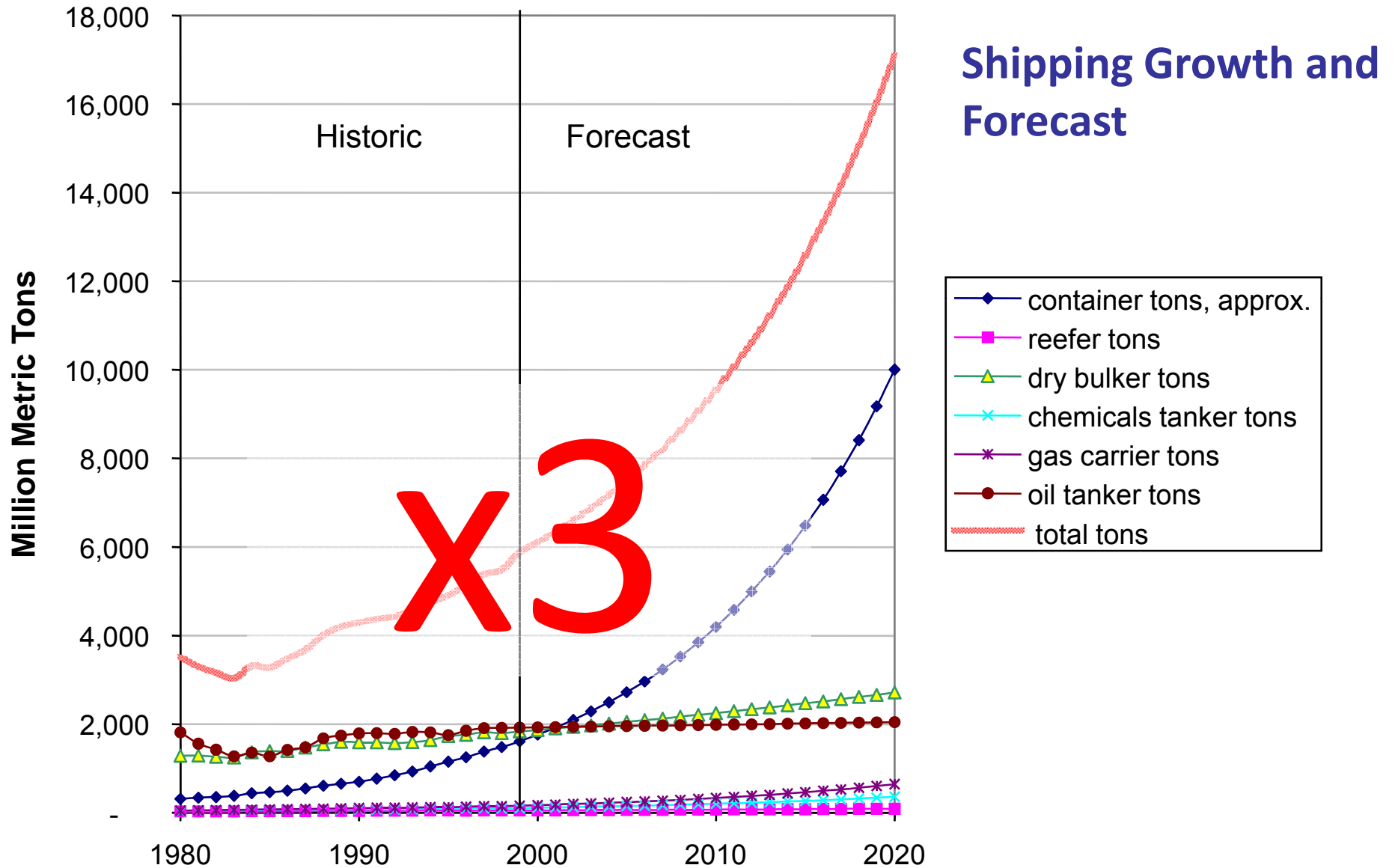
## Air Cargo Traffic Development



Source: Boeing, 2007



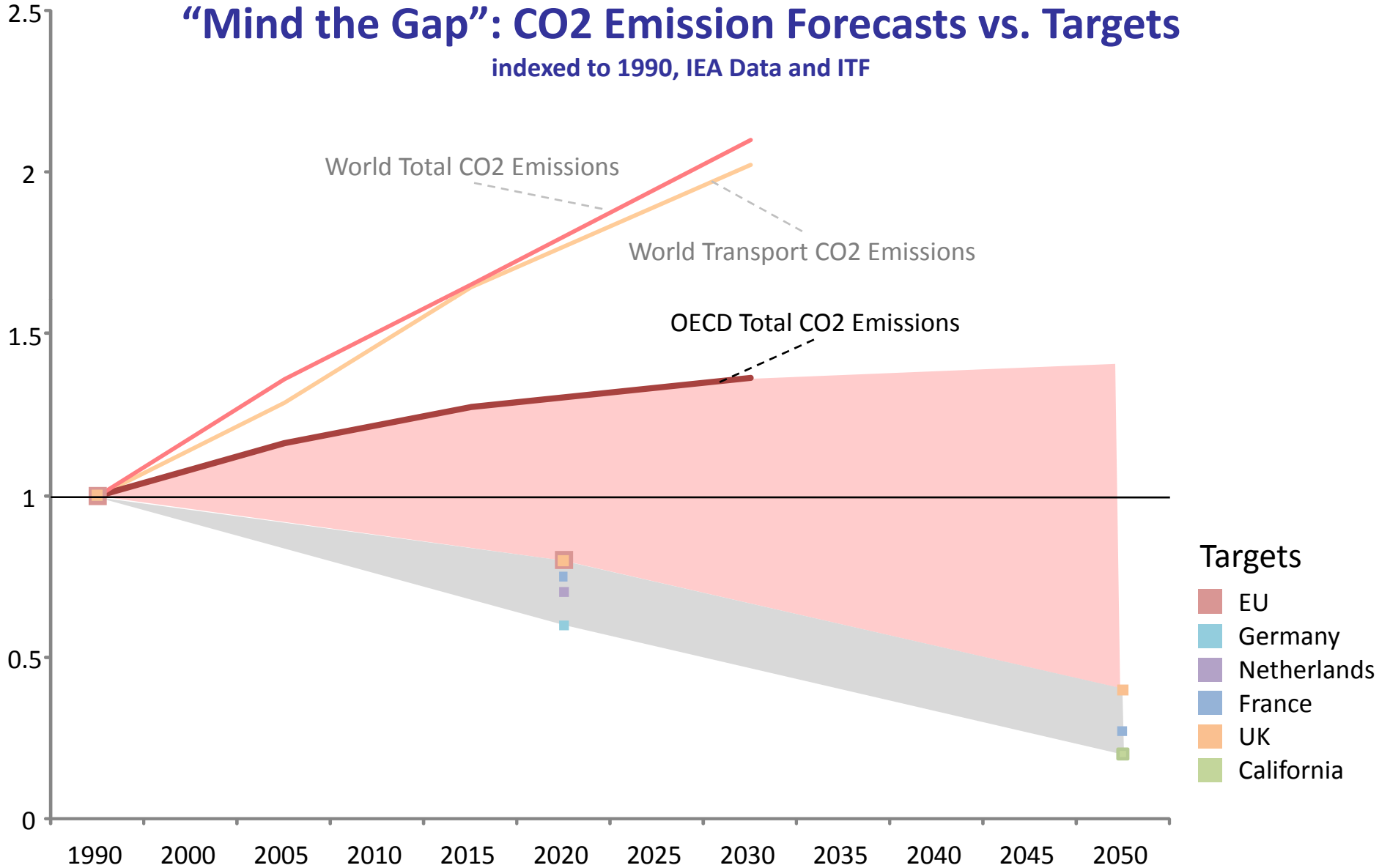
Source: Airbus, 2007





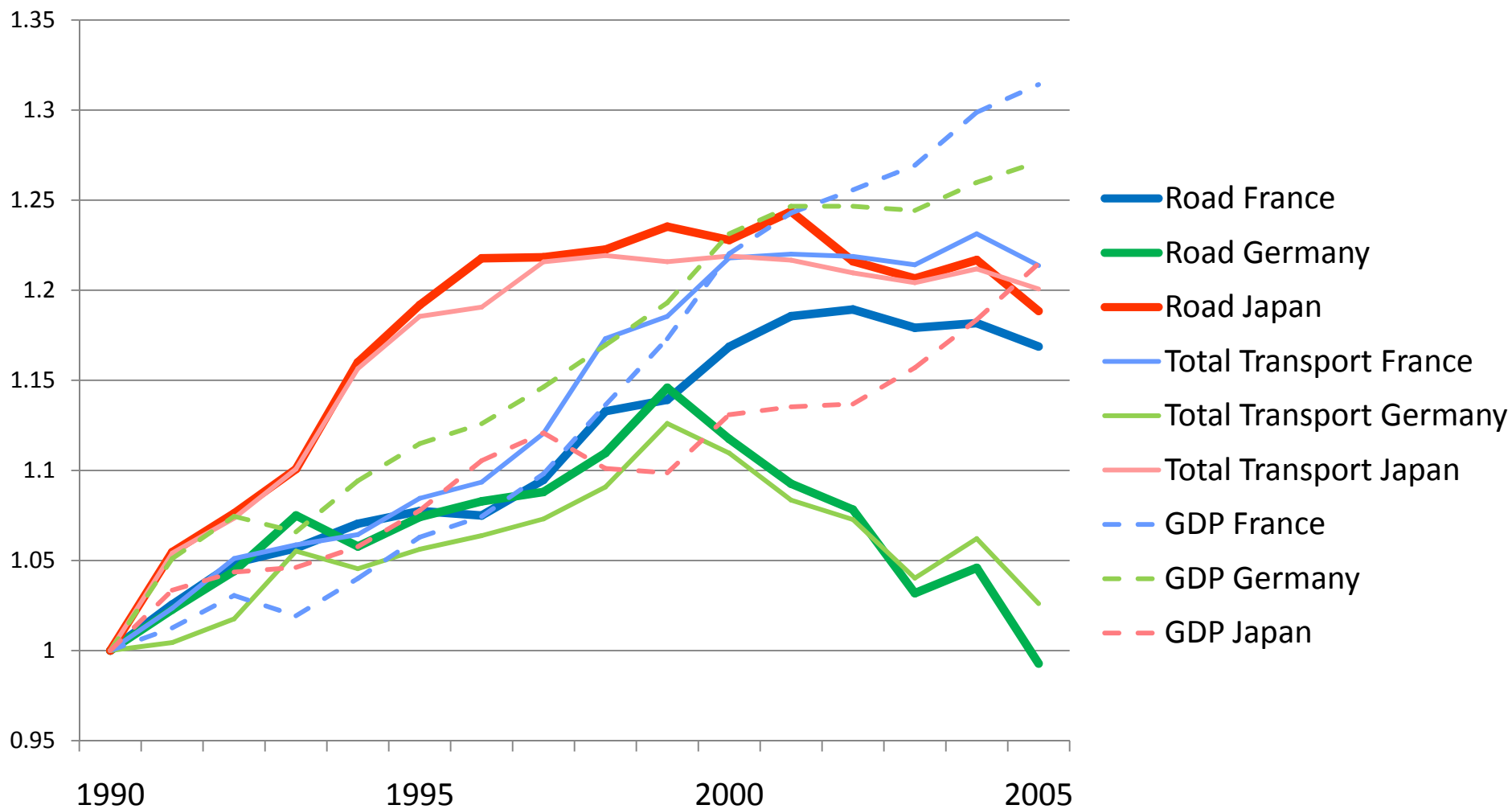
# “Mind the Gap”: CO2 Emission Forecasts vs. Targets

indexed to 1990, IEA Data and ITF






## Decrease in Transport CO2 Emissions: 2002-2005

Indexed to 1990, IEA data, France, Germany and Japan



## Outline

-  “Mind the Gap”: Trends in the Transport Sector
-  **Which Policies at What Cost?**
  - Our review of Transport GHG Policies
  - Decision framework: Cost Effectiveness
  - Evidence of Transport GHG Marginal Abatement Costs
  - Focus on Fuel Efficiency and Biofuels
-  **Transport Policy Implications and Priorities**

