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Transport Sufficiency

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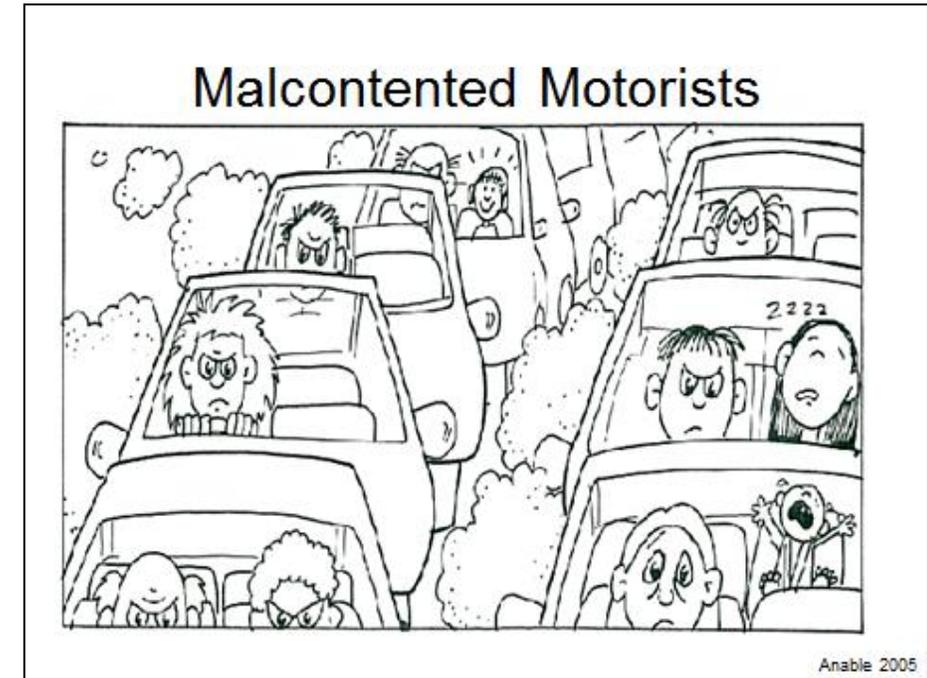
Why energy efficiency is not sufficient

- UK Transport sector since 1990:
 - energy use increased by 16.1% against an economy-wide *decrease* of 4.1%
 - ZERO reduction in net carbon, against -44% reduction for whole economy
- Yet huge technological innovation over this period
- Electric car-focussed carbon strategy isn't enough - we also need to cut miles driven by **20-60%** by 2030 in order to meet climate targets (FoE January 2019¹)
- Thus, **in addition to efficiency and fuel switching, limits to usage must be applied** to achieve environmental sustainability

¹Hopkinson, L. and Sloman, L. (2018) *Carbon and Urban Transport Project. Paper 1: [More than Electric Cars](#)*. Report Produced for Friends of the Earth. November 2018.

But transport policy – only one principle applied in practice: efficiency

- Transport policy is predicated on the assumption there will be major take-up of Ultra-low emission vehicles
- This gives little attention to reducing travel by powered vehicles
- This efficiency-based approach will fail because it:
 - will sustain existing conditions involving reliance on cars
 - fails to address mobility injustices
 - **actually ends up limiting people's choices**
 - and is leading to



¹ Anable, J. (2005) Complacent Car Addicts or Aspiring Environmentalists? Identifying Travel Behaviour Segments Using Attitude Theory. *Transport Policy*, 12(1): 65-78.

Table 3.1. Progress against the Committee's recommendations in the 2017 Progress Report

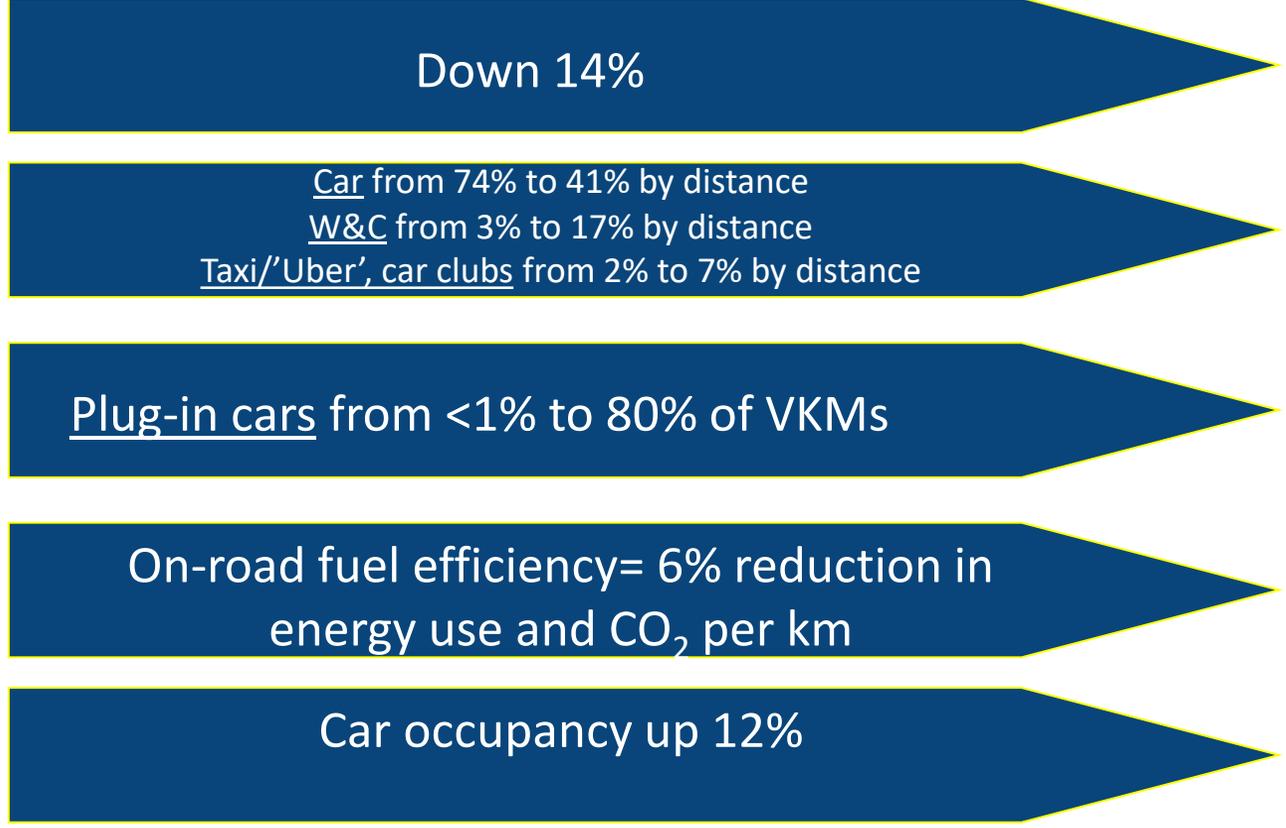
Recommendation	Assessment
Transport (26% of 2016 emissions): Emissions to fall by around 44% between 2015 and 2030 with options developed to allow near-zero emissions by 2050	
Stretching standards for new car and van CO₂ beyond 2020 , that require increased electric vehicle sales, are independently enforced and use real-world testing procedures	Partially met
Policies to deliver a high uptake of electric vehicles, of around 60% of new car and van sales by 2030 , including: time-limited financial support, preferential tax rates and effective roll-out of charging infrastructure	Partially met
Implementation of policy to deliver 8% of sustainable biofuels by energy by 2020 and maintain the biofuels volume after 2020	Met
Policies to support emissions reduction from HGVs , including new vehicle efficiency standards requiring electric options for smaller trucks, more efficient logistics, increased uptake of eco-driving measures, and a shift to lower-carbon modes (e.g. rail)	No progress
National and local policies to reduce demand , to deliver car-km reductions of at least 5% below the baseline trajectory	No progress
A plan to limit UK aviation emissions to the level assumed when the fifth carbon budget was set : around 2005 levels by 2050, implying around a 60% potential increase in demand, supported by strong international policies	No progress

