



CENTRE FOR RESEARCH INTO
ENERGY DEMAND SOLUTIONS

Transport and carbon emissions

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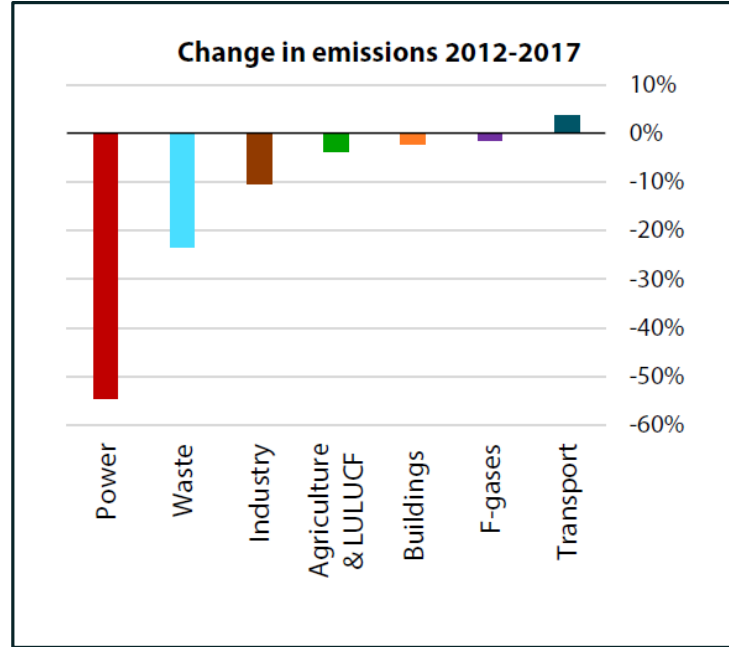
PRESENTATION TO CIHT YOUNG PROFESSIONALS, 14TH NOVEMBER 2019



Let us start with some humility ...

- Climate Change is not a NEW problem
- First IPCC report was in 1990
- In 2019, UK road transport sector emissions ~ 3% higher than in 1990
- Transport still 98% fuelled by fossil fuels (96% of road fuel)

Despite optimistic rhetoric, we have delivered 29 years of failure to reduce some of the worst consequences of motorised travel demand



Committee on Climate Change 2018 Progress Report to Parliament



How successful do you feel?

- 🐘 Energy use
- 🐘 Carbon emissions
- 🐘 Local pollutants
- 🐘 Car ownership
- 🐘 Car utilisation rates
- 🐘 Congestion
- 🐘 Bus patronage
- 🐘 Active travel
- 🐘 Obesity
- 🐘 Accident rates
- 🐘 Transport poverty

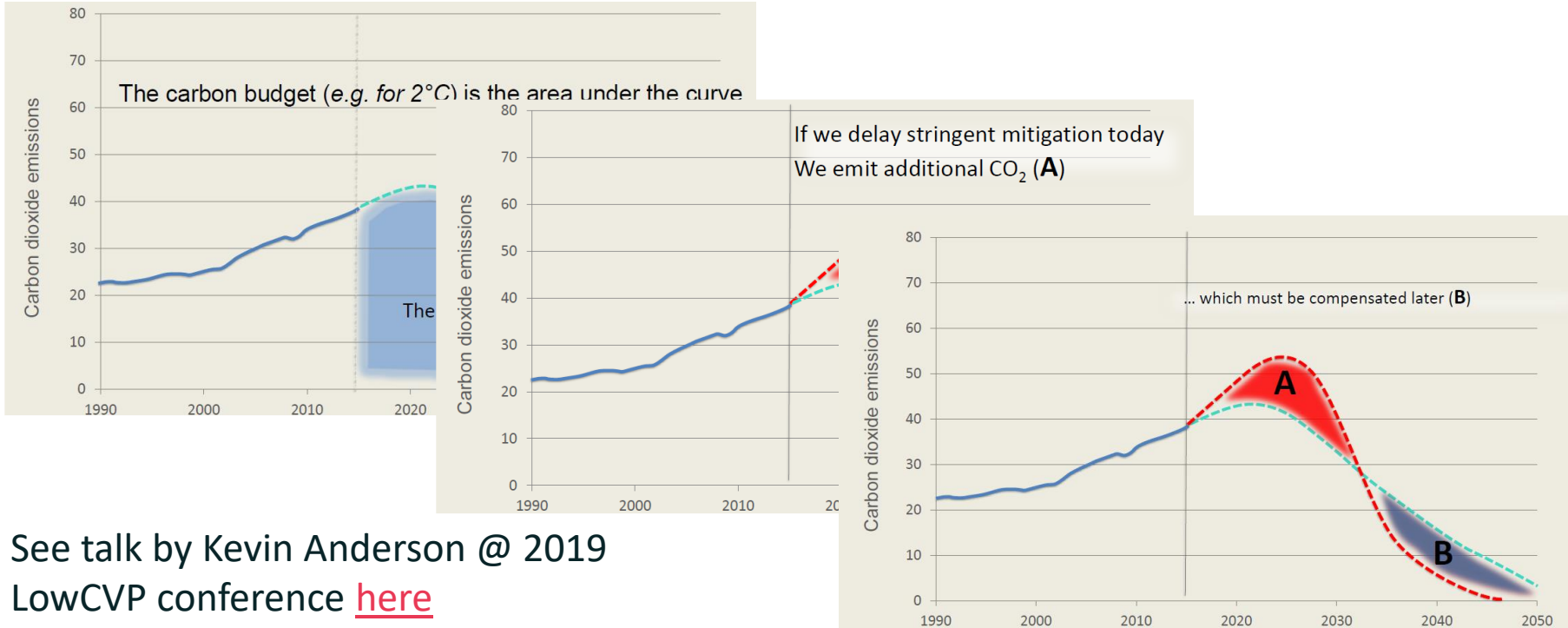
Our KPIs

HOW ARE YOU FEELING?





