



Understanding the potential for using alternative transport fuels

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Low Carbon Vehicle Partnership
Sustainability Live 2014

The Low Carbon Vehicle Partnership

Connect | Collaborate | Influence – www.lowcvp.org.uk

- ❑ **Connect:** With privileged access to information, you'll gain insight into low carbon vehicle policy development and be introduced to key stakeholders.
- ❑ **Collaborate:** You'll benefit from many opportunities to work – and network - with key UK and EU government, industry, NGO and other stakeholders
- ❑ **Influence:** You'll be able to initiate proposals and help to shape future low carbon vehicle policy, programmes and regulations



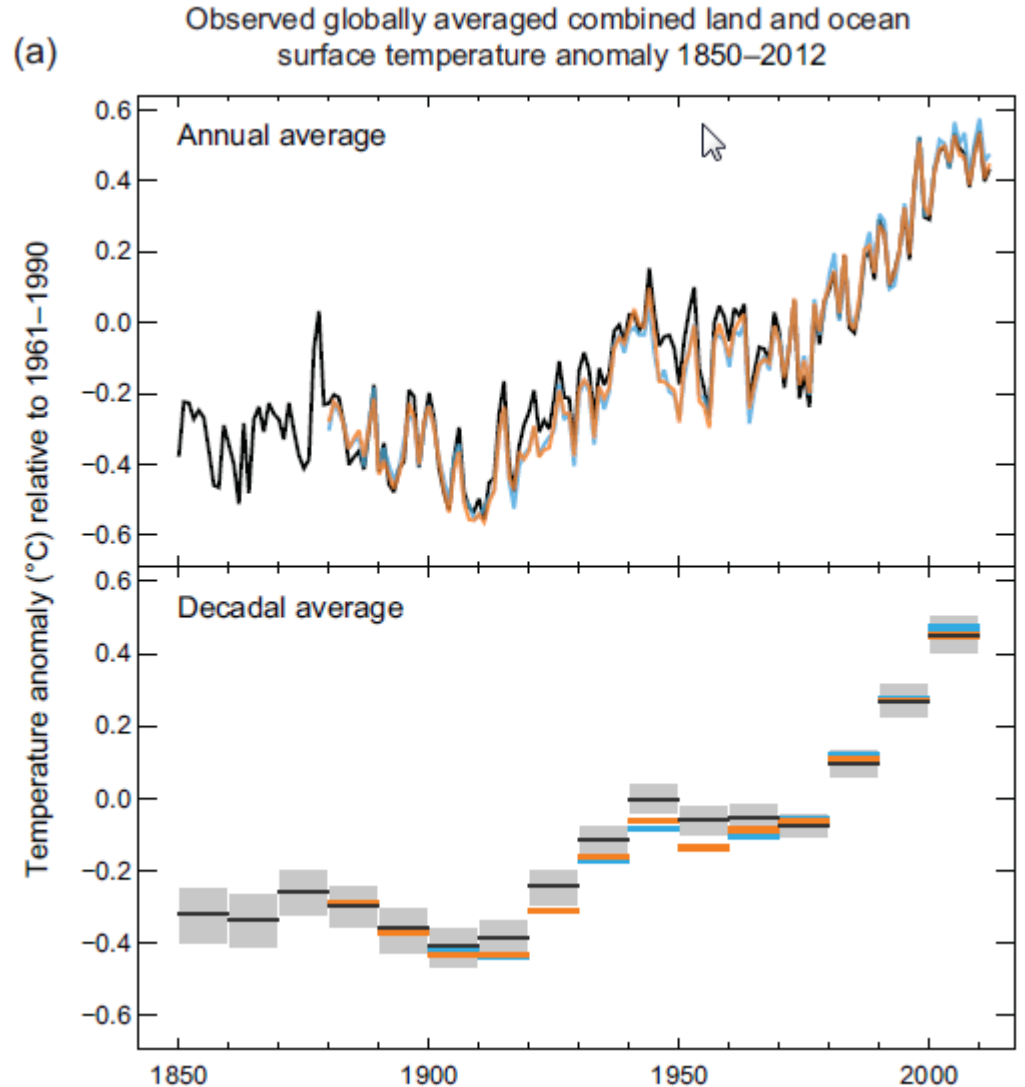
LowCVP is a partnership organisation with over 180 members with a stake in the low carbon road transport agenda.

Why Decarbonise

- Rising Temperature
- Extreme weather
- Sea level rise
- Ice melt

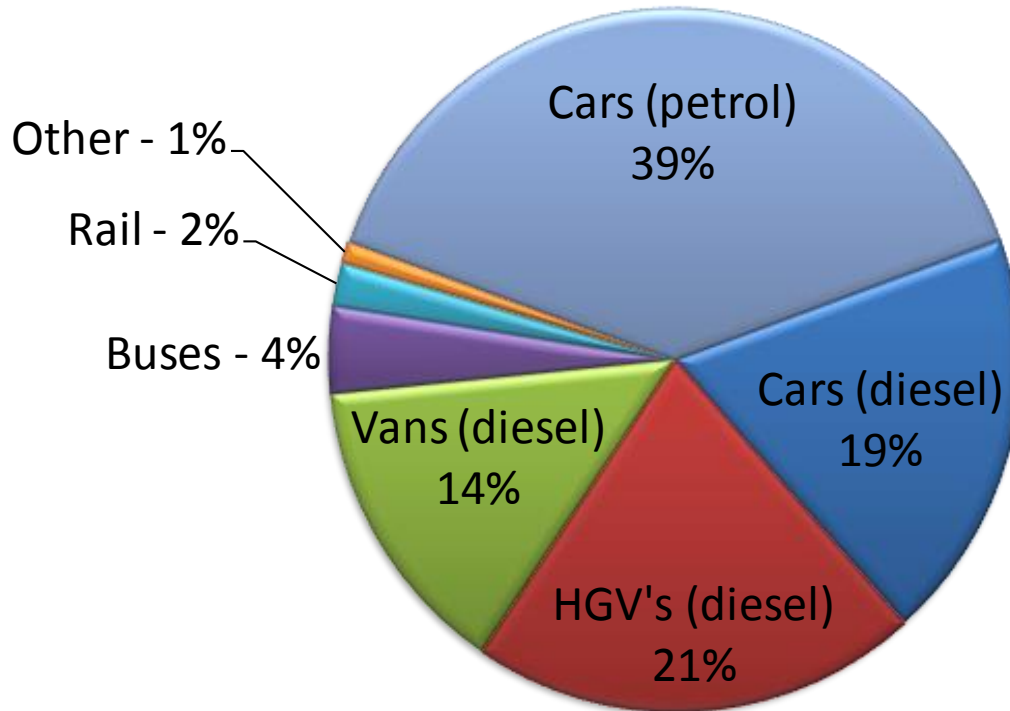
It's the law

- Climate Act 2008
- Sets binding targets 2050
- Publish Carbon Budgets
- Monitored by CCC



