

Emissions and Climate Change What can Europe do?

**Cutting transport CO₂ emissions:
Putting effectiveness & value for money centre stage**

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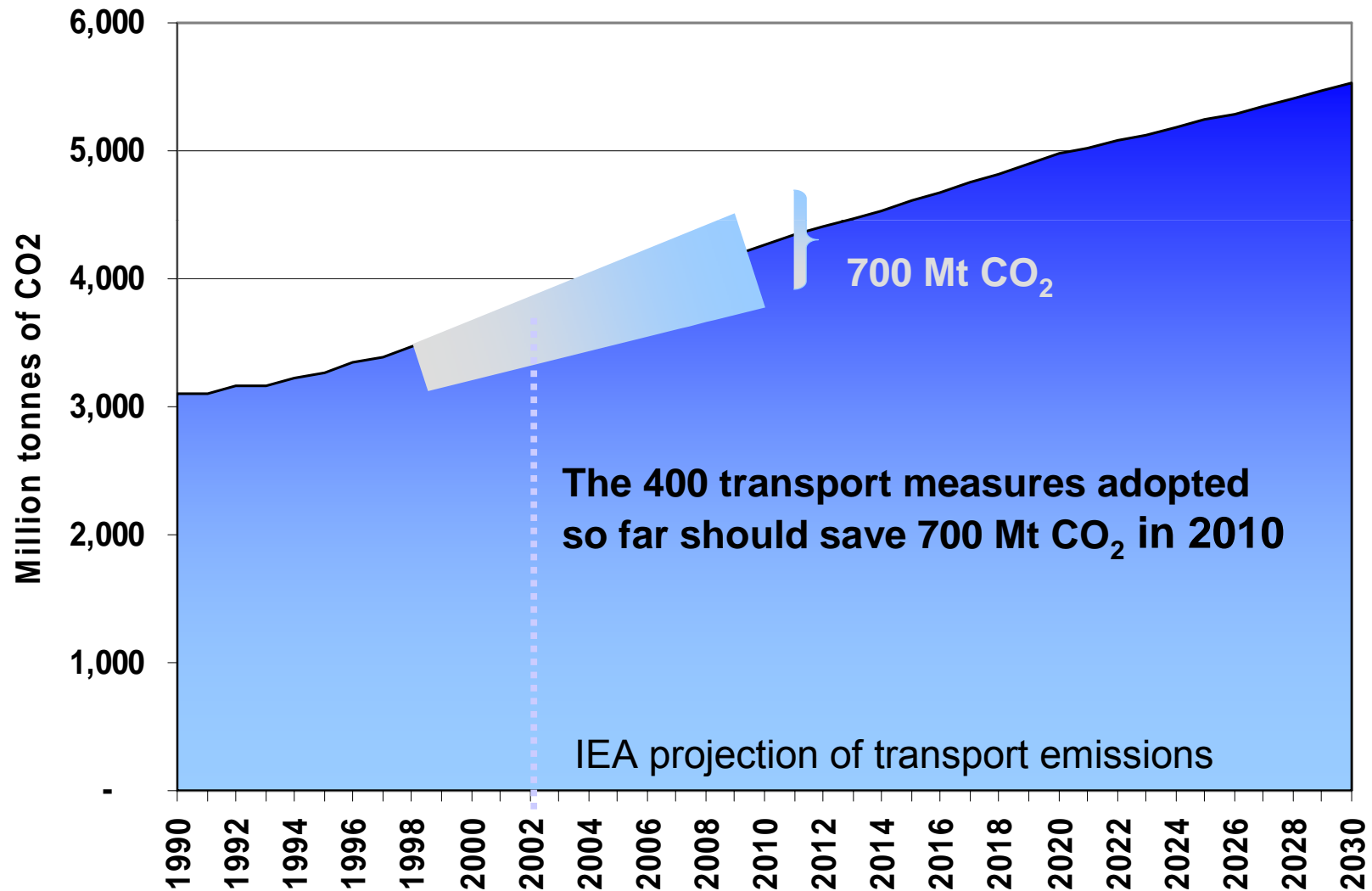


Does cost-effectiveness matter?

- 2nd best argument – transport should mitigate more because limited de-localisation effects
- High cost measures have attracted political support
 - Hydrogen
 - Biofuels
 - Modal shift
 - Hybrids
- Despite low effectiveness
- Effective measures weak political support



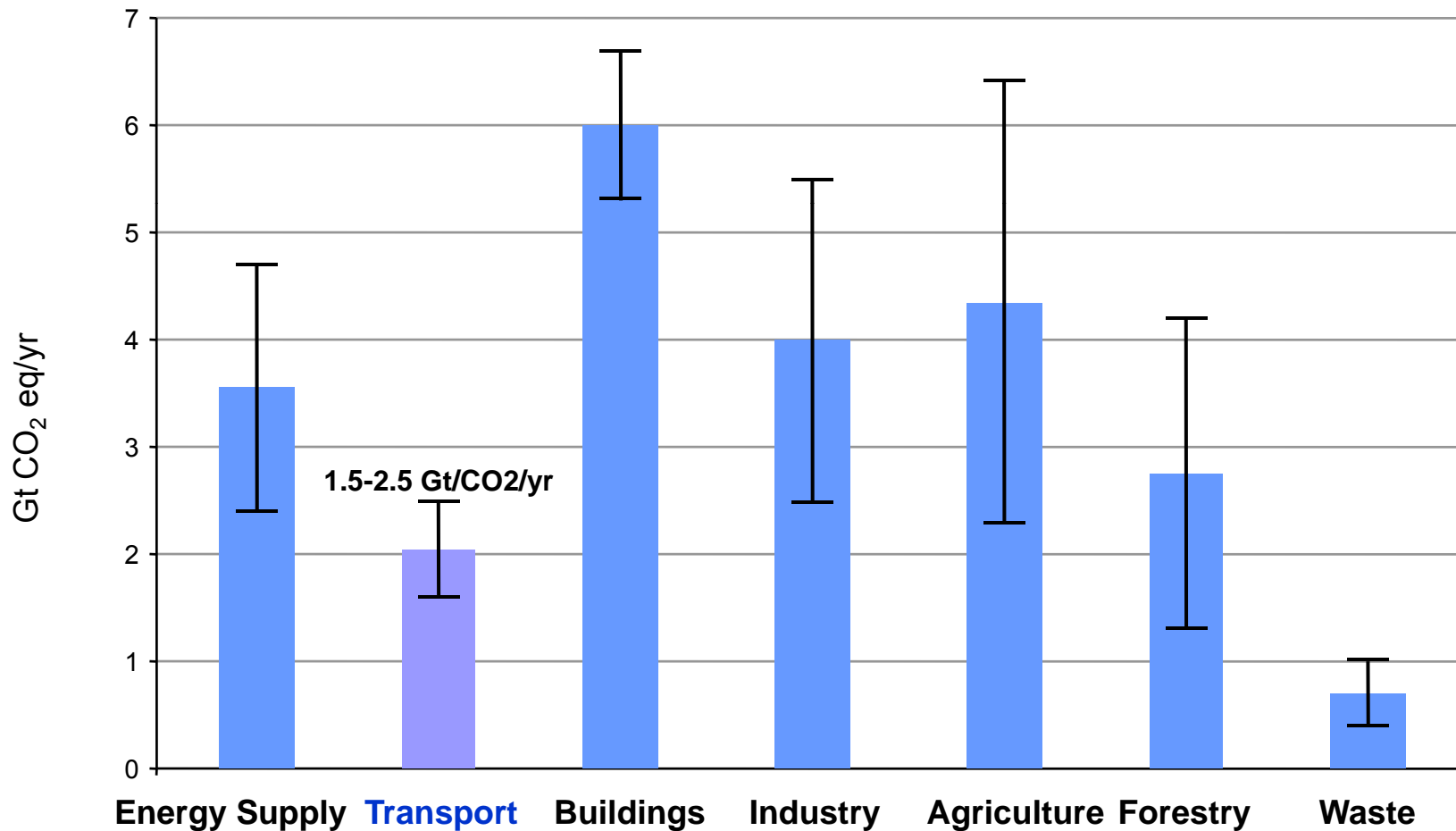
ITF Transport Sector Emissions: Potential Impact of Current Policies



