

Progress, Challenges and Solutions to Lower Road Transport CO₂

BioEthanol and the Road to Sustainable Transport

Imperial College, London Seminar

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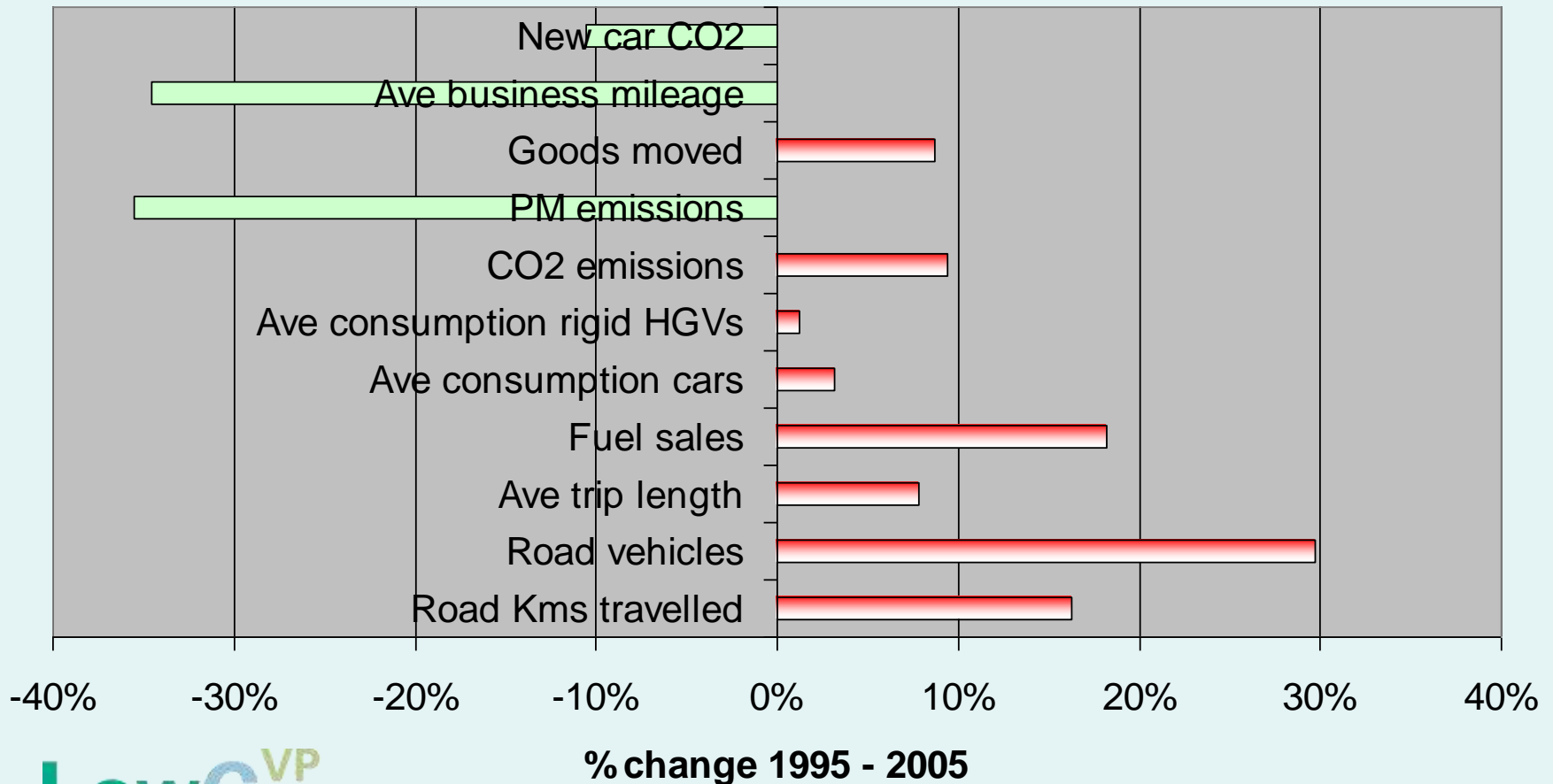
Accelerating a sustainable shift to low carbon vehicles and fuels in the UK

Stimulating opportunities for UK businesses



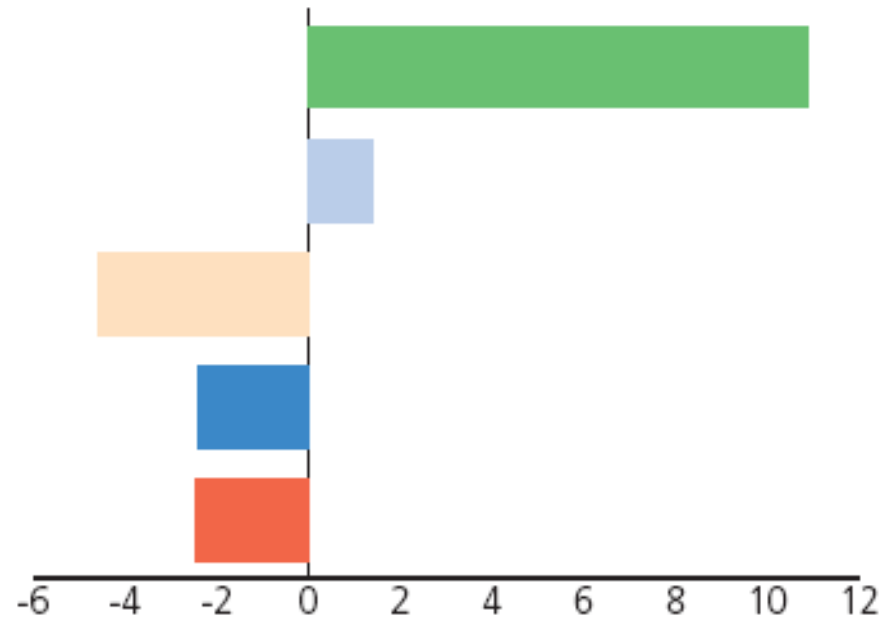
Road transport indicators show predominately unsustainable trends

