BVRLA

Road to Zero:
time to shift gear on tax

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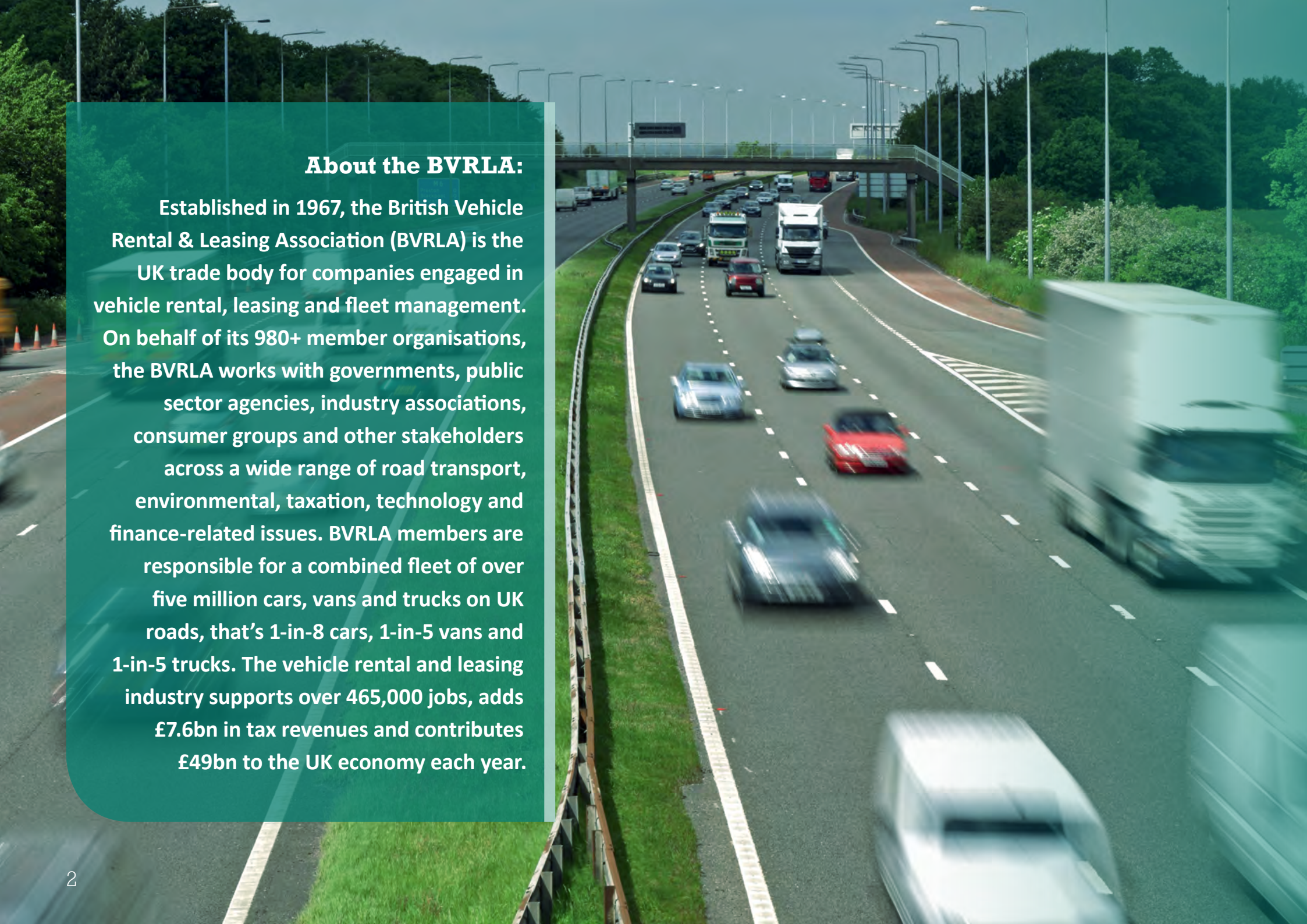


About the BVRLA:

Established in 1967, the British Vehicle Rental & Leasing Association (BVRLA) is the UK trade body for companies engaged in vehicle rental, leasing and fleet management. On behalf of its 980+ member organisations, the BVRLA works with governments, public sector agencies, industry associations, consumer groups and other stakeholders across a wide range of road transport, environmental, taxation, technology and finance-related issues. BVRLA members are responsible for a combined fleet of over five million cars, vans and trucks on UK roads, that's 1-in-8 cars, 1-in-5 vans and 1-in-5 trucks. The vehicle rental and leasing industry supports over 465,000 jobs, adds £7.6bn in tax revenues and contributes £49bn to the UK economy each year.

Time to shift gear on tax

Tax is a vital weapon in any government's policy armoury. Used in the right way, it can mobilise businesses and drive innovation or behaviour change. When poorly devised or implemented, it can damage whole industries and encourage avoidance or evasion.

Introducing a new tax is risky, so it is not surprising that policymakers have preferred to tweak – in some cases freeze – existing motoring measures.

The advent of increasingly connected, electric and shared road transport is challenging this fiscal status quo. Today's CO_2 emissions-based tax regime has a limited shelf-life and is not effective enough in tackling increasingly devolved policy priorities, such as urban air quality and congestion.

As the owners and operators of more than five million cars, vans and trucks, BVRLA members are at the centre of this automotive revolution. These companies buy nearly half of all vehicles sold in the UK and are responsible for almost 20% of used car sales. Together with their customers, they contribute an estimated £7bn per year in car-based Fuel Duty, Vehicle Excise Duty and Benefit-in-Kind tax.