Policy Implications

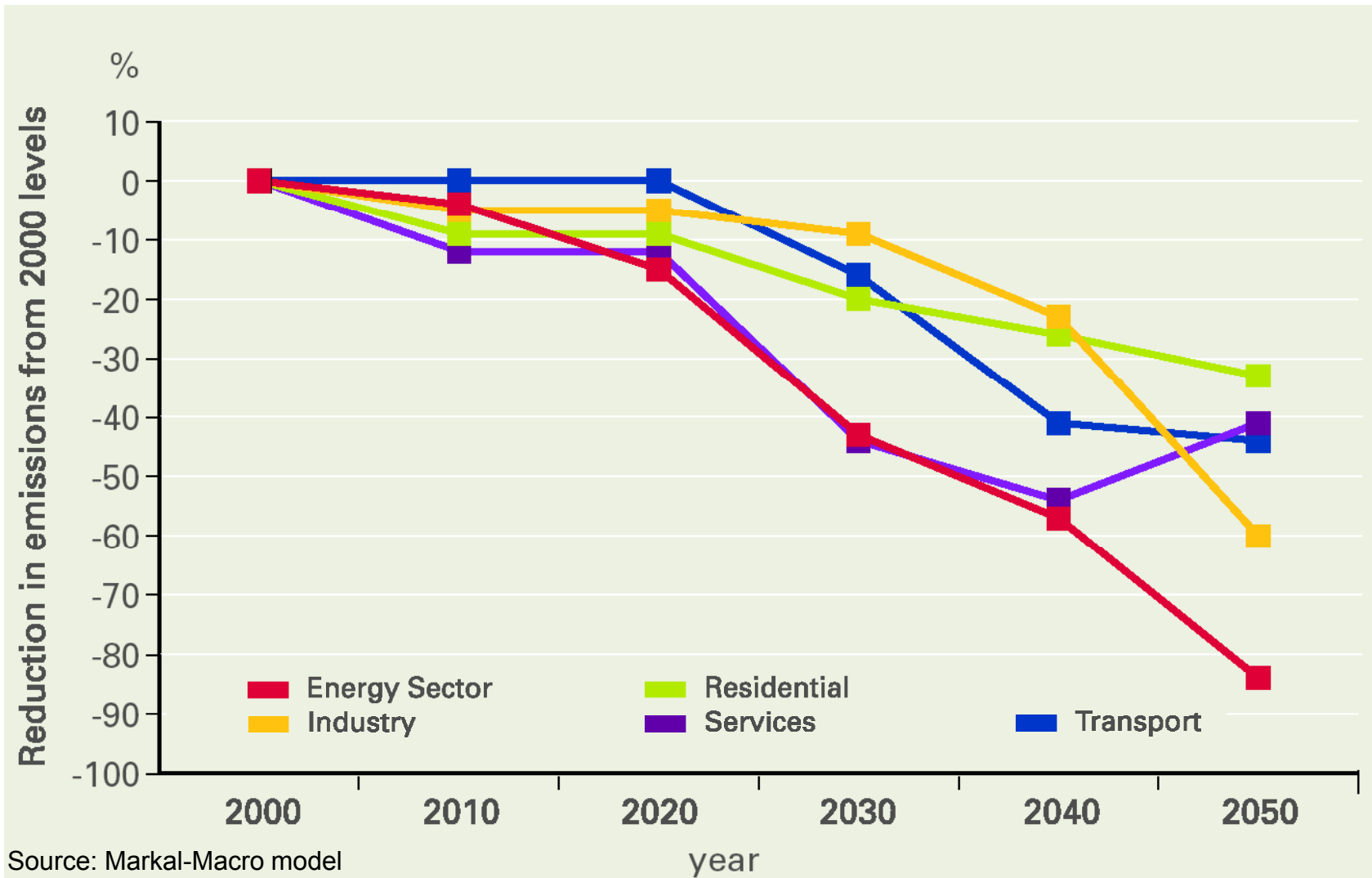
- More action needed if growth in transport emissions is to be cut.
- How much?
 - Power & heat sector will make biggest cuts
 - Some relatively low cost measures available in all sectors
 - Within transport some expensive measures implemented while cheap measures ignored

IPCC Sectoral GHG Abatement Potential for the World (Gt CO₂ eq/yr at less than \$100/tCO₂)



