

## Written evidence submitted by Greener Transport Solutions (EVP0094)

### Executive Summary

- We welcome this inquiry as it puts a spotlight on two issues central to decarbonising transport. We need to accelerate the shift to zero emissions vehicles. At the same time, some form of road pricing will be essential. Firstly, to replace diminishing fuel duty receipts as the vehicle fleet gets cleaner. Secondly, to reduce vehicle mileage.
- There is no such thing as a zero emissions car. Simply replacing ICEs risks locking in car dependency and increasing congestion. The manufacture and disposal of batteries, vehicles, electricity generation and civil engineering must also fully decarbonise. We need to shift to a much more intensive use of a smaller fleet of vehicles and to encourage behaviour change.
- Road traffic will increase unless we transition from fuel duty to a new way of paying for road use. A pricing mechanism will be needed to manage demand and encourage a switch to more sustainable modes. The challenge we face is how introduce in road pricing in a way which can be delivered politically, and which doesn't disintentionalise the switch to electric vehicles.
- The switch to EVs provides the opportunity for an honest conversation with the public about road taxation. It would be inequitable in the extreme if road infrastructure was financed from general taxation. This would mean non car owners, a high percentage on low income, cross subsidising motorists.
- Five key themes have emerged from Greener Transport Solutions research into decarbonisation: i) we must internalise external costs; ii) the transition to must be fair and equitable; iii) we need a whole-systems approach that includes digital connectivity, and integration with energy and green finance; iv) we must reform transport appraisal, funding and governance; v) technical solutions alone will not be sufficient, we also need behaviour change.

### ***About Greener Transport Solutions***

***Greener Transport Solutions (GTS)*** is a non-profit organization dedicated to the decarbonisation of transport set up by Claire Haigh, formerly CEO of sustainable transport group Greener Journeys. Through the **Transport Knowledge Hub (TKH)**, GTS works with local and central Government and the transport community to encourage investments that will facilitate inclusive and sustainable economic growth.

GTS has received grant funding from the **Foundation for Integrated Transport** to develop a 'Manifesto for Decarbonising Transport'. The work seeks to develop a credible and deliverable framework for decarbonising transport whilst mitigating any negative social impacts. It aims to build a broad coalition of support for some of the politically challenging solutions needed if we are to achieve our carbon reduction targets. The work is overseen by a Council of academics and experts [Appendix I] and includes a thought leadership programme [Appendix II].

## **Accelerating the shift to zero emission vehicles**

### **The feasibility, opportunities, and challenges presented by the acceleration of the ban of the sale of new petrol and diesel vehicles to 2030.**

Transport is the worst performing sector of the UK economy on reducing emissions and road vehicles are responsible for 90% of transport emissions<sup>1</sup>. Transport emissions are 4% higher than in 2013, and only 3% lower than in 1990<sup>2</sup>. Rising demand for car and van travel is one of the central reasons why transport emissions remain stubbornly high. Progress to improve efficiency of new vehicles has been largely offset by their increased use, and the tendency to larger vehicles. Average CO2 emissions of new cars increased in 2017, 2018 and 2019.<sup>3</sup>

The 2030 ban on sales of new petrol and diesel cars and vans will certainly address accelerate the shift to electric vehicles (EVs). However, whilst EVs are an important part of the solution to the net zero challenge, but they are not a panacea.

In his blog for the Decarbonising Transport [Professor Greg Marsden](#) argues that simply replacing ICEs (conventionally powered vehicles) with EVs risks locking in car dependency. We should reduce our carbon footprint by shifting to a much more intensive use of a smaller fleet of vehicles, and we must focus on reducing emissions from all cars. There are still too many high emitting vehicles being made and sold (and bought) and these will remain in use well in to the 2030s. Researchers at the University of Leeds and UKERC found that 20% of cars sold are currently SUVs whilst only 2% are electric vehicles<sup>4</sup>.

We need a whole system approach. Professor Marsden points to research involving the DfT's Chief Scientific Advisor which suggests that EVs will not deliver major whole-life carbon benefits over ICEs until 2030 and beyond as the grid decarbonises. As the production processes shift to using renewable energy whole lifecycle benefits of EVs will grow, but today there is no such thing as a zero emissions vehicle. There are also some hugely difficult questions over how to sustainably extract and fairly distribute critical materials for batteries at scale across the global economy.