It is carbon budgets, not long-term targets that link with temperature rise



See talk by Kevin Anderson @ 2019
LowCVP conference [here](#)



Reframing the question

- Take the Paris ***"well below 2°C"*** & ***"pursue ...1.5°C"*** commitment at ***face value***
 - To be based on ***science*** AND ***equity***
 - ***Ignore*** political and economic ***sensibilities***
- ***This frames a far more challenging mitigation agenda than other analysis***

"What total reductions does the Paris Agreement require the UK transport sector to deliver?"

Not:

"What can the UK transport sector deliver in terms of reducing emissions?"

See talk by Kevin Anderson @ 2019 LowCVP conference [here](#)





The TO DO LIST

In keeping with pursuing 1.5°C

- global carbon budget for energy is **~650GtCO₂ to 2100 and beyond**
- **In 2018, global CO₂emissions were ~36GtCO₂**
- **= 18 years of current emissions***
- **The UK's fair Paris 2°C carbon budget for energy incl. aviation and shipping is ~3 to 3.8 GtCO₂ ...for 2020 to 2100 & beyond i.e. 9 years of current emissions**
- **Apportioned to the car sector = 7 to 8 years of current emissions**

*Tougher than CCC Net Zero: does not account for irreversible feedbacks, but also not for speculative negative emissions technologies)

TO DO LIST

- **Rapidly ramp up mitigation to 13% p.a.**
- **Total reduction of around 80% by 2030 (cf. 1990)**
- **Fully decarbonise energy by around 2035-40**





The Government's response

- Heavy funding for new roads
- Extra airport capacity (at many airports, not just Heathrow)
- Ongoing freeze on fuel duty while rail fares increase
- Cuts in funding for buses
- Limited or no funding for public transport and active travel (especially outside main cities)
- A deregulated planning system which promotes car based green-field development



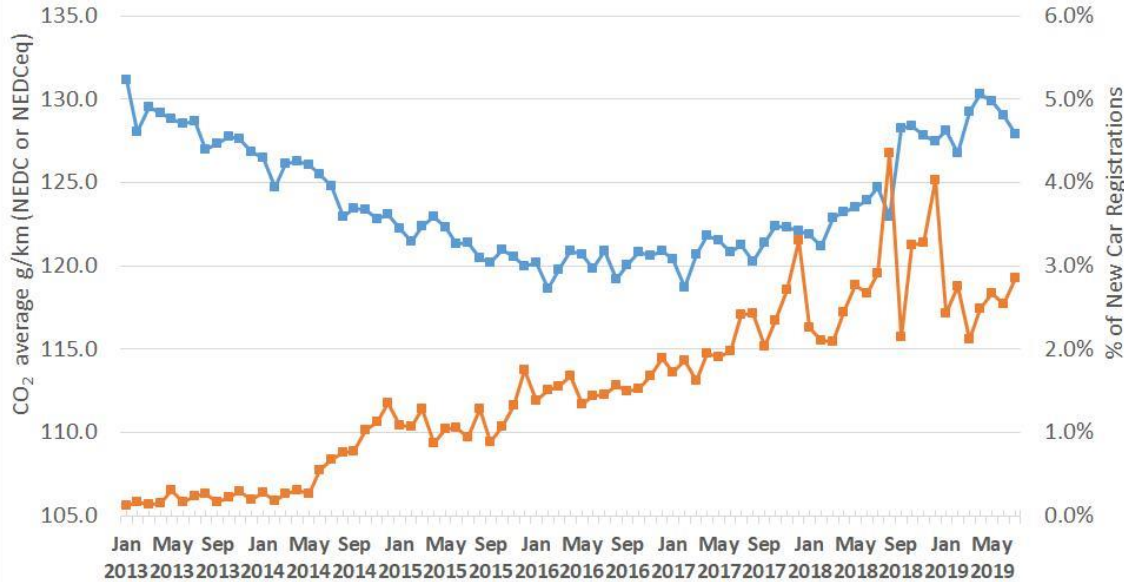


Progress?