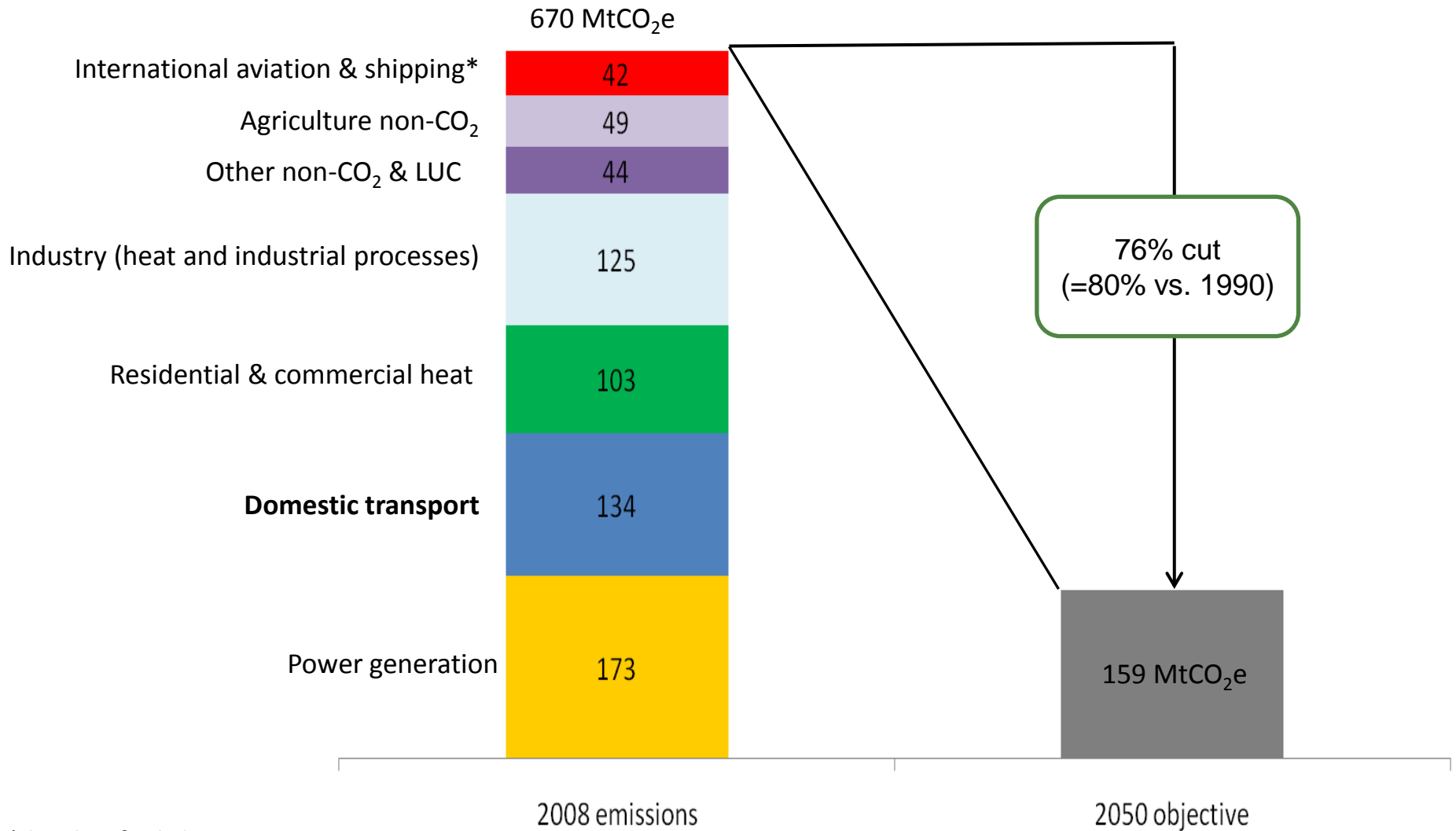
Petrol and diesel currently account for the vast majority of surface transport emissions (99.7%).

Surface Transport CO2 Emissions sources



The 2050 target for UK is very challenging

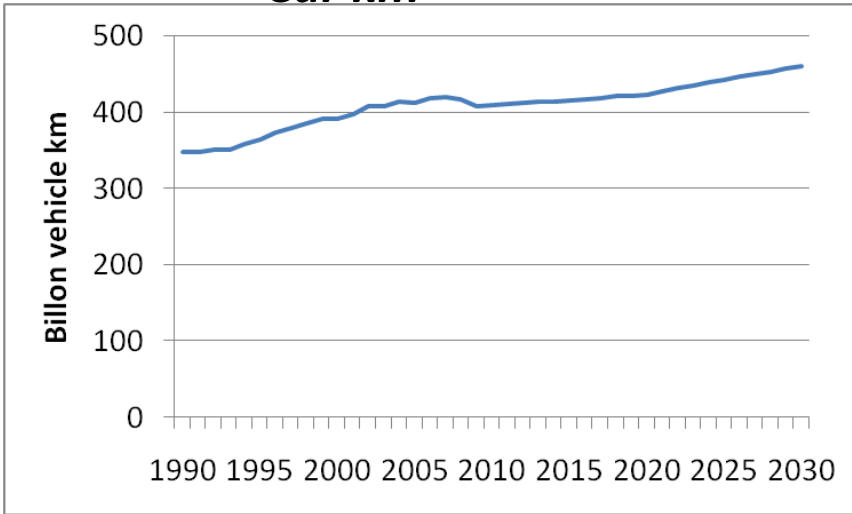
(source CCC)