If we electrify without sorting out how to transition away from fuel duty, road traffic would increase by nearly 600 billion miles over the period to 2050 as motoring becomes cheaper<sup>5</sup>. We have not yet resolved how to manage the upgrade to the grid, how smart charging might work, and who is going to pay for it<sup>6</sup>. There are real risks that the less well-off car-dependent groups and the 25% of households who do not own cars will be disadvantaged.

One of the most obvious immediate benefits of switching to EVs is the reduction in local air pollutants such as NOx emissions. However, these air quality benefits will be undermined if in reducing the running costs of motoring, EVs lead to more traffic and congestion on our roads, with slower traffic speeds causing increased pollution from other vehicles on the road. It is also very important to reduce the number of vehicles if we are to tackle tyre particulate pollution, which is increasingly recognised as a serious health issue.

### **The actions required by Government and private operators to encourage greater uptake of electric vehicles and the infrastructure required.**

Lack of charging infrastructure is one of the biggest barriers to take up. Consumer confidence to buy EVs will require a massive scaling up of charging points. In February 2020 it was estimated in 2020 that there were just over 30,000 public EV chargepoint connectors available in the UK shared between around 230,000 plug-in vehicles. A

wholesale transition to EVs for all 32 million cars registered in the UK would require more than four million chargepoints.

The production of batteries is another big challenge. Currently most batteries for British cars are imported from China, Japan and South Korea. The UK has only one small battery plant in Sunderland supplying the Nissan production line. Not only does manufacturing need to scale up, but work is needed to develop a new circular end-of-life supply chain for the electric vehicle industry. Without proper provision, end of life batteries could become a major safety and environmental concern<sup>7</sup>.

The gulf in car prices is also problematic, with EVs costing approximately £10,000 more than cars with an internal combustion engine (ICEs). Grants play an important role in making EVs more widely affordable. EVs are typically owned by people in the richest two income deciles. Only 4% of EVs are owned by people in the lowest two income deciles<sup>8</sup>. Households in the bottom 40% mostly buy second-hand cars, and the second-hand car market for EVs is underdeveloped.

These affordability and equity issues must be addressed, but they are likely to be short term. International Council for Clean Transportation estimates that in the UK EVs are already 5% cheaper to own over a four-year period, and these savings will increase as EVs become more affordable<sup>9</sup>. Battery prices are falling rapidly, and we could expect parity on price of EV and ICE as early as the mid-2020s. If this happens, and we haven't introduced road pricing, there is a very real risk that lower running costs will cause traffic to increase, worsening both congestion and pollution.

[Professor Marsden](#) emphasises that we must focus not only on when to stop selling ICEs but how we should electrify as part of a carbon pathway that delivers deep cuts right now. The work of the DecarboN8 network is based around building on the idea of Technology Readiness Levels (EVs are here) to Societal Readiness Levels (we know how to deploy EVs as part of a low carbon future we want). This will include rebalancing road space between cars, buses, cycling and walking; not locking-in car dependency by assuming we just replace ICEs with (more) EVs; and reducing our carbon footprint by shifting to much more intensive use of a smaller fleet of vehicles and other e-micromobility solutions.

### **The particular challenges around decarbonising buses and how these should be addressed.**

Buses have an important role to play in decarbonising transport by reducing overall traffic volumes. A double decker bus can take 75 cars off the road. However, prior to the COVID-19 crisis bus use in Britain was falling at a rate of between 1% and 1.5% per year. During the initial phases of the COVID-19 crisis, bus use fell to less than 20% of pre-crisis levels. There remains significant uncertainty surrounding the shape and speed of patronage recovery. The Government's "avoid public transport" message may lead to lasting changes to passenger behaviour.

Once demand has recovered to a new steady state, there will be little benefit in investing in zero-emission vehicles if the vehicles become stuck in traffic and are not fully utilised. Since the 1960s congestion has been causing bus speeds to slow down by on average 10% per decade, causing bus patronage to decline by 10-14%<sup>10</sup>. Slower traffic speeds cause emissions

to rise. Halving average city traffic speeds leads to a 50% increase in harmful NOx emissions from larger vehicles<sup>11</sup>.