LowCVP
Low Carbon Vehicle Partnership

New Car CO₂ and %ULEV regns. Data to Jul 2019 (source DfT VEH0150)

— Average New car CO₂ — ULEV % of registrations

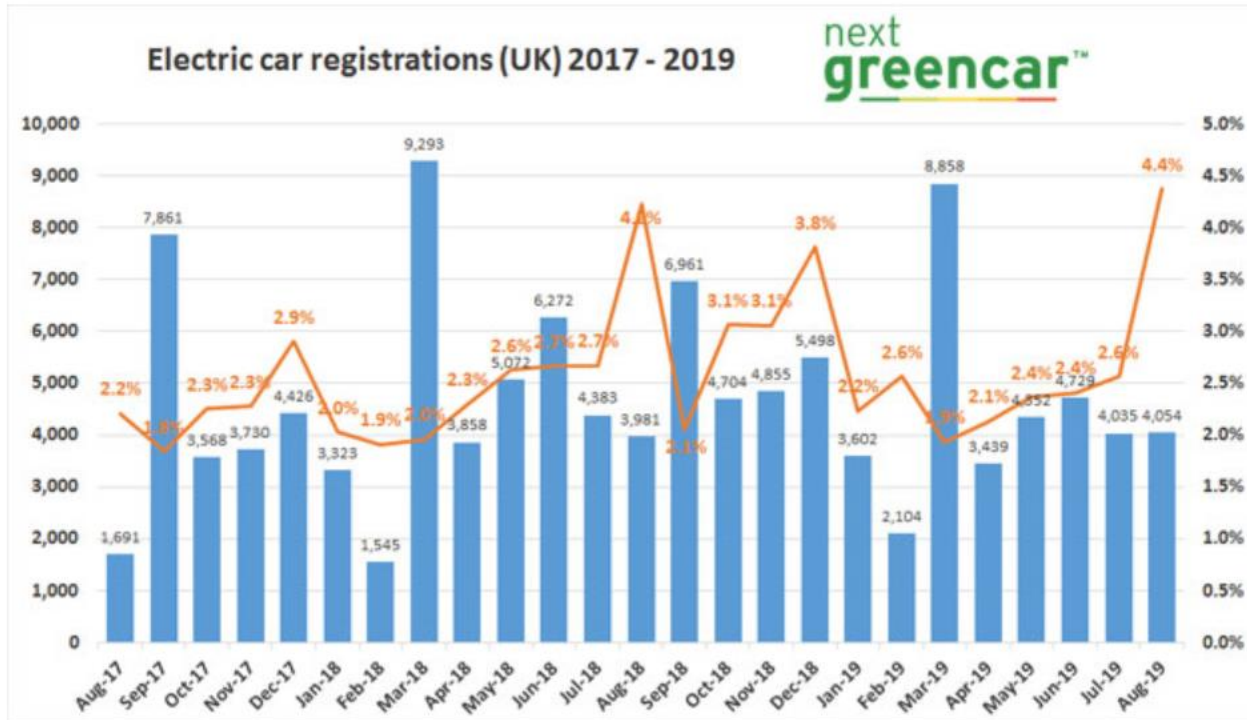


- Latest DfT stats show new car CO₂ still at 129g/km
- This is along way from the 95g target for 2020/1
- ULEV sales essentially flat over the last 12 months





Sales of EVs are static

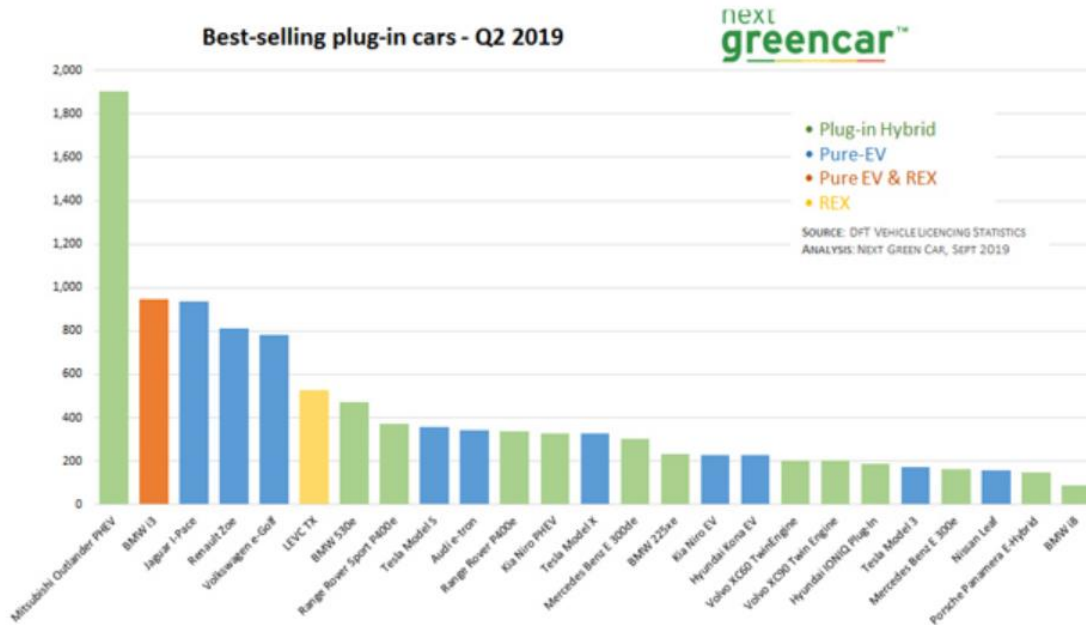


Source: Society of Motor Manufacturers and Traders, August 2019.