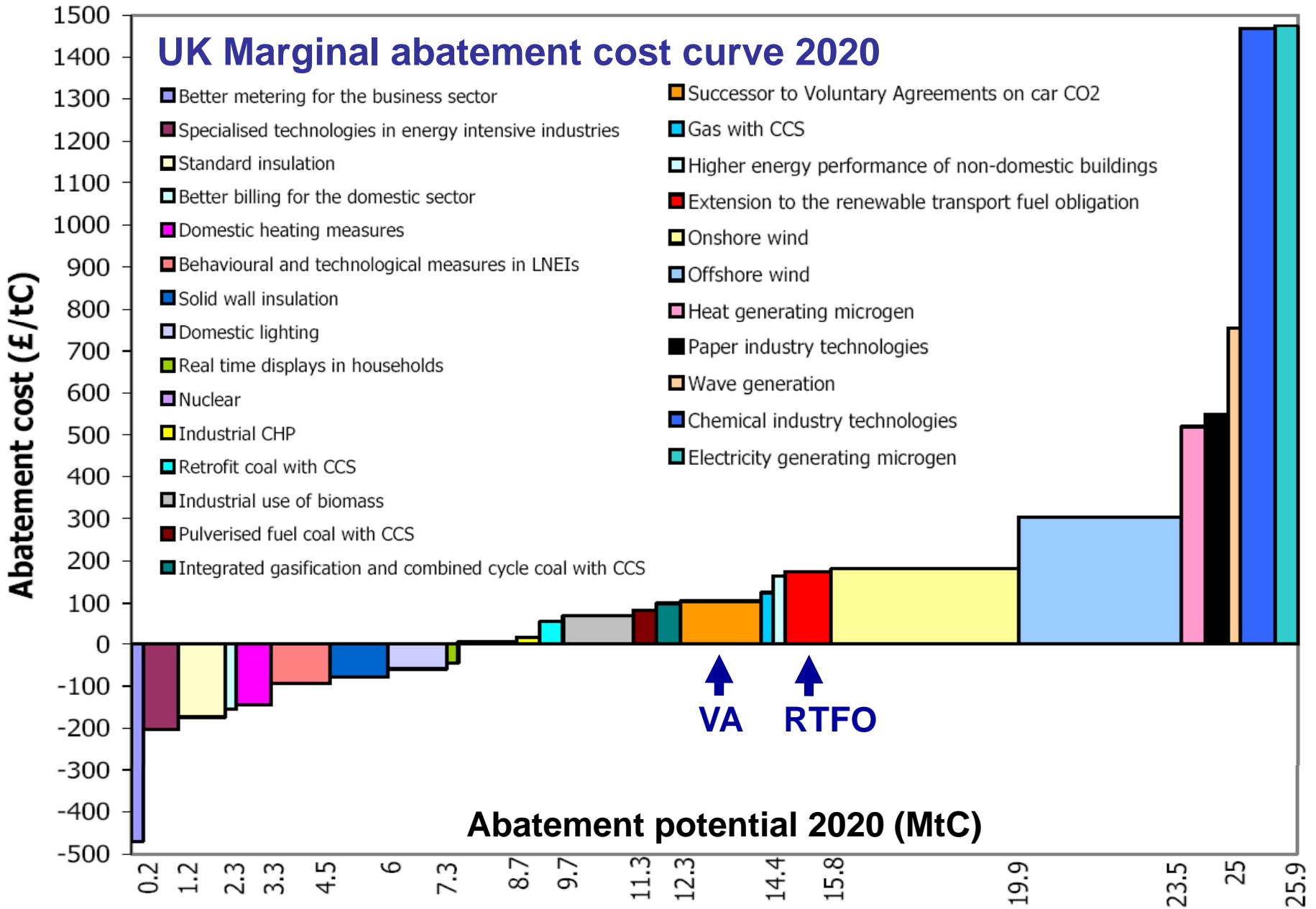
UK Modeled CO₂ Emission Reductions by Sector