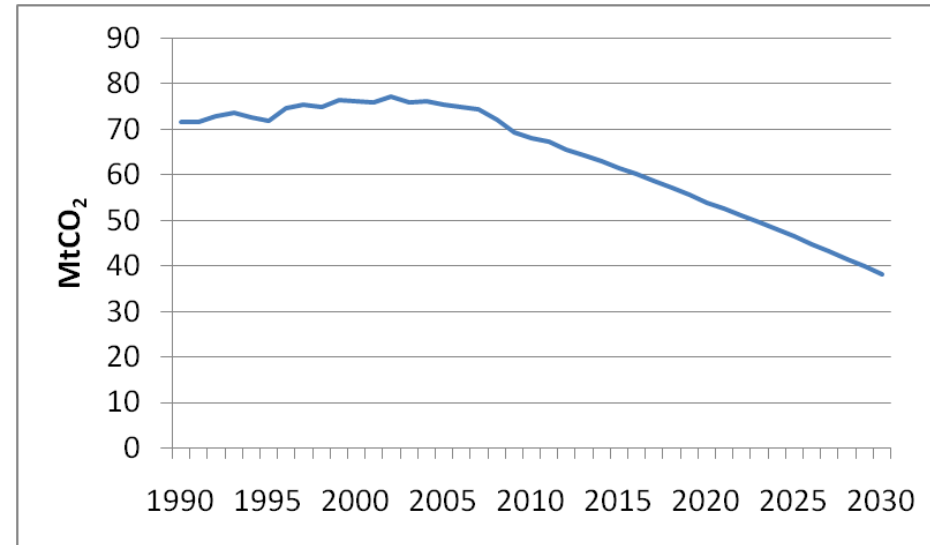
* bunker fuels basis

Transport: Emissions reduction will come from reducing g/km, while km likely to increase (Source CCC)

