

Accelerating the Transition to Low Carbon Vehicles and Fuels

Challenges in the Transition to a Low Carbon Society

Warwick University

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LowCVP is the only multi-stakeholder, membership organisation working to accelerate the shift to low carbon vehicles and fuels

- ❑ Diverse membership and perspectives
- ❑ Close relationship with key Departments
- ❑ Track record of successful initiatives and policy interventions
- ❑ Examines barriers to vehicle and fuel issues across the innovation chain
- ❑ Work programme focused on
 - Early market adoption
 - Supporting UK technology SMEs



Outline

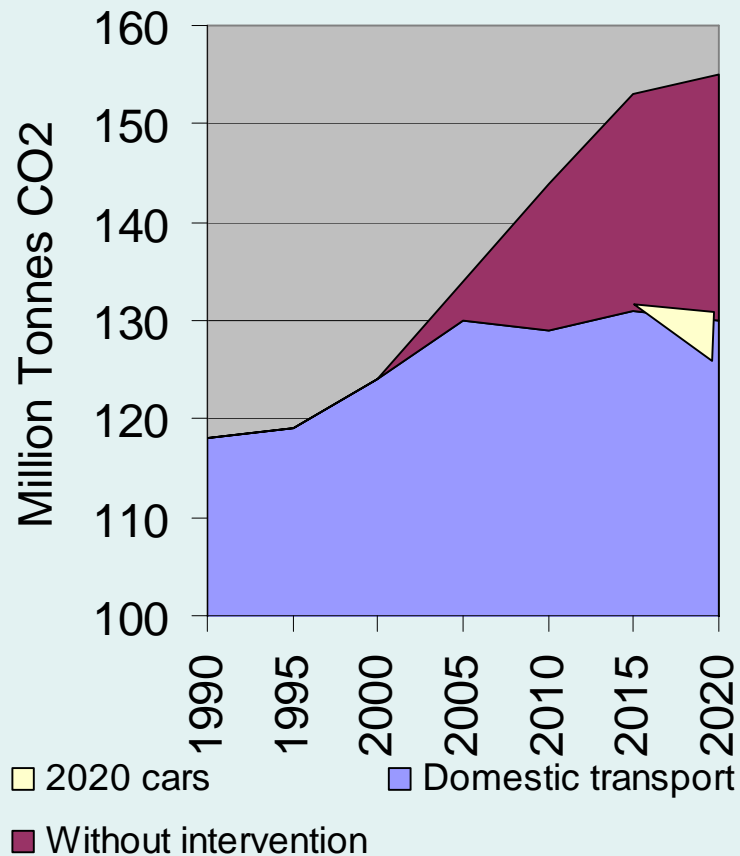
- ❑ The scale of the challenge
- ❑ Progress and approaches to accelerating deployment of low carbon vehicles
- ❑ Market readiness and preparation for renewable transport fuels
- ❑ What else is needed?



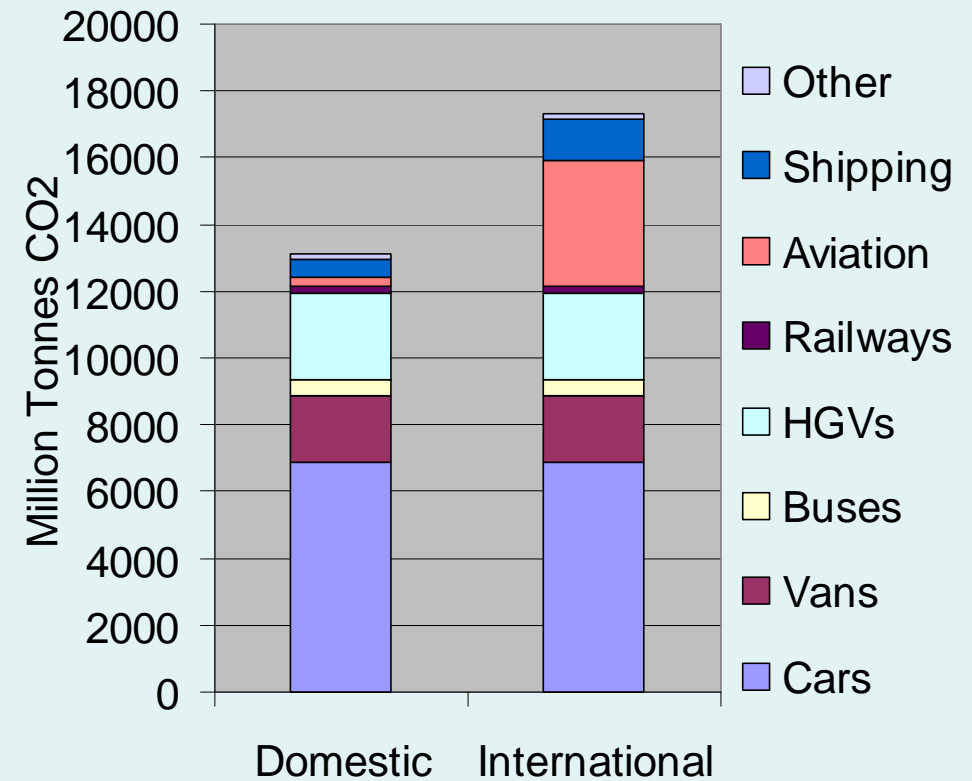
Domestic transport emissions have increased since 1990 and are projected to stabilise to 2020