LS EV

Lifestyle and mobility changes in 2050 - combined lifestyle+EV (LS EV) scenario

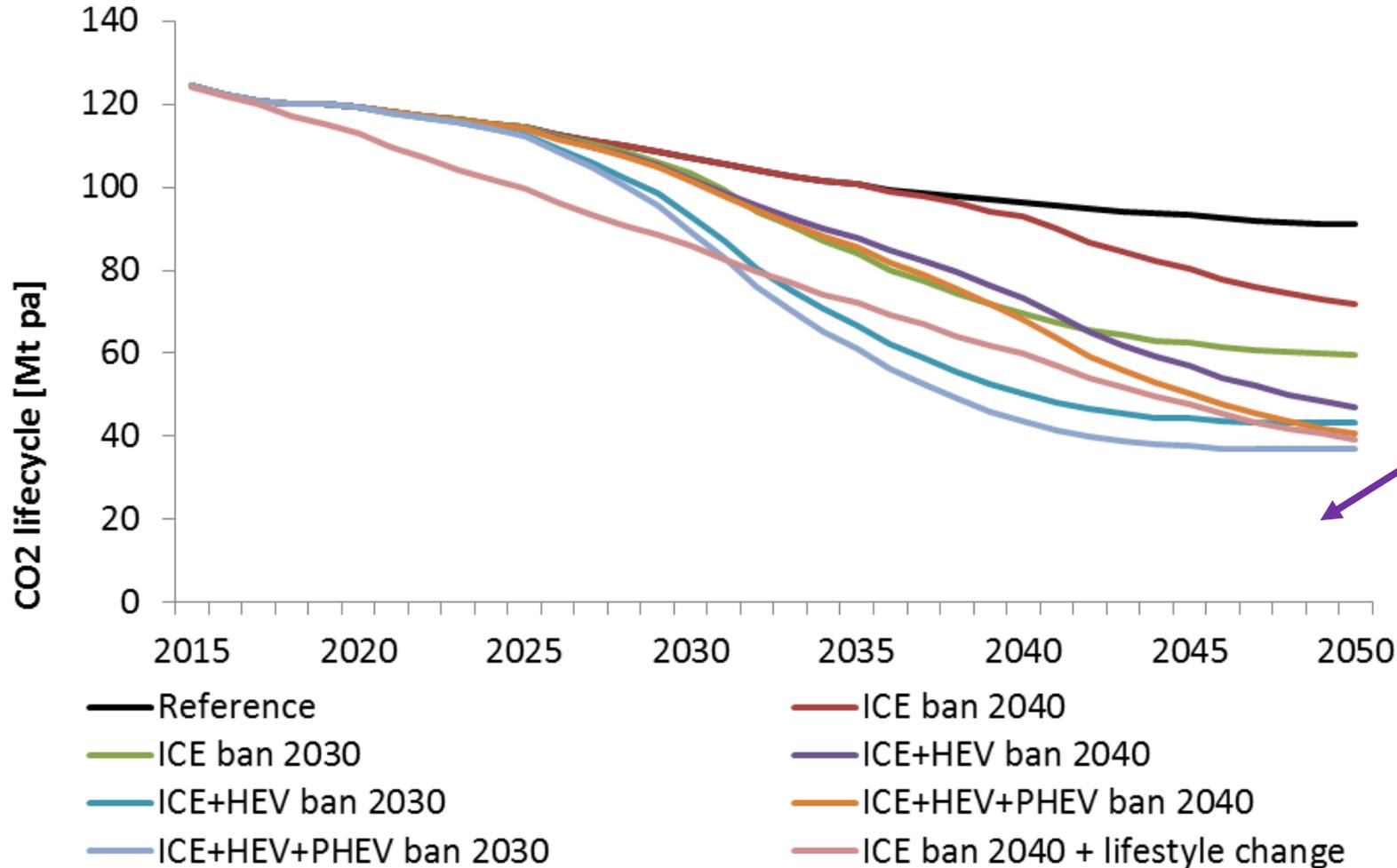
- Accessibility
- Localism
- Slower speeds
- Compact cities
- Car-free zones
- Car clubs
- ICT
- ULEV choice
- EV infrastructure
- Phasing out FFV
- Less air travel
- Policy acceptance

- Distance travelled
- Mode choice
- Vehicle choice
- Driving Style
- Load factors



Source: Brand, Anable, Morton (2018) Lifestyle, efficiency and limits: modelling transport energy and emissions using a socio-technical approach. *Energy Efficiency*: 1-21.

