

Creating the Transport Decarbonisation Plan

Feedback from the Sussex Energy Group (University of Sussex)

About the authors

This submission has been prepared by researchers from the Sussex Energy Group (SEG)¹ at the University of Sussex. SEG aims to understand and foster transitions towards sustainable, low carbon energy systems. We undertake academically rigorous, interdisciplinary and world-leading research that is relevant to contemporary policy challenges.

It draws upon several projects and publications, for which the lead investigators were:

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1. Introduction

- 1.1. The Sussex Energy Group (SEG) researches energy, mobility and climate change through an interdisciplinary lens. We therefore welcome the emphasis on behavioural and modal shift measures in the 'Creating the Transport Decarbonisation Plan' document. Although technical measures will play a key role in the energy transition, on their own they stand little chance of achieving net zero emissions in the transport sector. Other structural, institutional, cultural and behavioural measures will be needed to achieve modal shift and encourage the travelling public to engage with low carbon technologies.
- 1.2. Mobility plays a key role in both our economy and people's quality of life. The pathway to a net zero transport system therefore needs to positively impact other policy aims. These include areas such as economic growth, improving local environmental quality and alleviating the transport poverty that affects a significant number of people in the UK.
- 1.3. This submission largely draws from two projects undertaken by SEG researchers and their collaborators. The first is the *Centre for Innovation on Energy Demand* (CIED)², which investigated new technologies and new ways of doing things that have the potential to transform the way we use energy and achieve substantial reductions in energy demand. CIED included a transport theme. The second is our *Fuel and Transport Poverty in the UK's Energy Transition* (FAIR) project³, which forms part of the larger Centre for Research into Energy Demand Solutions (CREDS) led by the University of Oxford.
- 1.4. We have structured this submission in line with four of the strategic priorities in the consultation document (we have not addressed 'UK as a hub for green transport technology and innovation' and 'reducing carbon in a global economy'). We have also included some preliminary thoughts on the COVID-19 crisis; this largely hit after the consultation began but will very obviously have a significant impact on the policy landscape for some time to come.

¹ See <http://www.sussex.ac.uk/spru/research/themes/sussexenergygroup>

² See <http://www.cied.ac.uk/>

³ See <https://www.creds.ac.uk/fair/>

2. Accelerating Modal Shift to Public and Active Transport

- 2.1. Measures to implement modal shift for environmental benefits should also address a second policy aim of growing importance – transport poverty. Transport poverty can be understood as the inability to access or afford necessary transport services for participation in social and economic life. It arises from four core components: 1) cost of transport services, high costs contribute to transport poverty; 2) income, low-income households and/or individuals are disproportionately affected by transport poverty; 3) lack of access to mobility services and infrastructure, an inability to access and/or purchase transport services for fundamental mobility needs, and; 4) transport system design, transport system planning and related accessibility and locational issues are fundamental to reproducing or worsening transport poverty.
- 2.2. The UK does not produce official figures for the number of people in the UK in transport poverty, but researchers have estimated that it could be as many as 2.5 million households. It is paramount that transport poverty is recognised, measured and mitigated as we move to a net zero emission transport system.
- 2.3. The relationship between transport poverty and carbon reduction is in many ways similar to that between fuel poverty and carbon reduction in the housing sector. Carefully designed measures can address both policy aims, whilst a failure to consider both areas can lead to measures that benefit one but negatively affect the other.
- 2.4. Research on transport poverty in the UK shows that forced car ownership, car dependency and a lack of access to sufficient public transport compound and lock in poverty for low-income families and communities across the UK. In particular, large geographical disparities in transport services and infrastructure provision generate distinctly area-based inequalities, both in urban and rural locations. Indeed, there are stark regional differences in inequality and income across the UK and this has profound implications for transport poverty. According to a recent paper (McCann 2019) on UK regional inequality, the UK *'is one of the most regionally unbalanced countries in the industrialized world'*.
- 2.5. The University of Sussex is leading the *'Fuel and Transport Poverty in the UK's Energy Transition'* (FAIR) project, which is currently in its first year of operation (running from 2020 to the end of 2022). The project researches vulnerabilities to transport poverty in all areas of the UK, alongside its connections and overlaps with fuel poverty. FAIR will conduct research in all four UK nations and will therefore be collecting data on these regional disparities and contextual differences - alongside 'regional diversity' there are also 'regional vulnerabilities' to transport poverty. This is something the decarbonisation plan could recognise going forward. For example, in North and mid-Wales, transport services and infrastructures are severely lacking, while a heavier concentration of capital investment and service provision (via the newly established 'Transport for Wales') occurs in the South of Wales, particularly in the Cardiff Metro region. In England, similar disparities exist between the well-connected and developed South East of England and the relatively poorly served South-West, Midlands and Northern regions. Vulnerabilities to transport poverty will inevitably be more severe in certain areas. For instance, in Northern Ireland 68% of homes rely on oil-fired boilers for heating, so oil price shocks – for example - can theoretically hit both domestic energy and car-dependency, compounding transport poverty.