		% of policies
<b>Demand</b>	Urban planning to discourage sprawl; Road pricing; Logistics optimisation.	<b>4%</b>
<b>Fuel efficiency</b>	Tax differentiation to promote EFVs;	<b>31%</b>
- Technical	Vehicle efficiency regulations – CAFE, Top-Runner;	
- On-road	Driver training; Car pooling;	<b>16%</b>
	Logistics management, route planning / guidance.	
<b>Carbon intensity</b>	Biofuel targets and tax incentives;	<b>24%</b>
	Hydrogen fuel cell R&D;	
	Incentives for CNG buses.	
<b>Modal split</b>	Targeted subsidies for public transport.	<b>28%</b>

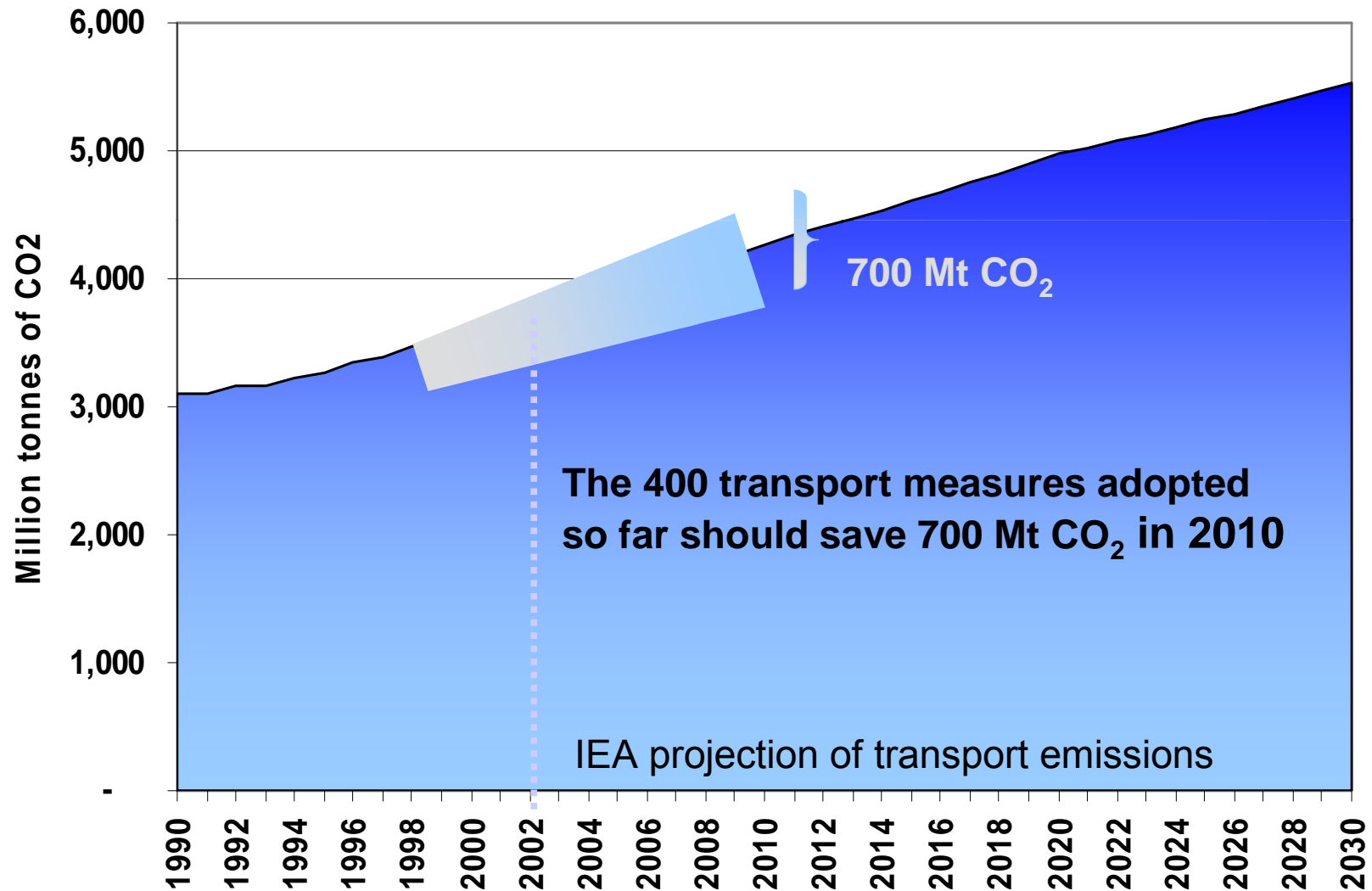
## Analysis of policies identified

Top Policy Combinations	Ave % impact *	No. of ITF Countries
Fuel tax policy	7.1	6
Vehicle fuel efficiency/voluntary agreement	4.6	EU + 3
Vehicle efficiency tax incentives	4.3	17
On road eff. education / training	2.8	11
Biofuels regulation	2.6	3
Fuel efficiency information	2.2	11
Road pricing	2.1	3

\* CO<sub>2</sub> abated by national measure / total domestic transport CO<sub>2</sub> emissions