The Government's Industrial Strategy sets out two transport-related 'Grand Challenges' focussed on clean growth and the future of mobility. BVRLA members will play a crucial role in delivering these goals, by providing affordable, flexible and increasingly zero-emission transport to millions of people and businesses. To play their part in the coming revolution, they will need a simple, fair and well-signposted tax regime.

To put it bluntly, motoring tax needs a rethink. Failure to act now or even signal the direction of future taxation is already threatening to hold back the Road to Zero vision.

We are very grateful to our colleagues at the RAC, Zenith, DriveNow, Ricardo, Energy UK, BP Chargemaster, Cambridge Econometrics, the Centre for Economics and Business Research and the Centre for London, for sharing their perspectives and starting this conversation.

Equally, we extend our thanks to Mary Creagh MP and Neil Parish MP for their opening remarks and to Paul Johnson of the Institute for Fiscal Studies for his conclusions and summing up.

Gerry Keaney
Chief Executive, BVRLA

Parliamentary perspectives

The government has clear ambitions to reduce carbon emissions, improve air quality and encourage a transition to the predominant use of electric vehicles. At the same time, it also rightly wants to protect tax revenues and maintain the automotive sector as a key pillar of the UK's Industrial Strategy.

Our Committee, along with the Health and Social Care and Transport Select Committees, found in our joint March 2018 report on improving air quality, that it is essential for government to align current climate change schemes, urban planning, public transport and fiscal incentives with air quality goals, if these ambitions are to be fully realised. Failure to do so will mean government policy continuing to work at cross-purposes.

This British Vehicle Rental and Leasing Association report provides a very useful contribution to the debate about the future of vehicle taxation. The vehicle leasing and rental sector is responsible for more than one in every seven vehicles on the UK's roads. It provides a significant boost to the automotive sector and can help the UK lead the manufacturing of electric vehicles. It brings valuable insight into what drives purchasing behaviour and demand in the automotive sector. This level of understanding can help the government achieve its clean air objectives more quickly.

We believe the government has a good opportunity to work with the sector to increase electric vehicle uptake, support the car industry as a driver of jobs and economic growth and provide a long-term, sustainable and environmentally-focused tax base that continues to support government revenues and clean air policy objectives.

We welcome this report as an important contribution to the conversation about making a success of this change and urge government to take note of its practical policy solutions to ensure greater alignment between fiscal policy and wider departmental ambitions.

Neil Parish MP
Chair, Environment, Food and Rural Affairs Select Committee

Mary Creagh MP
Chair, Environmental Audit Select Committee

About the RAC:

The RAC has been serving the needs of motorists since 1897. With more than 8 million members in both the private and business sectors its roadside patrols attend over 2 million call-outs a year. Through its annual "Report on Motoring" it also offers a widely respected analysis of British motoring sentiment.

Background

In 2007, a petition on the Downing Street website opposing the introduction of road pricing attracted more than one million signatures. The then Labour government decided to shelve the idea for fear that it would lead to serious disapproval at the ballot box. In the ten years since, the automotive sector has been transformed, with most manufacturers offering plug-in hybrid vehicles and others actively setting targets to fully electrify their models. With the current motoring taxation regime linked heavily to carbon dioxide emissions, the system is on borrowed time and it's now a question of when road pricing will be back on the table again.

Motorists recognise the need to decarbonise

From the point of view of most drivers, owning a pure-electric vehicle still seems quite a long way off. The 2018 RAC Report on Motoring asked 1,808 drivers about when they believe they will be driving a pure electric vehicle and what they want from it.

Our findings suggest we are still some distance from the 'tipping point' where consumers are actively looking at a pure electric vehicle as their first choice. For example, only 3% of drivers will purchase a pure electric vehicle as their next choice while a small but more appreciable 7% would opt for a zero-emission capable plug-in hybrid. Motorists tell us that the minimum range before having to recharge the vehicle would need to be, on average, 390 miles. Only 4% would consider replacing their vehicle with a pure electric vehicle if it had a battery range of 150 miles, the realistic figure a would-be buyer can expect today from an affordable electric vehicle. >>

"The elephant in the room has always been how to fill the £27bn blackhole caused by the collapse in fuel duty…. As vehicles become more connected and telematics more affordable, some form of road pricing is the most logical replacement."

The findings show the maximum time motorists would want to wait to fully recharge the vehicle mid-journey would need to be on average 40 minutes and within a five-minute detour. Only 36% of drivers see themselves switching to a pure electric vehicle within ten years, though many are undecided.

Our research suggests that motorists recognise the need to decarbonise vehicle fleets and are willing to play their part, but we will not see a mass take-up of pure electric vehicles until the building blocks are in place. In essence, this means affordable vehicles with a combination of range and recharging times that are as convenient for the user as conventional vehicles. This in turn requires a recharging infrastructure that is quite different to today's – on-street charging for all of those without off-street parking where they live; facilities in every shopping centre, leisure centre and car park as well as motorway service stations. The private sector will be reluctant to invest in these until we have greater standardisation of charging rates and points, rather than the "VHS-Betamax" situation that exists today.

Just another tax on motoring?