Uk derived international emissions add 25MT CO2

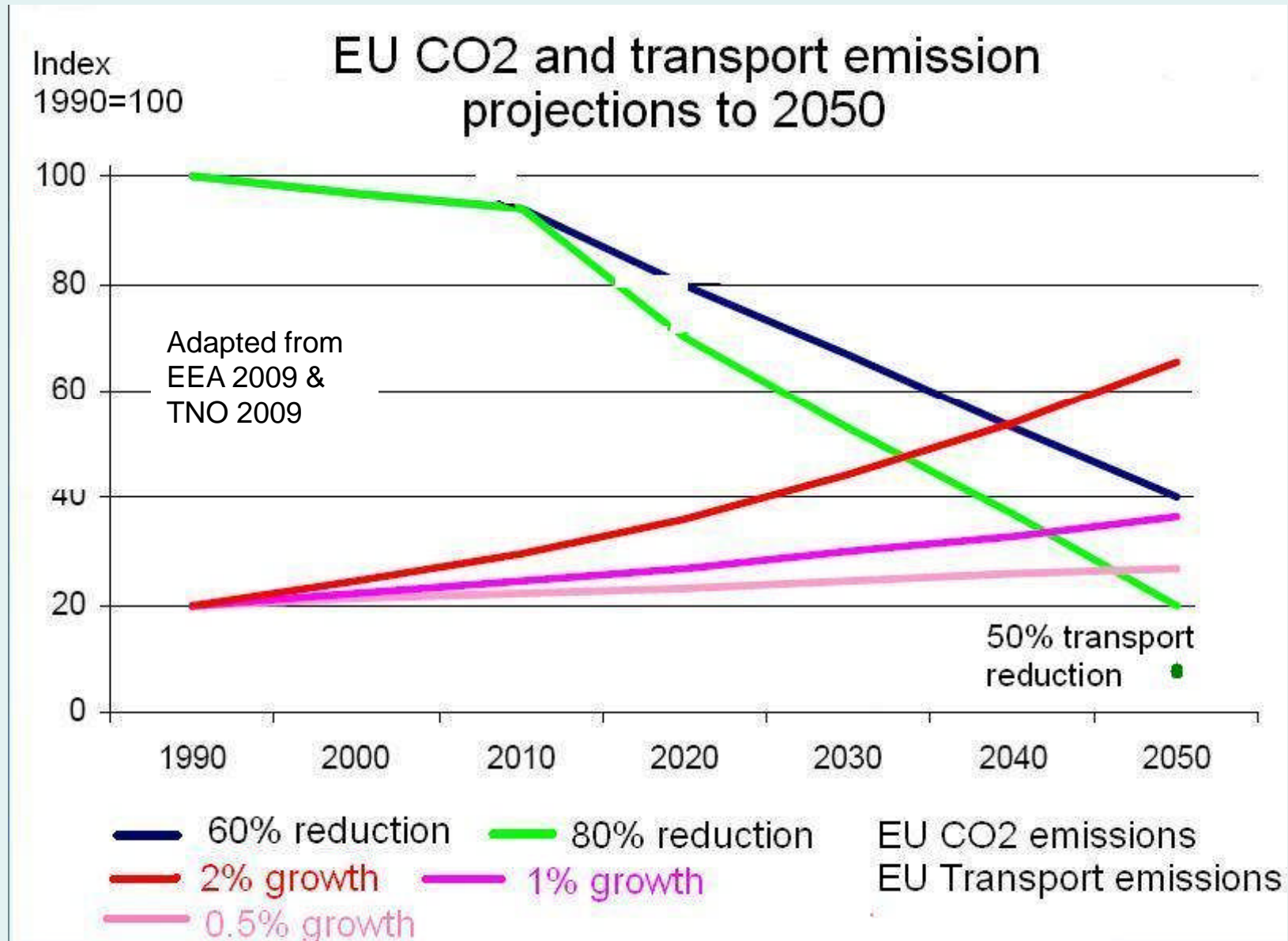
Domestic emissions



Transport emissions 2006

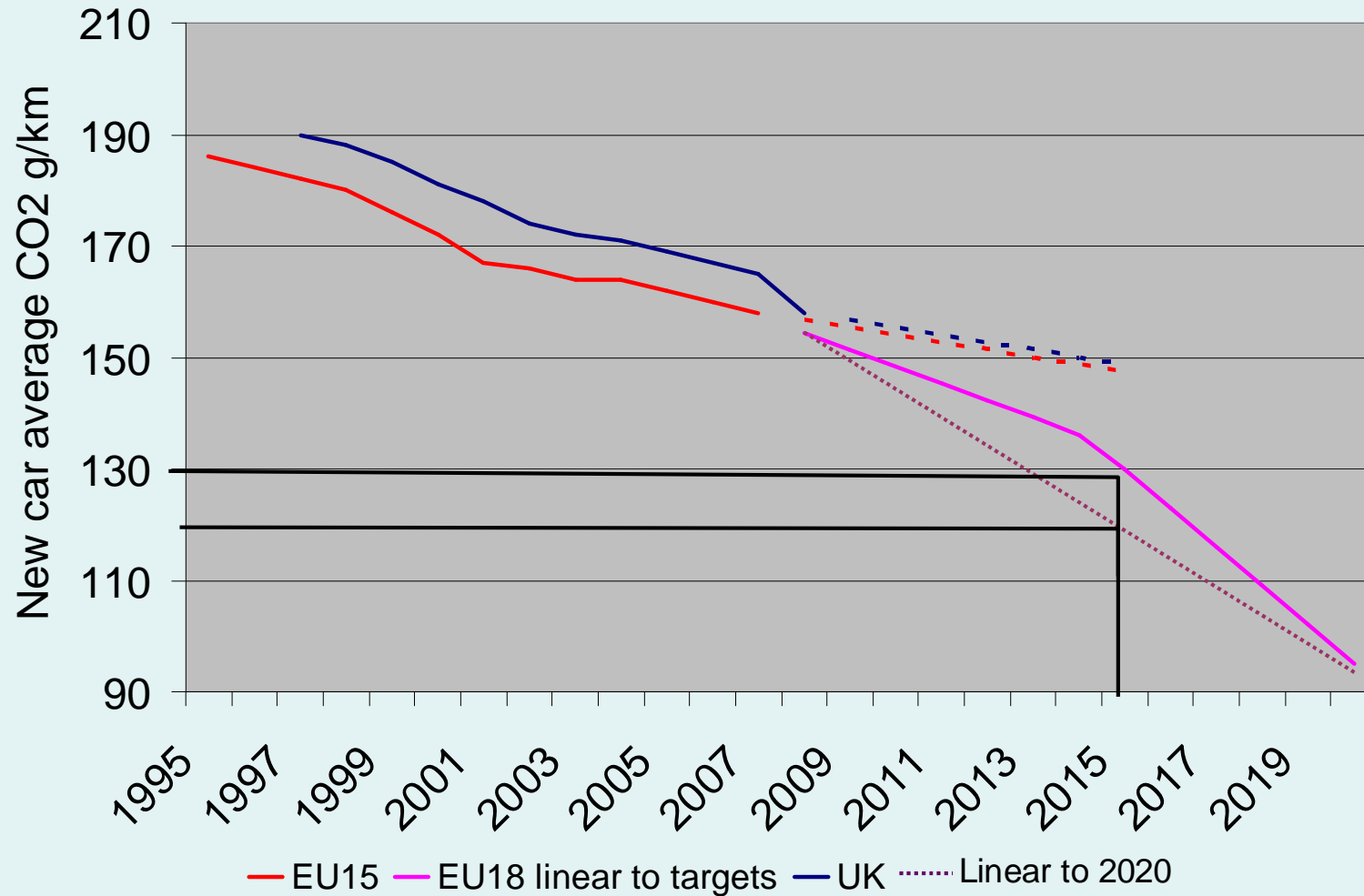


EU domestic transport emissions will consume the CO2 budget on current trends



New cars are becoming more efficient – but the rate of progress must be accelerated to achieve targets