## ITF Transport Sector Emissions: Potential Impact of Current Policies





## Cost-effectiveness matters

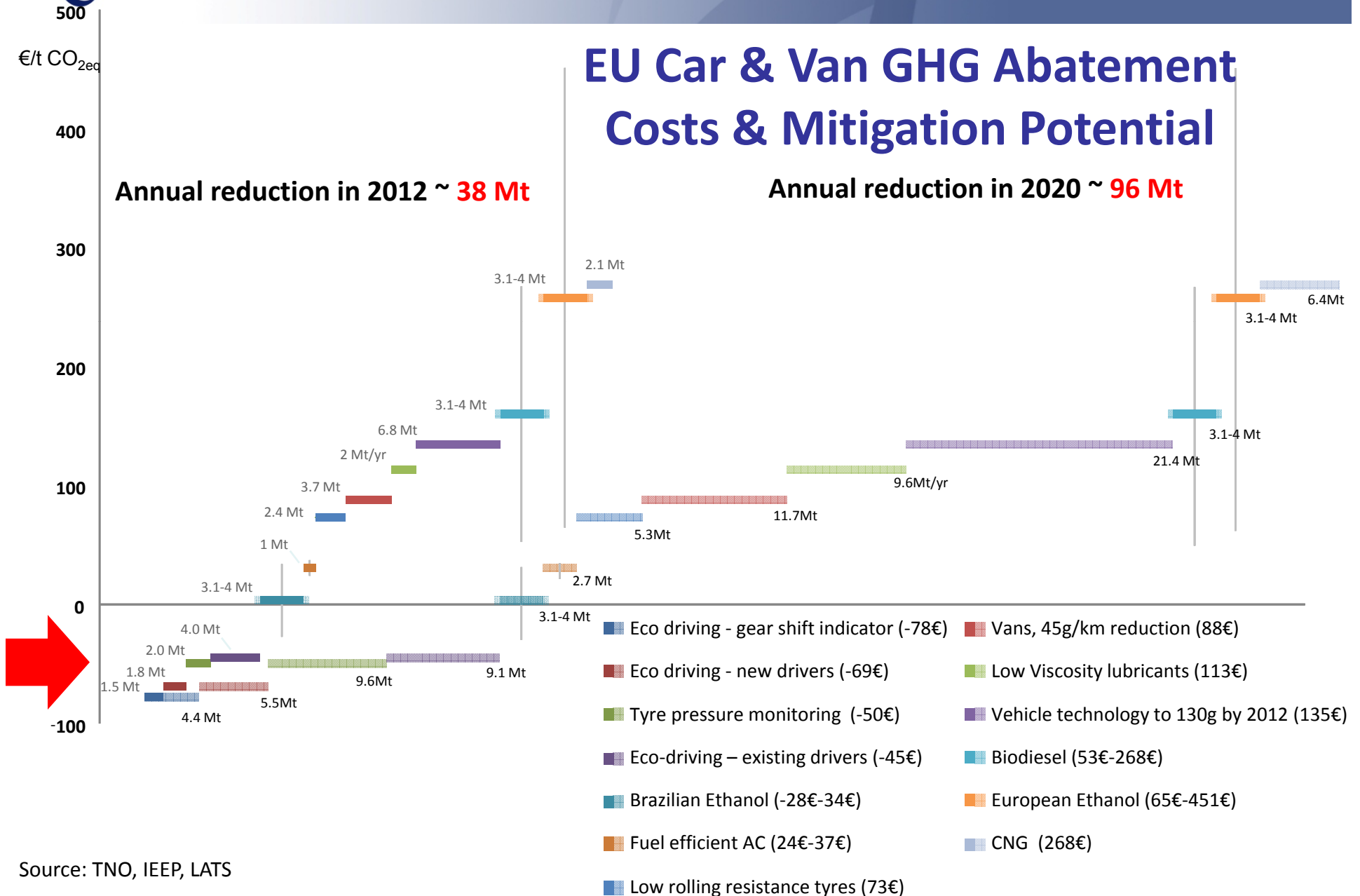
- Cost-effectiveness fundamental determinant of which abatement policies to adopt
- 2<sup>nd</sup> best argument – transport should mitigate more because limited de-localisation effects
- Transport reported to have high marginal abatement costs, evidence that this is not so much the case
  - *More rigorous abatement cost analysis needed*
- High cost measures have attracted political support: Hydrogen, Biofuels, Modal shift, Hybrids
- Despite low effectiveness or robust quantification of GHG reduction
- Effective measures have weak political support