Scenario Showing Least Cost Route to 60% Reduction by 2050



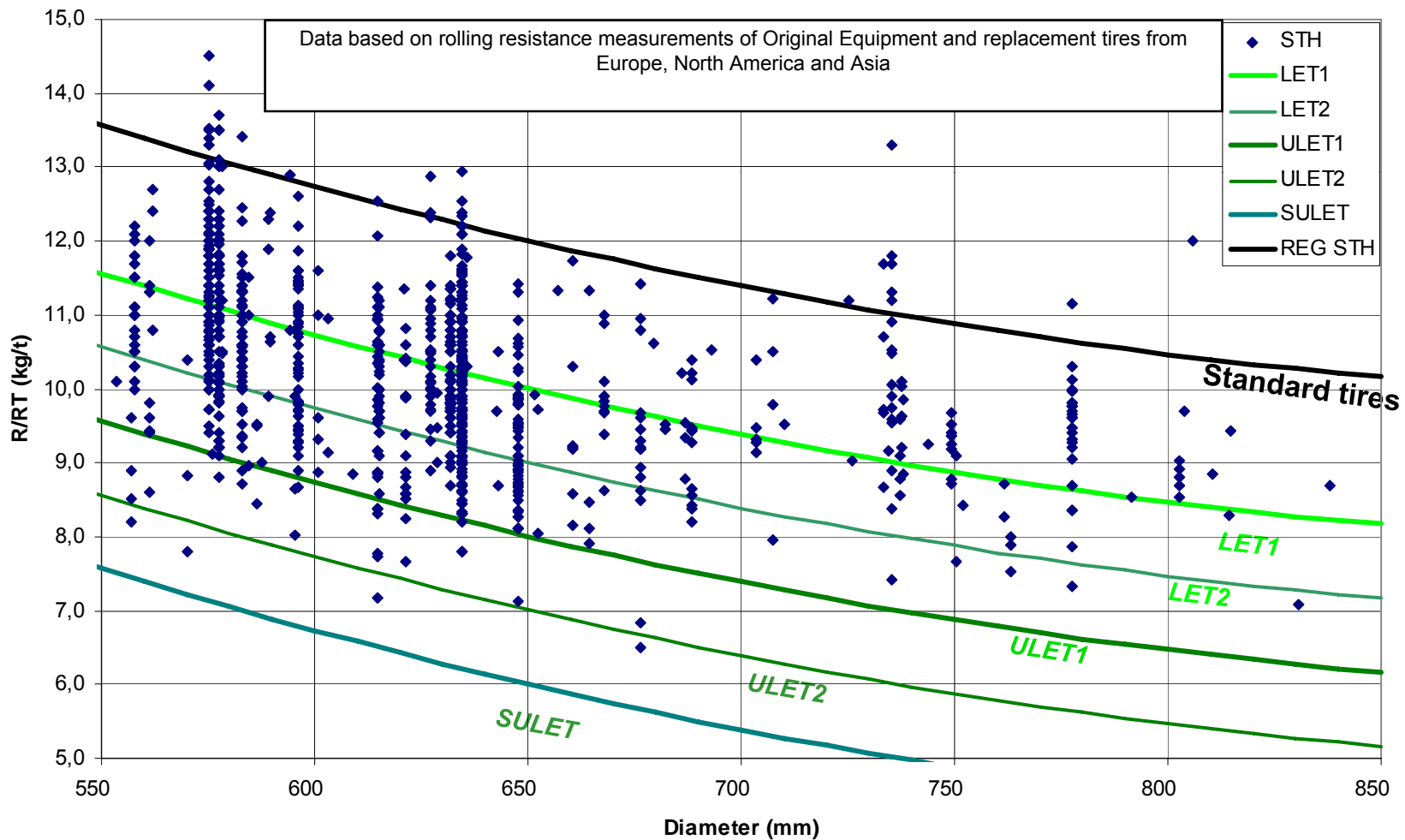


UK Marginal abatement cost curve 2020

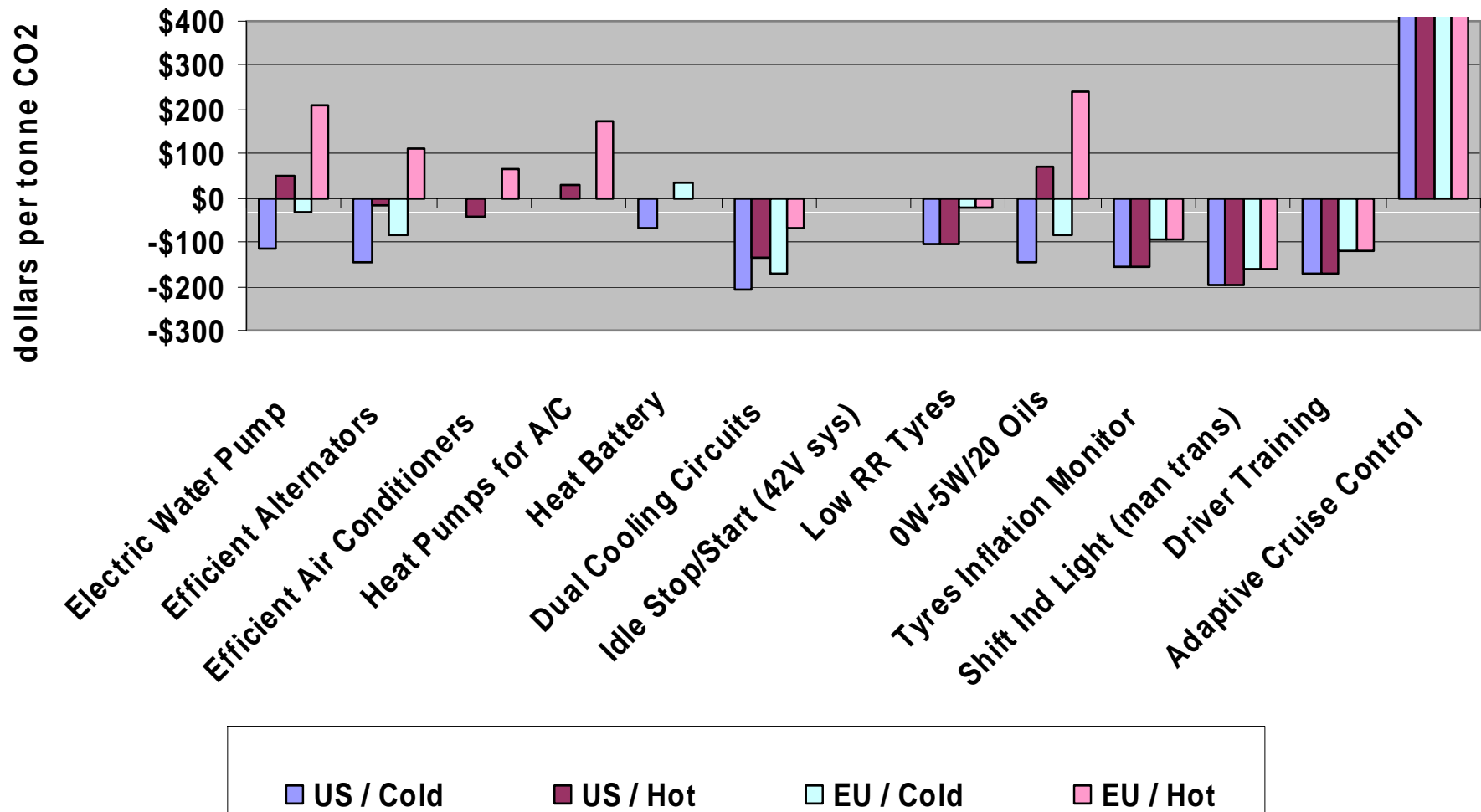


Possible regulatory standard & energy efficiency “bins” for tyres

P metric STH



Low Cost Vehicle Component Improvements

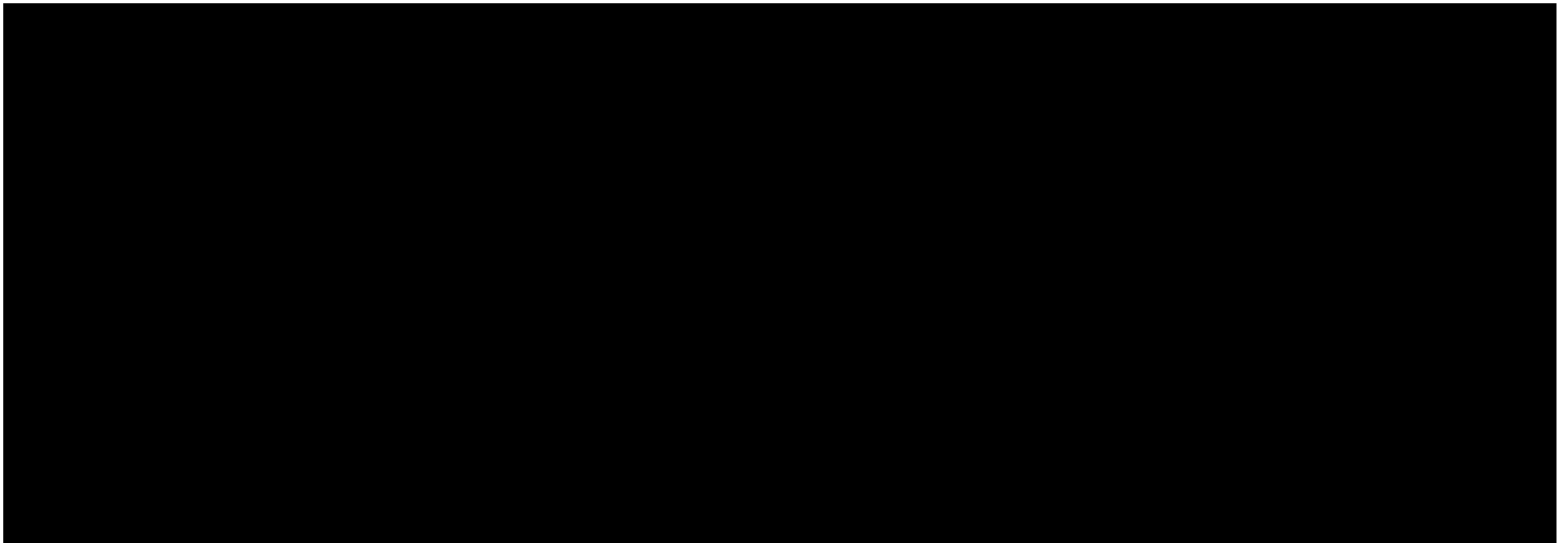




- Tyres, cruise control, air con effective under all conditions
 - combined these could save up 5-10% of fuel.