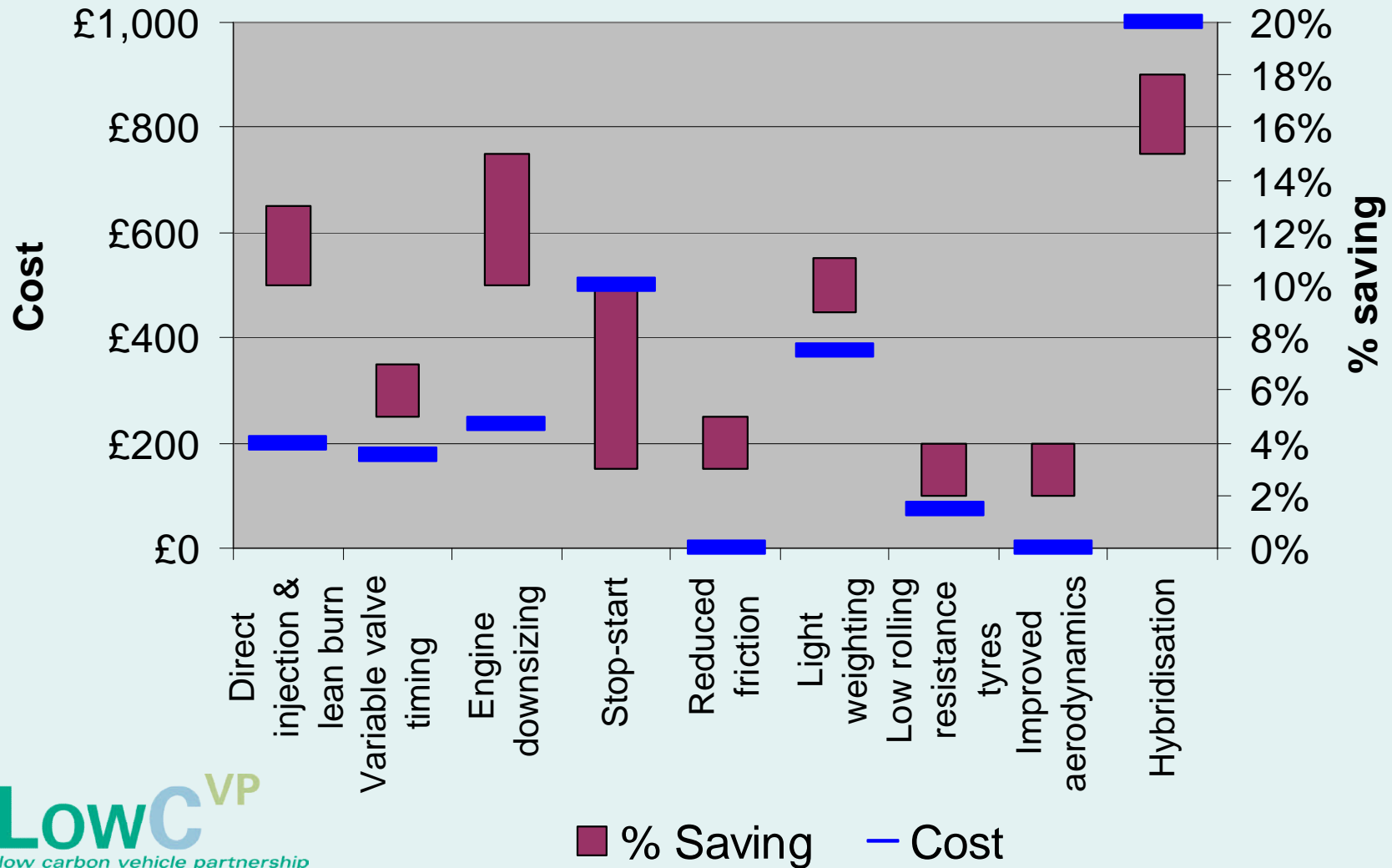
EU & UK new car CO2 emissions



Based upon T&E and SMMT data

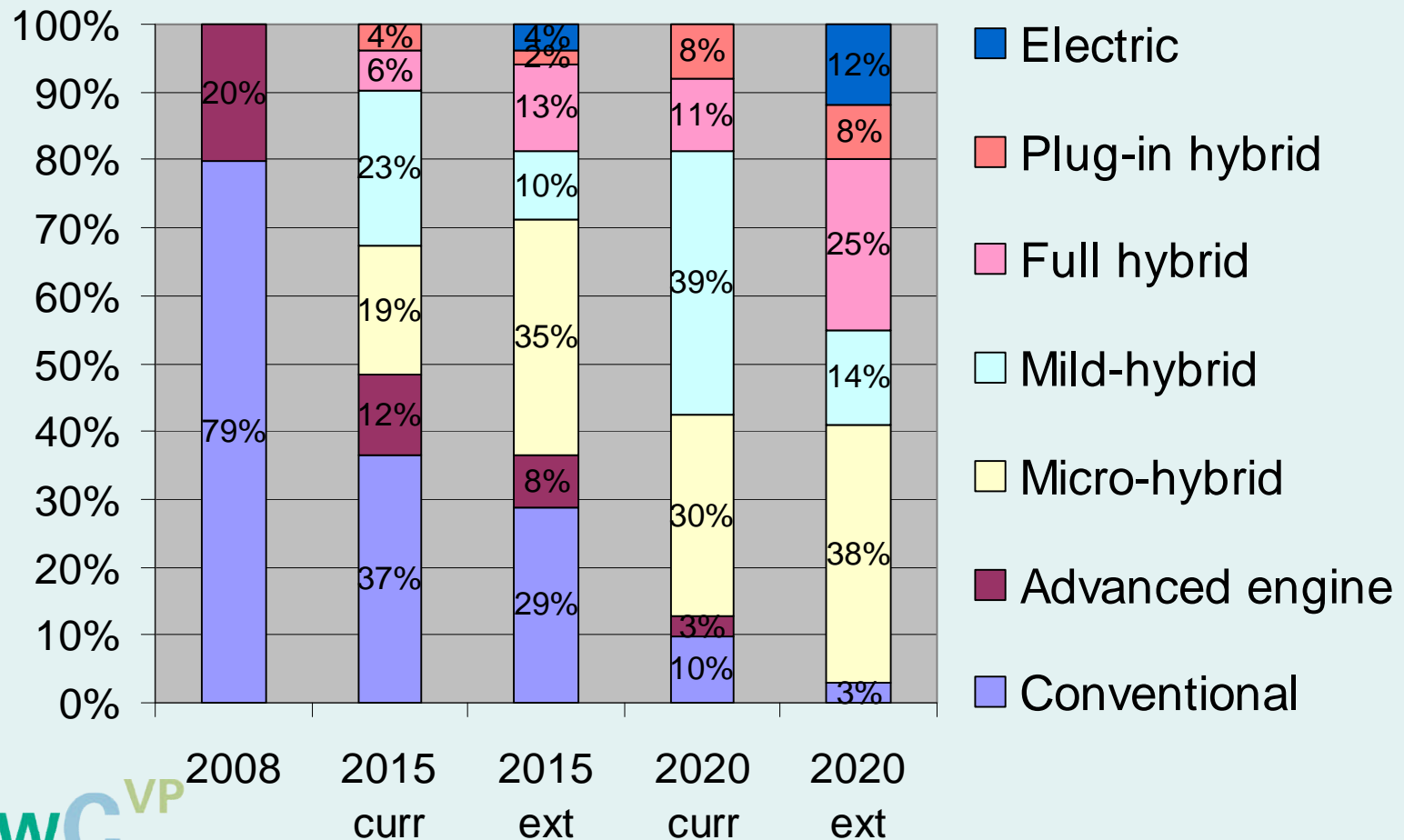
A range of existing technologies are available to reduce CO2 emissions – at a cost