# EU Car & Van GHG Abatement Costs & Mitigation Potential

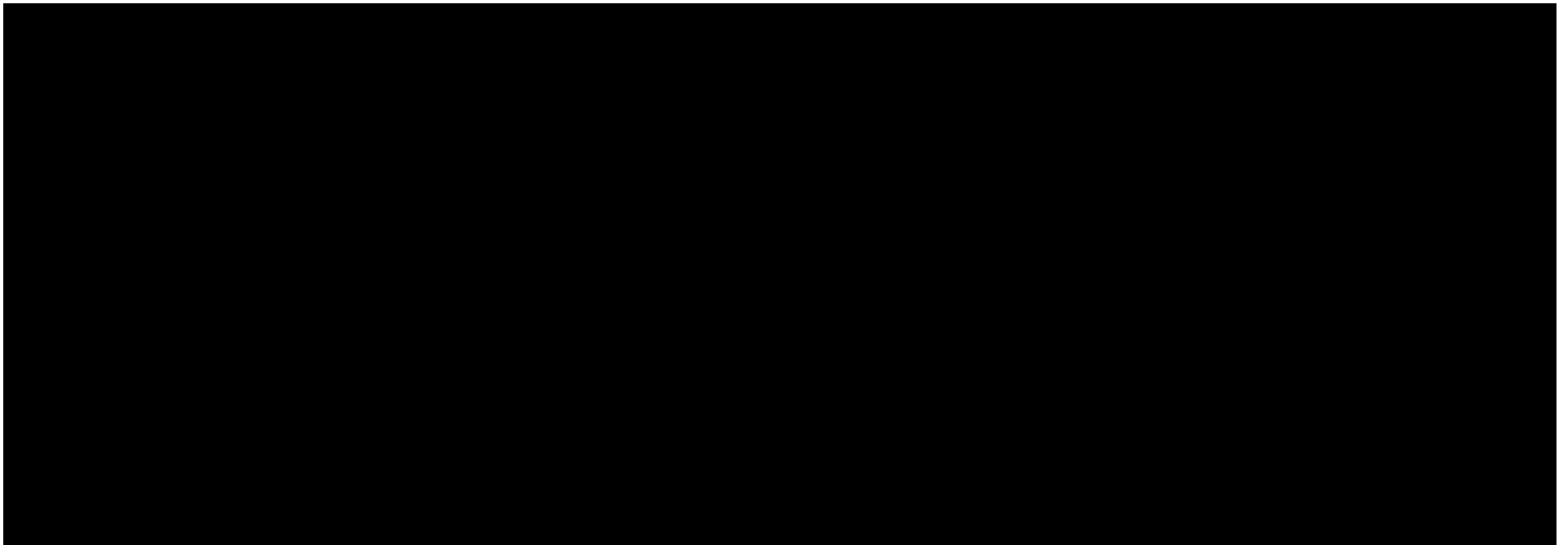
Annual reduction in 2012 ~ 38 Mt

Annual reduction in 2020 ~ 96 Mt



Source: TNO, IEEP, LATS

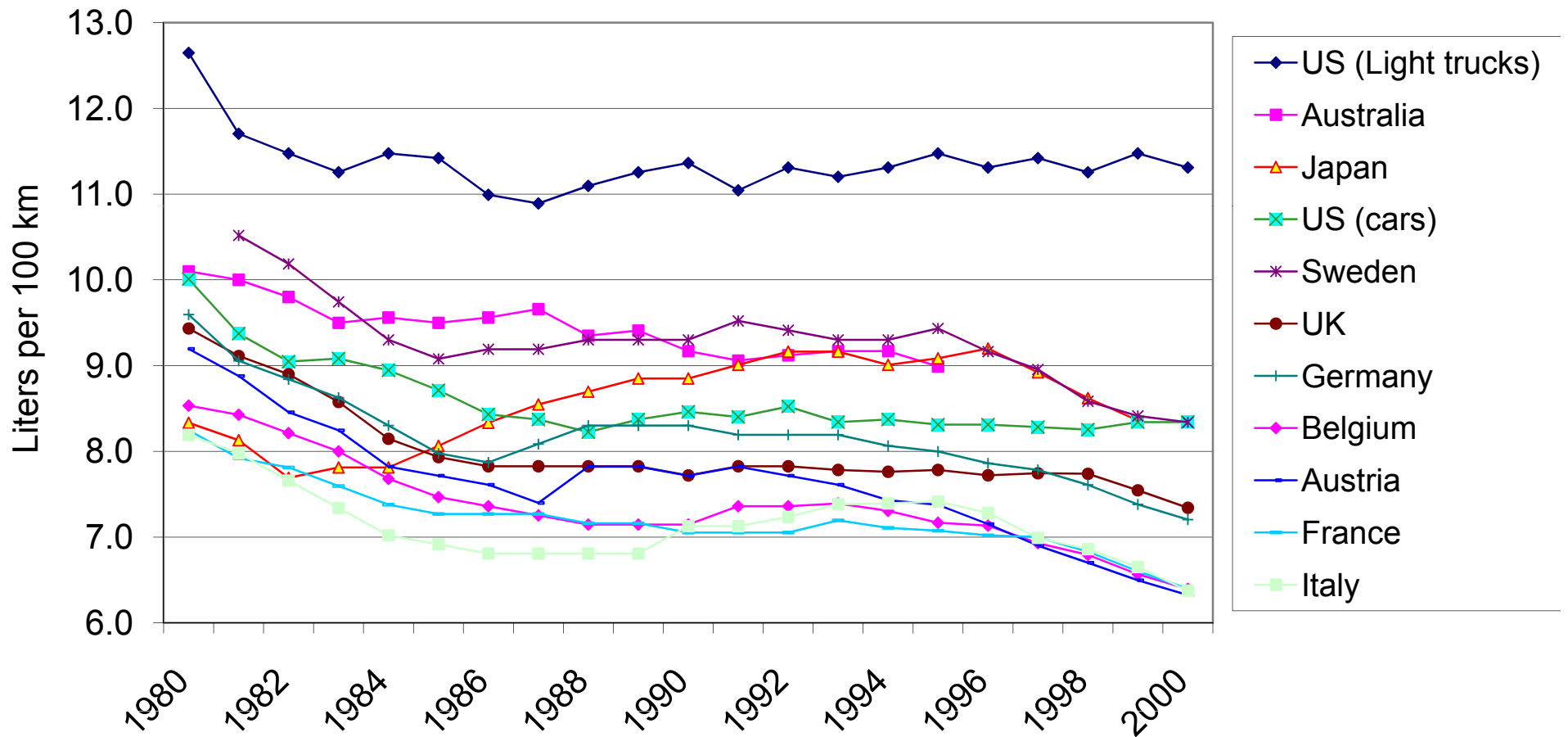
# Core Vehicle Technology



## Fuel Efficiency: Potential

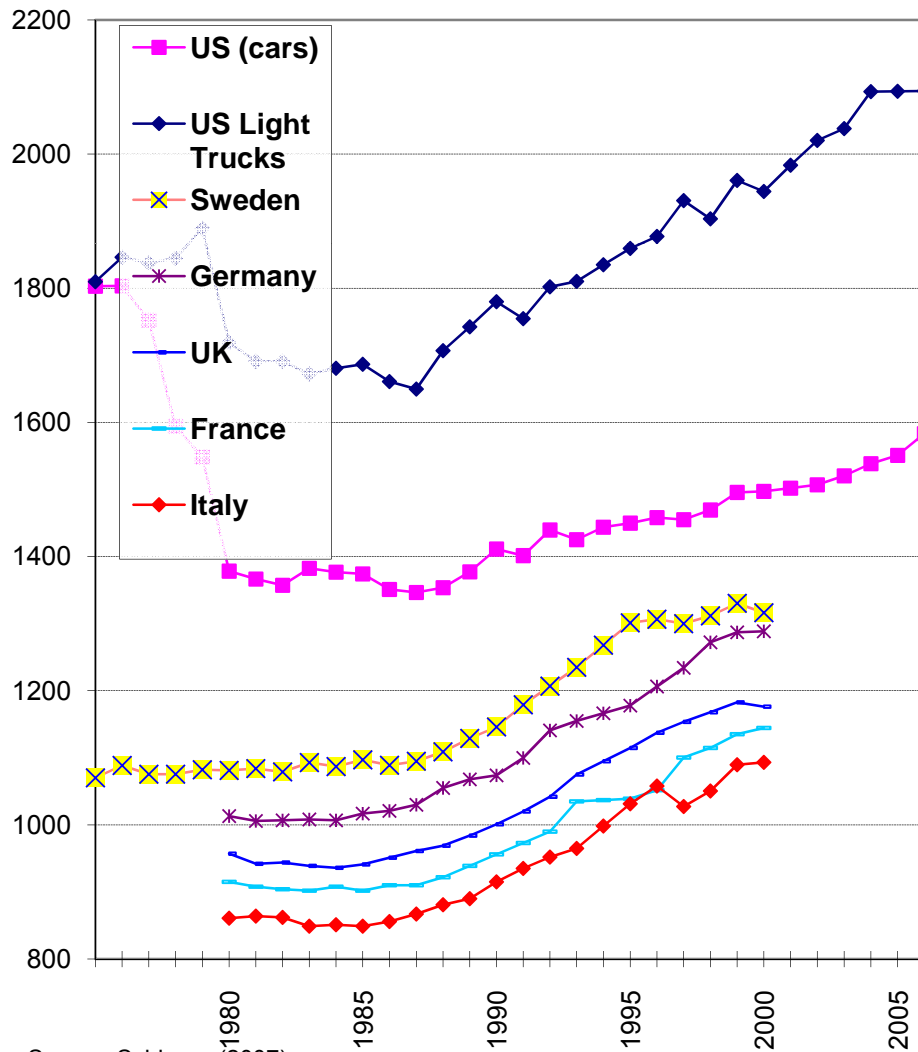
- Tyres, cruise control, air con effective, lubricants: combined these could save up 5-10% of fuel.
- Diesels: lower potential for improvement
- Reducing vehicle weight important: evidence indicates this can be done without compromising safety
- More ambitious measures might deliver up to a factor 2 improvement by 2035 – but this will be challenging and a crucial question remains: how will people use their fuel savings?