Impacts: 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

Transport 'poverty' versus 'excess'

- High impact households responsible for very large share of the total: 20% of emitters producing 61% of emissions (Brand & Preston 2010¹)
- **Transport emissions are more unequally distributed than domestic energy emissions** and more strongly associated with income
- Transport typically explains most of the differences in direct emissions between groups at the high and low ends of the spectrum
- One question for the concept of transport sufficiency would be whether quality of life is necessarily improved by greater mobility

¹Brand, C. and Preston, J.M. (2010) ['60-20 emission' - The unequal distribution of greenhouse gas emissions from personal, non-business travel in the UK](#). *Transport Policy*, 17(1): 9-19.

Minimum transport needs are increasing

- Car dependence definition: **when car use is essential to be able to travel to access services, opportunities and social networks and/or to undertake practices which are essential for the satisfaction of human needs**
- A product of motorisation and increasing distances between residences and essential activity destinations
- Government cuts to bus funding since 2016 have further increased car dependence – likely that carbon and energy intensity needs in the UK will further increase?
- Slowed down in recent years? (see ‘Peak Car’ – below)

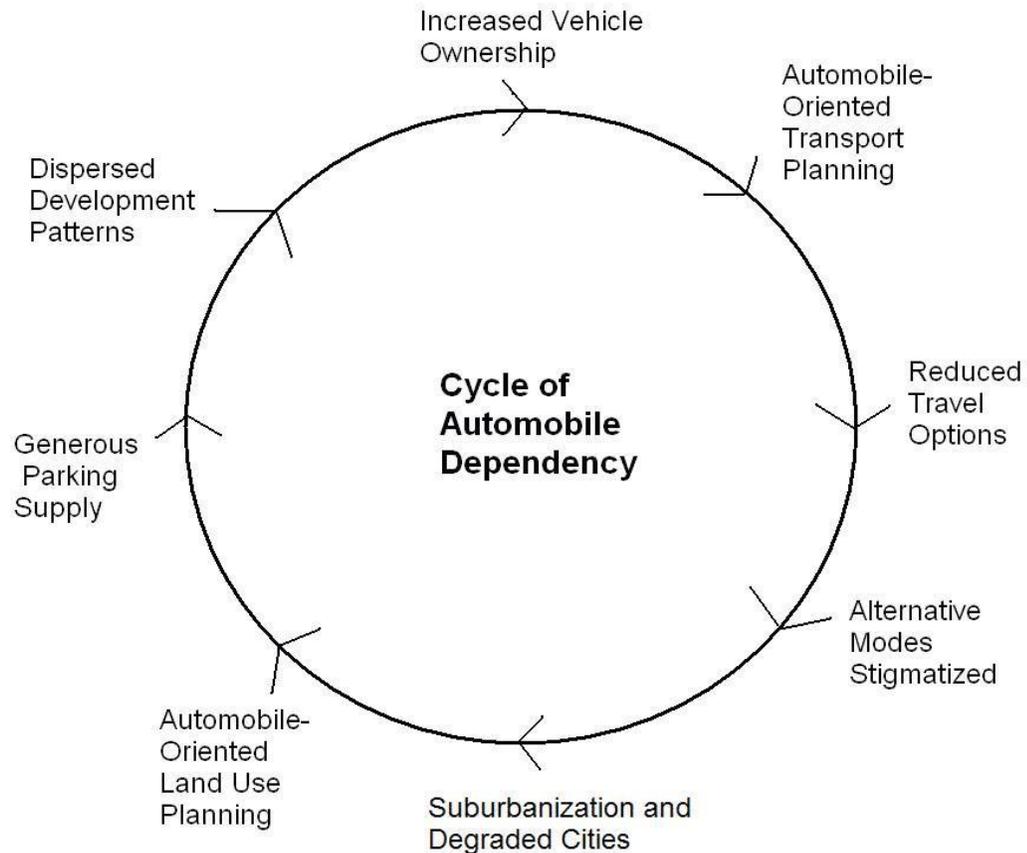
Thousands of bus routes 'at risk' of being scrapped, warn councils

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The car – from ‘want’ to ‘need’ satisfier



- Car travel was initially aimed at ‘want’ satisfaction
- But were also from the outset used to improve need satisfaction (eg doctors to rural areas)
- Thus practices aimed at want satisfaction have triggered a long process of change in social, spatial and technological structures which has progressively turned the car into a need satisfier

Mobility as a need satisfier (Mattioli 2016¹)

- **Mobility not a need in and of itself – it is a derived demand**
- Assume a hierarchical chain of needs satisfaction
 - Goods/services (eg mobility) are required for undertaking activities which in turn contribute to the satisfaction of some overall need
- **Over time, satisfiers have become more travel and carbon intensive through unintentional structuration processes**
- Needs might be universal but satisfiers are culturally/ context specific as different places satisfy their needs in different ways – this can lead to a defence of the status quo
- **Overall, big tension between (i) satisfaction of human needs becoming more carbon intensive and (ii) working towards environmental justice**

¹Mattioli, G., 2016. Transport needs in a climate-constrained world. A novel framework to reconcile social and environmental sustainability in transport. *Energy Research & Social Science*, 18, pp.118-128.