- Most technologies are most effective under cold conditions with dense traffic
 - water pump, energy efficient alternator, heat battery and 5W-20 oil most cost-effective
 - combined these could save up to 10% of fuel.
 - especially important for Northern climates
- Diesels: lower potential for improvement

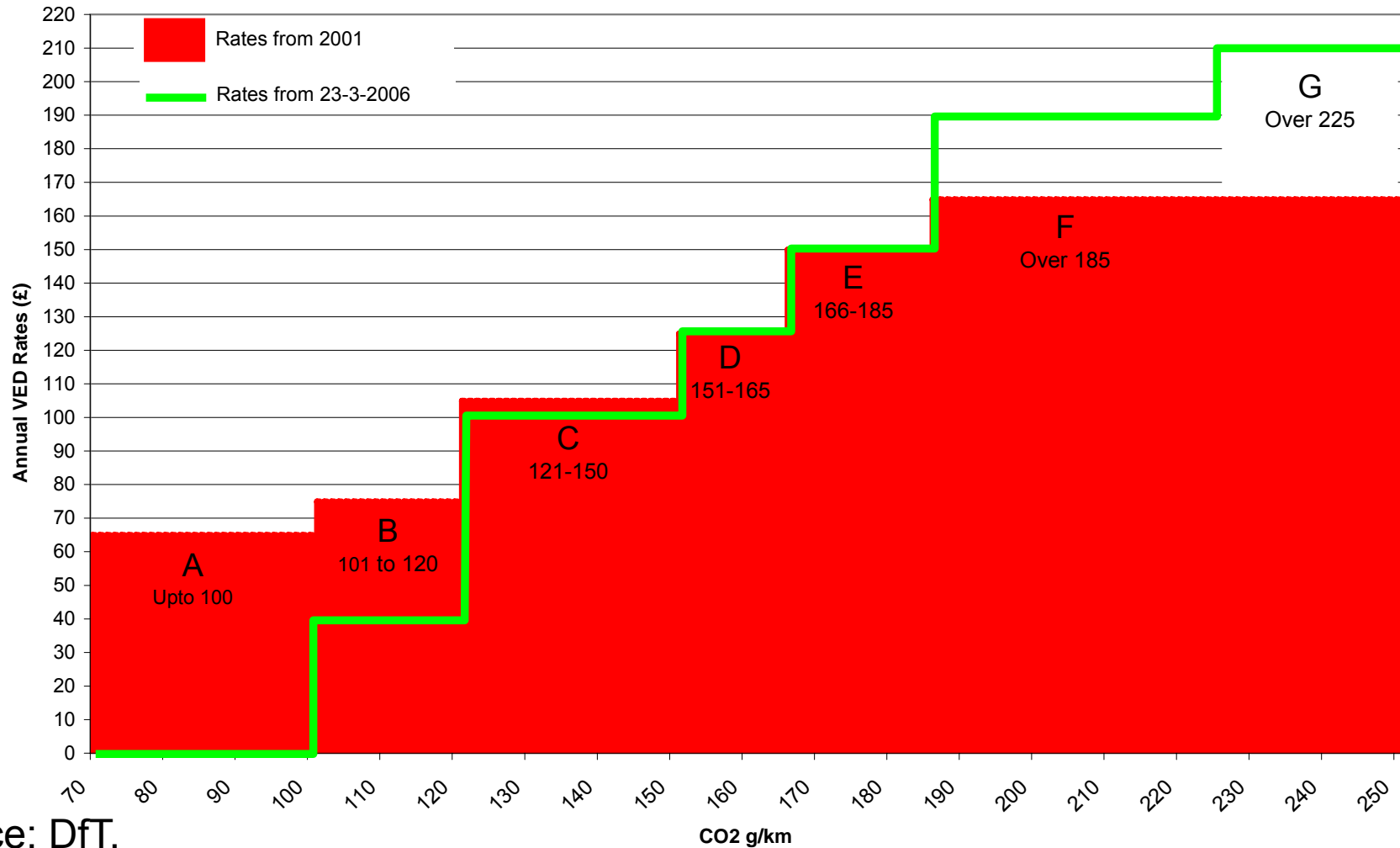


Core Vehicle Technology



Source: King 2007 based on IEA, IEEP, CARB, Ricardo.

