Accelerating the Transition to Low Carbon Vehicles and Fuels

Challenges in the Transition to a Low Carbon Society

Warwick University

14th July 2009

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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

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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?

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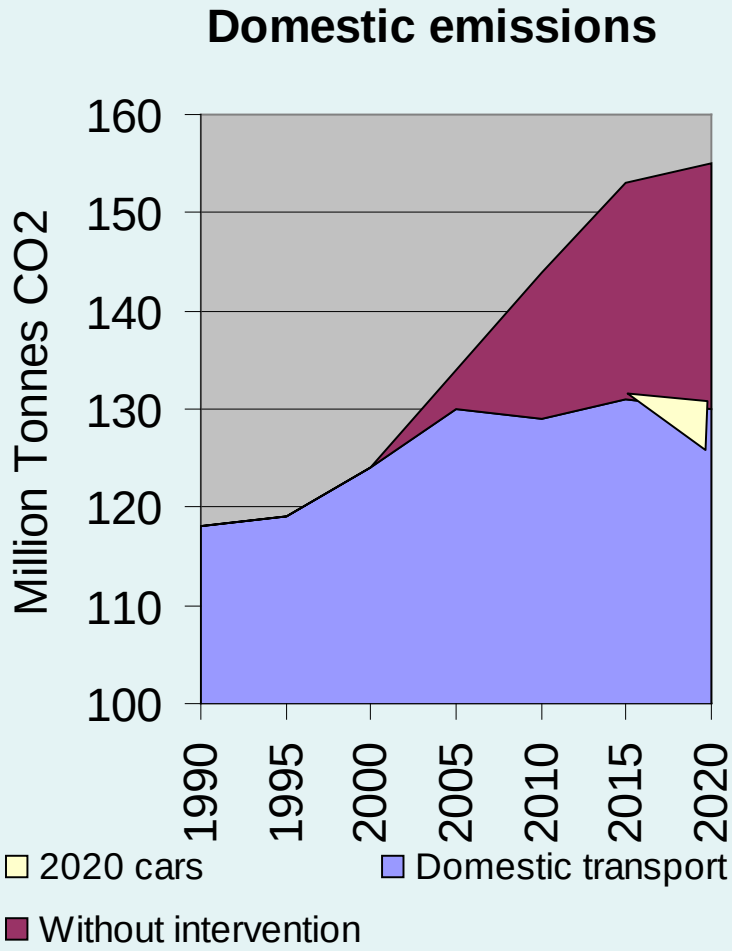
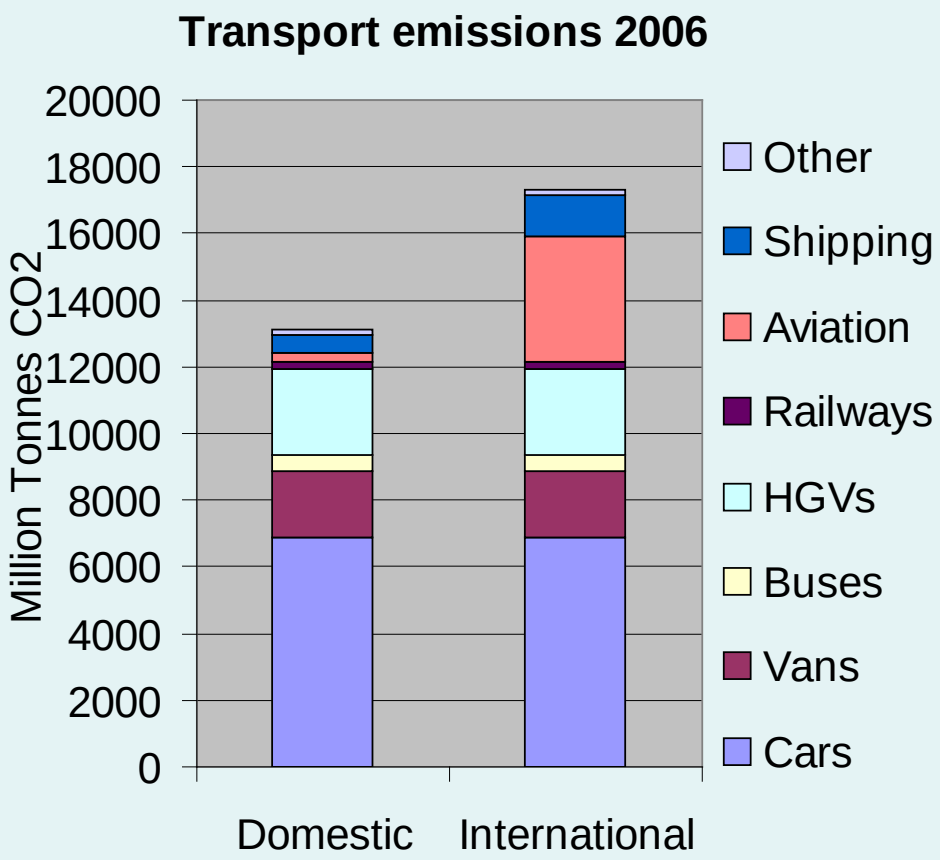
Domestic transport emissions have increased since 1990 and are projected to stabilise to 2020
Uk derived international emissions add 25MT CO2