Whilst new vehicles will support decarbonisation, they will do little in themselves to increase patronage. To do this we need to improve fares, frequencies, journey times and service reliability. This in turn will help to improve the financial sustainability of local bus networks, creating an environment which supports capital investment in infrastructure and vehicles. Research commissioned by Greener Journeys and the Department for Transport explored how £2 billion could be used to transform services in England outside of London<sup>12</sup>.

The research, which was undertaken by KPMG, considered different ways that this funding could be allocated. KPMG adopted an approach based on the economic principles of efficiency and equity, pursuing twin objectives to maximise growth in passenger journeys for each £1 of new investment and levelling-up services to allow each local area to reach its potential in terms of patronage per capita.

The analysis suggested allocating 44% of the £2 billion for transforming services to metropolitan areas, 44% to urban and semi-urban areas and 12% to rural areas. The investment mix between capital and revenue will vary between areas and will be influenced by the speed and shape of the recovery to COVID-19. That said, achieving a balance between economic efficiency and equity would mean that on average between 60% and 70% of the £2 billion would be spent on infrastructure and between 30% and 40% on supporting fares and additional services.

The challenge for the DfT in developing its new National Bus Strategy will be to manage the tension between efficiency and equity, making sure that it gets the best return on investment whilst at the same time making sure that no place is left behind. Given the importance of good public transport networks to local communities, the focus needs to be on making the right investments in the short and medium terms to support decarbonisation, whilst also improving economic connectivity and social accessibility and strengthening the financial sustainability of the sector.

### **The Government's ambition to phase out the sale of new diesel heavy goods vehicles, including the scope to use hydrogen as an alternative fuel.**

There are major technical challenges in terms of electrifying long-haul, heavy duty vehicles and heavy goods vehicles. Inadequacies around battery capacity for HGVs, coupled with the need for regular recharging, make the EV offering unattractive. Similar concerns are felt in remote communities particularly for rural public transport and emergency services where an EV is simply not a practical alternative to a petrol or diesel vehicle.

There is growing interest in hydrogen vehicles (HVs) as potentially a more suitable solution for longer bus routes and heavier vehicles, although investment remains a long way behind that of EVs. A blog by [Addleshaw Goddard](#) discusses this subject. The refuelling infrastructure in the UK 'desperately requires expansion'. There are just 16 HV charge stations across the UK compared to over 30,000 EV charge points. Germany has pledged to have 400 HV refuelling stations operational by 2023.

The Government seems determined that the UK won't be left behind. "Driving the Growth of Low Carbon Hydrogen" is on the PM's Ten Point Plan. In September 2020 Transport Minister Rachel Maclean announced the first Hydrogen Transport Centre in Tees Valley.

There is growing interest across industry and stakeholders. The [North West Hydrogen Alliance](#) seeks to capitalise on the opportunity to lead the development of a hydrogen-based economy.

Wrightbus a bus manufacturer based in Northern Ireland, has produced the world's first hydrogen electric double decker bus. In a blog for the Decarbonising Transport series, [Wrightbus outline their ambition](#) to deliver 3,000 hydrogen buses, which would be about 10% of the country's total fleet, into towns and cities across the country by 2024. These buses will be powered by green hydrogen produced from five Ryse Hydrogen production plants connected to offshore wind farms around the UK coastline.

## Road pricing

### **The case for introducing some form of road pricing and the economic, fiscal, environmental and social impacts of doing so.**

The main conclusion [Transport Knowledge Hub \(TKH\) Workshop 'Decarbonising Transport'](#), was that we need a total reformulation of transport pricing. The principle that the polluter should pay must be central. Professor Dieter Helm describes “making polluters pay” as the single most radical and effective policy that could be adopted both for economic prosperity and for the environment<sup>13</sup>.

The failure of road taxation to cover external costs means that we over consume roads. The fuel duty escalator was first introduced in 1993 as an environmental tax, to stem the increase in pollution from road transport. However, since the fuel duty protests in 2000 levying any additional charges on road users has become politically toxic. The freeze in fuel duty since 2011 has caused 5% more traffic, an additional five million tonnes of CO2 emission and a quarter of a billion fewer bus journeys and 75 million fewer rail journeys<sup>14</sup>.