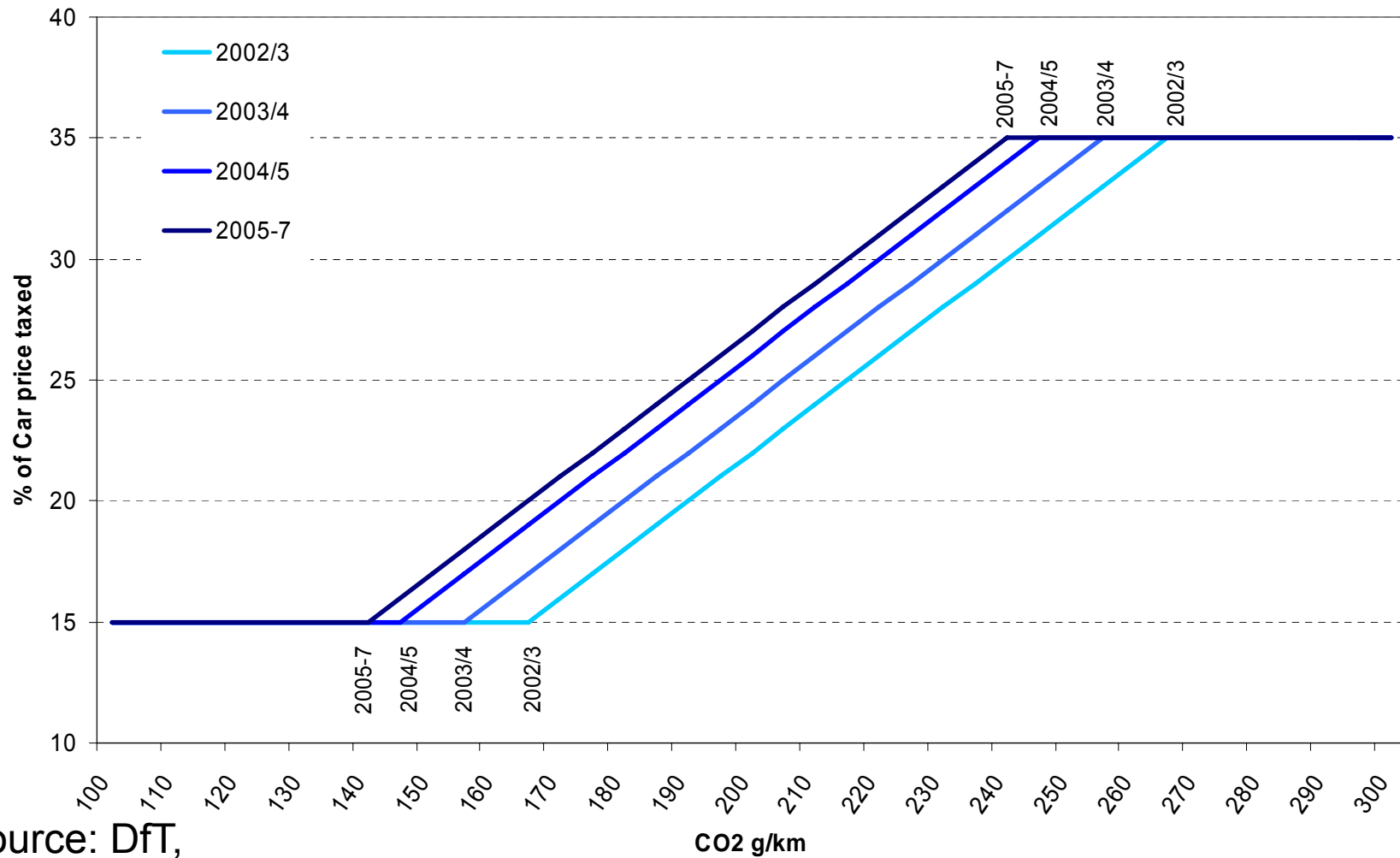
Differentiation of annual circulation tax for private cars in the UK