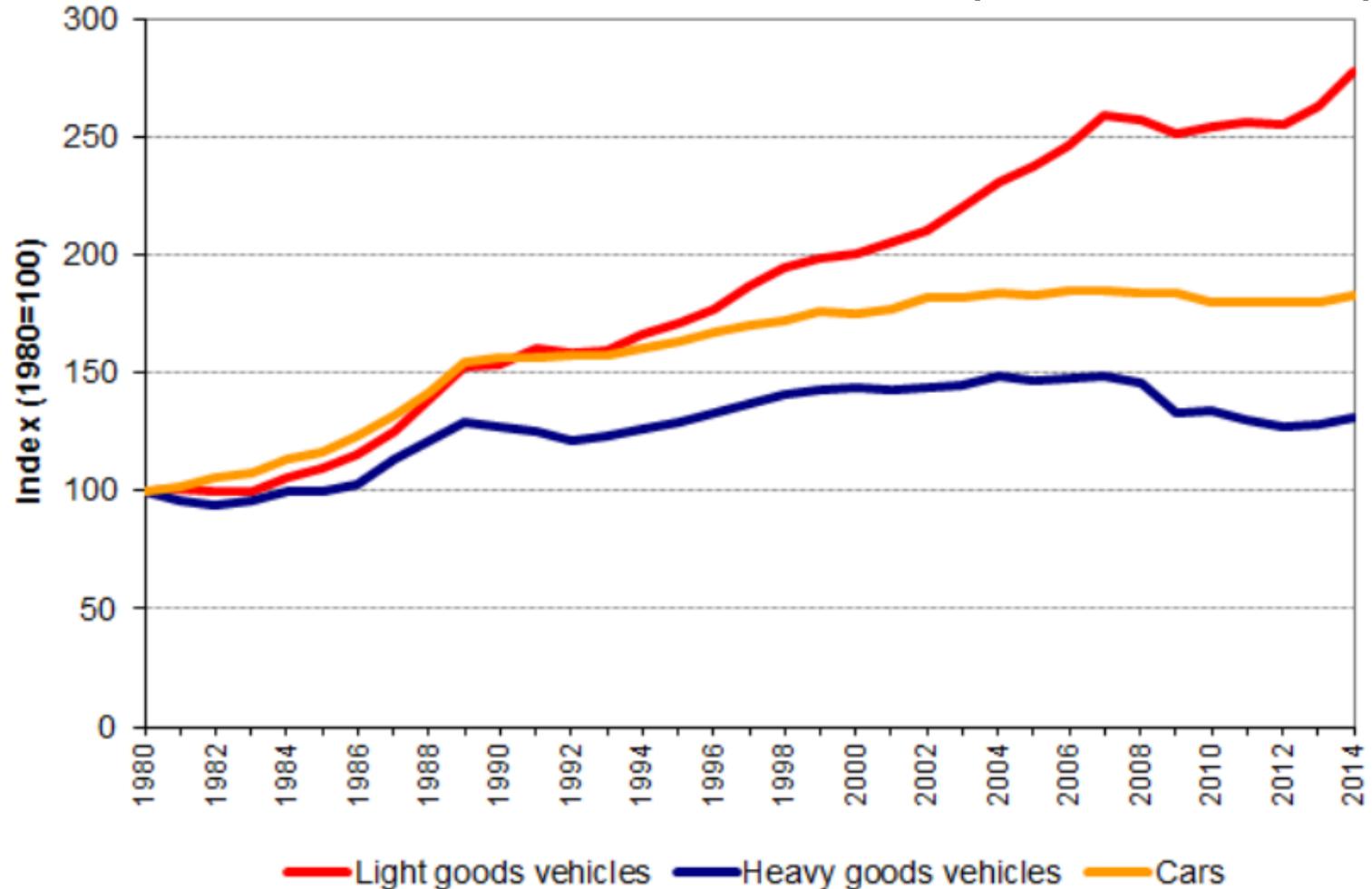
Role of the car in need satisfaction has changed over time

- MIS¹ identifies minimum transport needs of UK households
- In 2008 Druckman and Jackson found transport responsible for 26% of GHGs needed for an acceptable standard of living
- Since then, 'entitlement' to car ownership has been steadily increased in MIS due to increased cost of public transport
 - 2008 – most h'hold types living in rural towns
 - 2016 – all families *regardless of residential location*
- Increased need to travel long distances using powered modes
- So GHG to meet basic needs have increased
- THIS MAKES IT VERY DIFFICULT TO RECONCILE REDUCED CO2 WITH THE STANDARDS OF LIVING DEEMED ACCEPTABLE IN THE UK

¹ Joseph Rowntree Foundation: Minimum Income Standards <https://www.jrf.org.uk/report/minimum-income-standard-uk-2018>