Road pricing has been one of the best fiscal changes that any government could have made over the last generation. It has always been the most effective way to tackle traffic congestion and reduce pollution but now there is a fiscal imperative as the government faces a £40 billion hole in its public finances with the advent of electric vehicles. Some £28bn was paid last year in fuel duty. A further £6bn came from VAT on fuel, while another £6.5bn from vehicle excise duty.

The fiscal implications of the 2030 ban on sales of new petrol and diesel cars and vans will have to be addressed. Crucially, the ban on its own won't bring about the necessary reductions in emissions from road transport. Even with all new car sales being ultra-low emission (ULEVs) by 2030, at least 40% of the fleet will still be petrol or diesel. It is estimated that we will still need to reduce traffic on our roads by anywhere between 20% and 60% by 2030<sup>15</sup>.

Some form of road pricing will be needed to manage demand. The inefficiency of our current transport system is already staggering both in terms of carbon and movement of people. The car is used for 61% of trips; 62% of car trips are single occupancy<sup>16</sup>. The RAC Foundation calculates that 96% of the car fleet is stationary at any given time<sup>17</sup>. A big risk is that in lowering the cost of motoring, electrification will make mode shift to public transport and active travel even harder to deliver. Road pricing would mitigate this risk and be a boost for public transport.

## **Which road pricing or pay-as-you-drive schemes would be most appropriate for the UK context and the practicalities of implementing such schemes**

The tricky problem to solve is how to phase in road pricing in a way which can be delivered politically and doesn't disintentionalise the switch to electric vehicles. [Professor David Begg](#) recommends that government de-risks this politically by setting up a commission with cross party representation to agree a way forward. It should delegate authority to the Office of Road and Rail (ORR) in consultation with the Office of Budget Responsibility (OBR) to set motoring taxation.

The precedent for this is taking the politics out of the setting of interest rates and leaving it to the Bank of England to make the decisions which are right for the economy. In the same way that the government asks the Bank of England to meet inflation targets they should ask the ORR/OBR to establish the right level and mix of motoring taxation to meet targets in public finances, road infrastructure spend and set targets for congestion and air quality.

Begg suggests that one of the first proposals from the ORR/OBR that we could anticipate is a ten-year trajectory for fuel duty increases to encourage the switch to electric vehicles and to set a date for the introduction of road pricing based on distance and congestion. We must not make the mistakes we made 20 years ago when motorists were encouraged to buy diesel cars. We need to give road users at least a ten-year horizon of how motoring taxation is going to evolve yearly.

[Dr Steve Melia](#) argues that we cannot rely on electrification plus road pricing to decarbonise transport fast enough. In the short-term, we should raise fuel taxes and try some urban congestion charging where the political will exists, but supplement this with many other measures, including well-designed scrappage schemes, to reduce the number of petrol and diesel vehicles as rapidly as possible. [David Bayliss, Stephen Glaister and Tony Travers](#) argue that whilst in the longer term the answer is road user charging, in the meantime increasing fuel duty would be a useful interim measure.

There has been a systematic reduction in fuel duty after allowing for price inflation from about 80 pence per litre in the late 1990's to 58 pence per litre. This creates headroom to partially restore it to generate new revenues. To make any increase in fuel duty less unacceptable to the public, Bayliss et al propose that the incremental revenue should be ring-fenced and made available to local authorities for beneficial transport purposes. One way to do that would be to use public trusts as these legally require trustees to use money for a dedicated purpose<sup>18</sup>.

A report by Professor Begg for Greener Transport Solutions, to be published Spring 2021, will set out proposals for a politically deliverable national road pricing scheme which will accelerate the take up of electric vehicles in a way which will support the levelling up agenda, boost UK manufacturing and make the UK a climate leader on the decarbonisation of transport. Begg argues that there will be little appetite at Whitehall for a "Big Bang" for a big bang approach. Instead, the way forward will be to incentivise road users to opt in to a new way of paying for road use.