Technologies for improving vehicle efficiency



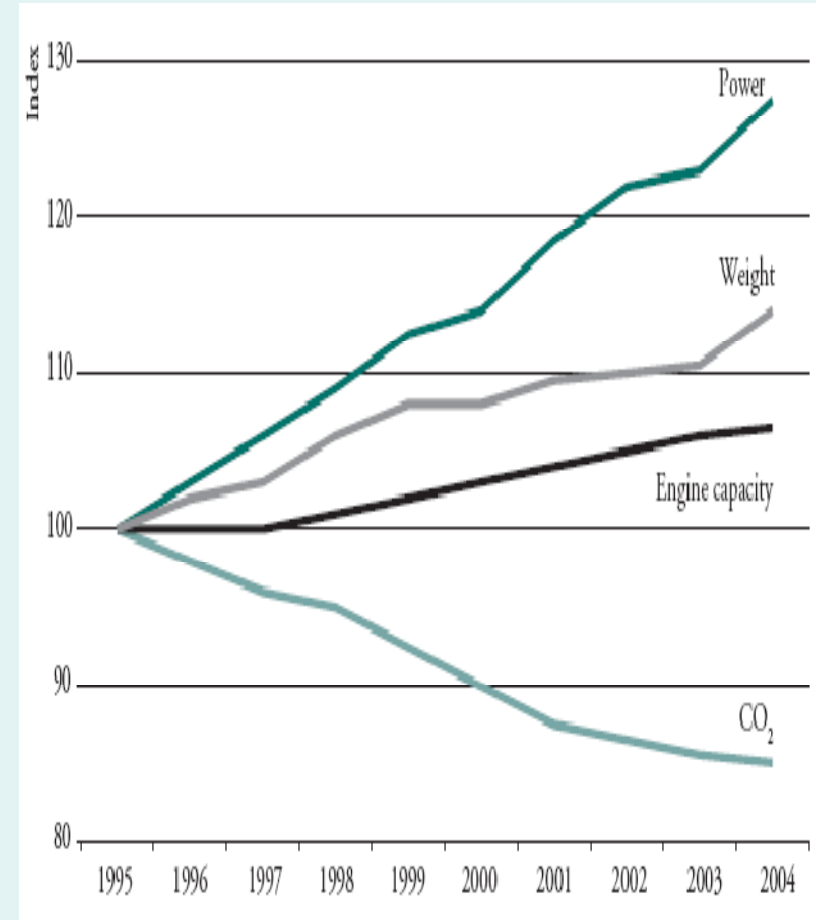
To 2020 most emissions reductions will be through improvements to existing ICE vehicles