The reality of the market for EVs



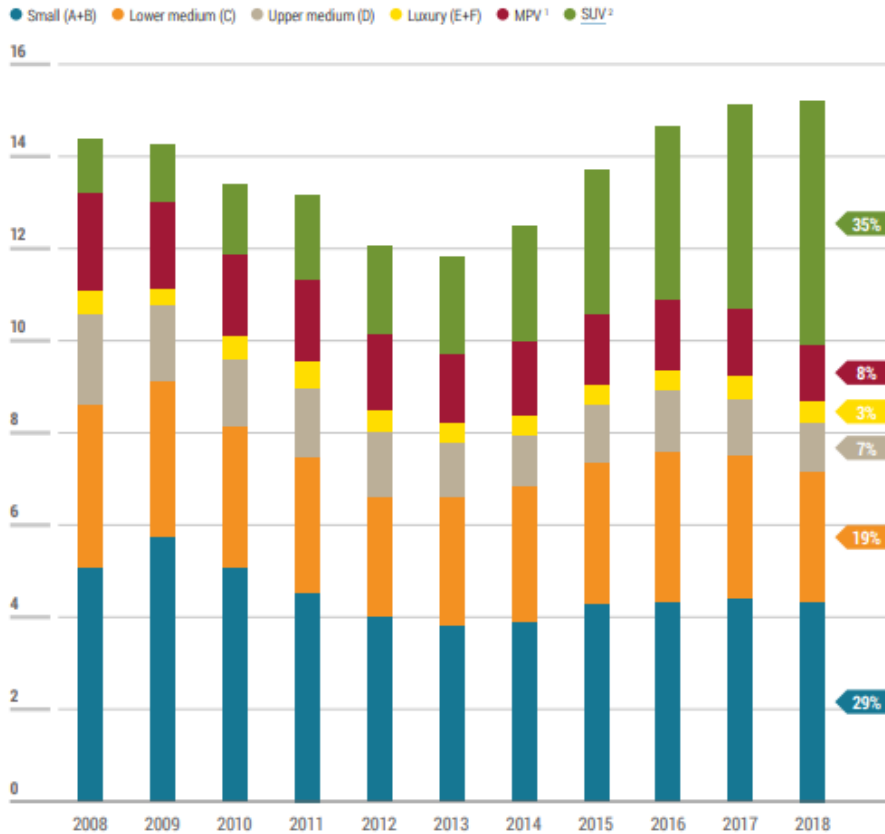
Source: DfT Vehicle Licensing Statistics. Analysis Next Green Car, July 2019.

- 3 out of every 3 EVs that are sold are PHEVs
- What proportion of mileage is undertaken in electric mode??



New passenger cars by segment in the EU

IN MILLION UNITS, % SHARE / 2008 – 2018



SOURCE: IHS MARKIT

1. Multi-purpose vehicles
2. Sport utility vehicles

Increasing size of cars sold

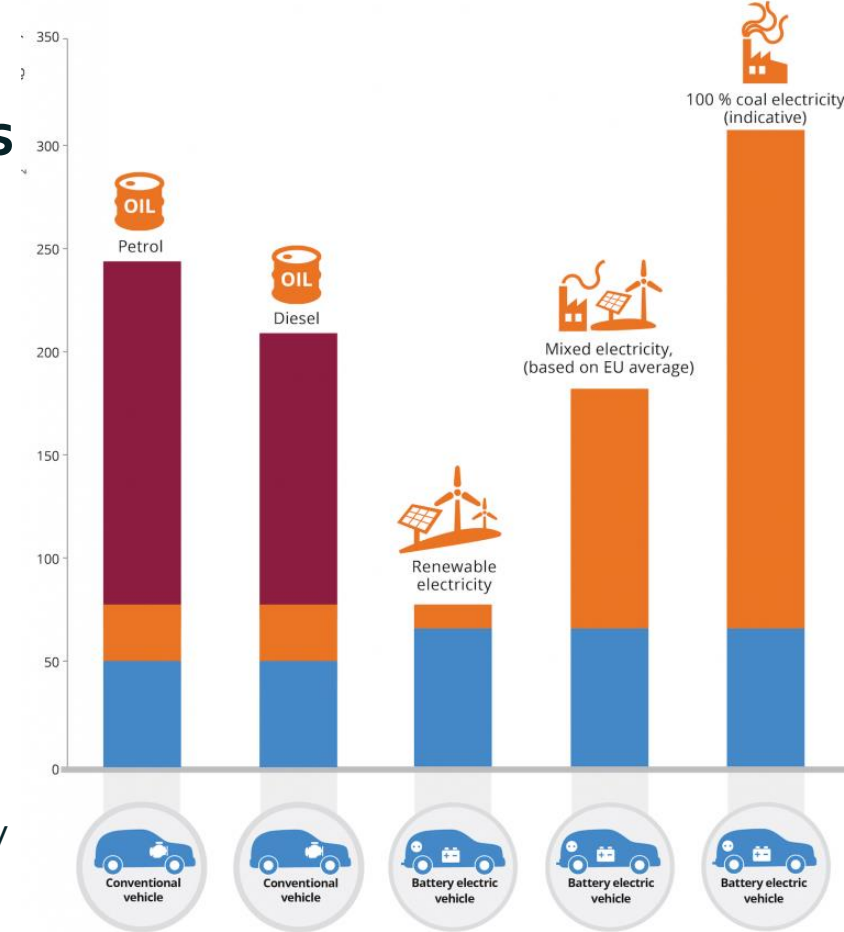
- In 2018, SUVs accounted for 35% of new passenger car sales in the EU
- Just two years before it was 26%

acea.be/uploads/publications/ACEA_Pocket_Guide_2019-2020.pdf...