% Change in road traffic metrics 1995 - 2005



***GDP growth,
changes in fuel
price and
improving
vehicle
efficiency are
the key drivers***

Impact of transport on carbon emissions from 1990-2010, MtC



- Increased traffic growth due to GDP growth
- Lower real fuel prices 2000-2010
- Higher real fuel prices 1990-2000
- Better car fuel efficiency due to VAs package, including reforms to VED and CCT
- Measures including RTFO and sustainable distribution

Climate Change Programme, 2006

Road transport GHG emissions are projected to continue to rise without further measures

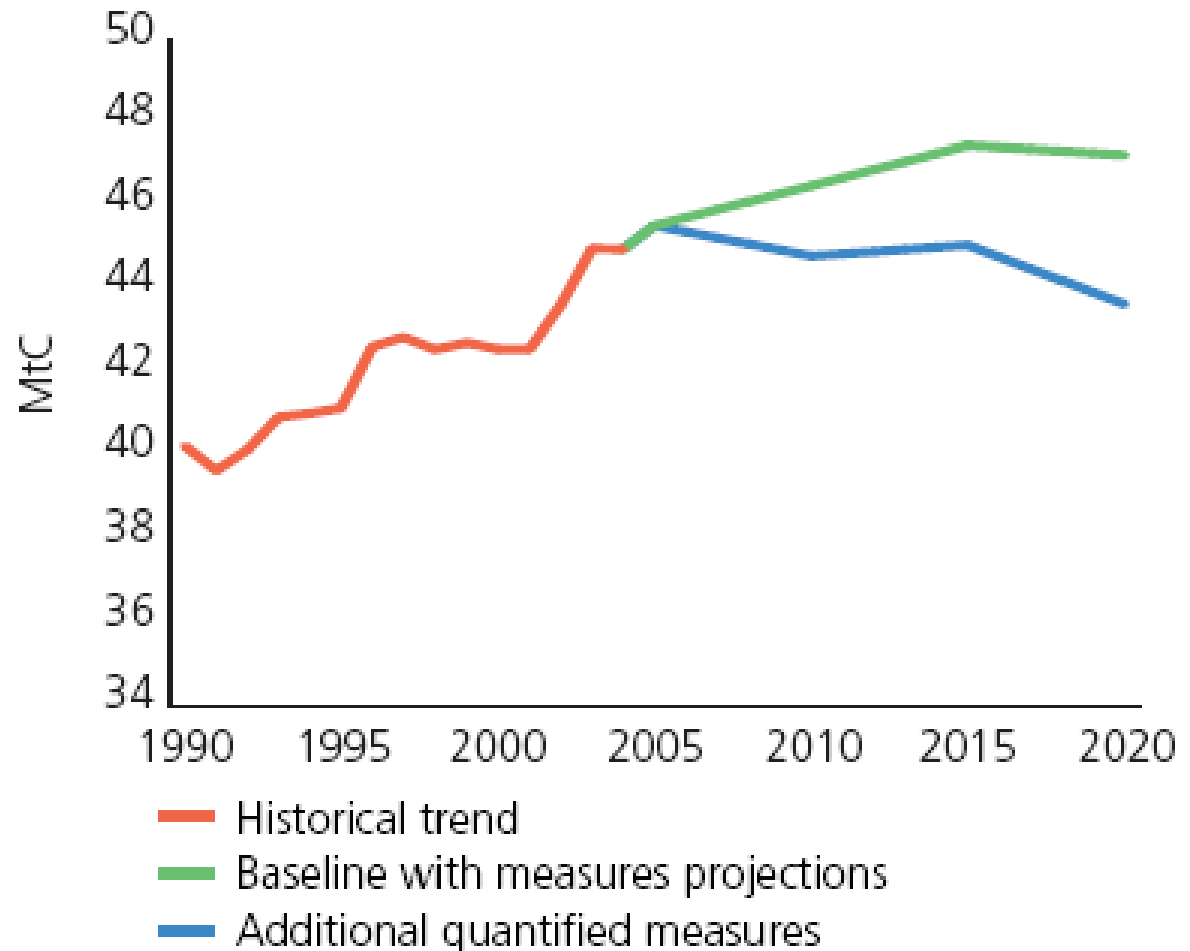
Existing measures

- 2.3 MtC
VA package+ VED and CCT
- 0.8 MtC
Transport 2010 Plan
- 1.9 MtC
Fuel Duty Escalator
- **5.1 MtC
Total**