Evolution of technology in new car market



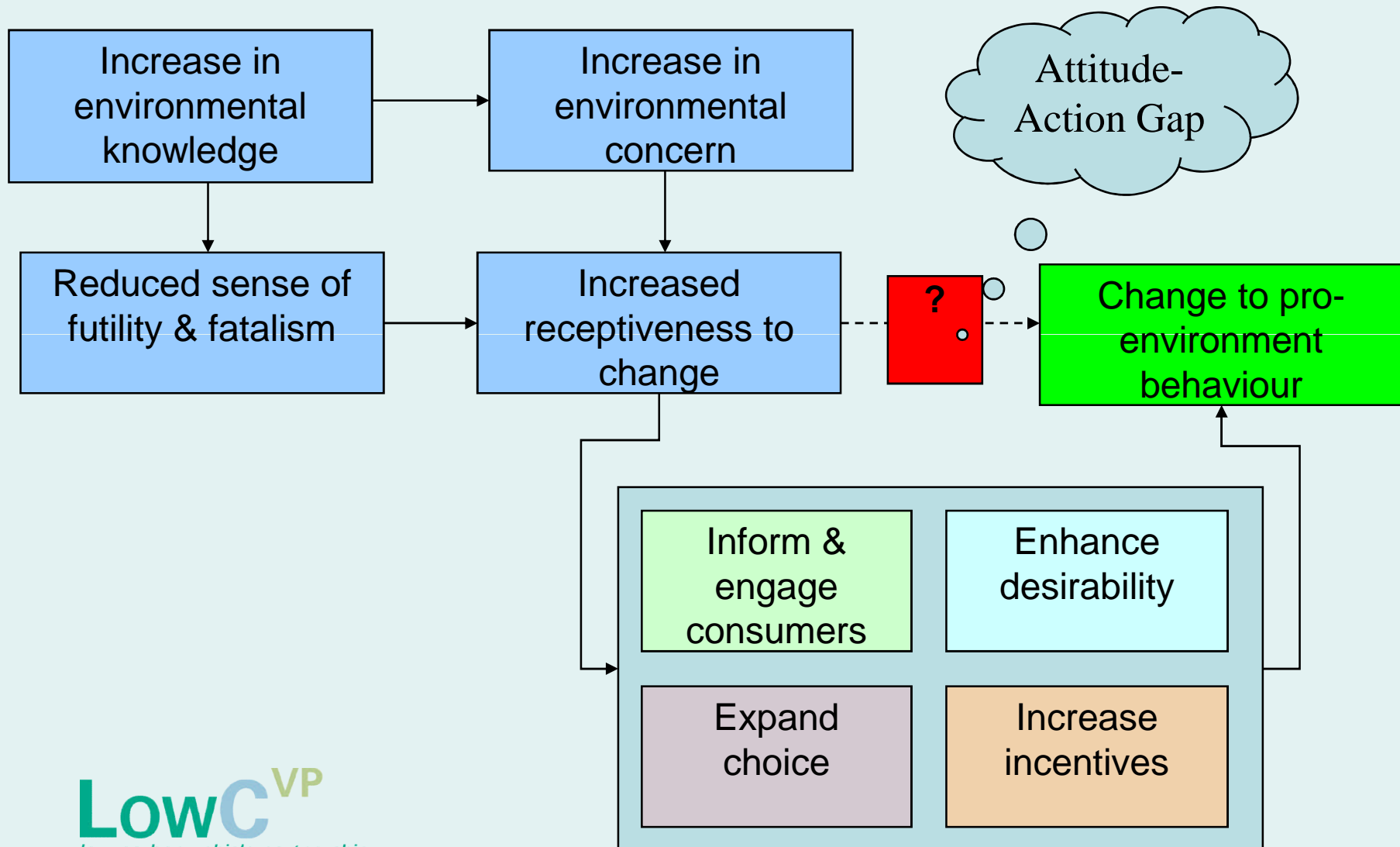
Accelerating progress depends upon:

- ❑ Reversing unsustainable trends in vehicle size, weight and power
- ❑ Maintaining consistently high fuel prices
- ❑ Industry-wide action
 - legislation
- ❑ Increased consumer demand
 - Improved information
 - Increased incentives, appeal and model availability