Source: DfT,

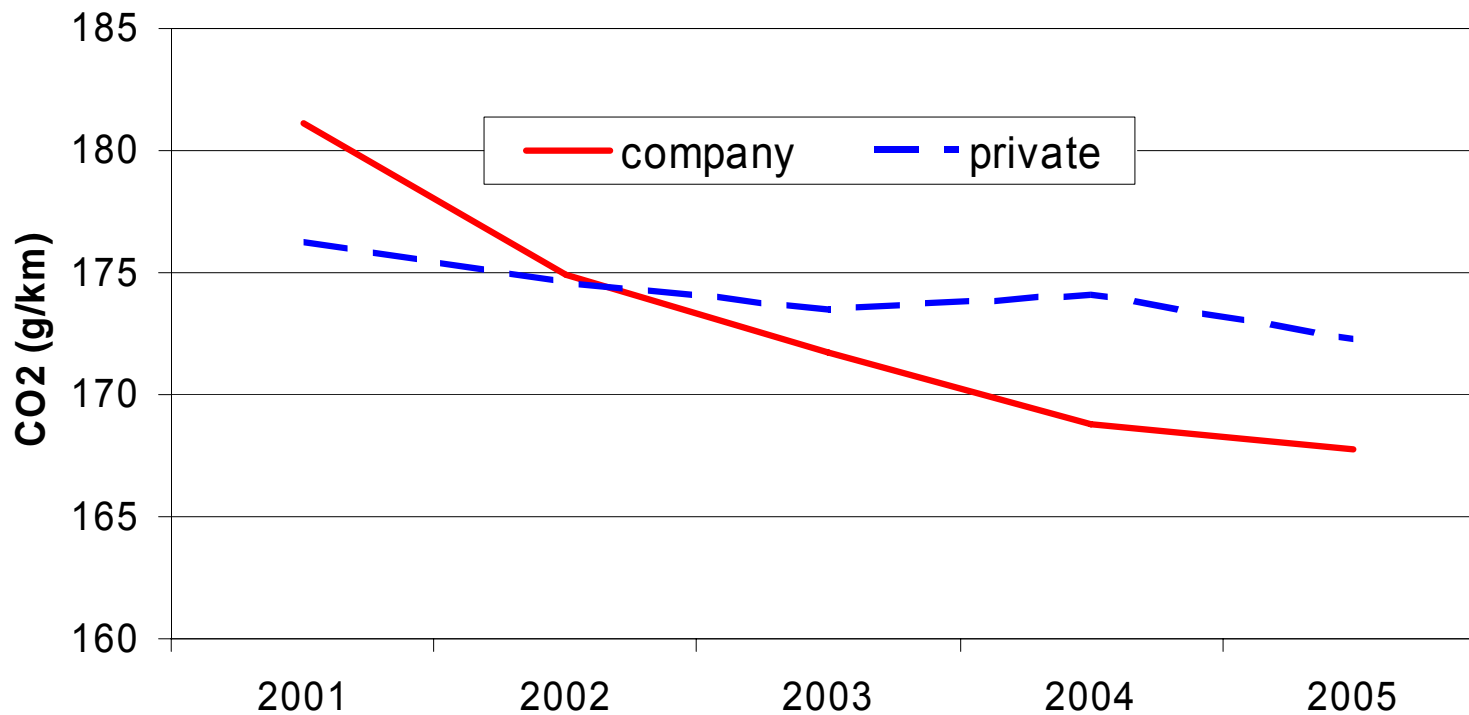


Company car tax differentiation in the UK



Source: DfT,

Impact of UK tax differentiation



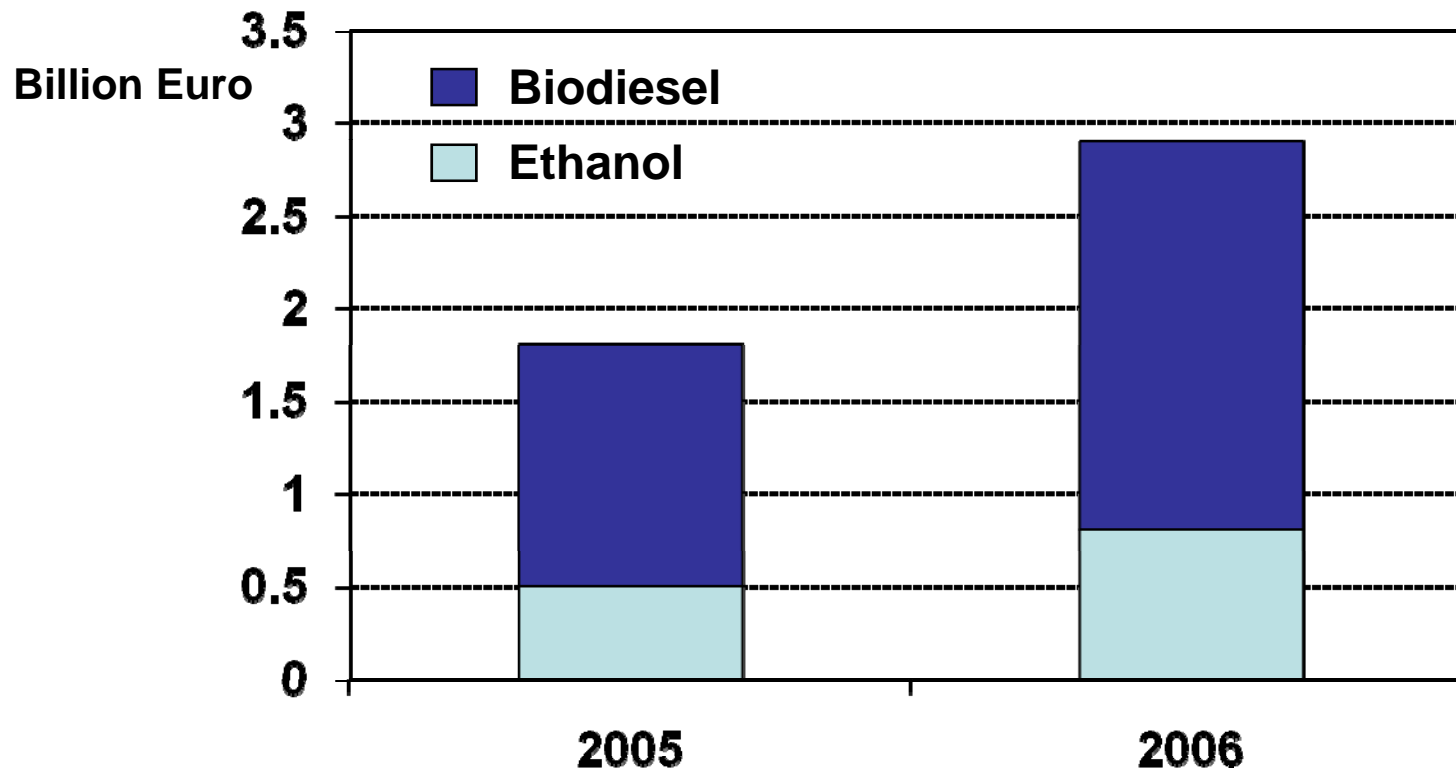
Source: DVLC

High cost GHG mitigation: Biofuel subsidies

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

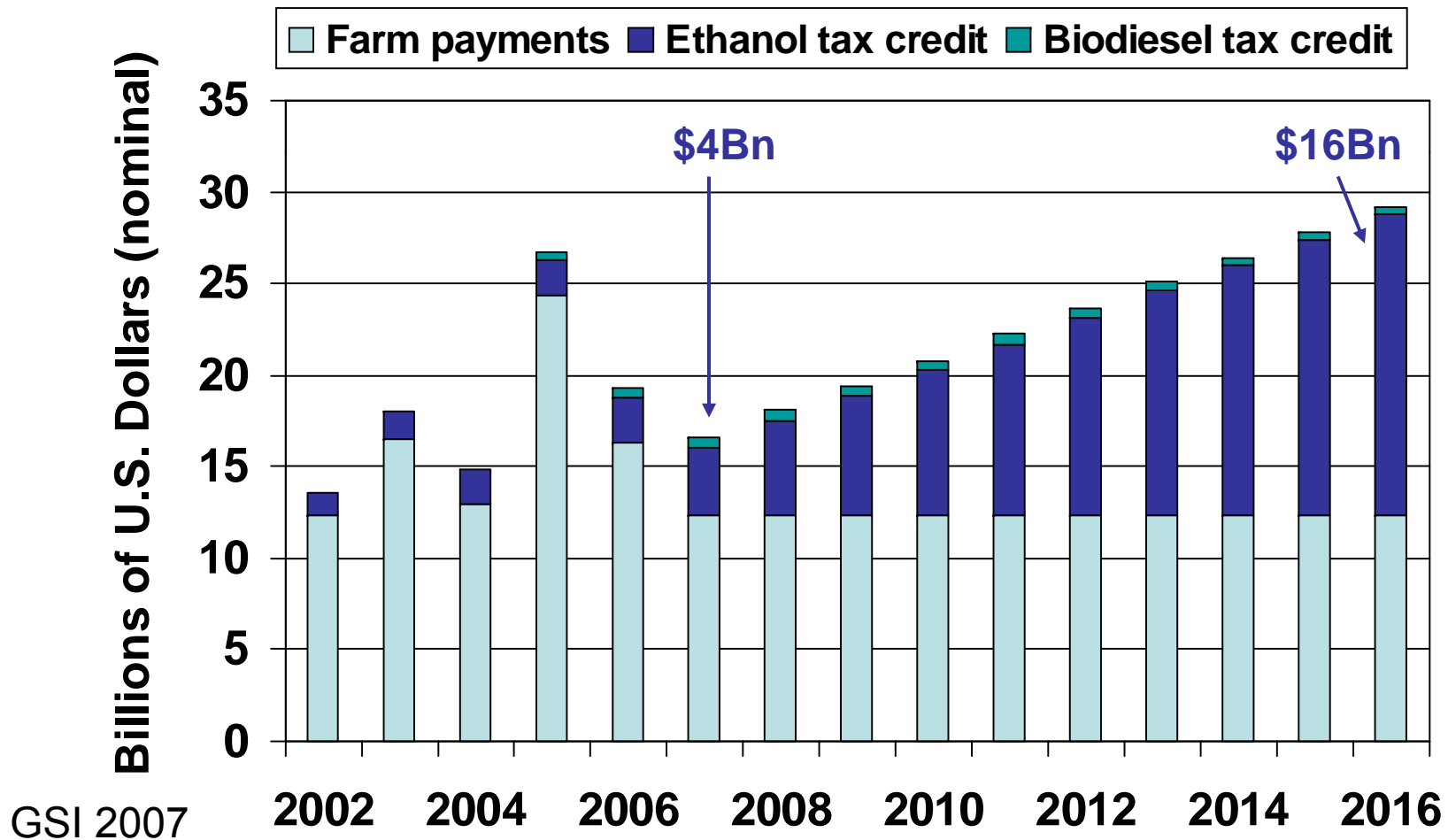
Sources: Koplow 2007; Kutas *et al.*, 2007.