Additional measures

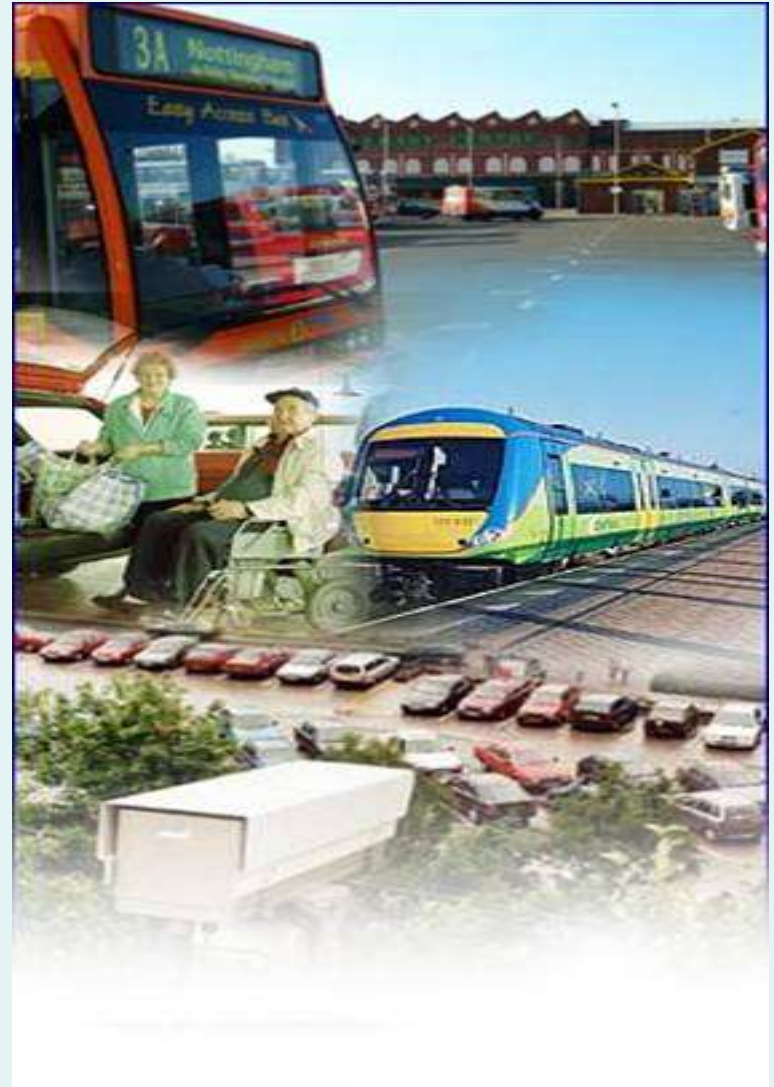
- 1.6 MtC,
RTFO
- 0.1 MtC,
Future EU VA
- **1.7 MtC
Total**

Projections of greenhouse gas emissions from the transport sector and the estimated effect of additional quantified measures, MtC