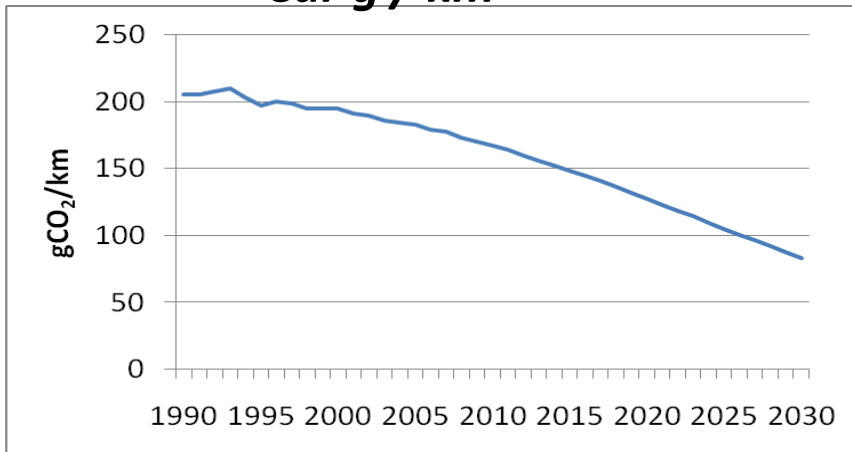
Car km



Car emissions



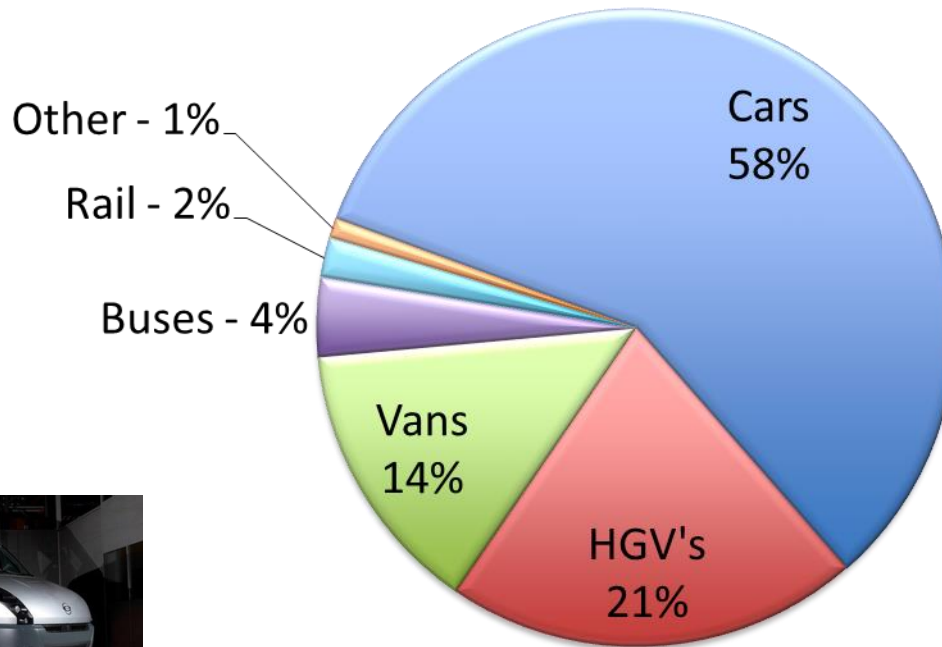
Car g / km



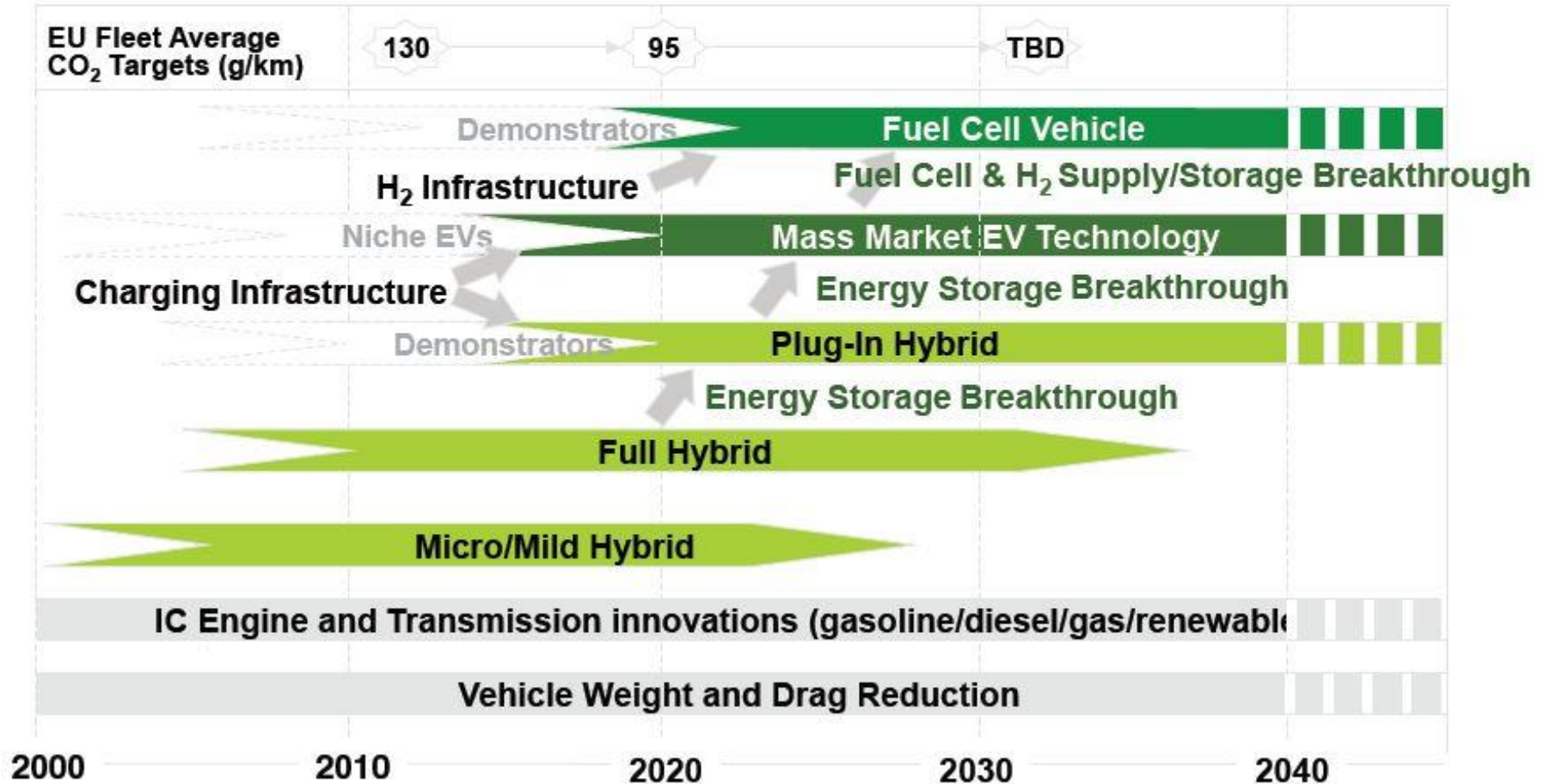
Vans: 17% emissions reduction to 2030
HGVs: 33% emissions reduction to 2030

A wide range of innovative vehicle technology options to reduce carbon are emerging on the market

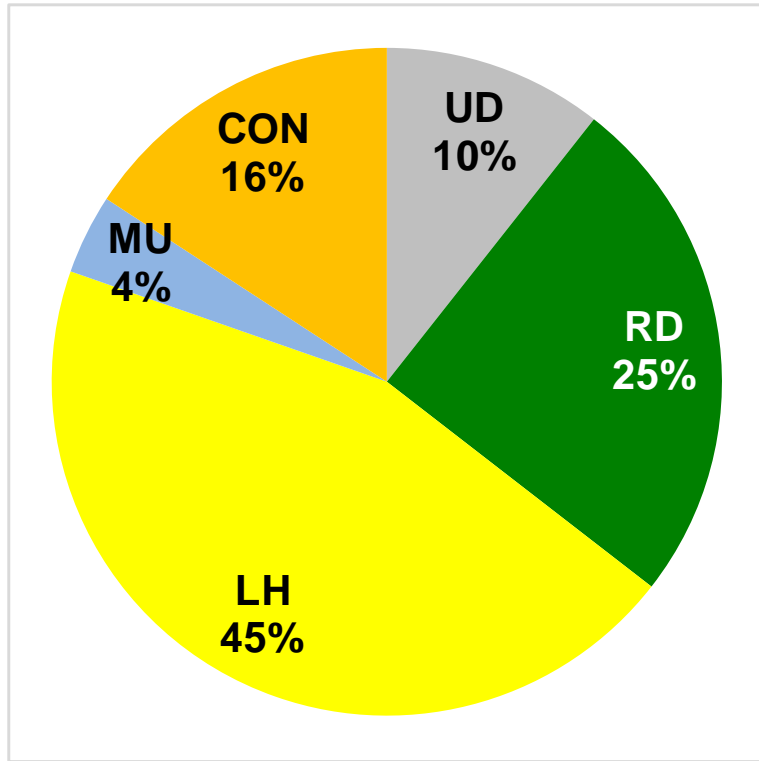
Core progress made through improvements in vehicle efficiency and with low blend Biofuels



Passenger car low carbon technology roadmap



CO₂ emissions from HGVs differs considerably by type of operation



Ranking of duty cycles by CO₂ emissions share:

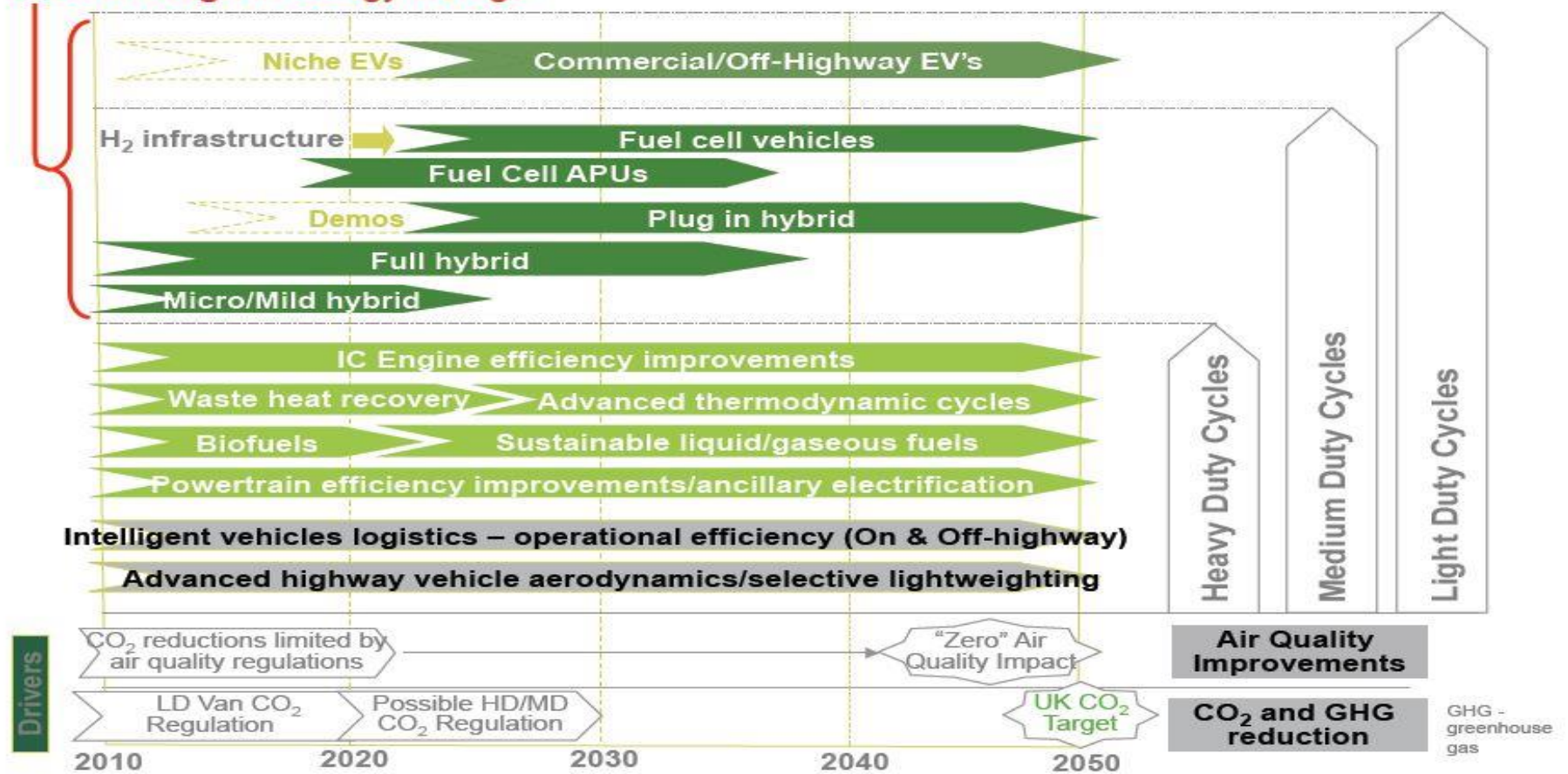
1. LH Long haul (44-46 %)
2. RD Regional Delivery (24-25 %)
3. CON Construction (15-16 %)
4. UD Urban Delivery (10-12 %)
5. MU Municipal Utility (4 %)

The ranges indicate the variation due to low, central and high distance estimates.

70% of fuel is used in Long Haul and Regional Delivery operation in Larger Trucks

Commercial and off-road technology roadmap

Breakthrough in energy storage



Source: Automotive Council Technology Group 2012

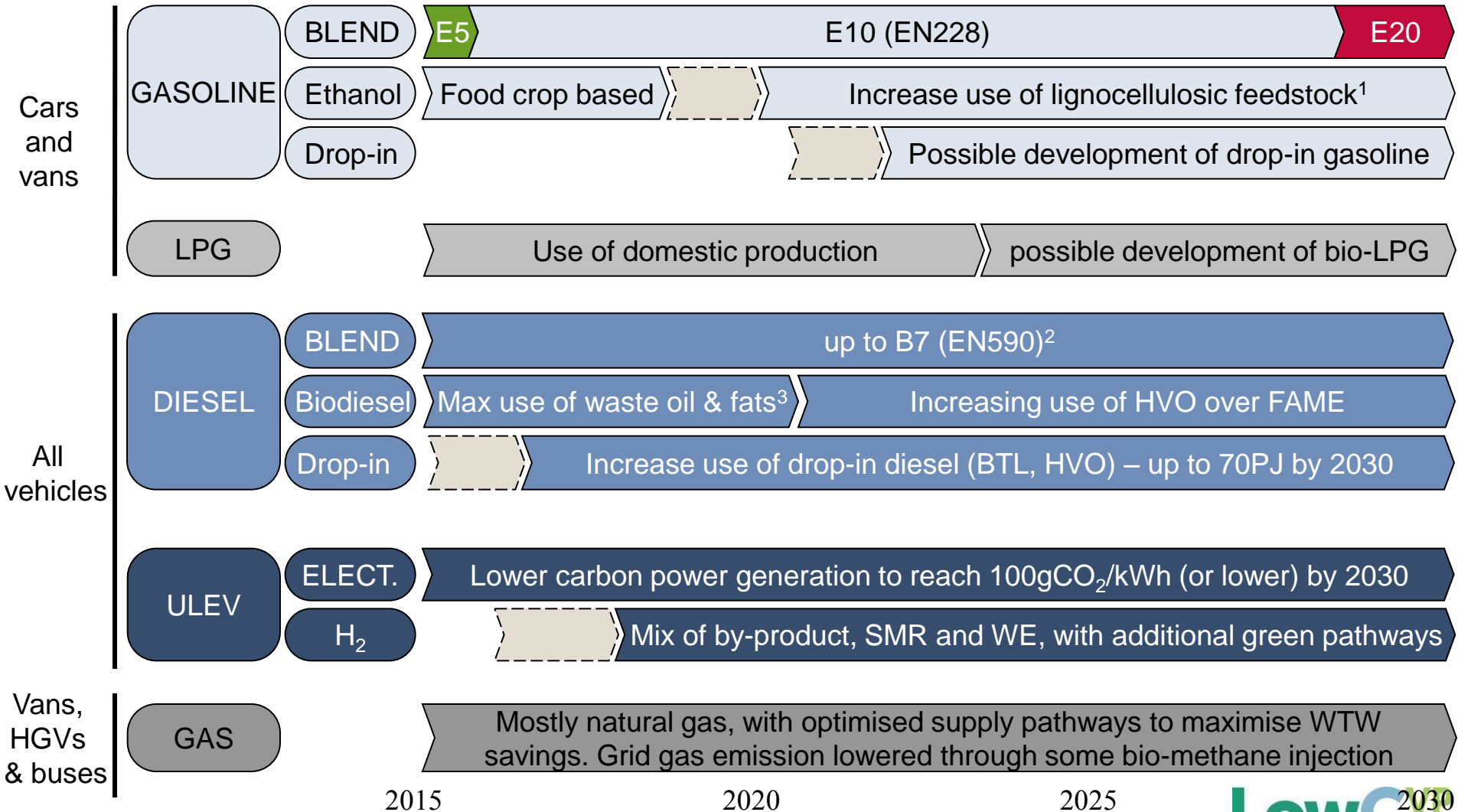
Penetration of technology is at an early stage