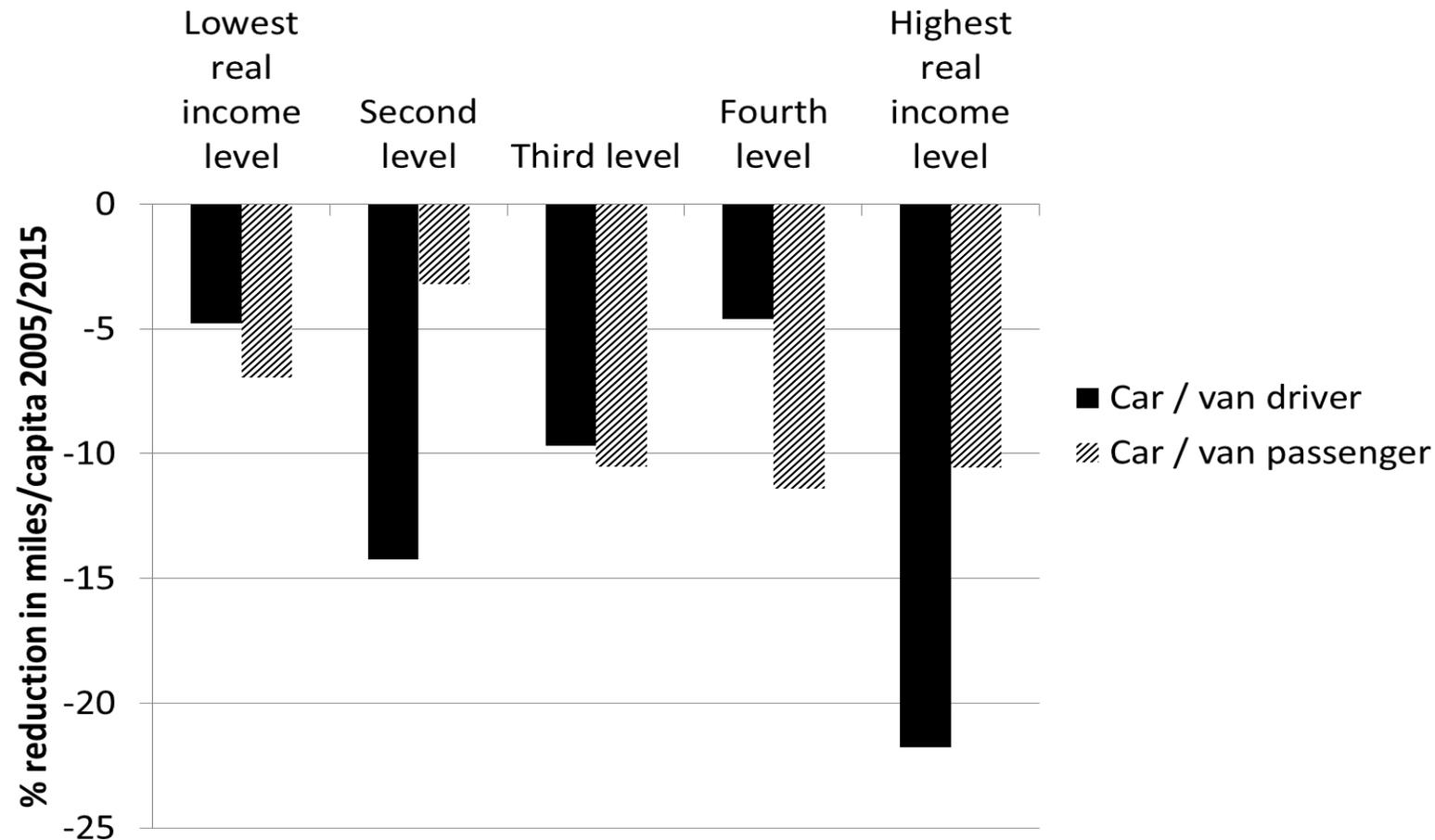
But are trends slowing or even reversing (Peak car)?

Vehicle Kms travelled in Britain 1980-2014 (Index 1980 = 100)

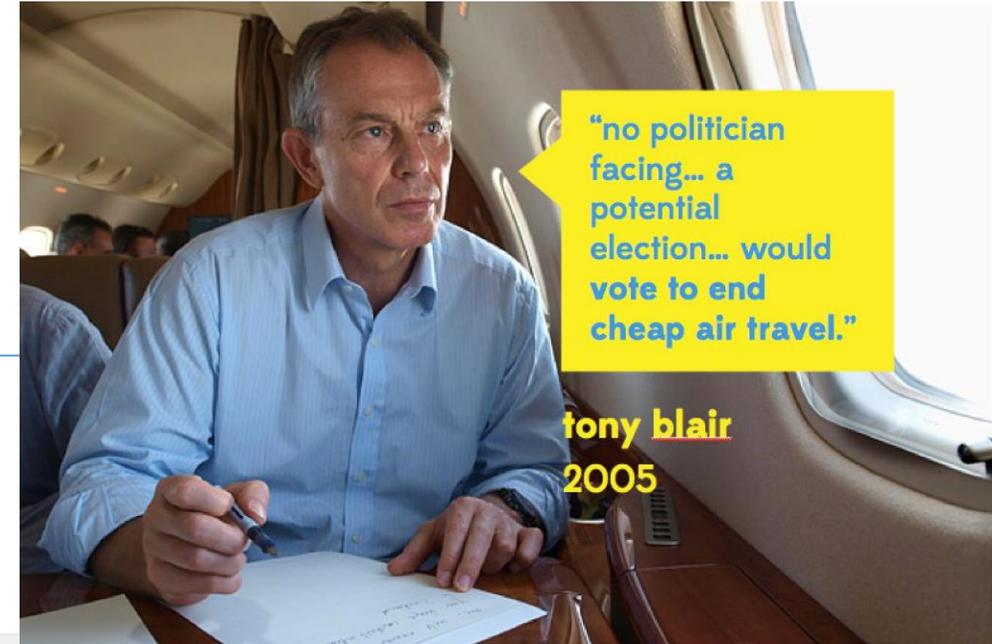


Miles Travelled/Capita since 2005-2015

Car and Car as Passenger by Income Quintile



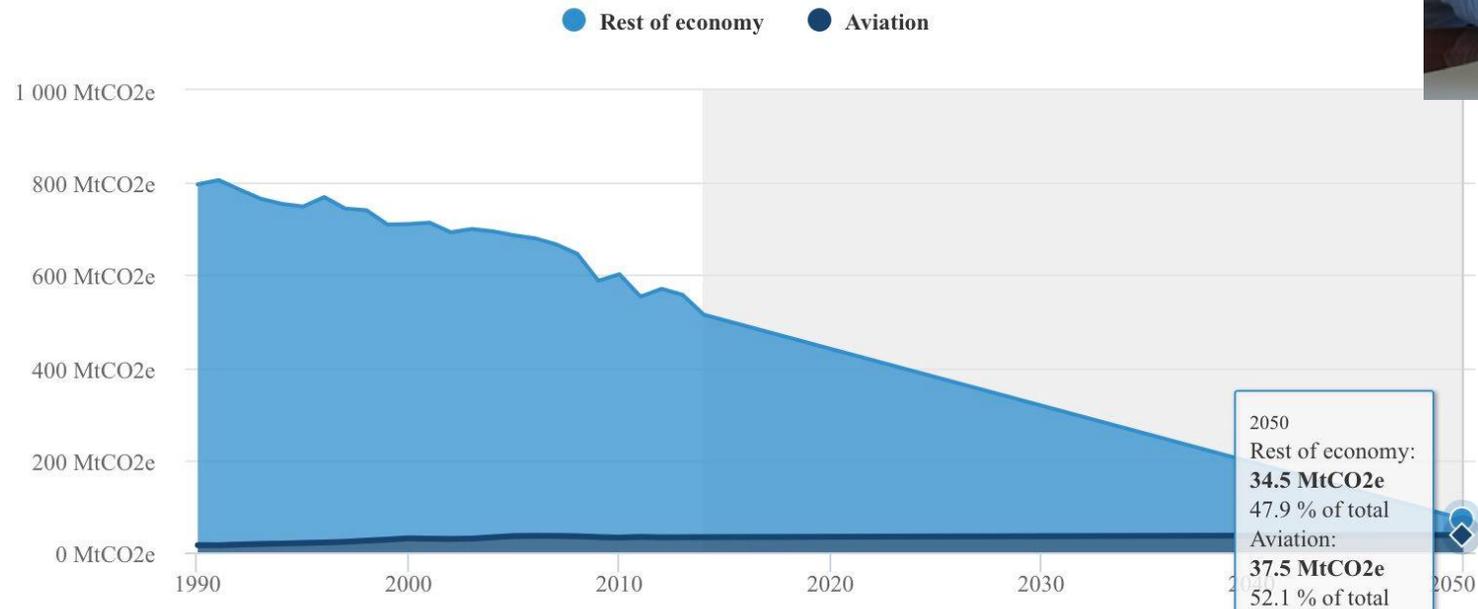
Aviation – demand reduction will be necessary