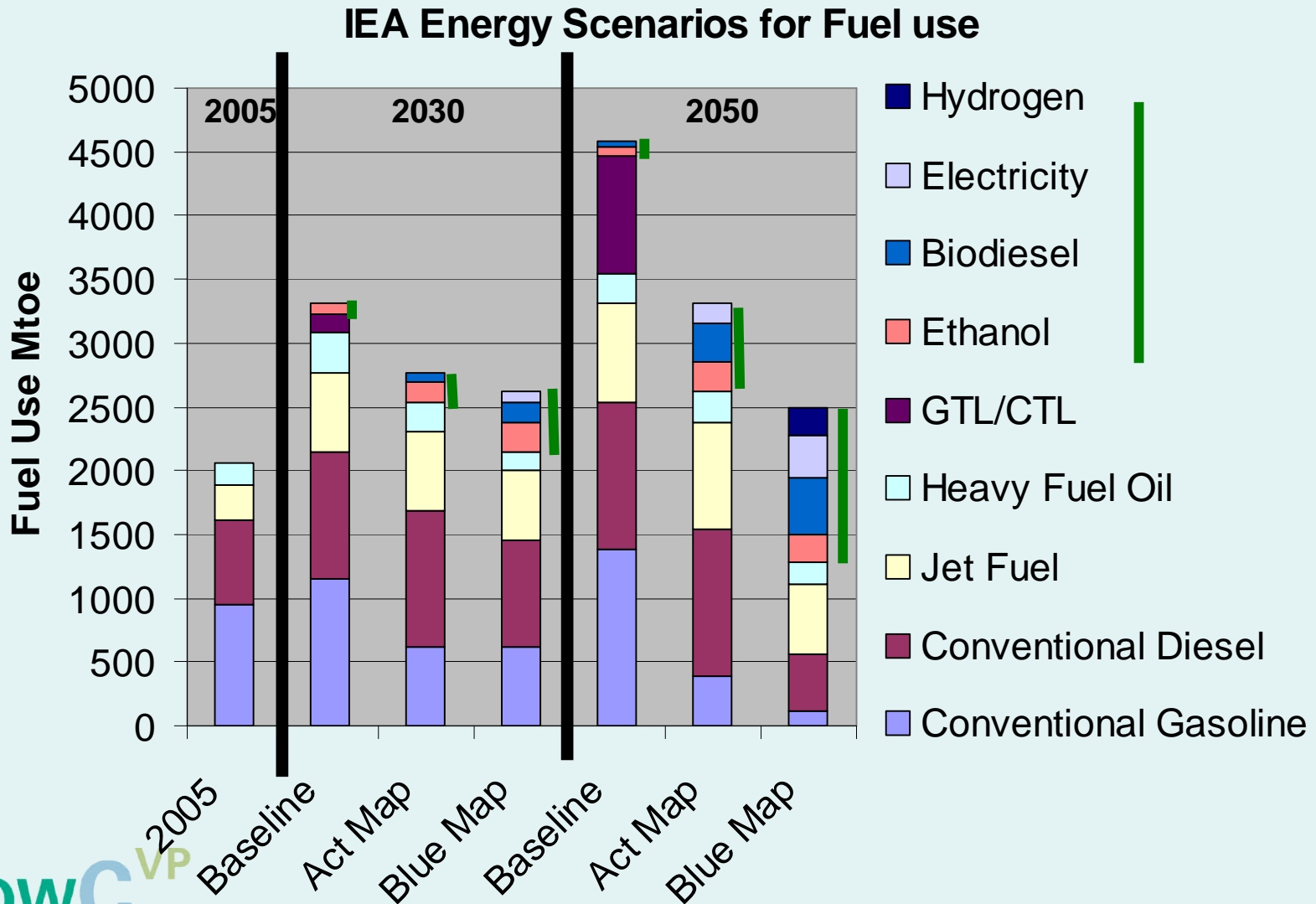


King Review 2008 based upon ACEA data




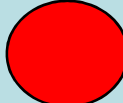

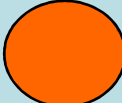



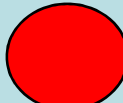





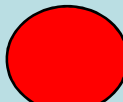




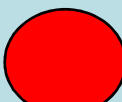
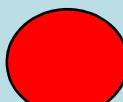


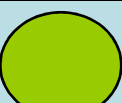
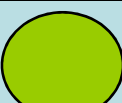
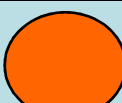
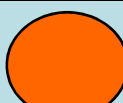
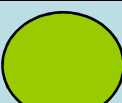
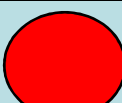
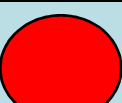
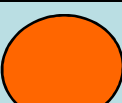



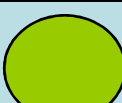
Increasing consumer demand for environmentally friendly vehicles requires bridging the attitude-action gap



Beyond 2020 IEA scenarios show an increasing penetration of renewable transport fuels to meet increasing demand

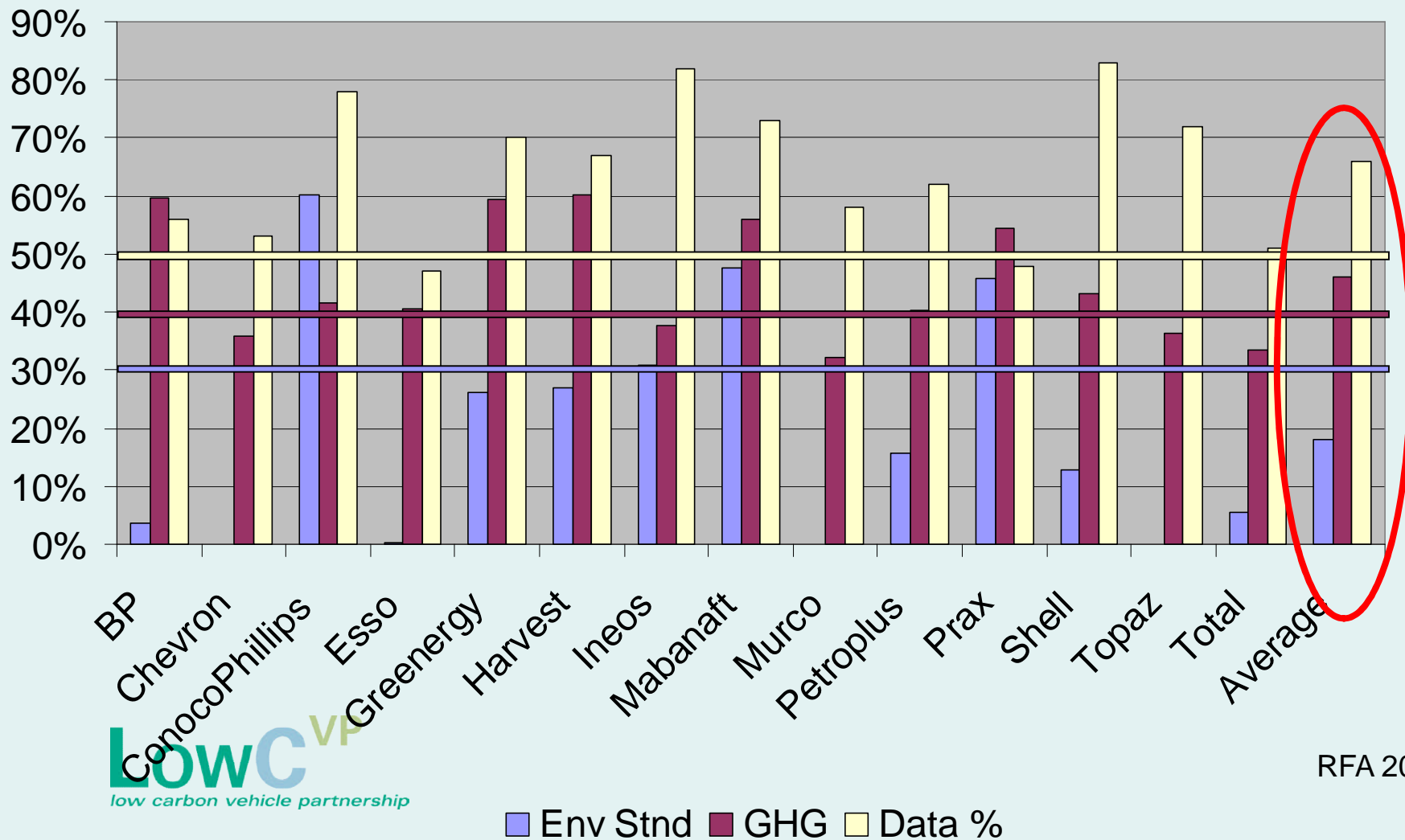


To 2020 the challenge is to ready the market for renewable fuels – but which option?