## Evolution of New Car Fuel Economy

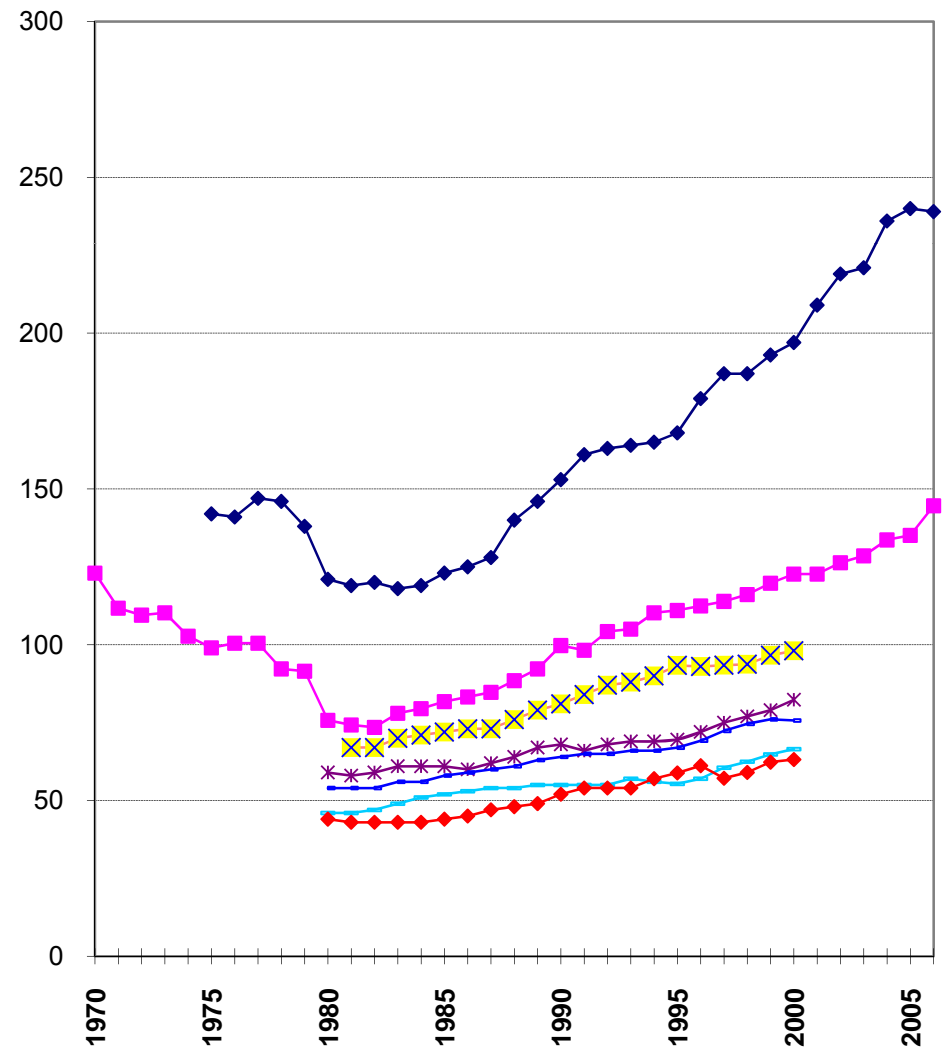


## Evolution of New Car Weight and Power

Average Car Weight (Kgs)