“no politician facing... a potential election... would vote to end cheap air travel.”

tony blair
2005

UK aviation emissions and carbon targets



Stubbornly static emissions from air travel, equal to half of our total 1.5°C compatible budget in 2050

Social Exclusion research agenda

- Reaction to dominance of utilitarian approaches where goal is to maximise utility and not needs – e.g. welfare economics & cost benefit analysis –
- Social exclusion agenda:
 - Prioritises the needs of individuals whose ability to travel is limited because of lack of access to car or PT and so are more at risk of social exclusion
 - Leads to the argument that interventions to prioritise accessibility should be prioritised over other transport investments
- Social exclusion research generally focuses on transport and access to services/opportunities without taking account of transport externalities and their justice implications
 - **Therefore, in some areas, we may need NEED MORE carbon intensive travel options**

Can we reconcile the tension between transport justice and climate justice?

- Studies are now consistently showing that reductions in travel demand are an essential part of CC mitigation
 - = increasing tension between social and environmental goals in transport
- If car is (increasingly) needed to access essential services, measures restricting its use or increasing costs potentially threaten social exclusion and may be unfair towards already disadvantaged groups
- Also, environmental concerns make it taboo to promote car-based measures to increase well-being
- Can we make progress on both fronts at the same time?



Distinguish between 'needs' and 'needs satisfiers' (Mattioli 2016¹)

- Social exclusion research emphasises the nature of the goods and services required to achieve transport inclusion but does not reflect the underlying universal human need
- Often looks at differences in trip rates, travelled distances and travel time to support claims of inequality
- Assumes that the high levels of travel currently observed are inherently required to be able to access essential opportunities
- **This means implicitly assuming that car is required**
- **But there are different ways in which need satisfaction could be achieved with less travel if the distribution of activities were different**

¹Mattioli, G., 2016. Transport needs in a climate-constrained world. A novel framework to reconcile social and environmental sustainability in transport. *Energy Research & Social Science*, 18, pp.118-128.

Accessibility is the energy service, not mobility

- Shift the potential from *actual travel* to the potential for *access to the activities* that matter
 - i.e. from lower order satisfier to a higher order one (Mattioli 2016)
- **Big question for transport sufficiency: Is quality of life improved by greater mobility?** Or is transport not a need *per se* but a means to an end just like any other energy infrastructure?
- **Transport/ mobility is not the energy service or need – access is**
- Ensure essential services are within reach of all
- **But this needs more imagination on how to satisfy these needs with the least possibly energy and carbon emissions**

And the biggest changes to travel patterns are not coming from transport policy



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www.parliamentstreet.org



www.agelessvoice.net



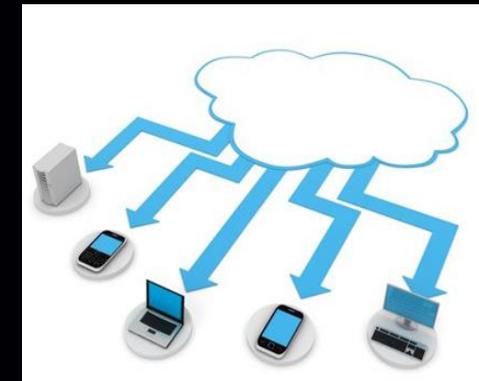
www.walesonline.co.uk



Home.38degrees.org.uk



www.mrw.co.uk



www.smilemachine.com

<http://www.fleximobility.solutions>



We need a Curative & Preventative agenda (Mattioli 2016¹)

- Not just about imagining a life within sustainable boundaries – also have to ensure the satisfaction of universal human needs
- But, needs satisfiers are liable to change
- In short term – easier to bring about change in lower order elements in chains of needs (e.g. mode shift)
- In longer term – modify higher order ones such as socio-spatial structures

BUT ALSO NEED A PREVENTATIVE AGENDA

- *If needs become conflated with excessive use of any resource a Pandora's box of justice dilemmas is opened up (Mattioli 2016)*

¹Mattioli, G., 2016. Transport needs in a climate-constrained world. A novel framework to reconcile social and environmental sustainability in transport. *Energy Research & Social Science*, 18, pp.118-128.

Excess travel

- Travel that does not arise from needs satisfaction
- **Curtailing travel for wants would not result in 'serious harm'** (but try telling the welfare economists that!)
- **Currently a major taboo** in transport policy 'where there is a general notion that all transport is necessary'

BUT

- Curtailment might be the only way of achieving emissions reductions while allowing for increased demand among the disadvantaged
- **Social welfare approach: A redistribution of car travel from privileged to disadvantaged households¹**



¹Schwanen, T, Lucas, K, Akyelken, N et al. (3 more authors) (2015) Rethinking the links between social exclusion and transport disadvantage through the lens of social capital. *Transportation Research Part A: Policy and Practice*, 74. 123 – 135.