	1 st G Bio	2 nd G Bio	H2-IC	H2-FCV	Bio-CH4	EV
Technology readiness						
Cost competitiveness						
Vehicle availability						
Infrastructure deployment						
Driver acceptability						
Sustainability						

Recent legislation only partially addresses biofuel sustainability concerns

UK Company Performance against targets ytd



There is considerable renewed interest in electric vehicles following advances in lithium-ion battery technology and ultra capacitors



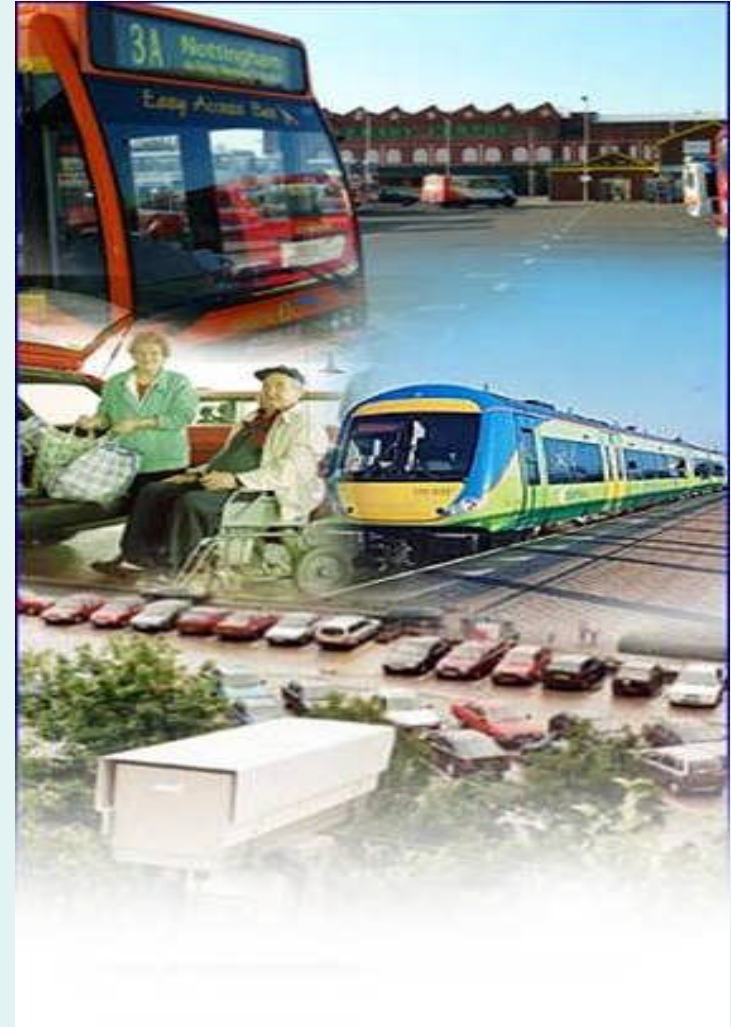
Preparing the market for renewable fuels requires:

- ❑ Coordinated support throughout the innovation chain
- ❑ Tackling market failures & supporting niche applications
- ❑ Long-term commitments to promising alternatives
- ❑ Adequate incentives to reward low carbon
- ❑ Bridging the customer attitude-action gap
- ❑ Preparing for the rebound effect and changes to transport fuel tax revenues



Key messages

- ❑ Significant decarbonisation of transport is essential to achieve an overall 80% cut by 2050
- ❑ Technology deployment and cost (not availability) is the key issue
- ❑ Current progress in improving vehicle efficiency must be accelerated
- ❑ Beyond 2020 renewable fuels will play an increasing important role
- ❑ There are no silver bullets & technology is only part of the solution



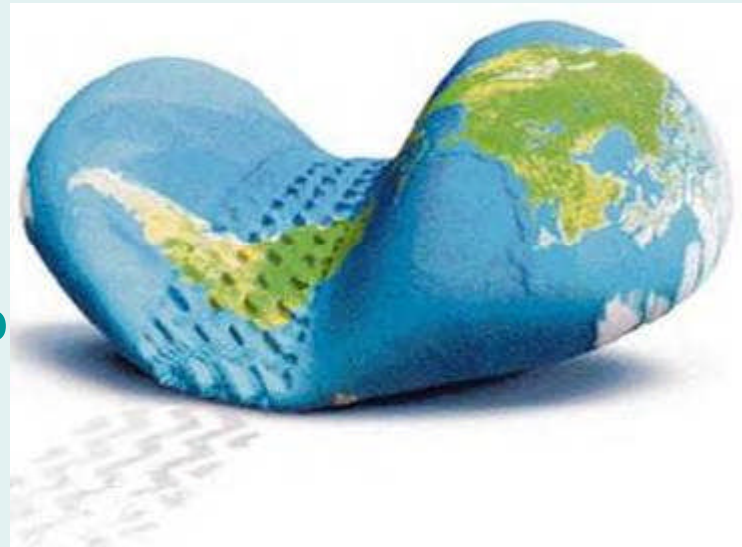
Any Questions?