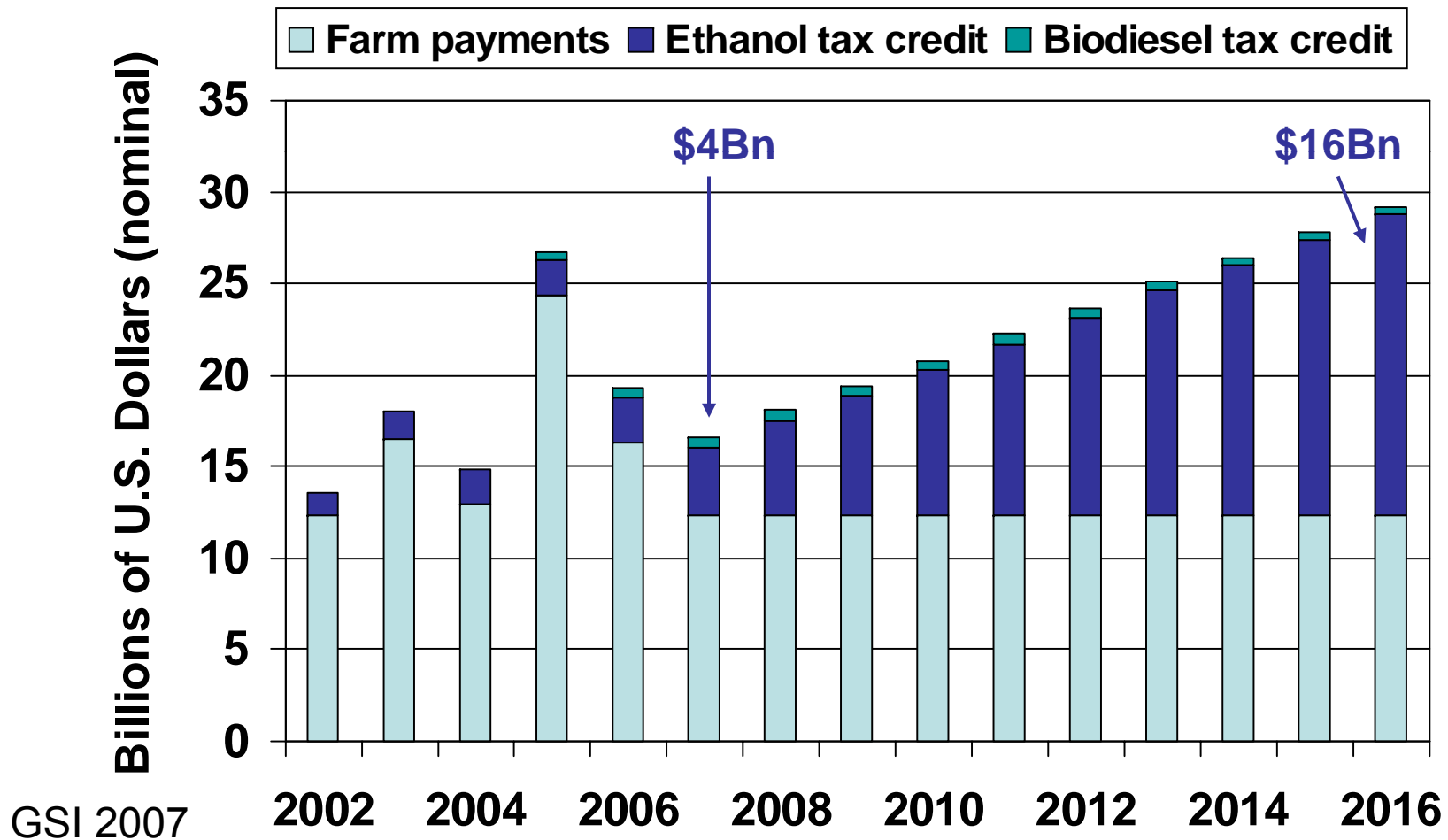
Average Car Power, kW



## High cost GHG mitigation: Biofuel subsidies

Average performance	Euros/tCO <sub>2eq</sub>	USD
US corn-ethanol	390	520
EU sugar-beet ethanol	450—620	610—840
EU rapeseed biodiesel	750—990	1 000—1 340

## US biofuel tax subsidies to grow and grow



## Designing support for Biofuels

- Volumetric targets inappropriate
  - Likely to favour worst performing, lowest cost production
- Transport fuel carbon content targets better
- Certification for biofuels production
- Fuel carbon taxes, including for biofuels, would be more cost-effective than subsidies or targets

## Outline

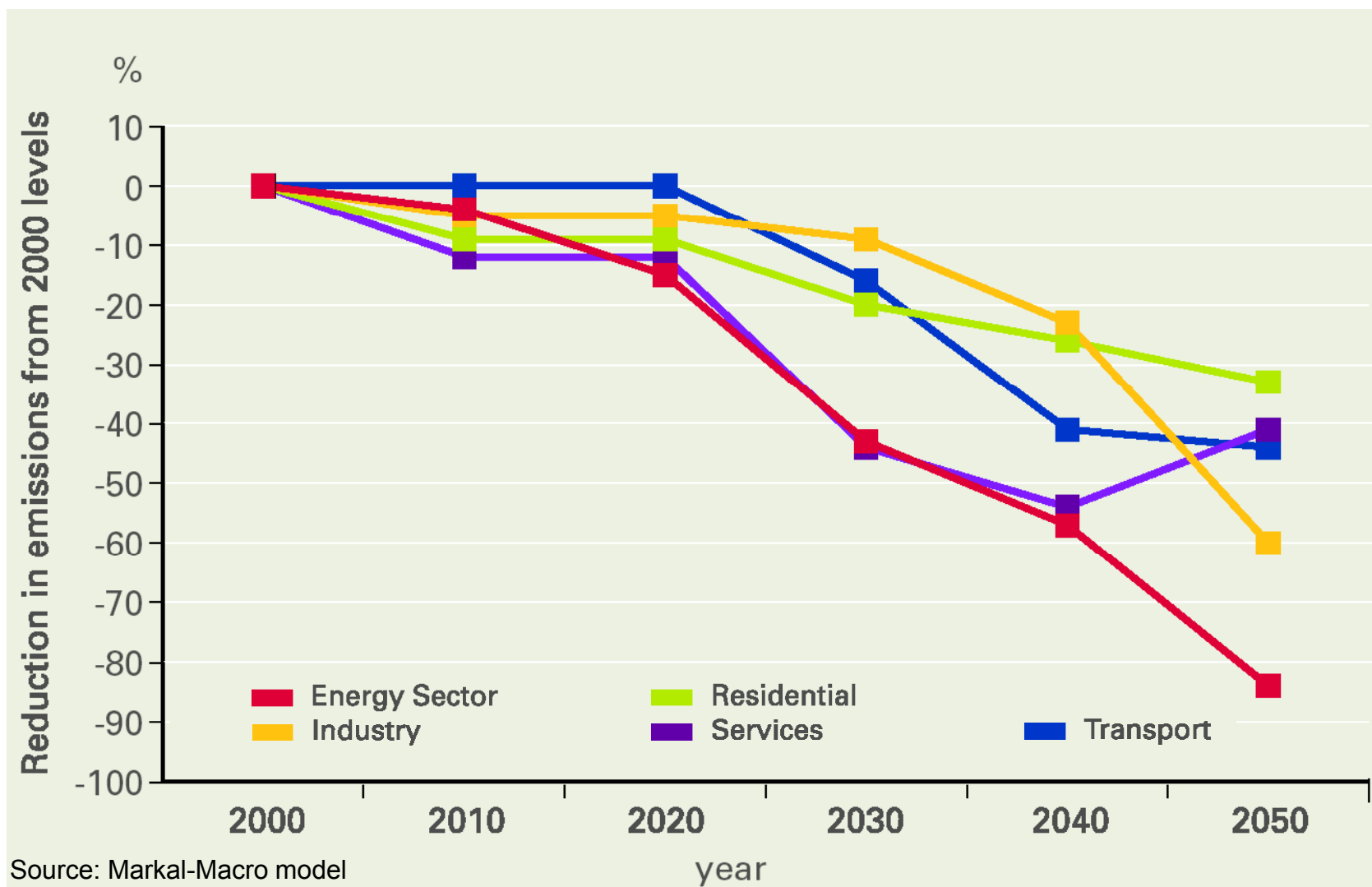
- “Mind the Gap”: Trends in the Transport Sector
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## Policy package (1/2)