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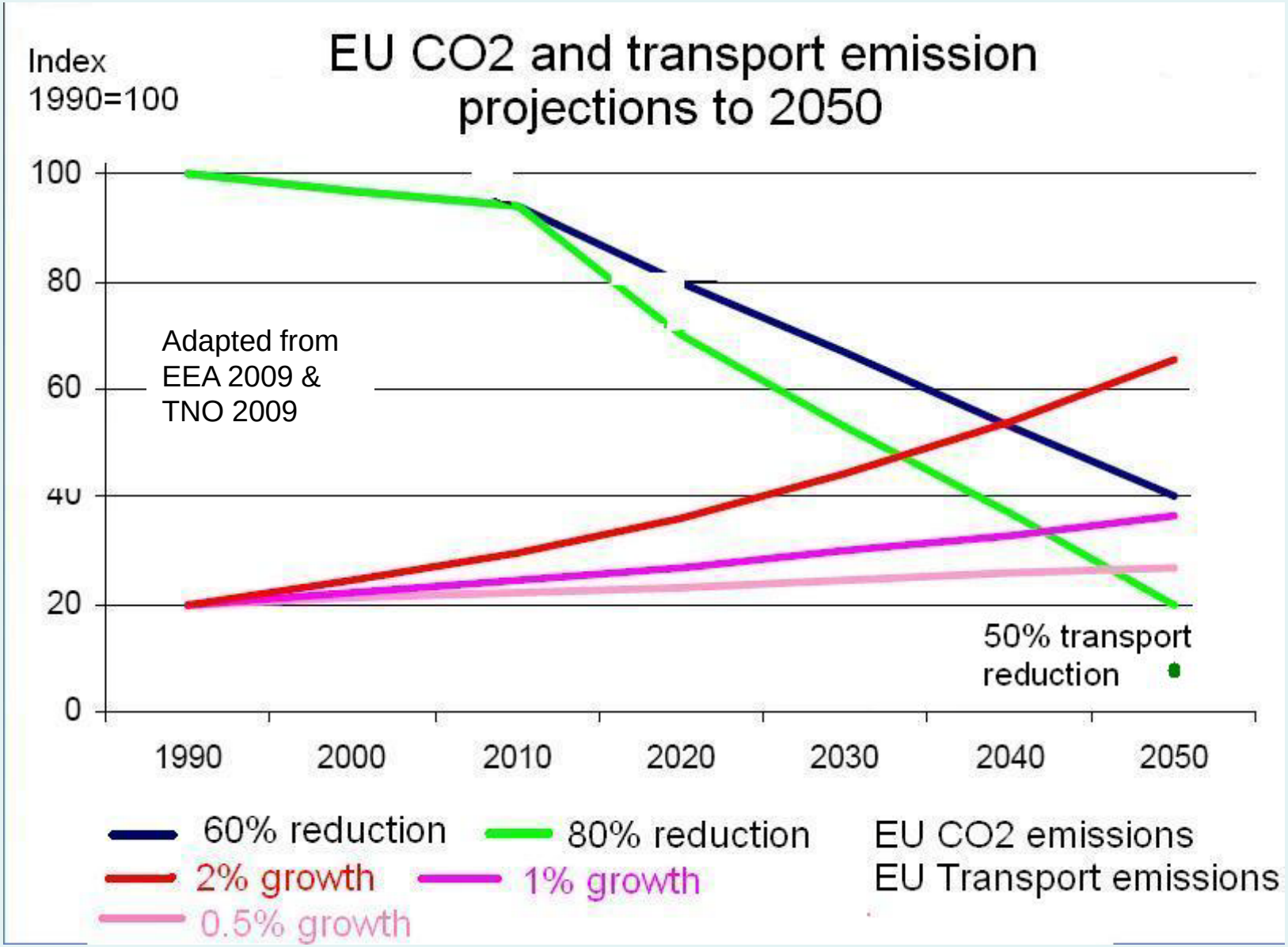
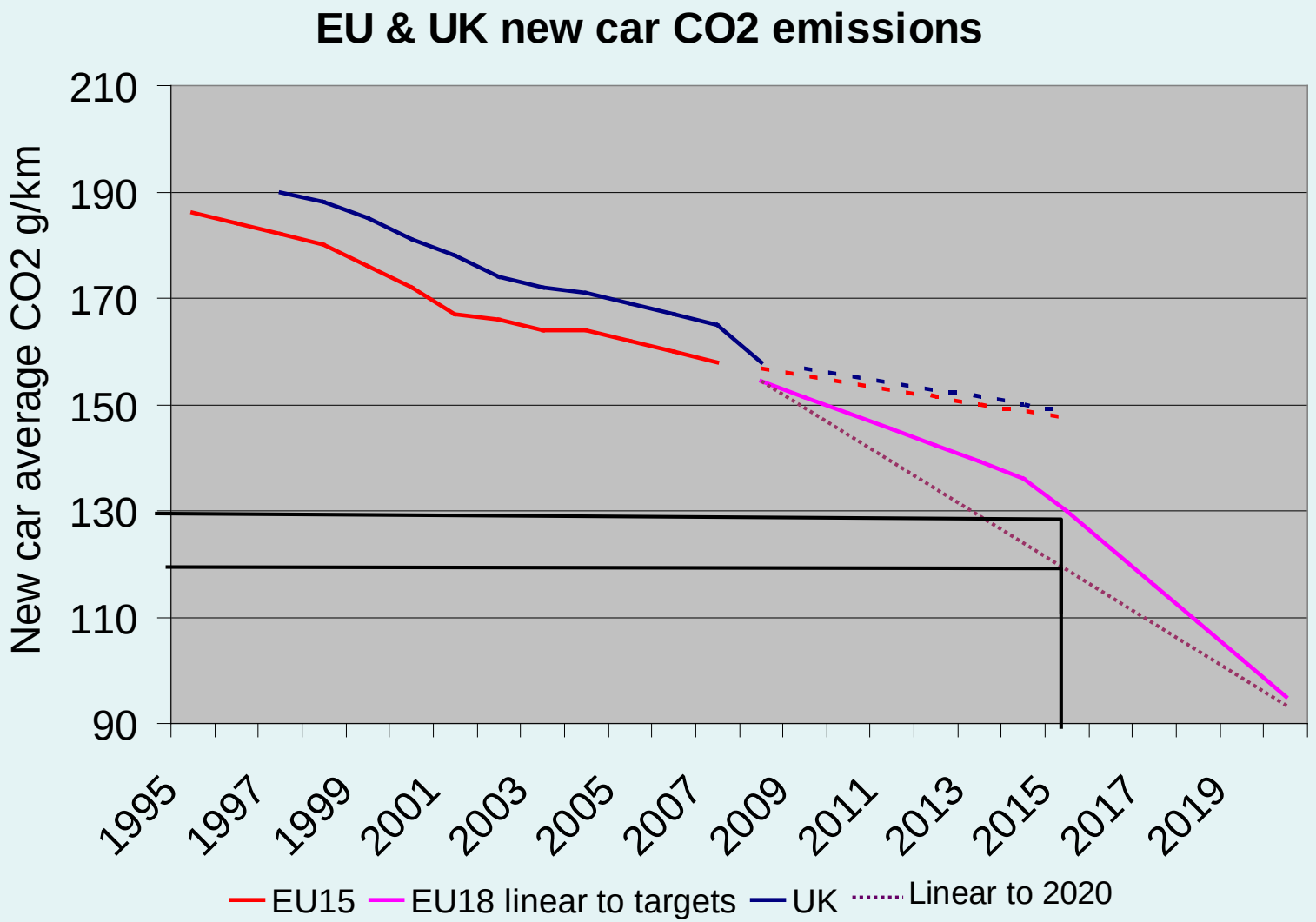
DfT 2008 Carbon Pathways Analysis