- 2.6. Consideration should be given to ensuring some degree of spatial and regional equity in the development and deployment of new low-carbon mobility services. These include zero emission buses and electrified trams and trains, as well as new bicycle hire schemes for cities and other localities. The exacerbation of existing regional inequalities will occur if new low-carbon services are concentrated in those areas with already sufficient levels of transport provision. There is an opportunity to orient the low-carbon transition towards areas that need it most. Here we advise that you further consult with the FAIR project as our findings mature, and also acknowledge the ambitions of the Scottish and Welsh governments to create a fairer and more just transport system for their respective nations.

3. Decarbonisation of Road Vehicles

- 3.1. It should be noted that electric vehicles (EVs) are not 'zero carbon'. There are still significant emissions and environmental damages related to the production, operation and disposal of these vehicles, in addition to emissions from the electricity supply system and road infrastructure. Individual private cars are inherently inefficient in most contexts when compared to public and active transport, and a strategy that simply substitutes current fossil fuelled cars with EVs is highly unlikely to result in a net zero transport system.
- 3.2. Much of the discussion around EV adoption has focused on technical issues such as driving range, charging infrastructure and their effects on power grids. We are confident that the current call for evidence will receive good quality advice from several sources on these areas. To date though there has been less focus on consumer factors; in particular discussions have neglected to look at how the car retail industry is responding to policy and industry strategies. Our research has addressed this, exploring what vehicle buyers are actually experiencing at the point of sale where EVs are offered to consumers alongside petrol and diesel vehicles. This research has been summarised in our policy brief '*Accelerating the adoption of Electric Vehicles in Europe*⁴', with key points provided below.
- 3.3. Our research explored vehicle shopping experiences in 15 major European cities across Denmark, Finland, Iceland, Norway and Sweden. Based on our investigations, we believe that 92% of potential mass-market customers would have selected a petrol or diesel vehicle rather than an EV. Removing Norway, the world leader, from the mix increases that number to 97%. Although this research was carried out outside the UK, we believe that these findings can be generalised to other countries where EVs and conventionally fuelled vehicles are sold alongside each other.
- 3.4. Within car dealerships themselves we identified 9 distinct barriers to EV purchases. Perhaps the most significant though was that in 77% of all dealership visits sales personnel simply did not discuss the existence of EVs, despite having EV brands and models available for sale in their stores. The reasons behind this vary from a lack of understanding of the technology involved to colder calculations around sales - industry experts in our study suggested EVs can take 2-4 times longer to sell than petrol or diesel cars.
- 3.5. At an industry level EVs can be seen as a worse business case than petrol and diesel cars, with many manufacturers hesitant to promote them downstream to retail markets. This attitude filters down to dealerships, where EVs can be seen to be bad for profitability. Marketing for EVs tends to focus only on the environmental benefits, without featuring their technological

⁴ http://www.cied.ac.uk/wordpress/wp-content/uploads/2018/07/4235_policy_briefing_11_WEB-1.pdf

premiums that include acceleration and speed, safety, comfort, design and other advanced features. This focus on emissions may appeal to consumers who place environmental features at the top of their shopping lists, but results in less appeal to the mass market.