SMMT Motor industry facts 2013

- New technology is a key carbon reduction strategy (eg new car CO2 progress, EVs)
- Annual sales of new vehicles as percentage of road fleet:- average sales % over last 10yrs
 - Cars 7.3%
 - Vans 8.2%
 - Trucks 8.5%
 - Bus 4.1%
- Existing vehicles will remain in the fleet for many years and fuel must remain compatible
- Sales of plug-in cars doubled in 2012 but were just 2254 in a new car market of over 2M (and total fleet of 31.5M)

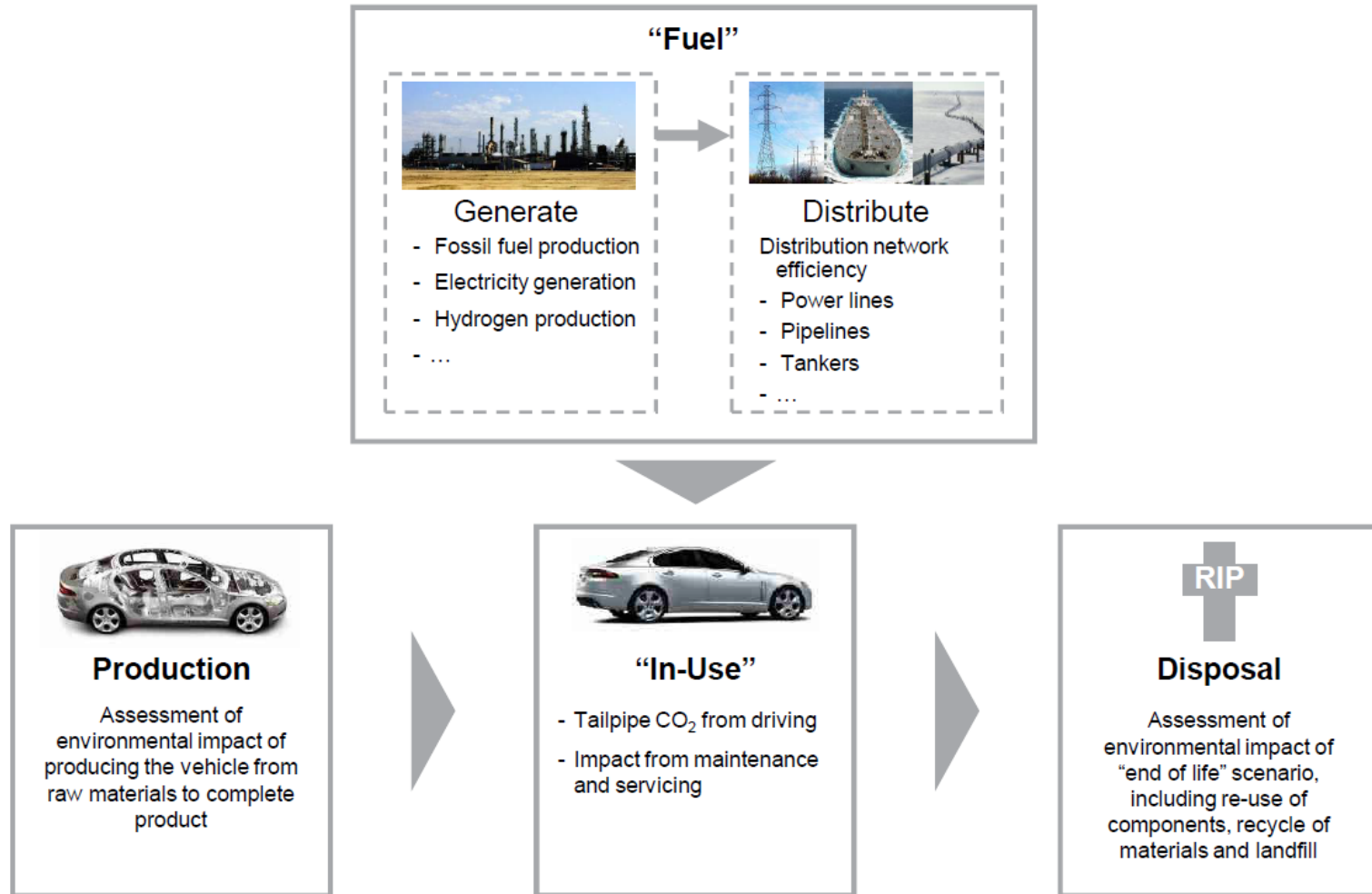
A range of low carbon fuels will be needed

SMR: Steam Methane Reforming; ULEV: Ultra Low Emission Vehicles; WE: Water Electrolysis; 1 – Possible development of butanol 2 – Effective blend likely to stay at B2 for Non Road Mobile Machinery 3 – With measures in place to ensure fuel quality