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

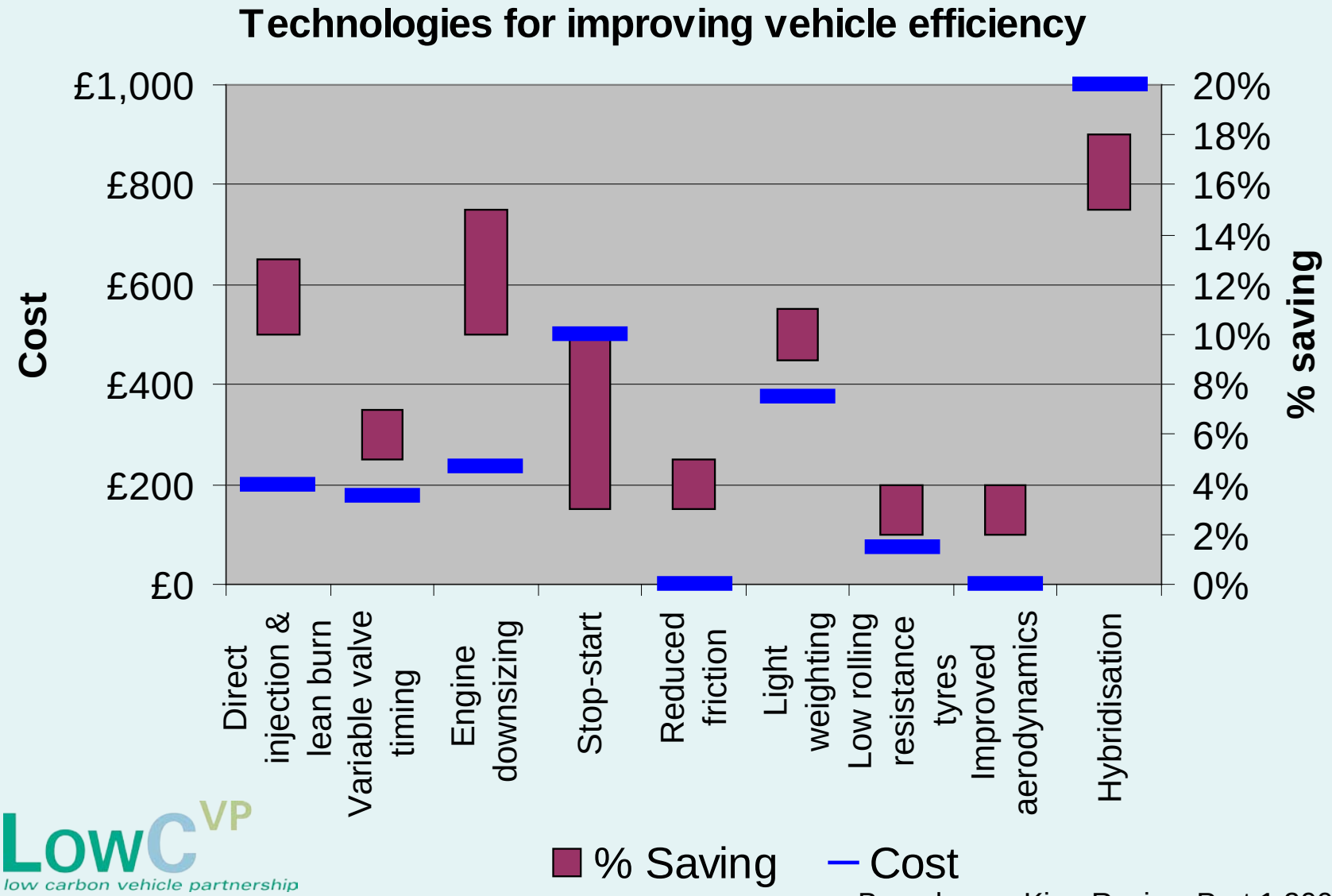


New cars are becoming more efficient – but the rate of progress must be accelerated to achieve targets