While there has been much written about the quickest way to reach the sector's zero-emission goals, the elephant in the room has always been how the Treasury should fill the £27bn blackhole that would occur from the collapse in fuel duty revenues. Similarly, with Vehicle Excise Duty rated at zero for zero-emissions vehicles, we need to mitigate the impact of this on VED revenues (currently around £6bn per year) and the roads fund for which VED will by hypothecated from 2020/21.

With vehicles becoming more connected and telematics becoming more affordable, many agree that some form of road pricing is the most logical replacement for fuel duty revenues. But given the public reaction to road pricing in 2007, have policy makers really given thought to how this can be sold to the motoring public as fair and reasonable?

There is evidence that motorists' opposition to the principle of road pricing is softening. The RAC's Report on Motoring asks tracker questions each year to monitor how opinions are changing over time. In 2014, only 28% agreed that they would be willing to pay per mile on all roads if it replaced some existing taxation, with 45% disagreeing. By 2018, more than one in three drivers (35%) said they would support the principle and significantly, opposition had fallen to 38%.

Perhaps concerns about privacy are no longer so entrenched, as many modern vehicles and all new smart phones have GPS technology? Or maybe, as traffic levels hit new record highs in 2017, motorists are becoming more open to the idea of paying for what you use as an alternative to being stuck in endless queues. The Mayor of London, in his transport strategy is now openly talking about charging per mile, which in the long term would signal the end of the Congestion Charge. Arguably, the biggest error that the Government made back in 2007 was failing to spell out what other taxation road pricing would replace. Essentially, drivers saw it as just another tax on motoring in addition to the taxes they were already paying. Whichever Government is brave enough to raise the issue again must explain why the new system will be fairer than the current system.

A seismic shift in how we tax?

In reality, the current approach to motoring taxation has evolved over many years and has become complex and confusing. A new system of road pricing is an opportunity to address these deficiencies and could incorporate some or all of the following:

- **A charge per mile on all roads.**
- **Variable rates – charging more per mile for heavily used major roads and much less per mile for quieter rural roads with different rates for peak-time travel.**
- **Even with increasing numbers of zero-emission vehicles, there may be a requirement to levy a surcharge on the rate per mile for more polluting vehicles. This depends on whether road charges are levied as well as, or instead of, fuel duty.**
- **Hypothecation of a proportion of road pricing revenues to fund the maintenance and development of the road network. This would give the system far greater transparency and make it much more acceptable for road users. Any such system would need a formula that takes account of local authority needs for local network infrastructure.**
- **A single national roads database would be required for the billing of vehicle mileage charges. Billing systems could mirror those available to mobile phone users with options to "pay-as-you-drive" or monthly and quarterly billing. Users should be offered access to the system to track their mileage with functionality mirroring the 'smart metering' of energy.**
- **Longer term, it might be possible to offer discounts to encourage safer driving based on similar technology to that used by some insurers to monitor driving style and assess the risk of accidents.**

Such a seismic shift in how we tax motoring would require phased introduction over a number of years. This would likely coincide with the increased take-up of zero emission vehicles on our roads, providing Government with the opportunity to manage the transition smoothly, minimise technical risk, and protect motoring taxation receipts.

While the RAC's research suggests there is less hostility towards road pricing among motorists than there was four years ago, it is incumbent on politicians to explain why such a system is required and how the transition will occur. This should be based upon the principle of fairness and outcome – you pay for what you use so its fairer than the current system; it's fiscally neutral; and a defined proportion of what you pay is reinvested back into the road network. If Government can convince the public of the fairness of such an approach, then they might find the reaction of motorists much more accommodating than it was in 2007.

About Zenith:

Zenith has been leading the way for 30 years and is respected by many of the UK's leading blue chip companies for delivering high quality vehicle solutions that support their strategic priorities. From bikes to cars, vans, trucks and trailers, whether it's one day or seven years, business critical, perk or personal; and being independent means we can be trusted to always do what's right for our customers.

Background

If the Government's Road to Zero provides a plan for de-carbonising the UK's automotive sector, it is Zenith and its counterparts in the wider fleet sector that will be largely responsible for delivering it.

The vehicle rental and leasing sector registers more than one in every seven vehicles on the UK's roads[1], buying nearly 50% of new vehicles sold annually, including around a third of all new electric and plug in hybrids[2]. As well as taking the financial risk and operational management of new zero-emission technology, it also advises tens of thousands of customers on the appropriate vehicles and powertrains for their needs. The reach, technical know-how and buying power of the sector means that it's a key partner for policymakers and every link in the electric vehicle supply chain.

Product and market dynamics

Figures from the BVRLA show that its members already own and operate over 50,000 plug-in vehicles. Most of these are plug-in hybrids leased to company drivers, but the proportion of pure electric vehicles is rising. The vast majority of these vehicles are cars but there's a great deal of pent-up demand for electric vans, which is currently being held back by a shortage of larger-capacity electric LCVs. >>

"It's clear that Zenith and other BVRLA members have a lot to offer the government on the Road to Zero but the current tax and infrastructure environment is failing to keep pace with policymakers' ambitions."

On the rental side, operators have so far struggled to find a scalable business model that involves pure EVs. EVs are more expensive than their petrol or diesel equivalents and customers are unwilling to pick up the resultant increased cost in rental charges. Range anxiety is even more of an issue for customers – particularly those that are not used to the technology and are unaware of the charging facilities available on their routes. The situation is different in London and some other cities, where car clubs have responded to rising concerns around air quality by introducing hundreds of pure EVs in recent months.