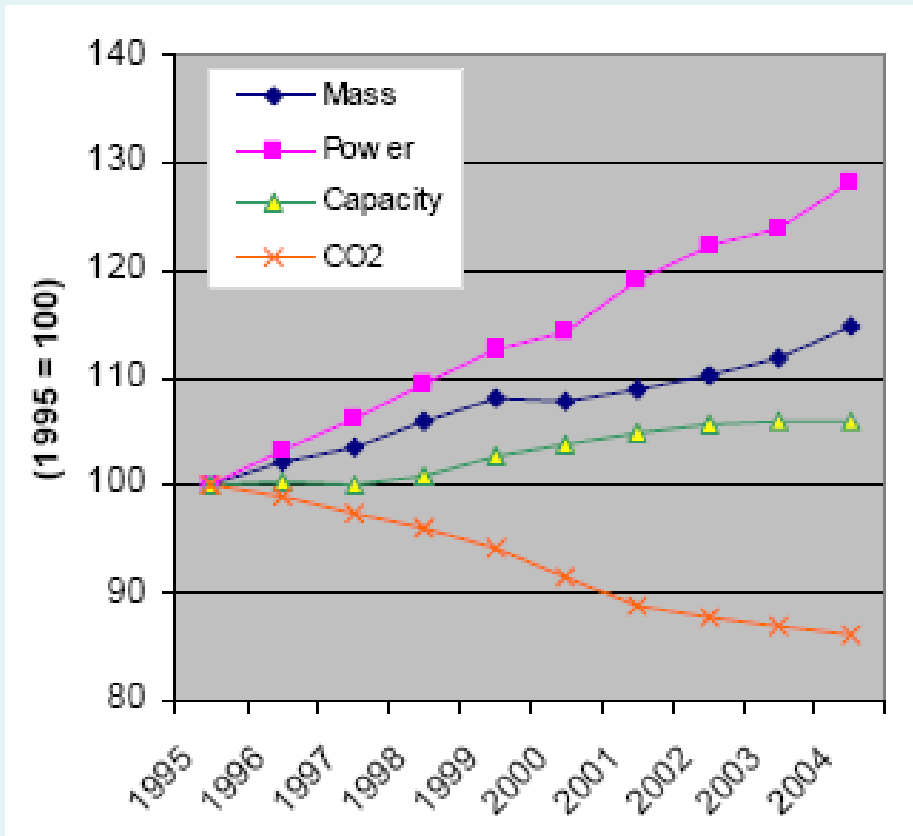


Reducing road transport emissions requires an Integrated Approach

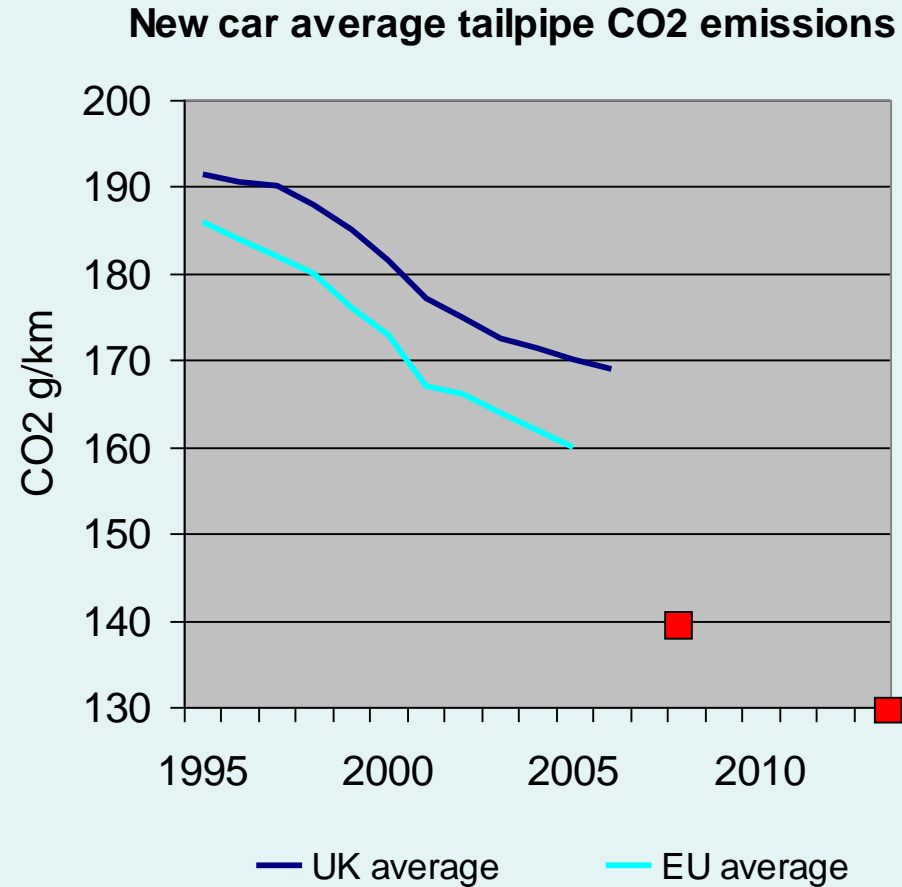
- ❑ Improved vehicle efficiency
- ❑ Low carbon / alternative fuels
- ❑ Improved driver behaviour
- ❑ Reduced vehicle use
- ❑ Better freight distribution
- ❑ Modal shift
- ❑ Land-use planning
- ❑ Tele-working