Based upon T&E and SMMT data

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



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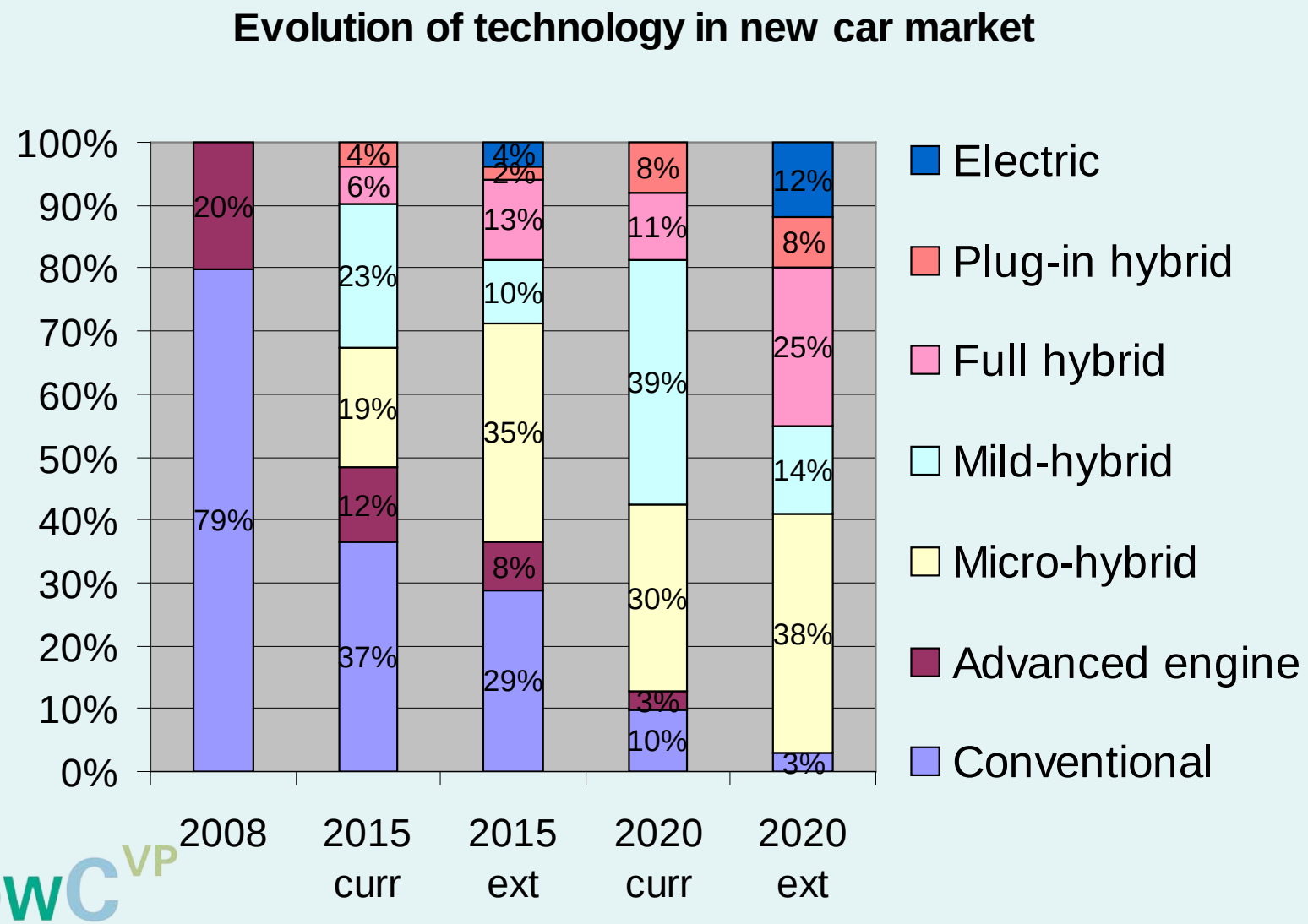
Based upon King Review Part 1 2008

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



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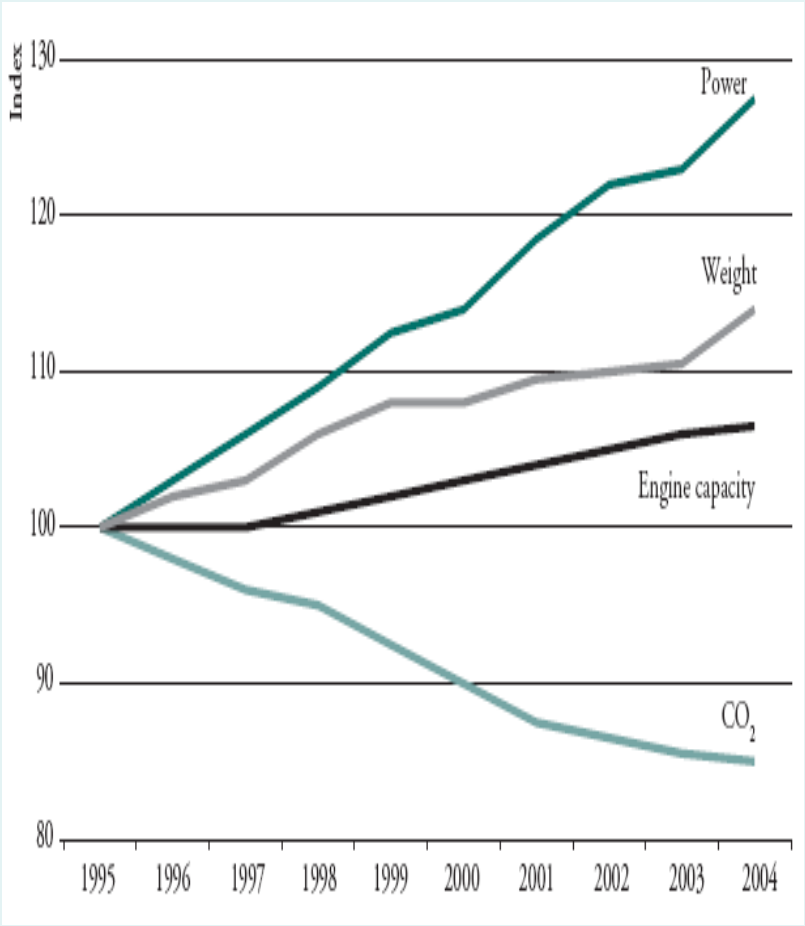
Climate Change Committee 2009