The fleet sector plays an equally influential role in the used car market, due to the number of vehicles they buy and the frequency of fleet replacement cycles (typically 3-5 years). Firms such as Zenith help to create a crucial reservoir of affordable, low emission vehicle options for businesses and individuals, who may find new options unaffordable or unobtainable. The leasing and rental sectors disposed of an estimated 1.4 million vehicles in 2017, accounting for 18% of all used vehicle transactions in that year[3], thereby supporting activity at the UK's used vehicle auctions and dealerships. The majority of electric cars and vans coming on to the used market over the next few years will be former lease or rental vehicles.

It's clear that Zenith and other BVRLA members have a lot to offer the government on the Road to Zero but the current tax and infrastructure environment is failing to keep pace with policymakers' ambitions.

Incentives and tax

Zenith is increasingly working with fleets on transition to cleaner fuels, helping them set targets and put policy in place to make more plug-in and electric cars available to drivers. Key to this transition is the incentives and taxation policy.

The high upfront cost of EVs mean they are currently out of the reach of many. To speed up transition, it's clear that incentives should stay in place until such a time as EVs achieve cost parity with their conventional equivalents or have an advantage over them. But when might we achieve cost parity? It is widely believed that it will take another two to six years before reductions in battery costs bring electric car prices into line with their petrol and diesel counterparts. The government needs to provide market certainty and stability – something which is currently in short supply. The recent removal of the grant for plug-in cars and the cut in the amount for pure electric vehicles came at very short notice. This poorly timed and implemented decision has damaged consumer confidence and provides another example of how the government's fiscal and environmental priorities are misaligned.

Taxation could also do a great deal to accelerate the uptake of ULEVs. A case in point would be the eligibility criteria for some tax reliefs. Cars bought for use in business – which are electric or whose CO_2 emissions are 50g/km or less – qualify for first year allowances (FYA), meaning that firms buying such cars can deduct the full cost from their profits

before tax. Crucially, this allowance applies only to ULEVs bought as an outright purchase, not to vehicles acquired through leasing. To exclude a sector putting 14% of new vehicles onto UK roads seems a missed opportunity. The leasing sector is a prime channel for bringing the greenest vehicles into use in the shortest time and a change in direction on this relief brings obvious benefits.

As we look to the future, what will happen to the current mix of emissions-based taxes? Fuel Duty is much discussed but other issues, such as particulates from tyres and brakes and, of course, congestion, lead most policymakers to a stance of "the polluter pays". But how this will happen in a zero-emission future is unclear. While there's clarity on how the government plans to move to zero-emission transport through the Road to Zero strategy, there's been no signal on how revenues from the traditional use of petrol and diesel will be replaced. As it tries to draw up its own plans, the fleet sector is concerned about the longer-term view on motoring taxation, or rather, the lack of it.

Changing attitudes and business models

The future of mobility is driving new behaviour change across the fleet sector. One rapidly emerging trend is the growing shift from vehicle "ownership" to "usership". This reflects broader societal changes where a subscription-based culture, especially among the younger generation, is becoming the norm.

Younger people and city dwellers are less focused on the prestige of owning of a car and much more concerned about the monthly or per-journey cost of moving from point A to B. As this subscription-based culture develops, there will be implications for the longer-term approach to taxation. For example, should taxation continue to be based on ownership or should it be based on usership, effectively a tax on mobility.

Solutions

There are now suggestions that some form of road pricing in the longer term is inevitable to replace lost revenues in fuel duty. This could take two forms: pricing linked to the individual through his or her smart phone: or costs attached to the vehicle through on-board telematics that are increasingly seen as standard. Beyond a simplicity of tax gathering, there may be other advantages in terms of limiting congestion. Pricing could be based not simply on road use but also on time of day – pushing flexible travellers away from peak times in the working day. However, this will be tricky to navigate and due thought needs to be made to ensure business critical fleets are not unduly penalised and that it does not create a social divide.

Examples of how the transport and tax future might look are beginning to appear elsewhere in Europe. There is undoubtedly much that can be learned from Norway and other countries that are well ahead of the UK in deploying zero-emission vehicles. EVs were responsible for 31% of new Norwegian registrations in 2018, making the country a world leader in the take up of the technology. It's been achieved on the back of massive incentives, including ones that appeal to all users rather than just the first buyer. Some of these include: exemption from most taxes and tolls as well as free parking spaces and charging points.

Conclusion

As policymakers, manufacturers and users struggle to navigate the changing landscape, we in the leasing sector are acutely aware that 2030 is only a few fleet cycles away. If the sector is to play its part in the decarbonisation of transport then clarity and fixity of purpose in tax, allowances, strategy (and much else besides) becomes vital. For many of the sector's clients, the Road to Zero has massive implications in terms of capital outlay on vehicles, charging infrastructure and business models. And make no mistake, the decisions made by Zenith, its counterparts and their clients will impact on every aspect of the supply chain. A vast array of stakeholders is waiting to hear from government and time is short.

[1] Page 4, Oxford Economics – The Economic Impact of the Motor Vehicle Leasing and Rental Industry, July 2018

[2] Calculation based on BVRLA member data 2017 and SMMT EV registration data 2017

[3] Page 6, Oxford Economics – The Economic Impact of the Motor Vehicle Leasing and Rental Industry, July 2018

About DriveNow:

Part of the BMW Group, DriveNow has been providing a flexible and sustainable alternative to owning a car since 2011. The free-floating model allows members to rent cars spontaneously from any on-street parking place, drive it and then drop off in another part of the defined business zone, using the DriveNow app. The company operates in 12 European cities, including London. It offers a pure electric option via the BMW i3.