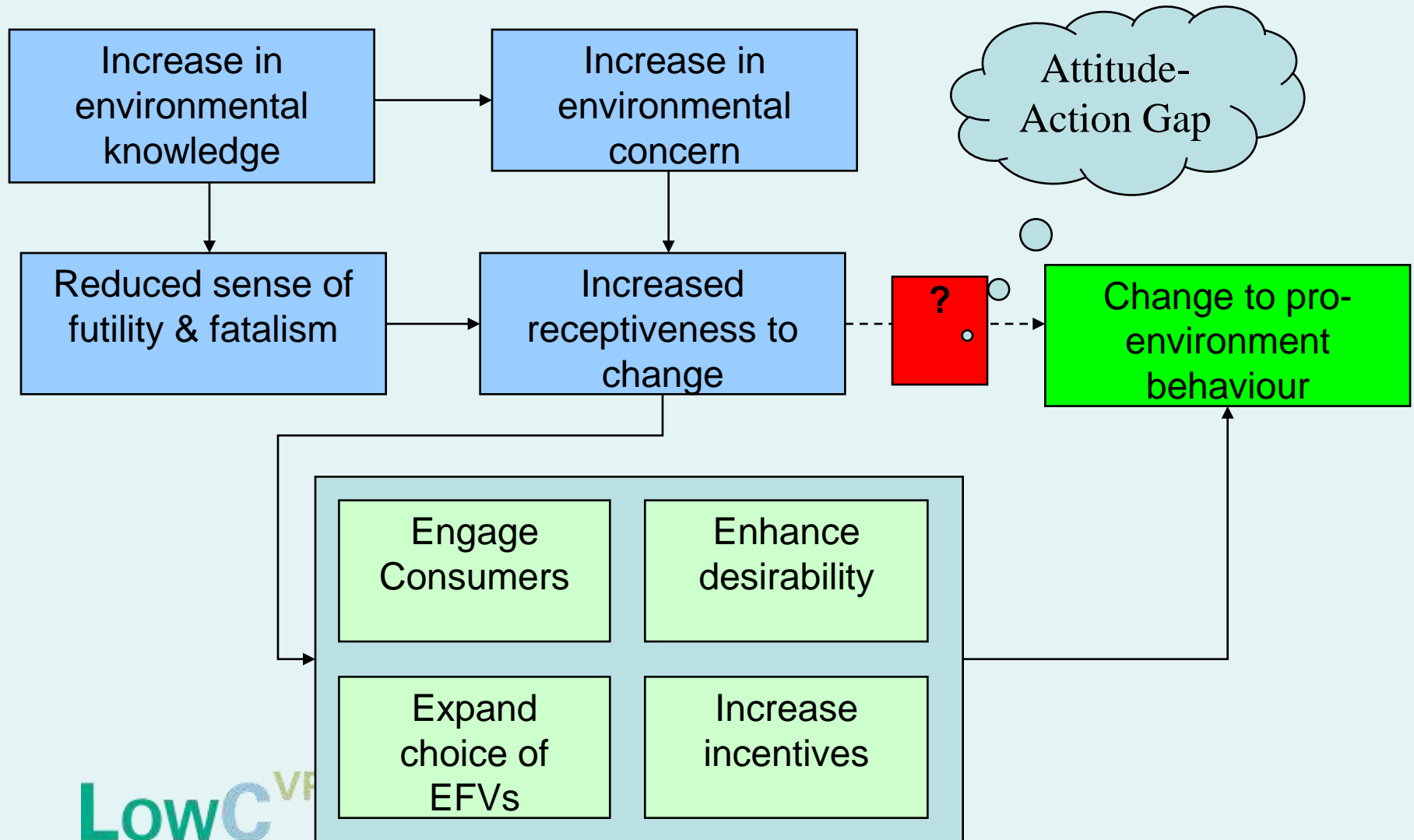
New car CO2 emissions are declining – but targets will be missed due to growth in vehicle power and size