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

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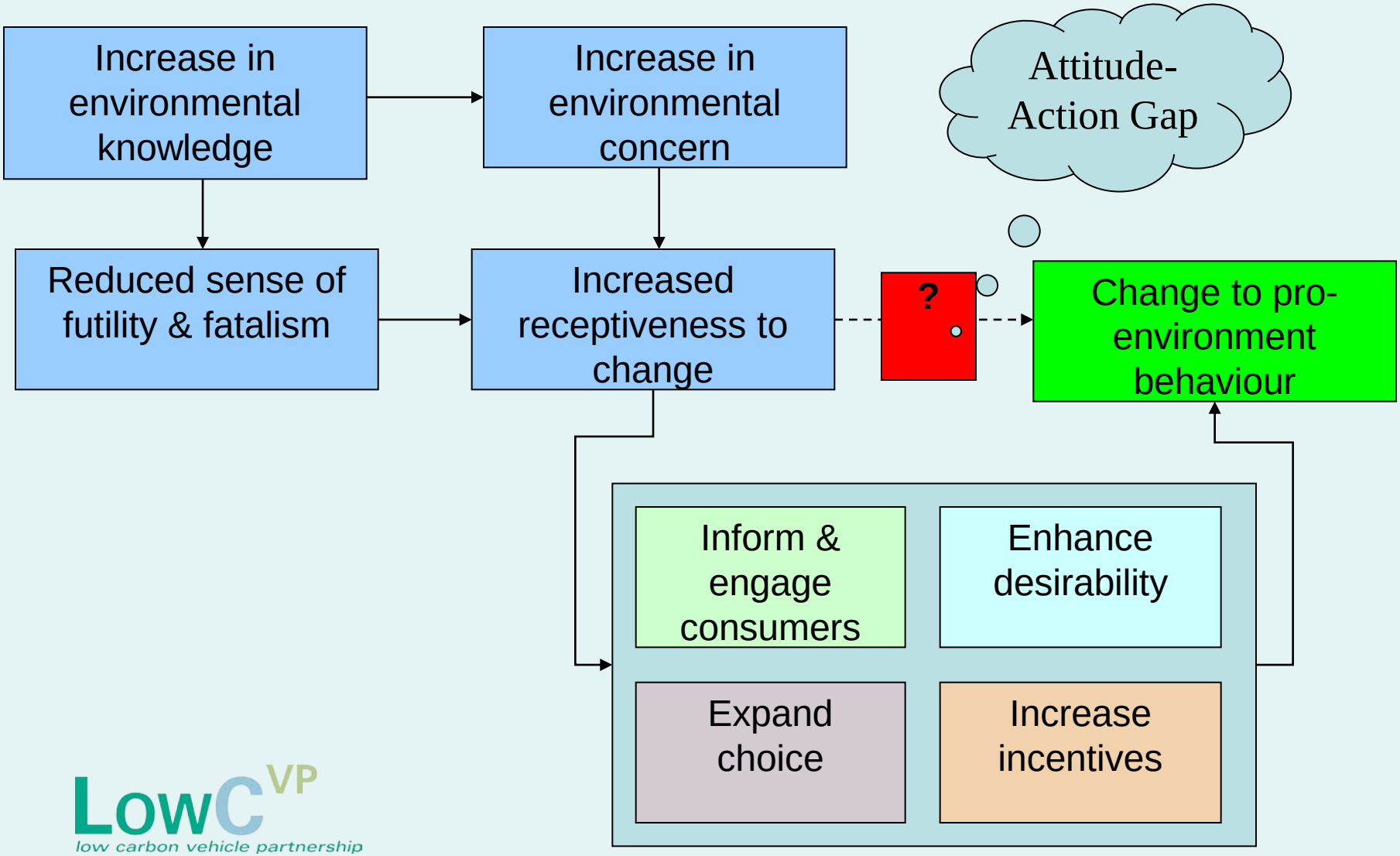
Increasing consumer demand for environmentally friendly vehicles requires bridging the attitude-action gap