- 3.6. Fairly strong policy mechanisms have been established in many countries to support EV purchases. However, the actual experiences at car dealerships show that EV initial purchase prices are often as much as €10,000 more expensive than comparable petrol and diesel vehicles. This places financial risk with the consumer (i.e. will they save enough through reduced running costs to offset the higher purchase costs?) and can present a financing challenge. We also found varying knowledge of tax benefits amongst sales personnel, with incorrect advice being provided on several occasions. This situation serves to encourage less informed, risk adverse consumers to default to familiar petrol and diesel vehicles.
- 3.7. We recommend that Government crafts a more effective policy mix for EVs to succeed at the retail level, where they should be priced competitively alongside petrol and diesel options. This can be achieved by harmonising mobility policy through a bonus-malus system, or other forms of subsidies and taxes. Incentives should also be introduced for intermediaries such as dealers and manufacturers, stimulating their motivation to sell EVs to consumers.
- 3.8. In addition to policy changes, Government should work with the automotive industry to encourage best practice in EV sales and marketing. Our recommendations here are at two levels:
 - *The Automotive industry and Original Equipment Manufacturers (OEMs)* need to develop and improve EV promotion, both to consumers and dealers. Marketing and promotional campaigns should be developed to communicate the benefits, specifications and availability of EVs to franchise dealerships. These messages and materials should not focus exclusively on the environmental attributes of EVs, but also on elements of superior performance, such as ease of operation, luxury, comfort, acceleration and safety.
 - *Automotive salespersons and dealerships* need better knowledge, confidence and willingness to encourage EV purchases. To this end, training schemes should be implemented for all staff and sales personnel around EV technology, vehicle specifications and sales processes (thus diffusing the capability currently held only by specialist salespersons), and sales commissions should be adjusted to make successful sales of EVs more attractive.

4. Decarbonising How We Get Our Goods

- 4.1. Rebound effects in the road freight sector need to be considered in the assessment of decarbonisation policies. Rebound effects will occur in all sectors if increased efficiency leads to cheaper goods or services, however our research suggests they are particularly pronounced in the freight sector due to fuel costs accounting for up to one third of operating costs.
- 4.2. Our research⁵ suggests that, historically, there has been a direct rebound effect of 50–60% for UK road freight transport. This suggests that, to date, around half of the fuel efficiency savings made by the freight sector have been absorbed by growth generated by the efficiency improvement. Clearly this reduces the absolute emissions impact of these efficiency measures. The implication of these findings is that efficiency measures may have less of an impact on

⁵ <https://www.sciencedirect.com/science/article/pii/S1361920917310088>

absolute emissions that a simple analysis suggests, that is unless other measures are taken alongside them to suppress the rebound effects.

- 4.3. These findings do not apply to alternative fuels where the relationship between emissions and operating costs is very different to diesel fuelled vehicles.

5. Place-based Solutions for Emissions Reduction

- 5.1. A key part of the transition to a low carbon, and ultimately zero carbon, transport system is setting out a clear vision for the future to avoid mixed messages. Whilst national level visions are desirable, different visions are clearly needed at regional and local levels to reflect vastly different mobility needs. Literature on innovation, for example, suggests visions – and the expectations they generate – can motivate engineers and designers, help attract financial support and raise interest from a wide range of stakeholders.
- 5.2. In our work on visions of the future of personal mobility^{6,7,8} we found that various forecasts, roadmaps, pathways and other visions assume little change in how we get around, beyond switching to new types of cars. This is based on a powerful paradigm of personally owned vehicles as both a right and a necessity, underpinning our way of life and our economy. Encouragingly, the Ministerial forward to the consultation document suggests a shift to a different transport system where active modes and public transport are central. It's vital not to underestimate the shift needed here – whilst infrastructural and regulation changes are necessary, a significant cultural shift also has to take place for this to work.
- 5.3. We note that there is a tension between two parts of the consultation document: promotion of a transition to low carbon vehicles on the one hand, and the aim of a modal shift towards public transport and active travel as the natural first choice for our daily activities on the other. The first actively encourages continued 'automobility', the culture where car is king, and delivers the message that if you switch to an electric car, you have done your environmental duty to the environment. The second asks for active behavioural change in modal shift and changing travel patterns, perhaps even reduced travel. These are comprehensively different narratives, and if drastic reductions in transport emissions are to be achieved, the technical transition to lower carbon vehicles cannot take precedence over the systemic transition of travel, which requires social, regulatory and infrastructural changes. Mixed messages like this must be avoided. A transition which focuses on replacing privately owned petrol (or diesel) cars with privately owned electric cars is a wasted opportunity, which does not play to the full promise of electric transport, nor is it a deep enough change to drastically reduce our transport-based emissions.
- 5.4. Another conclusion from our research is the passive role accorded to people in future scenarios. People are viewed as consumers whose role it is to adopt government solutions, in terms of buying a lower emission vehicle and perhaps jumping on their bicycle now and again. People play a vital role in this transition, and for it to take hold, they must be regarded not only as 'consumers' and 'commuters', but as citizens, activists, knowledge-holders, innovators and more. Scenarios we examined tend to portray people as overly simplistic 'rational actors', when