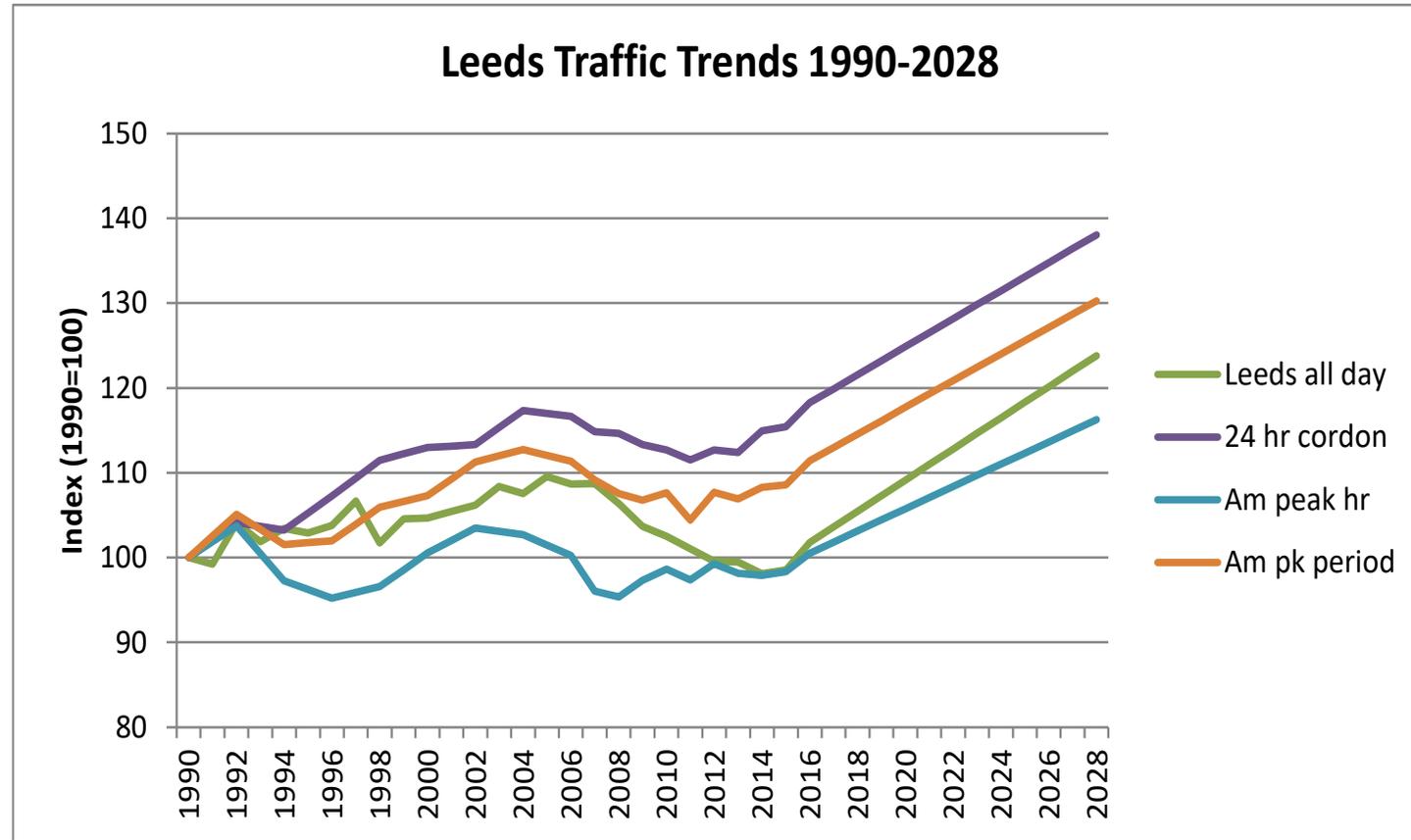
Context and scale

- The circumstances that make a trip essential for need satisfaction are often highly individualised and context specific
- VAST proportion of mobility is generated by businesses – this is a problem because individuals and businesses use much the same infrastructure so separately assessing need is problematic

See:

- Martens, K., 2016. *Transport justice: Designing fair transportation systems*. Routledge
- Simcock, N. and Mullen, C., 2016. Energy demand for everyday mobility and domestic life: Exploring the justice implications. *Energy Research & Social Science*, 18, pp.1-6
- Mullen, C. and Marsden, G., 2016. Mobility justice in low carbon energy transitions. *Energy Research & Social Science*, 18, pp.109-117.

But projecting business as usual is the business as usual

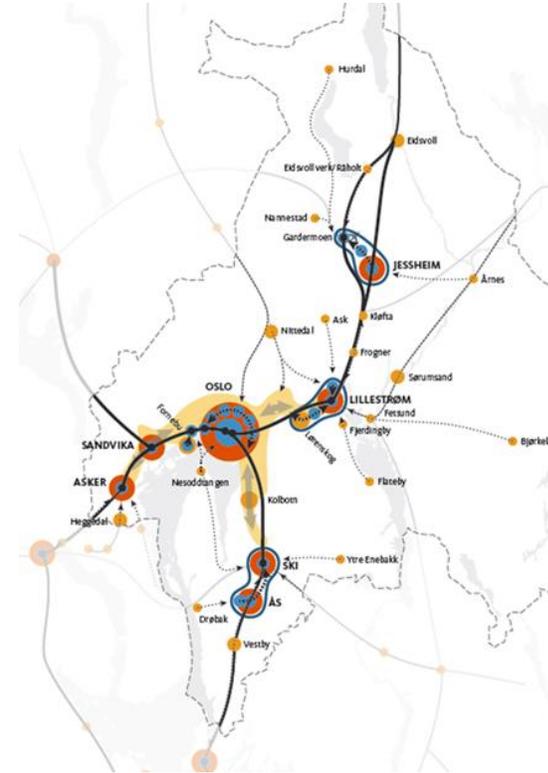


We keep recreating the past that we are trying to avoid



Car dependent developments

See <http://www.transportfornewhomes.org.uk/>



No growth in traffic

Norway: zero growth objective for car traffic in urban areas. But many road expansions are still planned in cities across Norway.