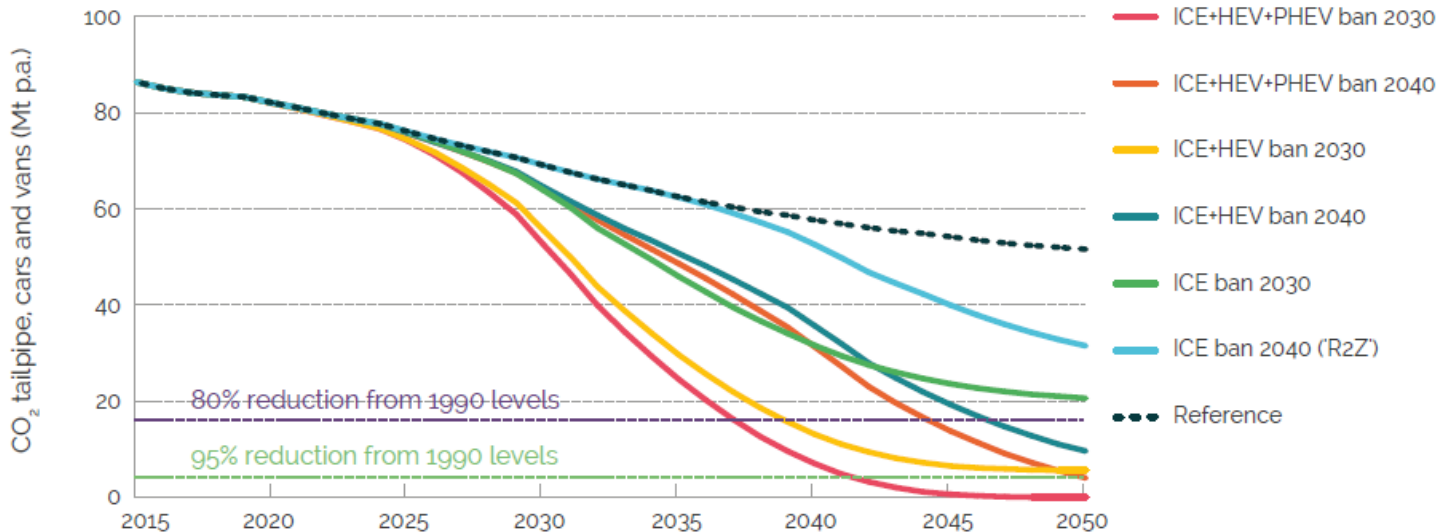
Seeing the whole picture re. EVs

- Lifecycle GHG emissions (see chart)
- Non exhaust emissions (Defra 2019)
 - Brake wear
 - Tyre wear
 - Road surface wear
 - Resuspended Road Dust
- Infrastructure requirements (roads, parking, charging)
- Congestion; obesity; car dependency and travel poverty





Scenario analysis: lifecycle CO₂e from car and van manufacture, use, maintenance, end-of-life



Upstream and downstream emissions remain

Emissions from generation of electricity replace those from fossil fuel production

Whose responsibility is it?



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“We expect this transition to be industry and consumer led”

HM Government Road to Zero Strategy, 10th July 2018 (p2)



Whose responsibility is it?



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*“Consumers are not the problem.
The problem is that they are treated
as a problem.”*

(Anable, July 2018)

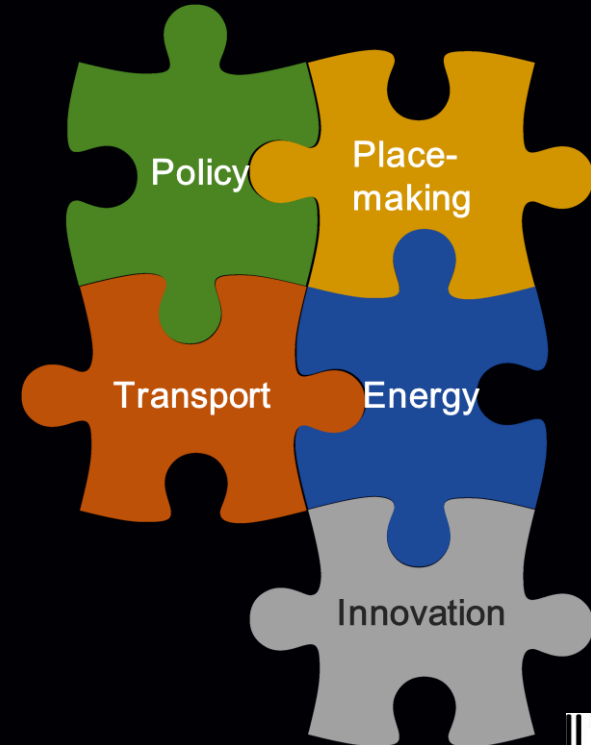


What does this all mean for the future of EVs?