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The Low Carbon Vehicle Partnership

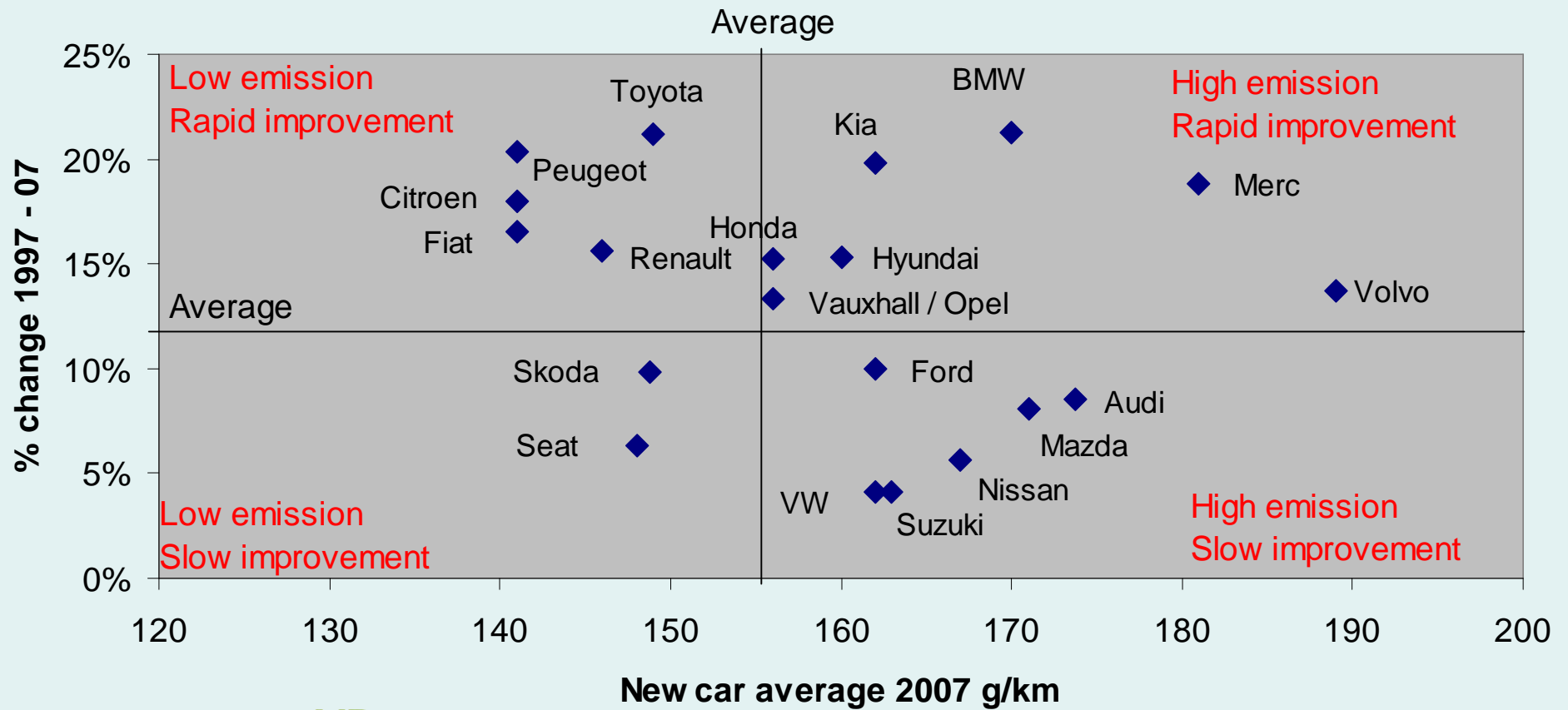
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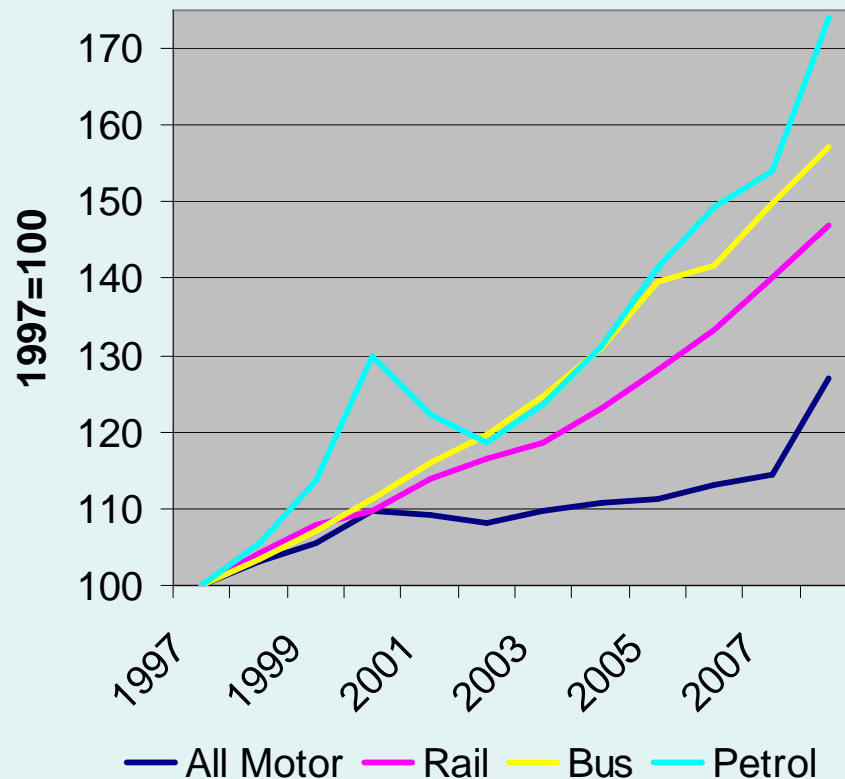
Strong legislation is essential to tackle market failures and stimulate industry-wide action

Comparison of manufacturer CO2 emissions



High fuel prices stimulate lower carbon and reduced demand for transport - but not necessarily mode shift

Transport cost comparison



- ❑ High fuel prices short term lead to
 - Fewer journeys
 - Shorter journeys
 - More efficient driving
 - Lower speeds
 - Mode shift
- ❑ High fuel prices long-term lead to
 - Trip destination changes
 - Location changes
 - More efficient vehicles
- ❑ High fuel prices reduce technology payback times
- ❑ Public transport has become increasingly expensive compared to motoring

Hydrogen fuel cell vehicles offer significant but still distant prospects

Key challenges:

- ❑ Higher costs per unit of energy
 - Adequate price of carbon mitigation
- ❑ Supply of renewable hydrogen
- ❑ Development of refuelling infrastructure and practical storage
 - Chicken and egg supply problem
- ❑ Supply of a range of affordable vehicles
 - Fuel cell costs, durability and reliability
- ❑ Improving public acceptability
- ❑ Alternative LC-options
- ❑ RD&D funding