DriveNow

Background

The rise of smartphone use amongst the public has changed the mobility habits of millions across the world. It has enabled a step change in the way people can access transport and has made "new" forms of mobility possible at scale, from carsharing to shared electric scooters. The new technology has lowered barriers to use across the carsharing sector, with consumers now finding it far easier to access a vehicle-on-demand on a pay-as-you-go basis – either through carsharing/car rental fleets or through peer to peer rental. As of 2016, membership globally had risen to over 15 million users sharing 157,000 vehicles[1], with Europe representing 29% of worldwide members. DriveNow itself has risen to become Europe's second largest provider with over 1 million customers across 12 cities[2].

Air quality and health top the agenda

Increasing urbanisation has added spatial pressures to cities, initiating a fall in private vehicle ownership which has enabled alternative services, such as car clubs, and provided a larger customer base for new transport services to thrive. Urbanisation is predicted to increase with 90 per cent of people in the UK expected to live in urban areas by 2050, and 30 cities in the UK to rise above 300,000 population by 2030[3].

Devolution has granted UK local authorities more powers over their transport systems, with new Metro Mayors for major cities seeking to change old funding models for transport. This more regional focus has brought issues such as air quality and health to the top of the agenda for transport planners and the costs imposed on cars in cities is changing to meet these new policy priorities. In London, for example, the Mayor's Transport Strategy is aiming to significantly lower the use of cars for trips and increase trips made by healthier, active modes. Research from Transport for London (TfL) shows that car owners are 2 to 3 times more likely to miss the activity targets required for a healthy lifestyle[4]. >>

DriveNow

"Consumers who are transferring to a mobile-first lifestyle from a car-first lifestyle have become accustomed to a pay-as-you-go model for their travel. New forms of pay-as-you-go taxation could begin to "plug the gap" as tax revenues from Fuel Duty and VED decline."

Car clubs driving behavioural change

Within this context, car club membership in the UK has grown to more than 350,000[5] and this is expected to grow considerably over the next few years as the UK is currently lagging behind its European neighbours (for example Germany has 2.1million carsharing users[6]). Evidence suggests that car clubs have a positive impact upon transport behaviour, with up to 13 private vehicles[7] either sold or disposed of for each car club vehicle, with household vehicle mileage reduced by 570 miles a year[8]. The air quality and carbon reduction benefits of this reduction in both vehicle numbers and mileage is clear and in a city context it also encourages a multi-modal transport lifestyle. For example, 62% of car club customers use the underground at least once a week against 37% for the resident population[9]. Not only are Car Clubs driving behavioural change but the fleets that they operate have a much cleaner profile than the UK car fleet as a whole. For London, only 7% of the fleet was diesel powered (mostly vans) and 99% of vehicles complied with the upcoming Ultra Low Emission Zone for London[10].

New forms of taxation

Car club fleets are currently taxed in a similar way to private vehicles, through Vehicle Excise Duty (VED) and Fuel Duty. Changes in consumer behaviour, coupled with highly utilised and cleaner vehicles will impact upon the marginal tax intake from car club fleets. On a per-mile basis the tax intake from car club fleets will clearly be lower than individuals owning private vehicles that sit on the drive 94%[11] of the time. Furthermore, this change in marginal tax intake is likely to increase as we move towards an autonomous vehicle future, where there will be even greater pressure on high fleet utilization, amid dwindling private car ownership.

It is now for government to begin trialing new forms of taxation that reflect changes in consumer habits; more localized funding; and differing policy priorities for taxation on car usage. Consumers who are transferring to a mobile-first lifestyle from a car first lifestyle have become accustomed to a pay-as-you-go model for their travel. New forms of pay-as-you-go taxation could begin to "plug the gap" as tax revenues from Fuel Duty and VED continue to decline.

New ways of taxing the car are being trialed for different policy objectives at city or regional levels:

- **Clean Air Zones (CAZs) are being considered within major cities, as mandated by central government, in a bid to lower NoX emissions of vehicles and improve air quality. Revenue generated from these zones should be retained at city or regional level and should be used to fund improvements in local transport projects. These projects should be designed to support the shift from private ownership to new mobility solutions. For example, funds from a regional CAZ could be used to implement a local private vehicle scrappage scheme and provide mobility credits for public transport or shared mobility use.**

- **The use of road pricing is limited in the UK, with London being the sole city using it for a policy purpose (reducing congestion) rather than simply meeting infrastructure costs. Congestion in urban areas will continue to be an issue where pricing can encourage positive behaviour. More sophisticated forms of road pricing can both increase revenues and meet policy aims, such as incentivizing healthier lifestyles. To ensure the most efficient use of vehicles by fleet operators it is important that there is a level playing field in costs attributed to all providers of car journeys, with the consumer in the least efficient vehicle paying most.**

- **The cost of on-street parking is often overlooked, but it has a huge role to play in creating incentives for behavioural change whilst providing better returns on public assets. The role of local authorities is clear – there must be a progressive increase in the costs of inefficient car usage towards more efficient forms such as car clubs. An open multi-operator approach to pay-as-you-go car usage (car clubs/car rental/peer to peer) in local authorities will create competition and innovation to increase the overall market for carsharing with associated benefits. This approach will bring additional revenue due to the comparatively high parking costs of commercial fleets operating on public spaces.**

Central government needs to consider the future purpose of taxes such as VED and fuel duty for a transport sector that is decarbonizing. New forms of mobility, different consumer transport habits, new policy priorities and city or regional devolution could enable a fundamental shift in taxation. The benefits of creative thinking could lead to real improvements in air quality, low activity levels and poor urban realms.