**The level of public support for road pricing and how the views of the public need to be considered in the development of any road pricing scheme.**

The showstopper on road pricing has been that it is seen as politically too difficult. Since the fuel duty protests in 2000, and the referendums on congestion charging in Edinburgh and Manchester, levying any additional charges on road users has become politically toxic. Successive governments have refused to put a penny on fuel duty for the past decade, despite the fact that the price of fuel at the pump has been at an all-time low and we have been through a period of austerity.

As public concern about environmental issues grows, it is tempting to surmise that opinion could be shifting. The UK Climate Assembly reported that 56% supported charging for use of roads, against only 39% who did not. However, what people say in surveys is not always aligned with behaviour. Overall, the Assembly concluded that people prefer technological solutions to cutting travel demand “minimizing restrictions on travel and lifestyles, placing the emphasis on shifting to electric vehicles and improving public transport, rather than on large reductions in car use.”<sup>19</sup>

What has changed, however, is that we now face a new dilemma. With petrol and diesel vehicles to be replaced, who pays for Britain's roads? This point is recognised by the RAC. As revenue from fuel duty declines “it’s inevitable that a new system will need to be developed”. RAC research shows around four-in-10 drivers believe that some form of ‘pay-per-mile’ system would be fairer than the current system of fuel duty, while half (49%) agree that the more someone drives the more they should pay in tax. But any new system must not be used as a way to increase the tax burden on them, and tax revenues from any replacement for fuel duty should be “solely reinvested back into the road network”.<sup>20</sup>

A key conclusion of the [TKH Decarbonising Transport workshop](#) was that that consideration should be given to how today’s digitally connected society could support personalised mobility pricing. We should avoid terms like ‘road pricing’ and ‘congestion charging’ as these are toxic and politically undeliverable. Instead, we should use terms like ‘eco-charge’ and ‘eco-levy’. We should also focus on air quality benefits to build support for road pricing scheme. TfL’s ULEZ shows how pricing can successfully be used to change behaviour when it is linked to air quality.

The switch to EVs provides the chance for an honest conversation with the public about road taxation. We need a system that can levy tax on both conventionally fuelled and electric vehicles fairly. It would be inequitable in the extreme if road infrastructure was financed from general taxation. This would mean non car owners, a high percentage of them on low income, cross subsidising motorists.

### **The lessons to be learned from other countries who are seeking to decarbonise road transport and/or utilise forms of road pricing.**

Norway has the most ambitious EV target in the world, with all new cars to be ULEV by 2025. By 2018 already 45% were ULEV. Measures have included tax incentives, free parking, free access to bus lanes and no charges on toll roads. Whilst the policy has been extremely successful in terms of take up of EVs, it has also encouraged more driving. Public transport's share of commuting has fallen from 23% to 6%. The car's share has risen from 65% to 83%<sup>21</sup>.

One key lesson is that we must avoid public transport becoming a major casualty of the roll out of EVs. Another lesson is that some form of road pricing will be needed to manage

demand. Today just five major cities around the world have congestion pricing systems. Singapore's Electronic Road Pricing (ERP) system was the first to be introduced, in 1975. Schemes have been implemented in London, Stockholm, Milan and Gothenburg, and scheme is to be introduced in New York City by 2023.

Stockholm's congestion pricing system is a leading example of how to implement a successful scheme whilst at the same time winning public support. The Swedish government developed a road-charging system that included park and ride services and improvements to public transport. They then implemented the scheme on a trial basis, with a pilot programme lasting six months from January 2006.

According to the polls, 60 to 70 percent of people were against the programme right up until the moment it began. However, once the trial went live public confidence grew. Buses started to run on time, and people noticed a difference in air and noise quality. Traffic levels stayed down about 25 percent, surpassing the original targets of 10 to 15 percent. After the pilot ended, the government released a referendum. Stockholm residents voted in favour. The scheme was relaunched in 2007 and has been running ever since.

The key elements to Stockholm's success were enhancements to the transit system – it was recognised to be important to give people options besides cars – and, crucially, the Swedish government took the public with them. Communications about the benefits of improved air quality and reduced levels of CO2 and congestion were important – and that funds gathered would be funnelled back into Stockholm's infrastructure. “The taxes went back to the people”<sup>22</sup>.