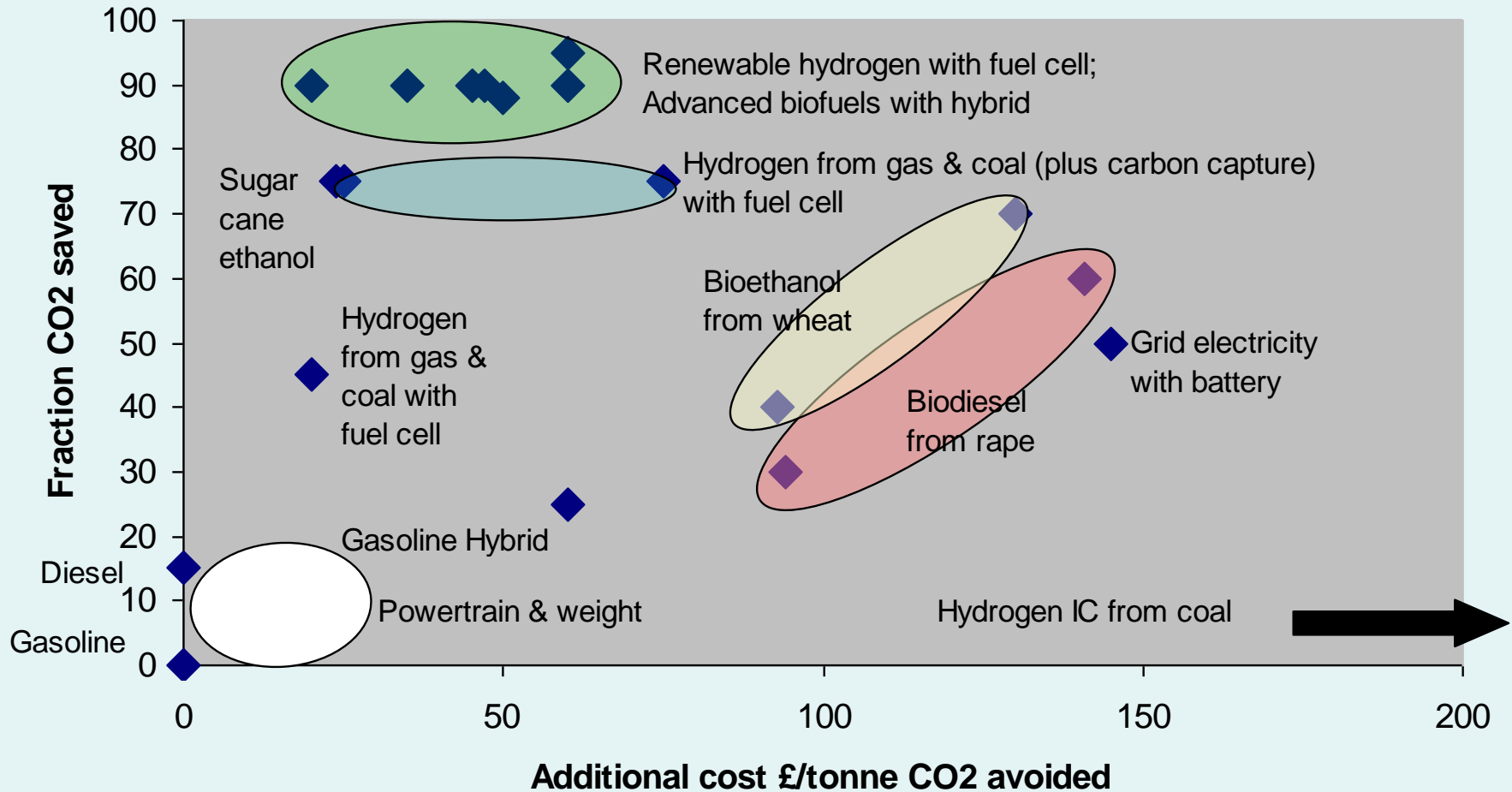
EC, 2007



Increased demand for environmentally friendly vehicles requires bridging the attitude-action gap



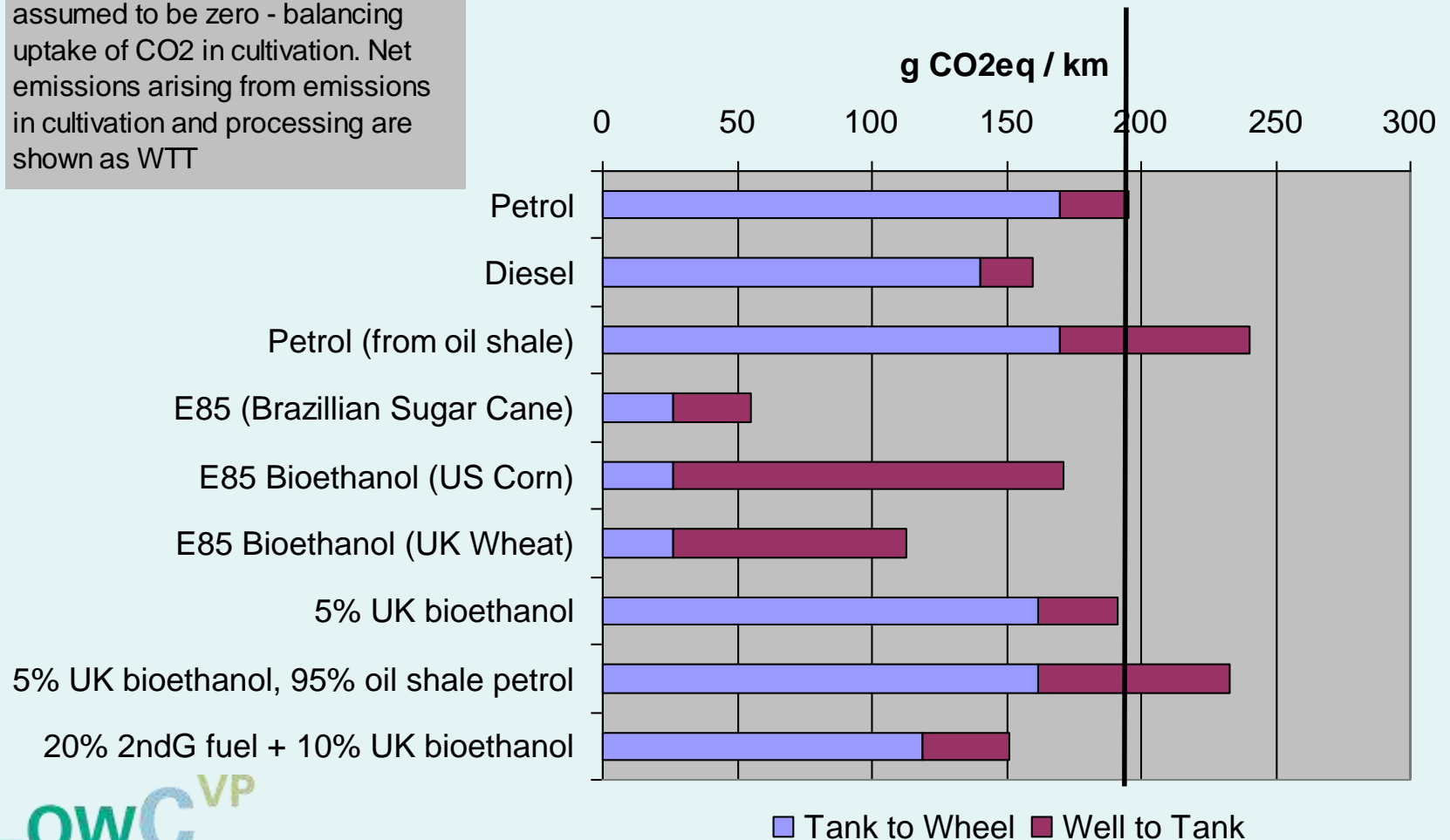
Alternative fuels and vehicle technologies provide opportunities - but CO2 savings & cost-effectiveness vary widely



WTW emissions depend upon the carbon intensity of the biofuel and oil product

Note: For simplicity - TTW emissions for biofuels have been assumed to be zero - balancing uptake of CO₂ in cultivation. Net emissions arising from emissions in cultivation and processing are shown as WTT