Biofuels: EU tax subsidies increasing rapidly (Excise tax exemptions - revenue loss)



Sources: Koplow 2007; Kutas 2007; for GSI

US biofuel tax subsidies to grow and grow



Biofuels GHG emissions balance

- Wide range of uncertainty in the estimation of life-cycle GHG emission balances;
- Farming practice can shift the balance from positive to negative;
- Oxidation of soil carbon and emissions of N_2O from fertiliser application are big sources of GHG emissions.



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
 - Should improve outcomes even if it is difficult
 - Not suited to indirect effects – forest destruction
 - Requires extensive stakeholder consultation
 - Crude system better than no certification



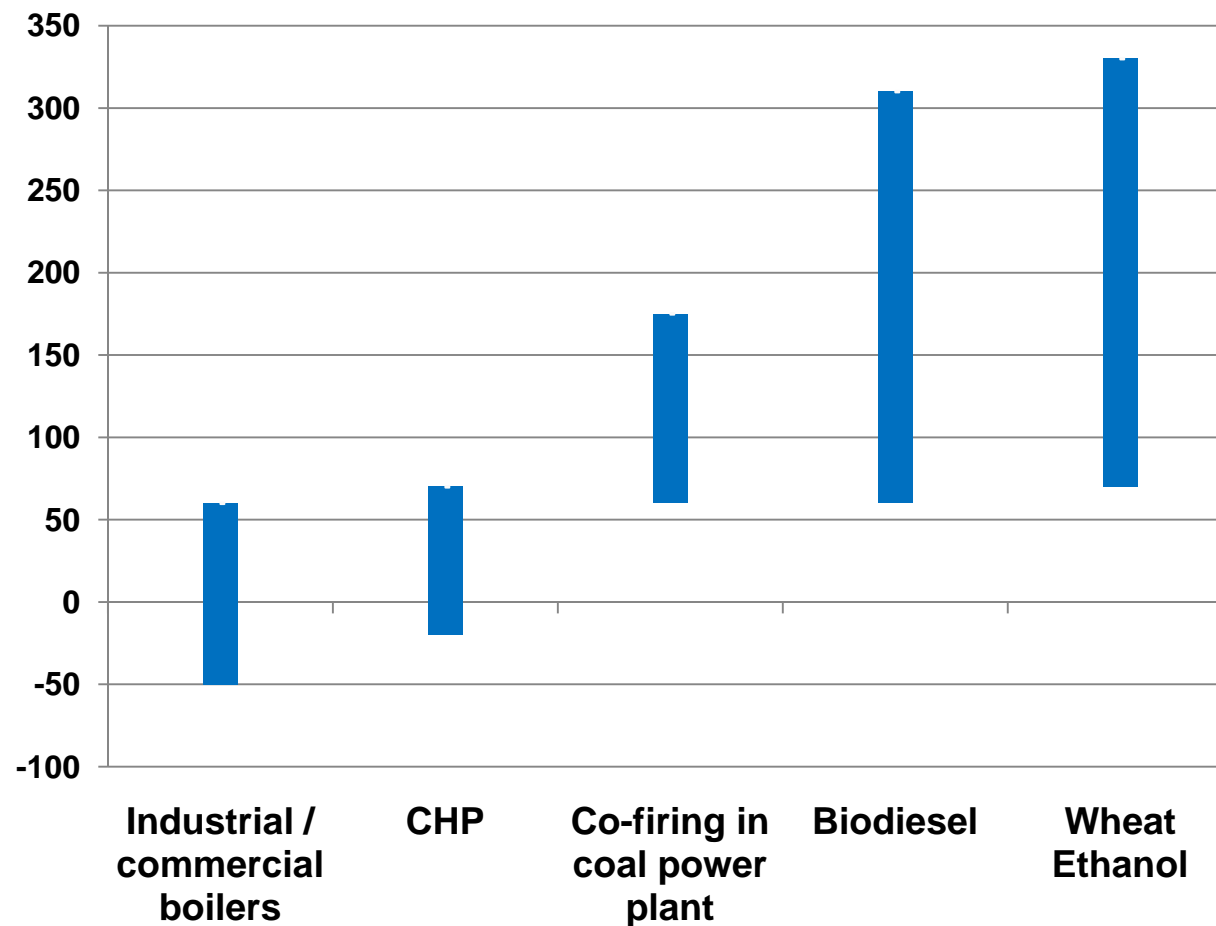
... designing support cont.

- UK, NL, Germany, Switzerland, California, EU developing certification to regulate market
- Range and poor performance of today's biofuels partly result of absence of regulation or incentives linking support to CO₂ balance
- Fuel carbon taxes, including for biofuels, would be more cost-effective than subsidies or targets



Biomass better for heat and power

£ / tonne CO₂ abated



Source: Dti



Policy package

- Integrated packages of measures needed
 - Vehicles, fuels, demand mgmt, modal shift
- But vehicle efficiency measures deliver most
- Off-cycle components and eco-driving are most cost-effective
 - Large, immediate savings – should be core measures
 - Switch attention to efficiency, away from fuels & modal shift co-benefits approach (currently 1/3 of all national policies reported)



Priorities

- Differentiate vehicle taxes by CO₂
 - More countries
 - In EU, no need to wait for Directive
 - stronger incentives
 - Linear incentives to avoid fragmenting car market
- New low cost efficiency measures
 - Off-test vehicle component standards / incentives
 - tyres, lights, air conditioners, lubricants.
 - On-road efficiency
 - driving style training / instruments

References:

- www.cemt.org
 - Environment pages
 - Research Centre pages
- www.internationaltransportforum.org