UNIVERSITY OF LEEDS

- EVs are not a solution to anything other than decarbonisation
- Decarbonisation does not mean rapid reductions in carbon; nor does it mean reductions in car use, car dependency and congestion
- Consumers & industry will act with rational bounded rationality – we need strong regulation to achieve the future we want



A revolution?



Showing results for **revolution** *definition*

revolution

/rɛvəˈluːʃ(ə)n/

noun

1. a forcible overthrow of a government or social order, **in favour of a new system.**
"the country has had a socialist revolution"
synonyms: rebellion, revolt, insurrection, mutiny, uprising, riot, rioting, rising, insurgence, insurgency, coup, overthrow, seizure of power, regime change; More
2. an instance of revolving.
"one revolution a second"
synonyms: single turn, turn, rotation, circle, whirl, twirl, spin, wheel, roll, round, cycle, circle
"the prop shaft turns 4.7 times for one revolution of the wheel"



Translations, word origin, and more definitions

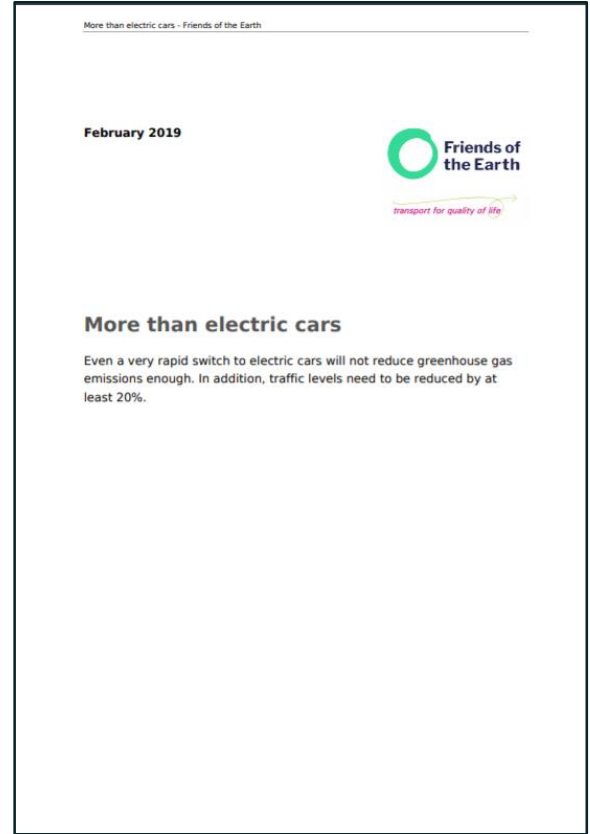
[Feedback](#)



Absolute reductions in traffic demand is not optional

“Level of traffic reduction needed by 2030 could be anywhere between 20% and 60%, depending on factors including the speed of the switch to electric vehicles and how fast the electricity powering them is decarbonised.”

That is a **MINIMUM** of 20% traffic reduction



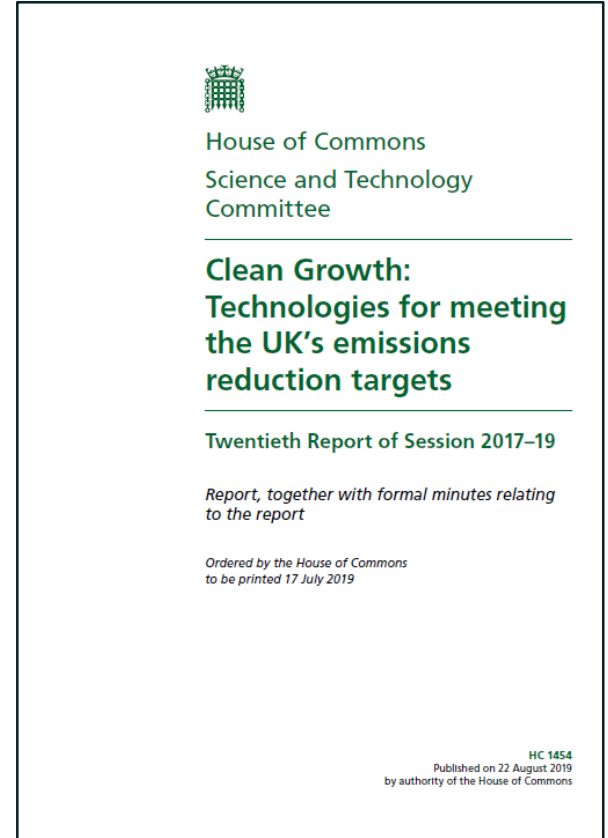
<https://policy.friendsoftheearth.uk/print/pdf/node/17>






“The Government admitted that the estimated impact of all sustainable travel interventions since 2009 was for a reduction in the number of car kilometres travelled per year of just 0.5% by 2021”

“In the long-term, widespread personal vehicle ownership does not appear to be compatible with significant decarbonisation.”



<https://www.creds.ac.uk/wp-content/pdfs/CREDS-Shifting-the-focus-July2019.pdf>





“Travel behaviour is already changing in ways that provide opportunities to enable a lower growth trajectory to be deliberately locked-in.”