⁶ http://www.cied.ac.uk/wordpress/wp-content/uploads/2018/04/4130_policy_briefing_09_web.pdf

⁷ <https://doi.org/10.1016/j.erss.2017.06.028>

⁸ <https://doi.org/10.1016/j.tranpol.2017.07.016>

visions of the future would benefit from a more realistic and complex approach to travel and mobility behaviour, considering not only price, but changing context, culture, habits and needs.

- 5.5. We suggest that engagement with local communities and transport activist groups from the start – rather than consulting them on all-but-finalised plans – is key for success, both in terms of buy-in and in terms of locally appropriate plans. With that, we stress that local governments do not have the capacity to implement these plans without central government support.
- 5.6. An alternative approach can be found in New Zealand's Ministry of Transport Future Demand project (see Lyons 2014, for example⁹), which considered how a future transport system might evolve in order to support demand for mobility in the future. This was a move from 'predict and provide' to debating desirable futures and providing for them.

6. COVID-19

- 6.1. This call for evidence proceeds the COVID-19 crisis, but the resulting plan will be implemented in its aftermath. Whilst the long-term impact of COVID-19 is yet to emerge we would recommend the following considerations.
- 6.2. The immediate impacts of COVID-19 will increase social inequality in relation to transport, given the widespread economic hardship faced by large swathes of the UK in the aftermath of the inevitable recession. Affordable, accessible and safe low-carbon mobility will be a critical addition to low-income periphery areas that rely on travelling to urban centres for work, particularly as millions will be seeking new employment - transport connections are vital for enabling many people to get to work.
- 6.3. Dominant narratives in transport are difficult to break, but extreme events can do just that. The pandemic has made the impossible now look possible, and drastic changes to the transport system may be possible which would have previously been thinkable. National and local transport decision makers should be encouraged to take advantage of this unique window of opportunity and consider wider mobility aims when they draw up plans to get us through the crisis and beyond.
- 6.4. As an example of this, many European cities are beginning to encourage cycling to avoiding crowding on public transport, with France offering a national subsidy scheme to encourage increases in cycling. The UK should also be leading on supporting accessible and viable low-carbon travel options in the aftermath of the coronavirus crisis, addressing a need for physically distanced travel and sustainable travel options. We therefore welcome recent announcements of greater funding for walking and cycling infrastructure (such as cycle lanes) during the period leading us out of lockdown; this increased investment should continue long term to embed emerging changes in mobility behaviour.
- 6.5. There is a considerable risk that public transport becomes associated with an increased likelihood of contracting COVID-19 (or other contagious diseases), which could potentially push modal shift the 'wrong way' towards private cars. Careful management of both practical measures to reduce infection risk and public messaging will be needed to ensure that the short term need to reduce pressure on public transport does not become a permanent trend towards individual car use.

⁹ <https://www.transport.govt.nz/multi-modal/keystrategiesandplans/strategic-policy-programme/future-demand/#publications>

7. Further Information

For further detail on any aspect of this submission, please contact Ed Dearnley (SEG Programme Manager) on 01273 873471 or e.dearnley@sussex.ac.uk.

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