[1] Shaheen, S, Cohen, A, Jaffe, M, "Innovative Mobility Carsharing Outlook Spring 2018 University of California", Berkeley, https://doi.org/10.7922/G2CC0XVW ,[accessed 20th November 2018]

[2] https://content.drive-now.com/sites/default/files/2018-11/DriveNow_Factsheet_November_2018_General_0.pdf, [accessed 20th November 2018]

[3] https://population.un.org/wup/Country-Profiles/ - United Kingdom, [accessed 20th November 2018]

[4] Fairnie, G.A., et al., "Active travel in London: The role of travel survey data in describing population physical activity", p.7, Journal of Transport & Health (2016), http://dx.doi.org/10.1016/j.jth.2016.02.003

[5] Data from COMO UK, February 2018.

[6] https://carsharing.de/alles-ueber-carsharing/carsharing-zahlen/aktuelle-zahlen-daten-zum-carsharing-deutschland, [accessed 20th November 2018]

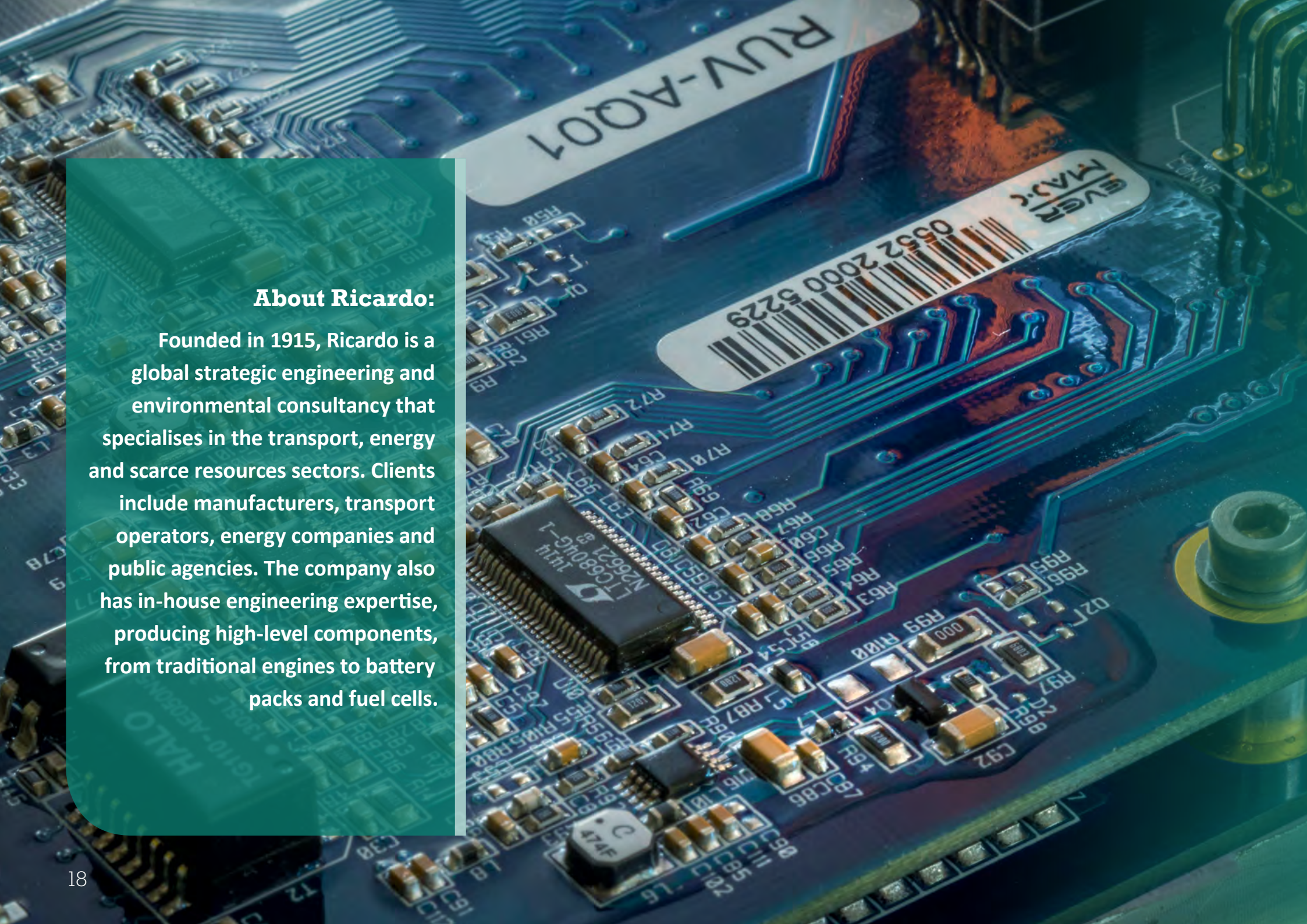
[7] Carplus Annual Survey 2016/17

[8] Carplus Annual Survey 2016/17 p.8

[9] Carplus Annual Survey 2016/17 p.10

[10] Carplus Annual Survey 2016/17 p.38

[11] RAC Foundation, "Spaced Out: Perspectives on Parking Policy", 2012



About Ricardo:

Founded in 1915, Ricardo is a global strategic engineering and environmental consultancy that specialises in the transport, energy and scarce resources sectors. Clients include manufacturers, transport operators, energy companies and public agencies. The company also has in-house engineering expertise, producing high-level components, from traditional engines to battery packs and fuel cells.