Carbon comes from more than just the tailpipe

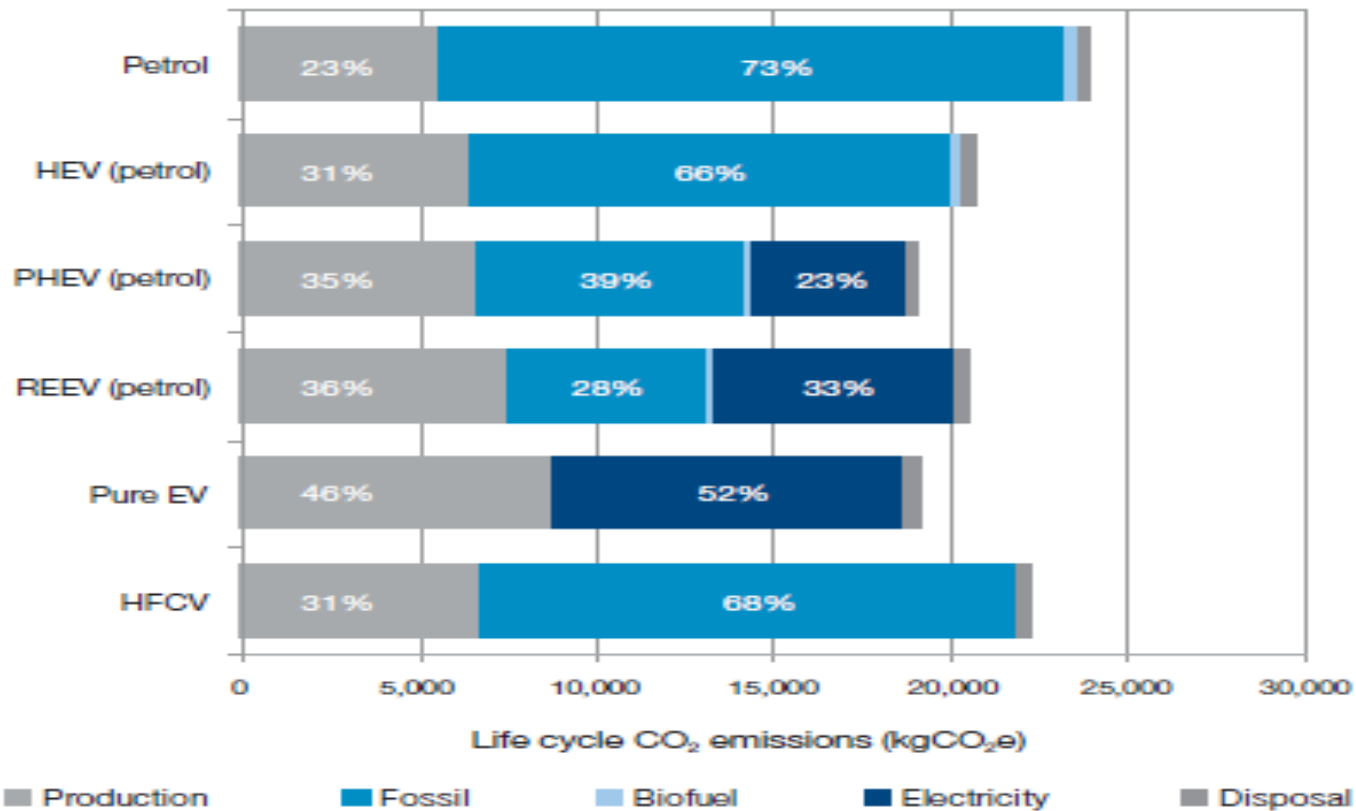
A vehicle's life cycle can be divided into four "blocks" – production of the vehicle, production of the fuel, "in-use", and disposal



Source: Ricardo

The way we measure carbon impact needs to change in 2011 – LowCVP highlighted technology variations

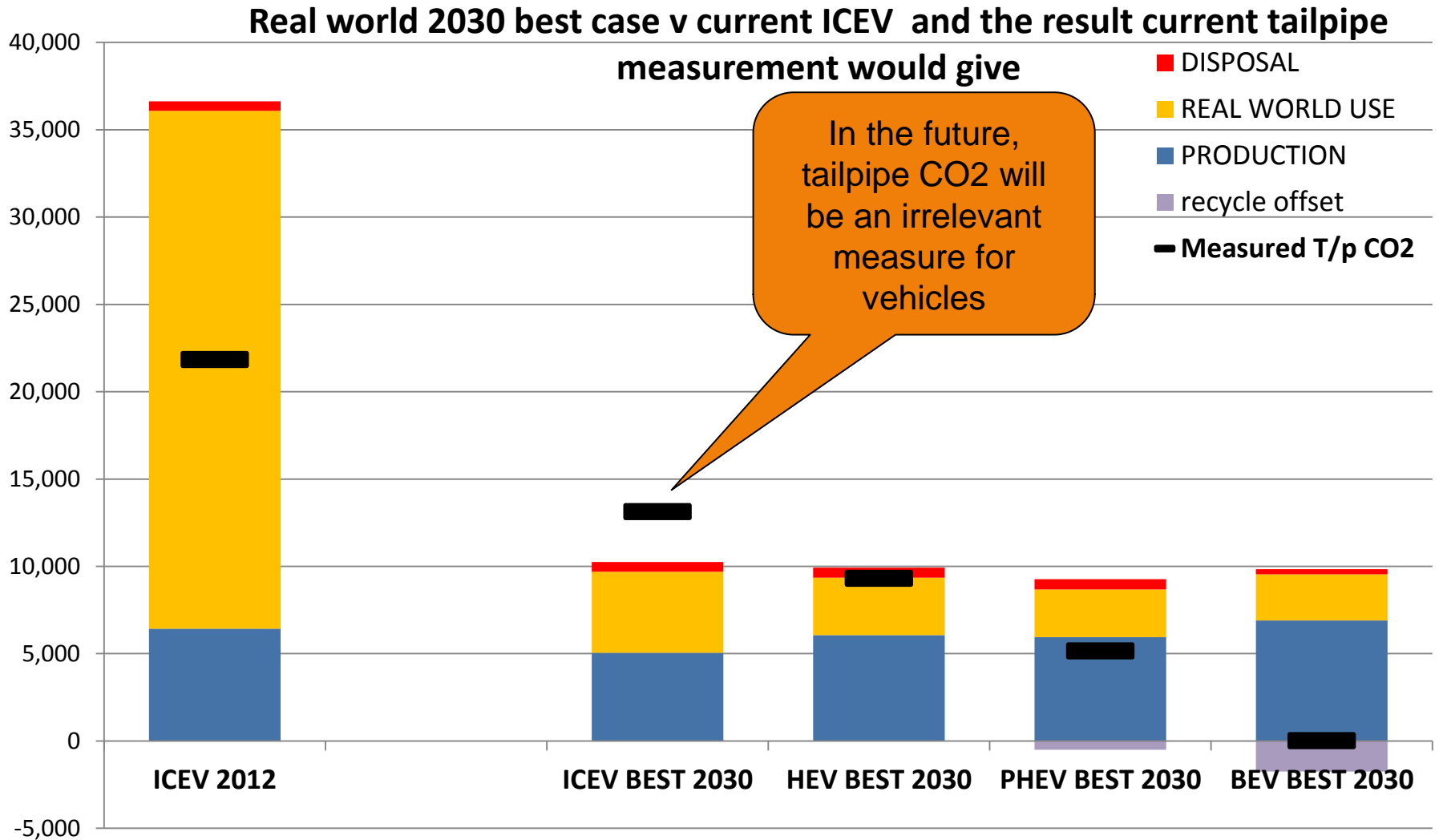
Figure 2.4: Life cycle CO₂e emissions for various medium-sized vehicle technologies in 2015