February 2021

## **APPENDIX I: GREENER TRANSPORT COUNCIL**

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Professor Jillian Anable, Chair in Transport and Energy, Institute for Transport Studies, University of Leeds

Stephen Glaister, Emeritus Professor of Transport and Infrastructure at Imperial College London, Associate of the London School of Economics

Professor Peter Jones, Professor of Transport and Sustainable Development in the UCL Centre for Transport Studies

Professor Glenn Lyons, Mott MacDonald Professor of Future Mobility, University of the West of England

Professor Greg Marsden, Professor of Transport Governance, Institute for Transport Studies, University of Leeds

Stephen Joseph, Visiting Professor at University of Hertfordshire and Trustee of the Foundation for Integrated Transport

Paul Champion, CEO of TRL

Hilary Chipping, CEO South East Midland Local Enterprise Partnership

Andy Eastlake, Managing Director Low Carbon Vehicle Partnership

Claire Haigh, CEO of Greener Transport Solutions

Anthony Smith, CEO of Transport Focus

Kamal Panchal, Senior Adviser on Transport and Local Growth Policy, LGA

## **APPENDIX II: DECARBONISING TRANSPORT BLOG SERIES**

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The Decarbonising Transport project in partnership with *Transport Times* and the Transport Knowledge Hub (TKH) brings together thought leadership and insight on how to decarbonise the sector.

The blog series builds on the [TKH Decarbonising Transport workshop](#) which was held on 3<sup>rd</sup> March 2020. Contributions published so far:

[Lilian Greenwood, MP, Chair of the Transport Select Committee 2017-2019](#)

[Baroness Randerson, Liberal Democrat Transport Spokesperson, House of Lords](#)

[Lord Randall of Uxbridge, Chair of the Essex Climate Action Commission](#)

[Lord Burns, Chair of the South East Wales Transport Commission](#)

[Professor Dieter Helm, Professor of Economic Policy at the University of Oxford](#)

[Stephen Glaister, Emeritus Professor of Transport and Infrastructure at Imperial College London and Associate, The London School of Economics and Political Science \(LSE\); Tony Travers is a Visiting Professor in LSE Department of Government and Director of LSE London; David Bayliss independent consultant.](#)

[Professor Corinne Mulley and Professor John Nelson, Institute of Transport and Logistics Studies, The University of Sydney Business School](#)

[Dr Steve Melia, University of the West of England](#)

[Professor Laurence Pickup, International Director Vectos](#)

[Professor Greg Marsden, Professor of Transport Governance, Institute for Transport Studies, University of Leeds](#)

[Professor David Begg, Chief Executive of Transport Times](#)

[Professor Glenn Lyons, Mott MacDonald Professor of Future Mobility, UWE Bristol](#)

[Stephen Joseph, visiting Professor at the University of Hertfordshire Smart Mobility Unit](#)

[Dr Rachel Aldred, Professor of Architecture and Cities at the University of Westminster](#)

[Jamie Driscoll, Mayor of the North Tyne Unitary Authority](#)

[Henri Murison, Director of the Northern Powerhouse Partnership](#)

[Paul Campion, CEO TRL](#)

[Dr Stuart Thomson, BDB, Pitmans](#)

[Sarah Baillie, Planning and Infrastructure Consenting Partner at Addleshaw Goddard](#)

[Giles K Bailey, Director at Stratageeb Ltd](#)

[Thomas Ableman, Founder & CEO of Snap Travel Technology](#)

[Tim Anderson, Group Head of Transport, Energy Savings Trust](#)

[Simon Dixon and Justine Bornstein, Deloitte](#)

[Neil Wallis, Head of Communications, Low Carbon Vehicle Partnership](#)

[Jim Steer, Director Greengauge 21](#)

[Keith Moverley, Major Projects Director, SYSTRA](#)

[Claire Haigh, CEO Greener Journeys & TKH Executive Director](#)

[Oliver Lord Head of Policy and Campaigns for Environmental Defense Fund Europe](#)

[Simon Jones, a former SpAd at Dft and No10](#)

[Katy Taylor, Chief Strategy and Customer Officer, Go Ahead Group](#)

[David Davies, Executive Director of the Parliamentary Advisory Council for Transport Safety \(PACTS\)](#)

[Tim Robinson, CEO of Duddle](#)