- Integrated packages of measures needed
  - Vehicles, fuels, demand management, modal shift : fiscal and regulatory
  - mix depends on context
- Pricing important: London and Stockholm = -20% CO<sub>2</sub>, German Heavy-duty vehicle road charge?
- Public Transport, Integrated Land Use Planning, Strategic Infrastructure Investment all can have large co-benefits... and can deliver other benefits even if climate impact difficult to quantify.
- ... but they deliver GHG reductions on different time scales

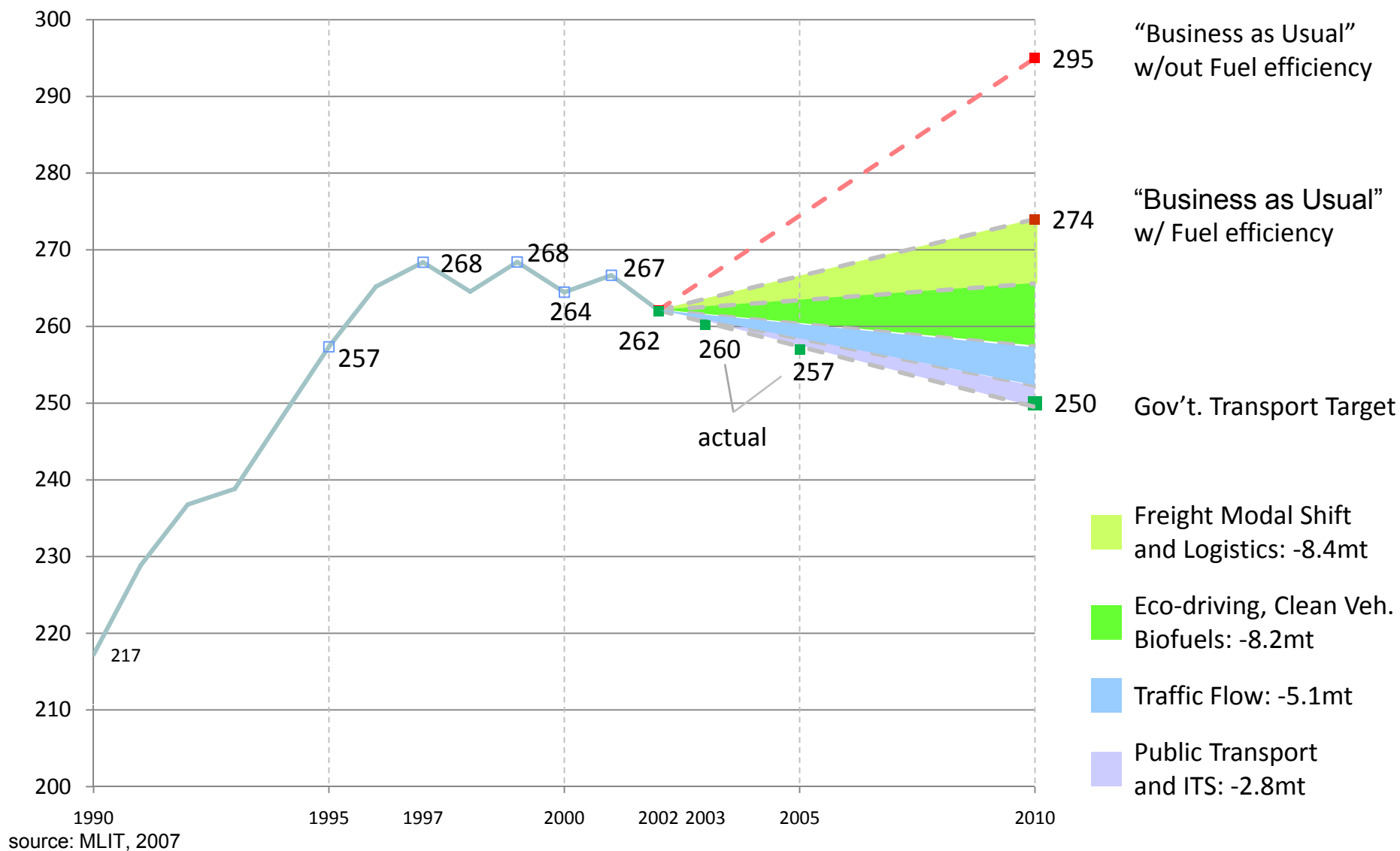
## UK Modeled CO2 Emission Reductions by Sector

Scenario Showing Least Cost Route to 60% Reduction by 2050





## Transport CO2 Reduction Strategy 2002-2010, Japan



## Policy package (2/2)

- Vehicle efficiency measures deliver the most quantifiable cuts
- Off-cycle components and eco-driving are most cost-effective
  - Significant, immediate savings – should be core measures
  - Give more attention to efficiency, away from only fuels & modal shift co-benefits approach (currently 1/3 of all national policies reported)

## Some Priorities for Road Transport

- Certification of Biofuels, volume targets to become quality targets.
- Differentiate vehicle taxes by CO<sub>2</sub>
- New low cost efficiency measures – Identify responsibility for implementation
- Develop off-test vehicle component standards / incentives
- Include CO<sub>2</sub> in transport appraisal
- Increase understanding of transport abatement costs
- Ultimately, we need a price on Carbon.



**Thank You**

For more information:

[www.internationaltransportforum.org](http://www.internationaltransportforum.org)

[www.cemt.org](http://www.cemt.org)