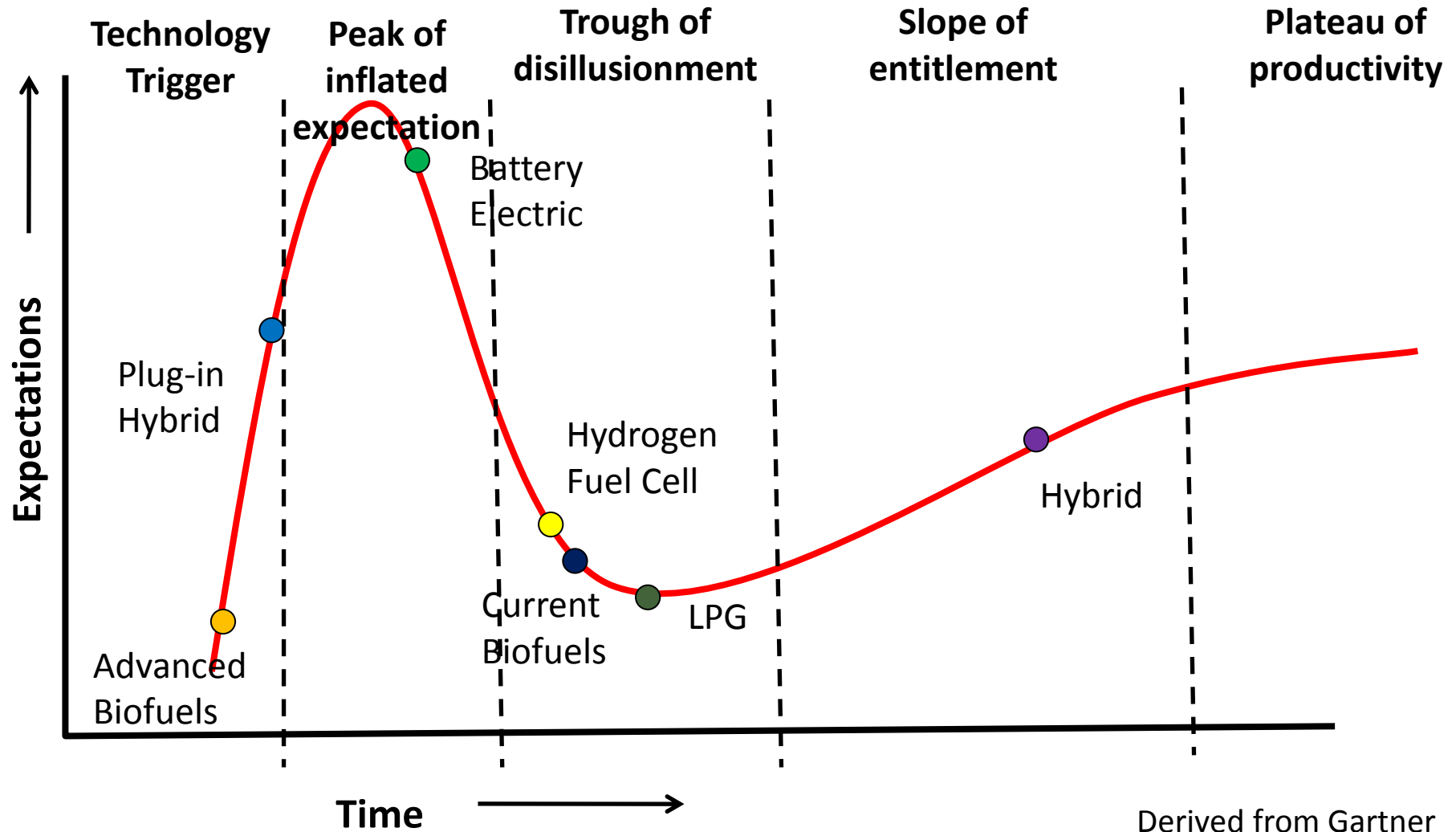
Source: Ricardo (2011)

Preparing for a Life Cycle CO₂ Measure – Report for LowCVP 2011

Tailpipe CO₂ is no longer representative



The adoption of new technologies is likely to be incremental and does not follow the hype cycle



The views expressed in this slide are illustrative and do not represent LowCVP position.

The potential for using alternative transport fuels

- We need alternative fuels and vehicles to combat climate change but petrol and diesel will be with us for a long time.
- There are increasing opportunities to use alternative fuels commercially today.
- The type of vehicle and fuel most appropriate will depend on the type of operation.
- Tailpipe emissions are becoming increasingly less appropriate in determining vehicle emissions.
- Look at the well-to-wheel emissions of the combined vehicle and fuel.
- In the future we will need to look at Life Cycle emissions, taking account of the production and end of life.

Thank you!

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