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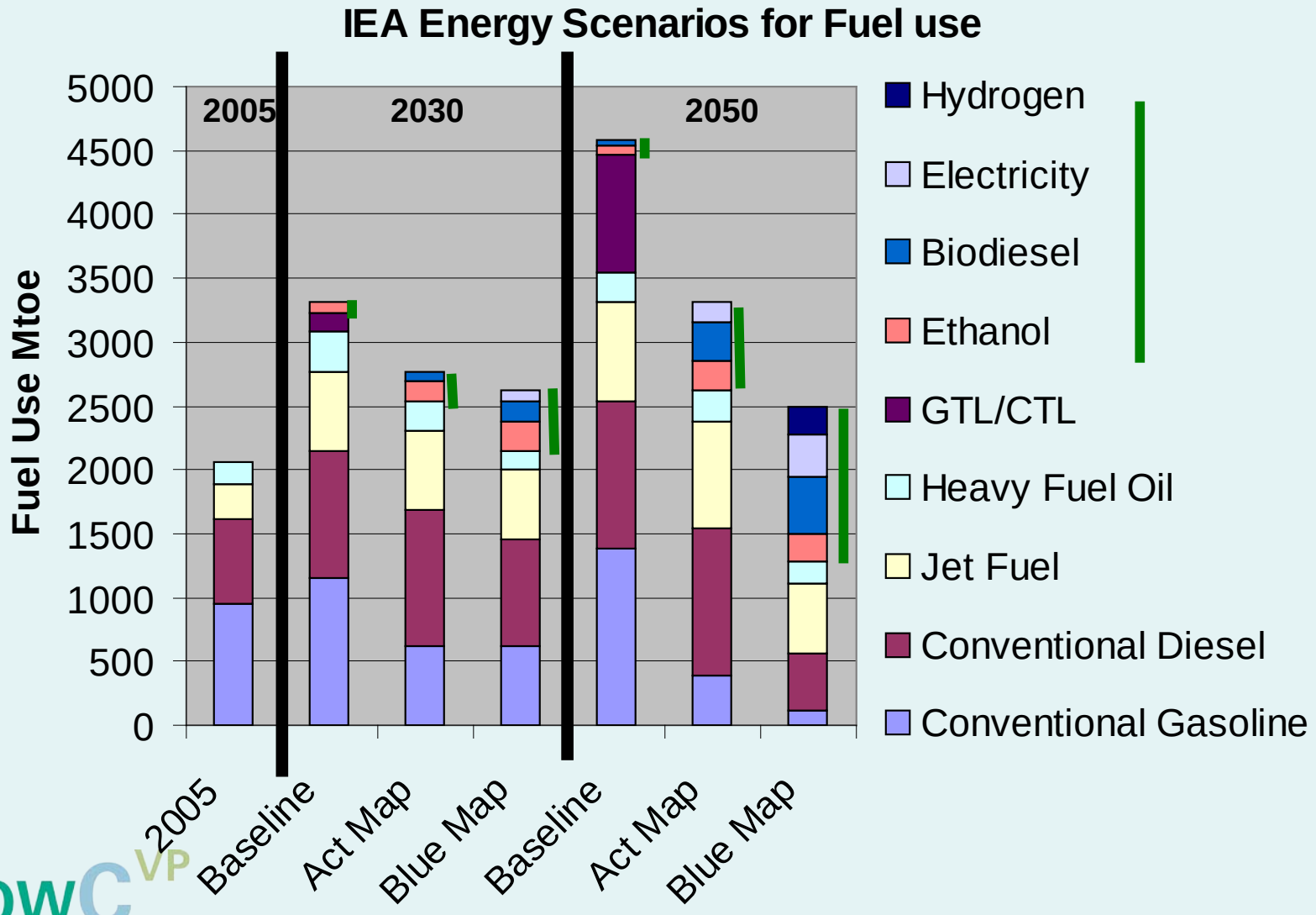
Adapted from Walton 2004

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



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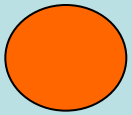
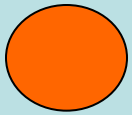
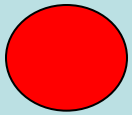
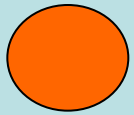
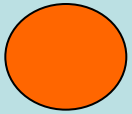
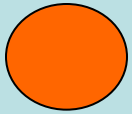
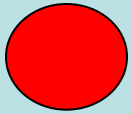
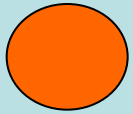
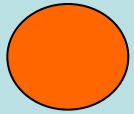
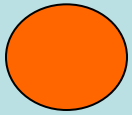
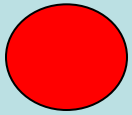
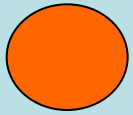
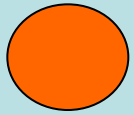
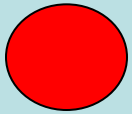
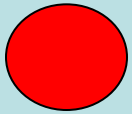
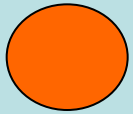
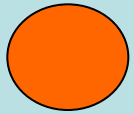
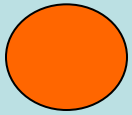
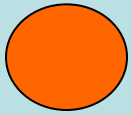
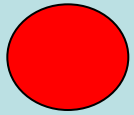
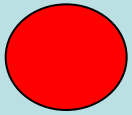
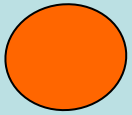
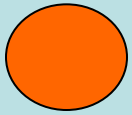
IEA 2008, Energy Technology Perspectives