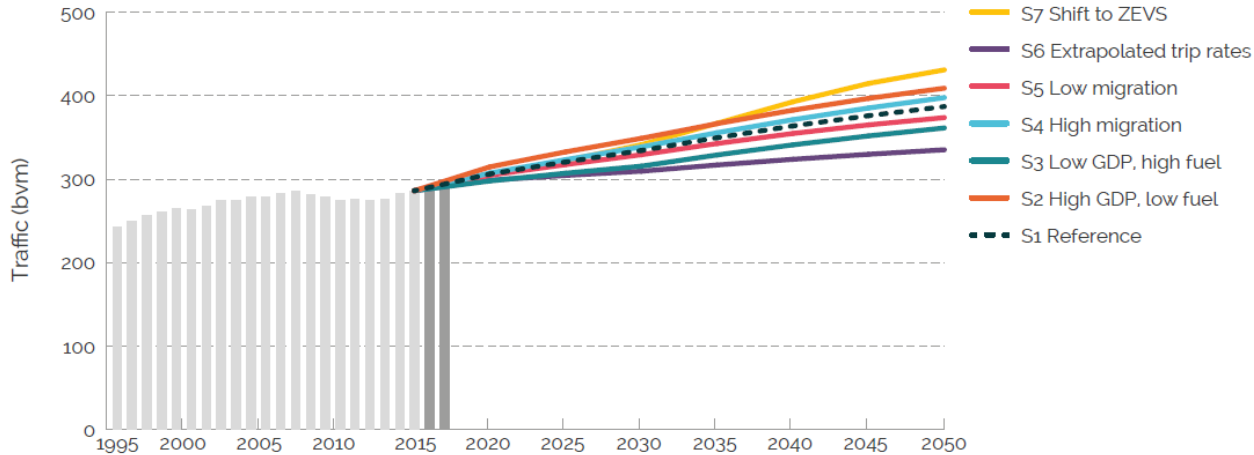
“...much greater emphasis on policies which influence and provide for more energy-conserving lifestyles, including: emerging models of car ‘usership’, changing social norms around mobility, new spatial patterns of population growth, the changing nature and location of work, education, housing, healthcare and leisure, reconfiguration of travel by digital technology, and new ways of paying for road use or energy (electricity).”



<https://www.creds.ac.uk/wp-content/pdfs/CREDs-Shifting-the-focus-July2019.pdf>



Business as usual



- DfT traffic forecasts are still for growth in all scenarios

Figure 8: Vehicle miles forecasts for England and Wales. Source: DfT (2018), Road Traffic Forecasts 2018. Moving Britain Ahead. September 2018. Figure 25, pp 51.





A focus on car sharing

Shared mobility: where now? where next?

Commission On Travel Demand Shared Mobility inquiry:
evidence graphics and recommendations

As the largest carbon emitting sector and one which has yet to show any clear emissions reduction trajectory, transport is at the heart of the climate emergency and centre stage in the shift to a net-zero carbon economy.

The Commission on Travel Demand Shared Mobility Inquiry focused on the potential to increase the occupancy of vehicles in-use, reduce individual ownership of assets and enhance multi-modal travel. The inquiry takes the position that more rapid and radical action is required to decarbonise the transport sector. This document gives an insight into the evidence with graphics and outline recommendations.



www.creds.ac.uk/where-now-where-next





Sharing must be centre stage



The whole life emissions of a BEV are only a third to a half lower than an ICEV

We need to reduce the size of our car fleet





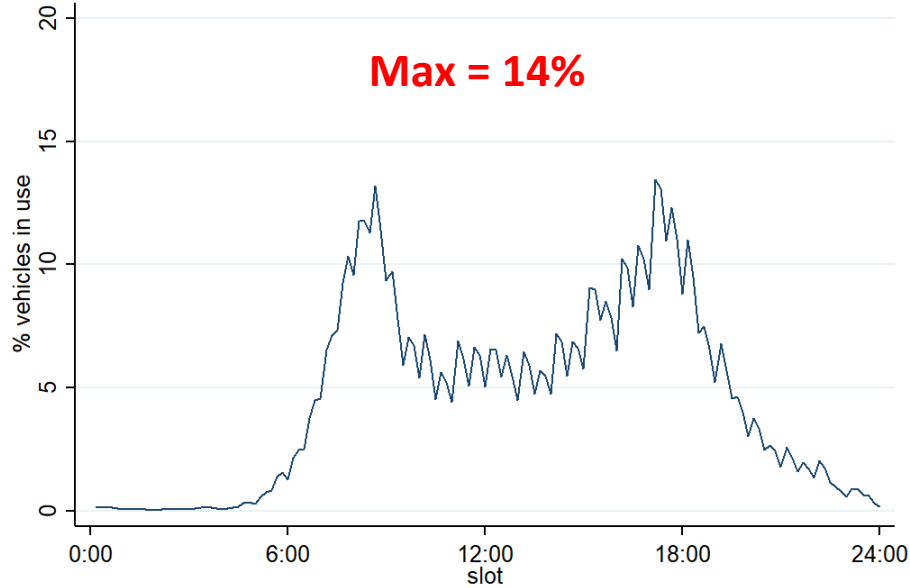
Is this smart transport?