Delivering Excellence Through Innovation & Technology

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Background

The shift to electric vehicles started in earnest at the beginning of this decade and now virtually every car manufacturer has at least one plug-in electric model in its range. However, the market take-up of these vehicles in the UK has been slow and is not in line with the progress needed to reduce greenhouse gas emissions or significantly reduce air pollution in urban areas. Of course, there are many reasons for this slow progress. Electric vehicles cost more to buy than their petrol/diesel equivalents; drivers worry about the relatively short driving ranges of electric vehicles; and the availability and speed of public charging does not currently compare favourably with the refuelling network for petrol and diesel.

To achieve the transition to ultra-low emission vehicles, manufacturers and vehicle users need consistent, long-term economic signals to help them make decisions. In 2018, a total of 15,474 new pure battery-electric vehicles were purchased in the UK and a further 44,437 new plug-in hybrid electric vehicles were bought. In total, plug-in electric vehicles accounted for 2.6% of the new car market in 2018, up from 1.9% in 2017. Whilst this increase is positive, market take-up is still very low, especially when compared to some other countries.

Part of the problem is that UK's taxation system and other economic incentives for moving to plug-in electric vehicles do not provide consumers and businesses with clear and consistent messages that shifting to ultra-low emission transport is an important objective. We can see this by examining some of the key taxation and financial support measures, namely vehicle excise duty (VED), company car tax, the plug-in electric car grant and fuel duty. >>

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"The Government supports the move to low carbon vehicles, but current fiscal measures in place don't consistently support that aim in a co-ordinated manner. Reforming the vehicle and fuel taxation system so that there are consistent long-term incentives to encourage a shift to ultra-low emission vehicles will provide more clarity for everyone and help the Government achieve its aims more quickly and with more buy-in from consumers, business and vehicle manufacturers."

Changing the rules of the game

Before 1st April 2017, all cars with CO_2 emissions below 100 gCO_2/km were exempt from vehicle excise duty (VED). This policy, which had been in place for many years, was used to stimulate the market for low CO_2 cars. However, with increasing numbers of new cars able to meet the sub-100 gCO_2/km performance threshold, revenues from VED were falling. The April 2017 reform fundamentally changed the rules of the game. Full exemption from VED now only applies to those vehicles that have zero tailpipe emissions (namely pure battery-electric vehicles and hydrogen fuel cell vehicles) AND that have a list price below £40,000. For any plug-in hybrid or range-extended electric cars (typically these have CO_2 emissions in the range 1 to 75 g CO_2/km), the first year VED rate is now levied at £10 for cars with emissions from 1 to 50 g CO_2/km and £25 for those with emissions from 51 to 75 g CO_2/km. Crucially, however, the standard VED rate for all subsequent years is £140 per year – the same as the standard rate for all other cars regardless of CO_2 emissions performance. Whilst the first year VED rate for new cars scales upwards as CO_2 emissions increase, the standard rate does not, meaning that for both new and second-hand car buyers, there is no longer a strong signal to encourage people to buy plug-in electric cars or low-CO_2 petrol and diesel cars.

What's more, further disincentives have been imposed. If the original list price of the car is more than £40,000 – even if a pure electric vehicle – it will be liable for a £310 VED supplement for five years after the initial first year rate. This is not consistent with the government's aims to encourage the uptake of ultra-low emission cars, particularly as many plug-in electric cars currently cost more than £40,000 when new. Importantly, it also has the potential to discourage second-hand car buyers (who are typically more sensitive to total costs of ownership than new car buyers) from purchasing used plug-in electric vehicles that were originally priced above the £40,000 benchmark.

Company car users need long term certainty

For much of this decade, company car tax rates have also failed to encourage the take-up of battery-electric and plug-in hybrid vehicles. Until tax year 2014/15, the UK Government levied an annual benefit-in-kind (BIK) company car tax rate of 0% on the list price of company cars for zero-emission vehicles, whilst the rate for vehicles with emissions from 1 to 75 g CO_2/km was just 5%. These rates were significantly lower than the rates for equivalent petrol and diesel vehicles, encouraging company car users to choose plug-in electric vehicles.

However, between 2015/16 and 2019/20, plug-in electric vehicles have been (and will be) subject to very significant annual increases in BIK tax rates.

For example, pure electric zero-emission vehicles and plug-in hybrids with emissions between 1 and 50 g CO_2/km were/are liable for a BIK rate of 5% in 2015/16, 7% in 2016/17, 9% in 2017/18, 13% in 2018/19 and 16% in tax year 2019/2020.

Thankfully, in tax year 2020/21, reforms to the company car tax system mean that a much lower BIK rate of 2% will apply to all zero emission cars and cars that emit 1 to 50 gCO_2/km and have an electric driving range of more than 130 miles. However, there is currently no information on what rates will apply in the years beyond 2020/21, and car manufacturers, employers and company car users need long-term certainty to encourage the use of plug-in electric vehicles.