[Joan Walley, Chair of the Aldersgate Group](#)

[Rt Hon Norman Baker, Transport Minister from 2010-2013 advisor to the Chief Executive at Campaign for Better Transport](#)

[Hannah Bartram, Chief Operating Officer for the Association of Directors of Environment, Economy, Planning & Transport](#)

[Claire Haigh, CEO Greener Journeys & TKH Executive Director](#)

[Stephen Bennett, chair of the Transport Planning Society](#)

[Robert Samson, senior stakeholder Manager at Transport Focus](#)

**Frazer Henderson, Head of Rail Policy at Transport Scotland**

**Richard Dilks, Chief Executive of CoMoUK (Collaborative Mobility UK)**

**Dr Ashok Sinha, Chief Executive of the London Cycling Campaign**

**Jodie Dunz, an associate at Addleshaw Goddard**

**Andrea Lee, clean air campaigns manager at environmental law charity ClientEarth**

**Jools Townsend, Chief Executive at Community Rail Network**

**Darren Shirley, Chief Executive, Campaign for Better Transport**

**Jenni Wiggle, Interim CEO of Living Streets**

**Claire Haigh, CEO Greener Journeys & TKH Executive Director**

**Dr Steve Melia, Senior Lecturer in Transport and Planning, Centre for Transport and Society, University of the West of England**

**Buta Atwal, Chief Executive of Wrightbus**

**Claire Haigh, CEO Greener Journeys & TKH Executive Director**

## **Endnotes**

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<sup>1</sup> [The Road to Zero, HM Government, 2018](#)

<sup>2</sup> [Decarbonising Transport: Setting the Challenge, Department for Transport, 2020](#)

<sup>3</sup> [The Sixth Carbon Budget, Committee on Climate Change, 2020](#)

<sup>4</sup> <https://ukerc.ac.uk/news/suvs-sabotage-green-revolution/>

<sup>5</sup> [Road Traffic Forecasts, Department for Transport, 2018](#)

<sup>6</sup> <https://decarbon8.org.uk/smart-charging/>

<sup>7</sup> [https://warwick.ac.uk/newsandevents/pressreleases/wmg\\_part\\_of\\_new\\_elv\\_car\\_battery\\_project\\_1](https://warwick.ac.uk/newsandevents/pressreleases/wmg_part_of_new_elv_car_battery_project_1)

<sup>8</sup> [Electrifying the UK, Ensuring the transportation revolution benefits everyone, Frontier Economics and Environmental Defense Fund 2019](#)

<sup>9</sup> <https://www.theguardian.com/environment/2019/feb/12/electric-cars-already-cheaper-own-run-study>

<sup>10</sup> [The Impact of Congestion on Bus Passengers, Professor David Begg, September 2016](#)

<sup>11</sup> [Tackling Pollution and Congestion, Professor David Begg, Claire Haigh 2017](#)

<sup>12</sup> [Maximising the Benefits of Local Bus Services, KPMG, 2020](#)

<sup>13</sup> <http://www.dieterhelm.co.uk/books/> Green and Prosperous Land: A Blueprint for Rescuing the British Countryside, March 2019

<sup>14</sup> [The Unintended Consequences of Freezing Fuel Duty, Prof David Begg & Claire Haigh](#) First published in 2018, subsequently updated in 2020.

<sup>15</sup> [More than electric cars, Transport for Quality of Life briefing for Friends of the Earth, December 2018](#)

<sup>16</sup> [Shared Mobility: Where now? Where next? Commission on Travel Demand, CREDS, September 2019](#)

<sup>17</sup> [Spaced out: Perspectives on Parking Policy, published by RAC Foundation 2012](#)

<sup>18</sup> [Funding Transport, Stephen Glaister, Tony Travers, David Bayliss, March 2020](#)

<sup>19</sup> [The Path to Net Zero, Climate Assembly UK, Full Report, September 2020](#)

<sup>20</sup> <https://www.rac.co.uk/drive/news/article/43742/>

<sup>21</sup> [More than electric cars, Transport for Quality of Life briefing for Friends of the Earth, December 2018](#)

<sup>22</sup> <https://www.ibm.com/blogs/industries/stockholm-congestion-pricing-iot-analytics-government/>