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

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

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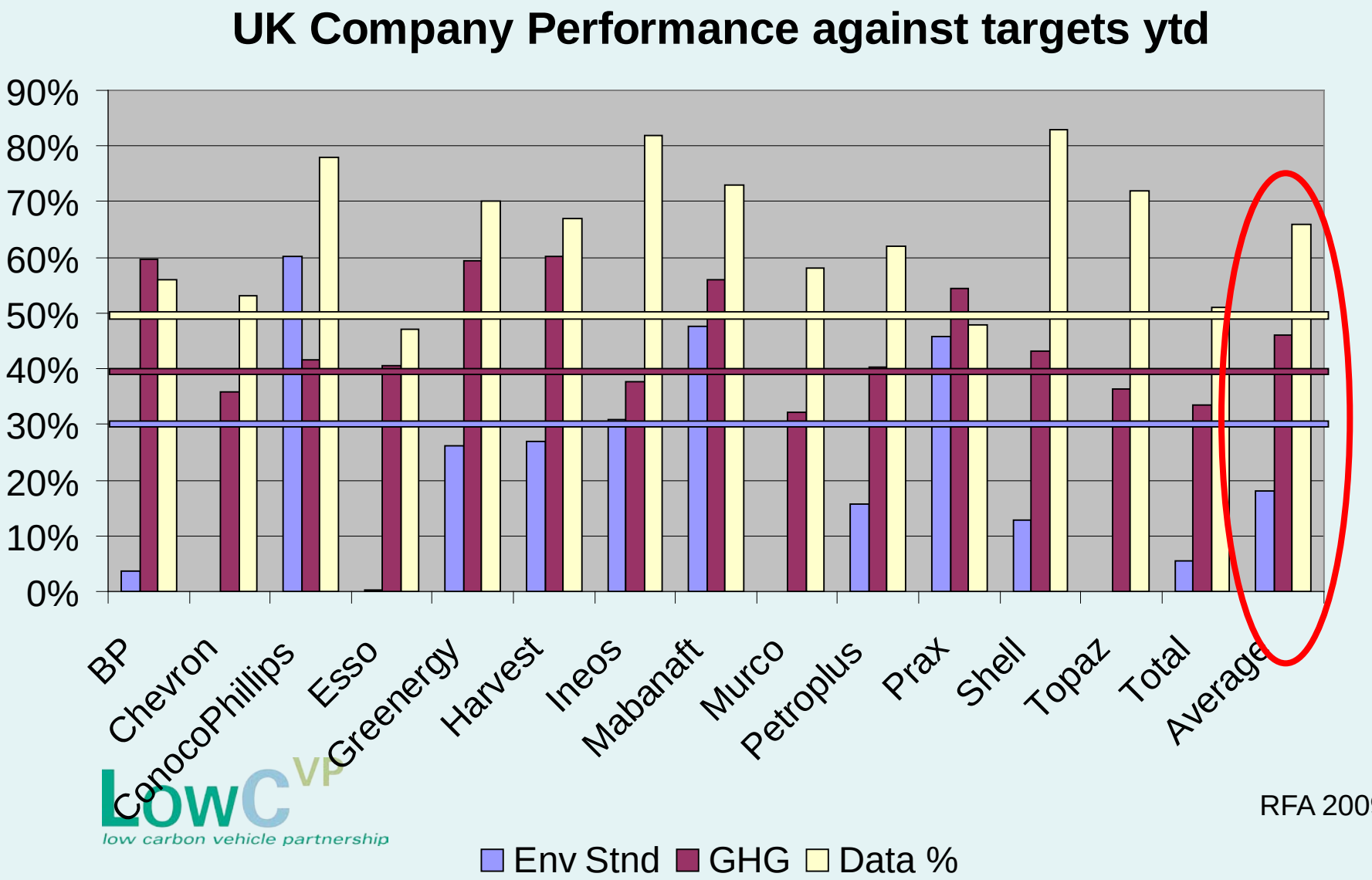
The relative scores do not represent LowCVP policy

Recent legislation only partially addresses biofuel sustainability concerns



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RFA 2009

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

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Preparing the market for renewable fuels requires:

- Coordinated support throughout the innovation chain
- Tackling market failures & <u>supporting</u> 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

"It has very low emissions - it's impossible to find a garage selling the fuel."

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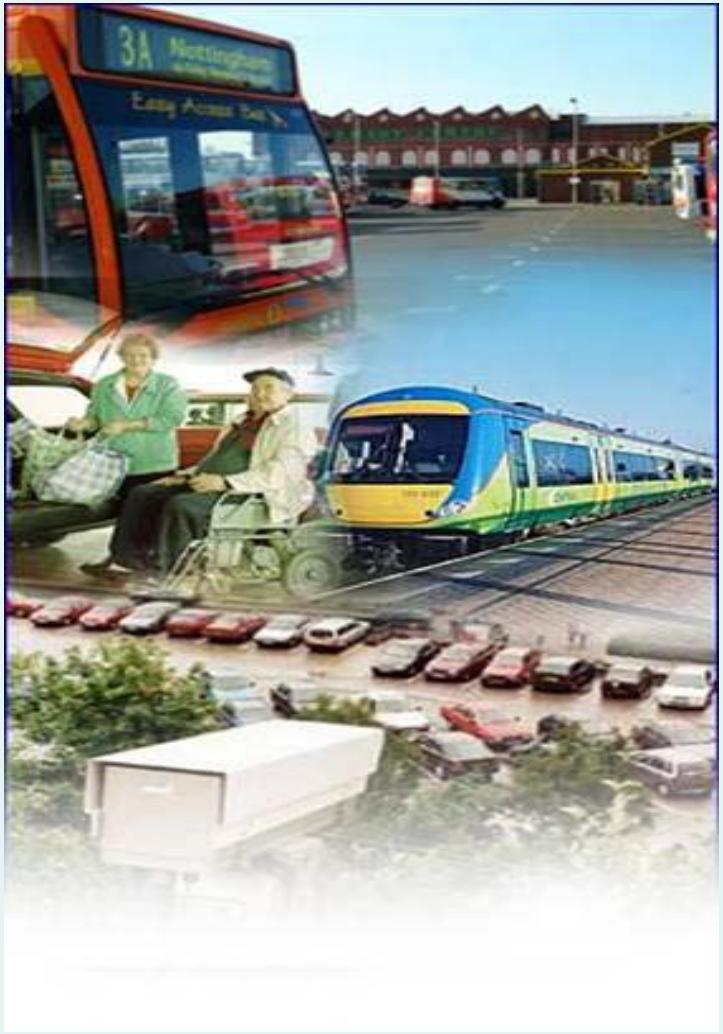
Key messages

- 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



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Any Questions?

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The Low Carbon Vehicle Partnership