WTW Emissions of Biofuel Blends



Forthcoming Renewable Transport Fuels Obligation is designed to boost supply of sustainable biofuels

UK RTFO requires suppliers of transport fuels to:

- Sell a given amount of renewable transport fuel each year (for which they will receive certificates); or
- Purchase certificates from another company; or
- Pay a “buy-out” price of 22c/l – duty differential of 45c/l retained

Commences April 2008, targets:

- 2008/9 2.5% (by volume)
- 2009/10 3.7%
- 2010/11 5%

Requirements to encourage companies source sustainable fuels with good GHG-savings



Smarter driving typically delivers an 8% improvement in fuel economy

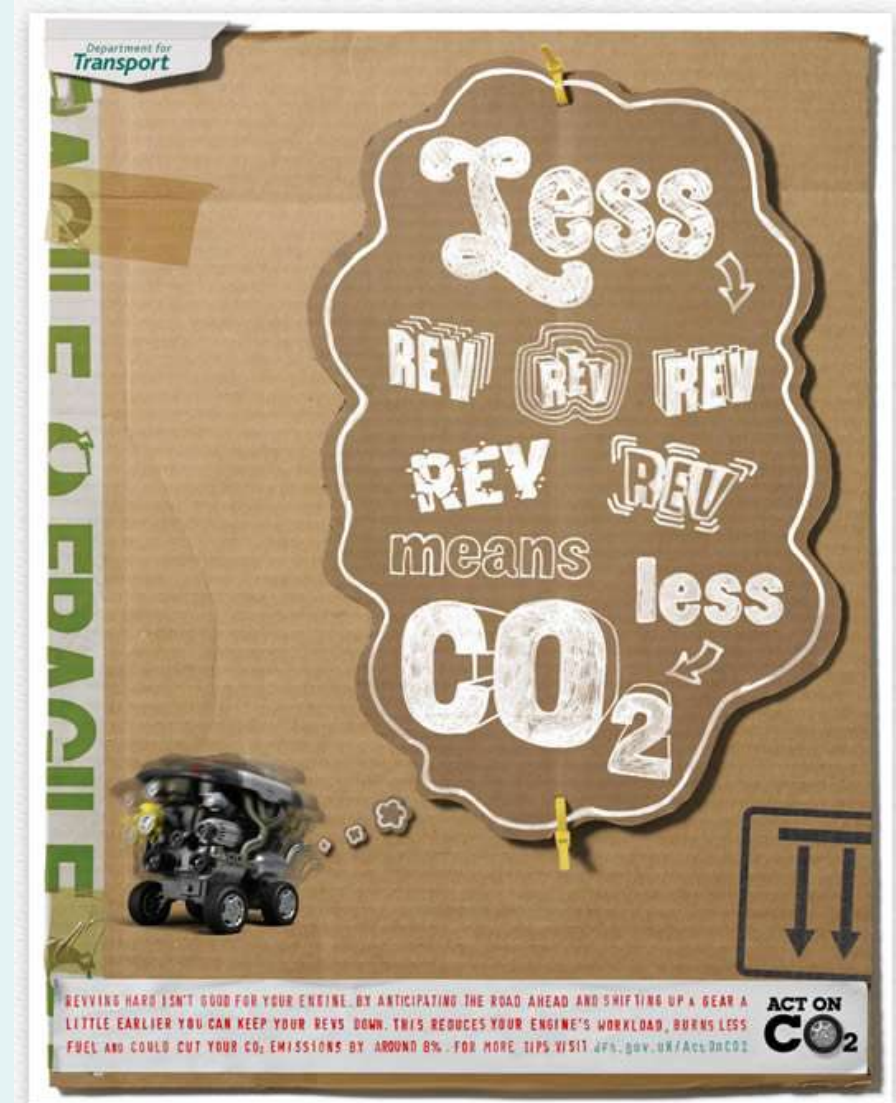
□ DFT Act on CO2 Campaign launched March 2007 focused on:

- Tyre pressures
- Reducing weight and drag
- Keeping to the speed limit
- Less stopping and starting
- Reduced revving

□ Lower speeds deliver significant savings. On a motorway:

- 80mph = + 20%
- 60 mph = -10%

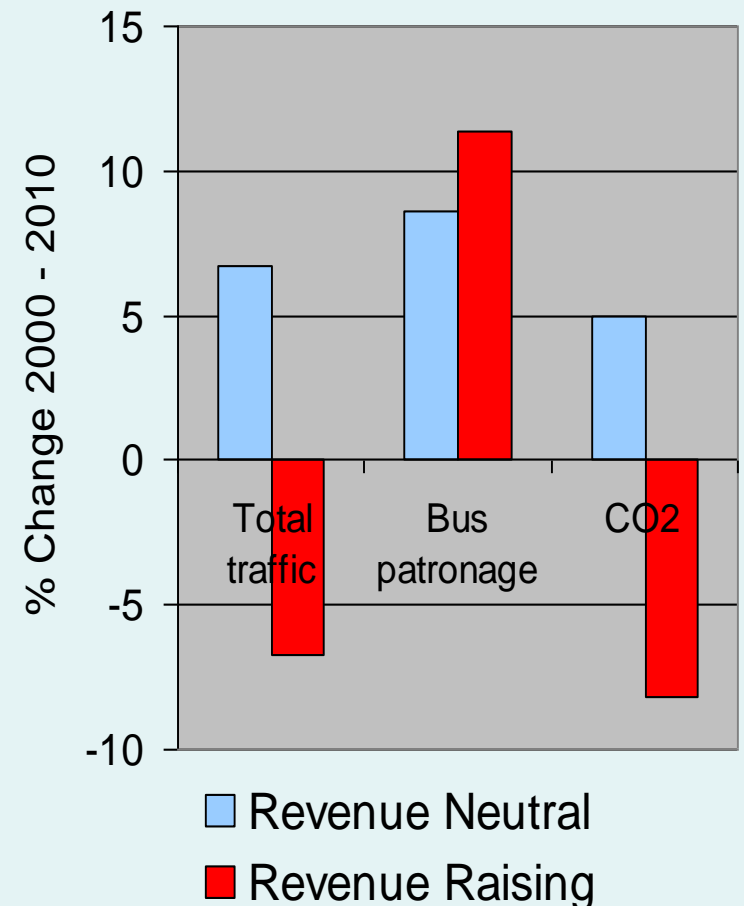
□ In-car instrumentation can deliver 10-20% savings



Road User Charging can deliver CO2 reductions – but effects depend upon scheme design

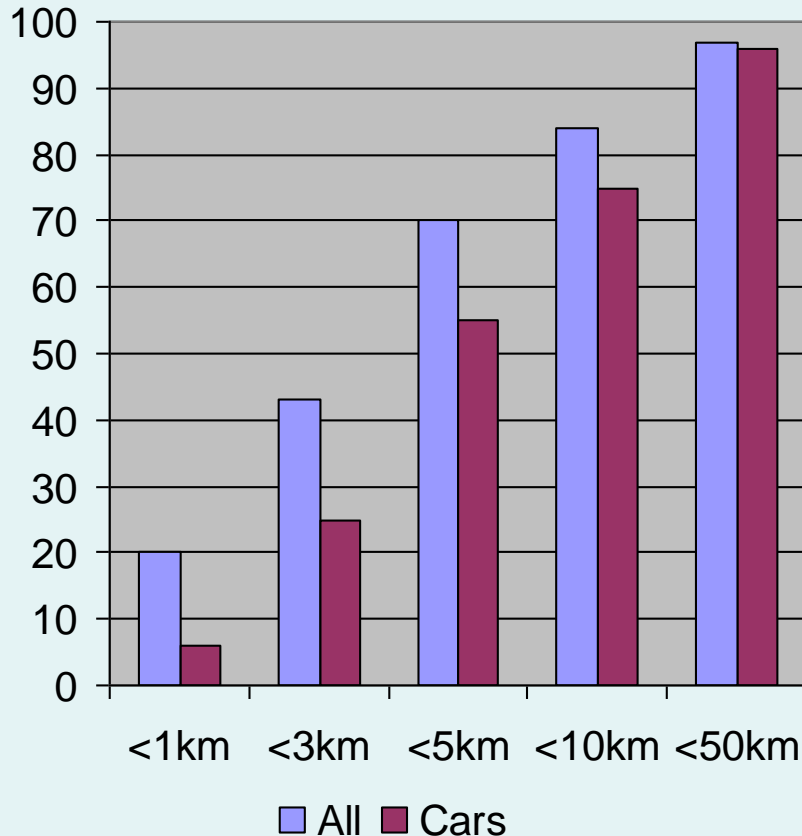
- ❑ How congestion charging influences motoring costs significantly effects CO2 emissions: It could:
 - Encourage responsible vehicle use and enable greater fuel efficiency
 - Make many car journeys cheaper - increasing vehicle use
 - Displace traffic leading to longer journeys
- ❑ Linking CO2 emissions (VED) to charges would incentivise low carbon vehicle sales
- ❑ London Congestion Charge has delivered 20% GHG savings and doubled the market for exempted vehicles

Impact of Road User Charging



Soft measures can deliver significant traffic reductions

% of trips in Peterborough, Worcester and Darlington



□ Around half of car trips could be replaced:

- 21% by public transport
- 31% by bike
- 15% walking

□ Poor perception of time penalties for alternatives is the key barrier

□ 10% reduction in car trips requires switching 1 car-driver trip per week

□ Soft measures have significantly greater potential than infrastructure improvements

□ Personal travel plans are increasingly being adopted

- Sustainable Travel Towns Demos
- Sutton / TfL

Summary

- ❑ Road transport is a significant & growing source of GHG emissions
- ❑ Technology can significantly reduce GHG emissions - but responsible vehicle use and other measures have an equally important role
- ❑ There are a wide range of fuel and vehicle technology options available with different GHG savings and costs
- ❑ Vehicles are becoming more efficient – but improvements are being offset by greater power and size
- ❑ Better consumer information, incentives and greater choice, and appeal of low carbon models are needed to stimulate the market
- ❑ Eco-driving and other soft measures can deliver significant GHG reductions
- ❑ Fiscal-neutral demand management through road-pricing does not deliver CO2 reductions
- ❑ Greater focus on GHG reduction within the DfT is needed – starting with a target for GHG emissions from transport

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