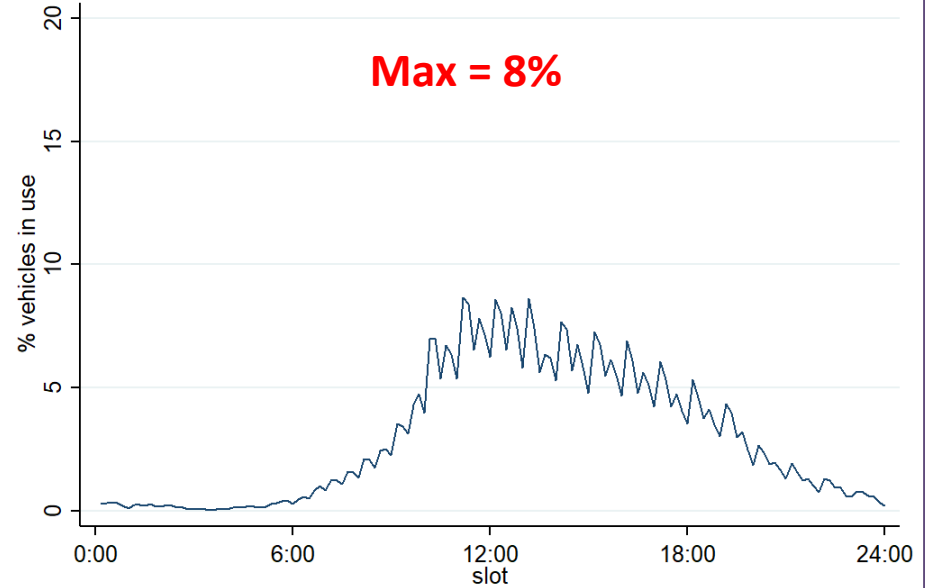


Is this smart transport?

Tuesday







Sunday





Sharing must be centre stage

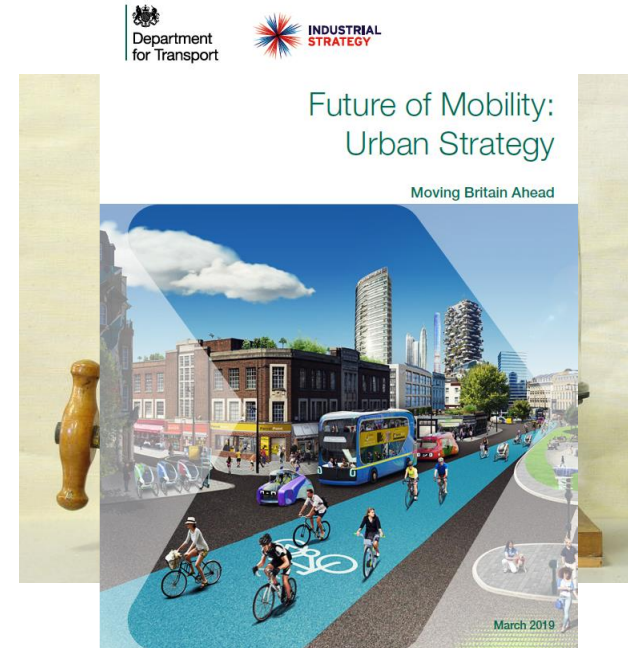
Traffic growth 2015–2050 55% Private travel	Average occupancy 2015 1.5 	Average occupancy 2050 1.3 
Traffic growth 2015–2050 5% Ride-sharing	Average occupancy 2015 1.5 	Average occupancy 2050 1.7 

Car
Occupancy
in Sweden is
1.73



Current Policy Position for sharing

- There is no overarching or focussed set of policies which look to:
 - Increased shared access to vehicles
 - Increased sharing in-use of vehicles
- There is a difficulty in reconciling cars as part of a sustainable mobility eco-system
 - 'sustainable mode-share'





Recommendation to support car sharing

- Build sharing around communities of practice
- New approach to piloting and trials
- Rural and non-core urban area innovation
- New ways of cross-subsidising from urban core
- Using the 'public' fleet assets
- Sharing initiatives around motorways
- Look at ownership taxation and incentives
- Data and data sharing
- DfT policy framework with CCC monitoring

Shared mobility: where now? where next?

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www.creds.ac.uk/where-now-where-next



1. Call out what should NOT be done

- Stop promising change without changing anything at all
- Stop referring to 'a revolution' with respect to new vehicle technology
- Stop building new roads and expanding airport capacity
- Stop advocating the building of new roads and airport capacity using junk models and data
- Stop burying head in the sand over the location of new development

What does the declaration of a Climate Emergency mean for the Transport Profession?





2. Agree a plan of actions

- Agree a traffic demand reduction target and incentivise local action/achievement of this goal
- Incentivise the coordination of transport and planning objectives to reduce the need to travel e.g. no more bonuses for meeting housing targets unless they do not lock in car dependence
- Lock in demand reduction changes that have already begun using demand management, including pricing and road space reallocation
- Design regulatory frameworks to steer emerging innovations, including on demand SERVICES
- Introduce regulatory targets to ensure businesses and large institutions are responsible for the commuting and supply chain traffic they generate
- Massively scale up investment in non car modes
- Alter appraisal system to place less value on travel time savings and more on co-benefits and early action