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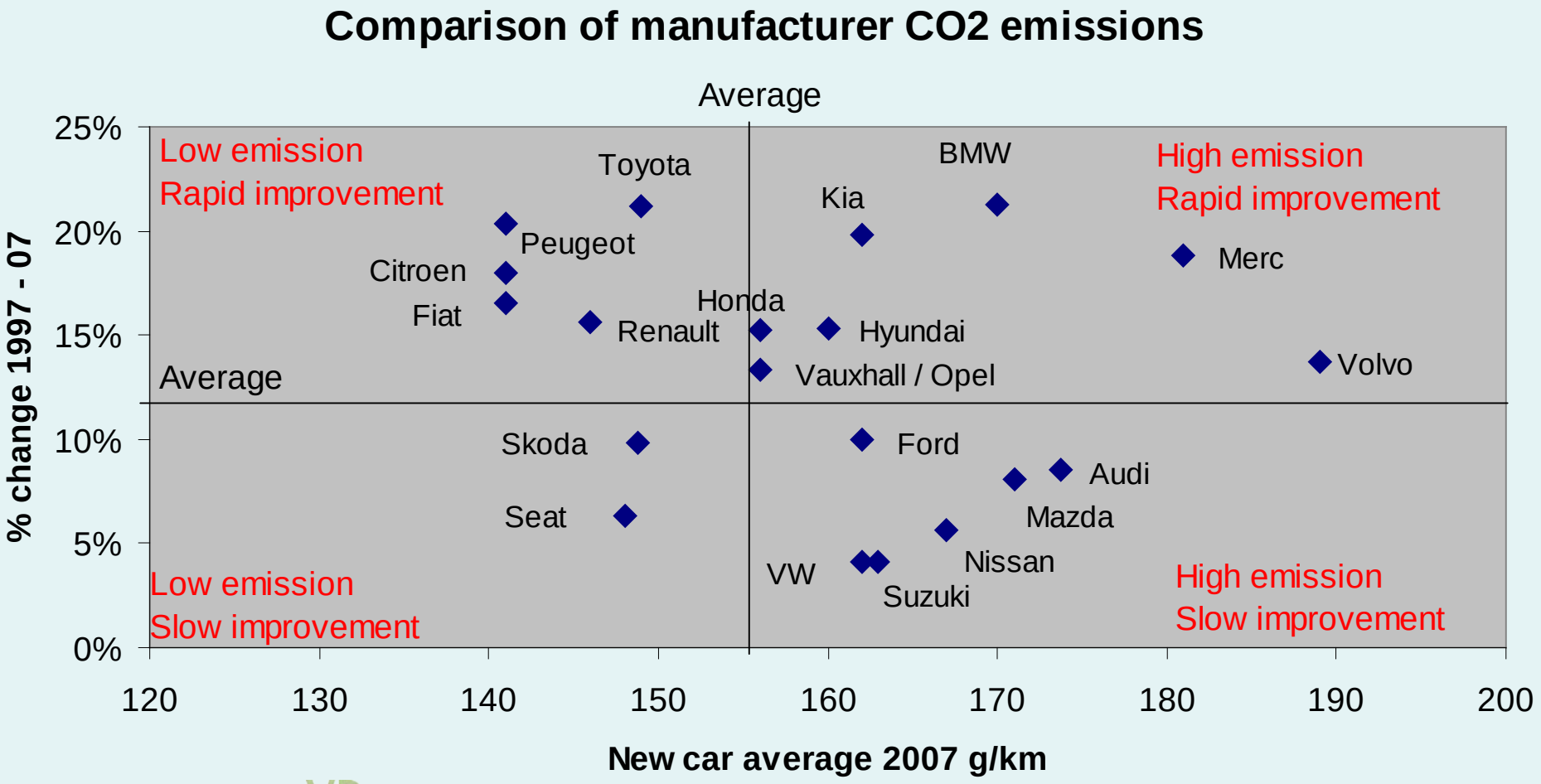
Strong legislation is essential to tackle market failures and stimulate industry-wide action



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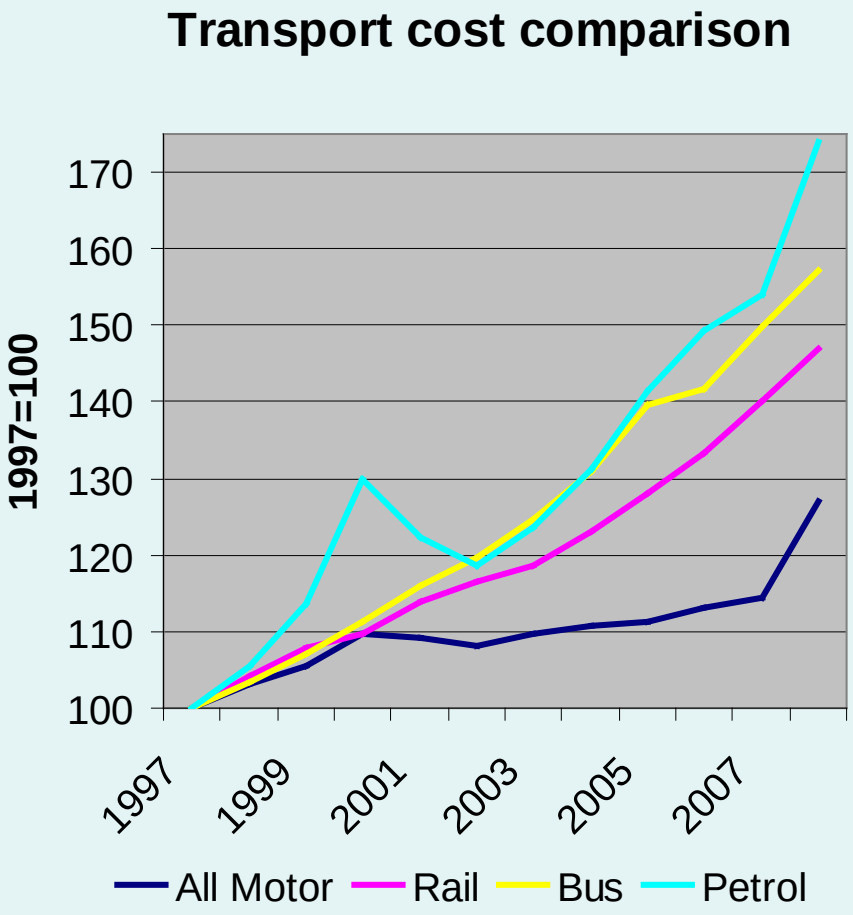
Derived from T&E data

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



- High fuel prices <u>short term</u> lead to
  - Fewer journeys
  - Shorter journeys
  - More efficient driving
  - Lower speeds
  - Mode shift
- High fuel prices <u>long-term</u> 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

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Based upon DfT 2008

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

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