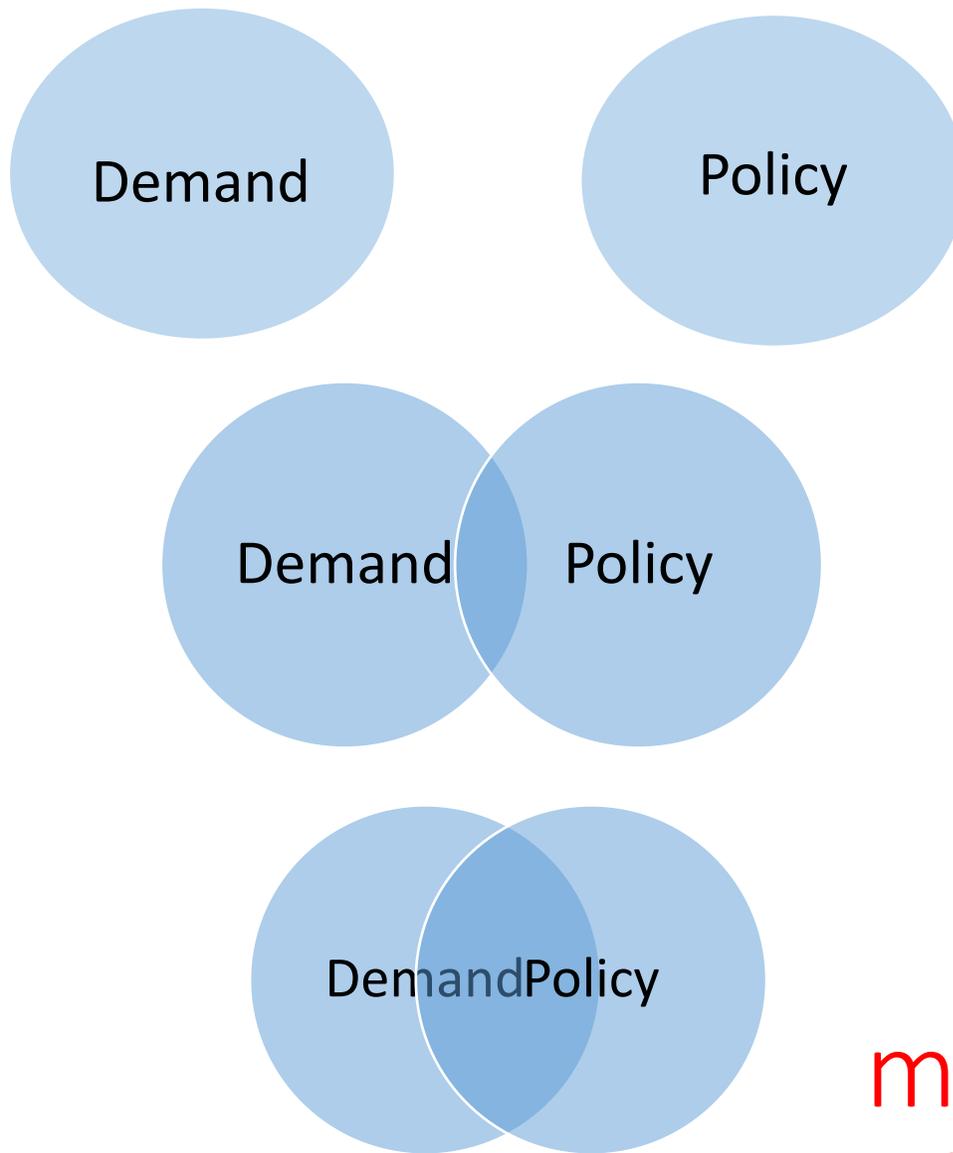
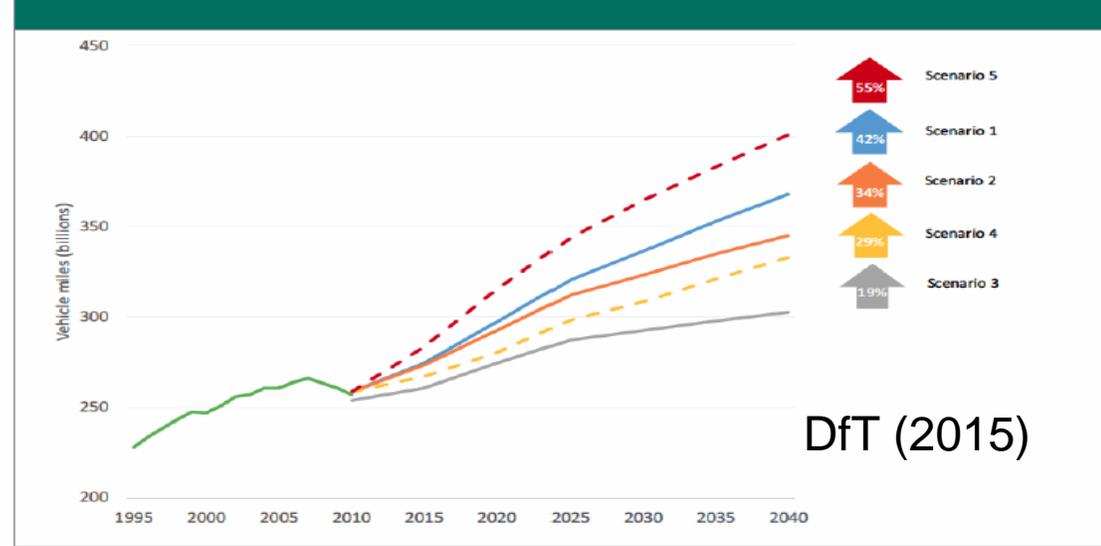


Figure 3.4: Traffic growth by scenario (bn miles, all vehicles)



How we think about demand defines how much agency we think we have to tackle demand

What does this mean for decision-making?

- What kind of futures **should** we plan for?
 - At what scale(s) is this best done?
- In what ways does this all challenge Business as Usual?
- Should we adapt our toolkit and if so, how much and for what types of decisions?
 - Can we adapt our toolkit? Are we really open to uncertainty?
- What would the consequences of continuing a focus **ONLY** on Energy EFFICIENCY be?