No longer a strong signal to buy plug-in cars

A similar story can be told about the plug-in car grant. Introduced in 2011 as an incentive to encourage the purchase of plug-in electric cars, it was initially set at £5,000 per car for all plug-in electric vehicles. However, in 2016, it was reduced to £4,500 for cars with emissions below 50 g CO_2/km and a zero-emission driving range of at least 70 miles and the rate was halved (to £2,500) for hybrids below 75 gCO_2/km with an electric range of at least 20 miles. In October 2018 – with barely four weeks' notice – the government announced that the grant would be reduced again to £3,500 for pure battery-electric and hydrogen fuel cell cars – while eliminating it completely for plug-in hybrids. Exceptional increases in demand following this announcement meant that in practice, the new rates came into force just ten days later, again pointing to a lack of consistency in providing the market with long-term economic signals.

Some form of road pricing

Of course, pure battery-electric vehicles are not liable for fuel duty and household domestic electricity (often the main source of energy for today's plug-in electric vehicle users) has a VAT rate of just 5%. So, in the coming years, there is likely to be a shortfall in fuel duty revenues as the deployment of electric vehicles increases. However, taxing electricity used for vehicles would be difficult to implement as there would need to be some means of being able to identify electricity used for recharging a vehicle's battery as opposed to electricity used for other purposes – not straightforward when many cars can be charged (albeit slowly) via a standard three-pin domestic socket. The answer is likely to be some form of road pricing based on mileage charges linked to the vehicle's overall environmental performance. However, the key question is when to make such a switch, without hindering the emerging market for plug-in electric vehicles, and how to sell this change in approach to the public at large.

More clarity for everyone

In the future, new ULEVs will enter the market, with much longer electric driving ranges and faster charging capabilities than today's vehicles. These vehicles should, in theory, be more attractive to consumers, but any major shift in technology needs to show clear benefits, to encourage users to make the jump. Today's electric vehicles don't provide them with additional utility compared to their existing petrol and diesel vehicles and, if anything, they can require compromises, particularly in their ability to make longer distance journeys.

This requires the vehicle and fuel taxation system to give clear, consistent long-term messages, that a shift to plug-in electric vehicles will bring economic benefits. Businesses and private drivers will need long-term sight of future changes in vehicle taxes and incentives and these measures will need to work effectively together. Importantly, a longer policy "horizon" will also allow vehicle manufacturers to better plan their market offerings.

The Government clearly supports the move to a low carbon transport system, but to date, its various fiscal measures don't support that aim in a co-ordinated manner. Reforming the taxation system to bring clear, consistent, long-term incentives for a shift to ultra-low emission vehicles will help it achieve its targets more quickly and with better buy-in from consumers, business and vehicle manufacturers.

About Centre For London:

Centre for London styles itself as the UK capital's "dedicated think tank". Now in its seventh year of operation it seeks to generate ideas and new thinking across a series of sectors, dealing with city wide challenges. Among these, population growth, infrastructure, skills development and soft power take centre stage. It's a charity and is politically independent.

Image © Steve Cysewski

CENTRE FOR LONDON

BVRLA

Background

All major cities require efficient transport systems to keep their economies moving and roads are an essential part of the network. Citizens need to travel for work and leisure, while business requires accessible roads for freight, logistics and servicing.

A fairer and more effective charging system

However, there's a growing acceptance that over-reliance on the road network produces a number of negative impacts – most seriously those of congestion and poor air quality. While personal car usage in central areas has been declining, traffic volumes have not[1] – due to trends such as home deliveries and the popularity of shared mobility services, such as Uber. This results in low journey speeds and unpredictable journey times.

In London, road traffic currently produces half of air pollution, with a direct impact on people's lives. It is responsible for up to 141,000 life years lost each year, as well as over 3,400 hospital admissions. Costs to the economy are estimated to be £3.7 billion per annum[2].

For city planners, any road charging system needs to incentivise both more efficient use of road space and the use of cleaner vehicles or choosing environmentally sustainable options, such as public transport, walking and cycling. As the Mirrlees review pointed out, fuel duty and VED may encourage the use of fuel-efficient cars, but they are ineffective in reducing other impacts, including congestion[3]. >>

CENTRE FOR LONDON

London is the only UK city to have used charging to manage traffic impacts, but the Central London Congestion Charge – once considered the height of innovation – is now seen as outdated. Charging zones that charge a set daily fee are a blunt instrument. They penalise only a small group of drivers that enter them – who are then incentivised to get value for money by making their journey longer – while also encouraging other drivers to avoid paying by skirting around the edges of the zone. Nonetheless, London Mayor Sadiq Khan has introduced two environmental schemes for drivers of older vehicles on top of the Congestion Charge. The T-Charge came into effect in October 2017 but is due to be replaced with the Ultra Low Emission Zone in 2019 within the Congestion Charge Zone, with an extension planned for 2021.

New technologies now present an opportunity to develop a fairer and more sophisticated system for London – and a template for cities around the country. A single, city-wide, road-user charging scheme – with charges based on distance, timing, location and emissions would be arguably much more effective at tackling congestion and air pollution. System parameters and charging levels could be tweaked over time as travel patterns and vehicles evolved. It would also centre on the "polluter pays" principle, encouraging people to make informed and sustainable travel choices.

Making roads self-financing

However the money is raised, the final destination of that revenue is a topic of hot financial and political discussion. Roads are not simply conduits, but places where people socialise, play and exercise. Insufficient funding has resulted in a backlog of potholes[4], dangerous junctions, inadequate cycle routes, narrow pavements and unwelcoming public spaces.

The current system provides no clear link between what drivers pay and what is spent on the roads, as responsibility for this lies with numerous stakeholders. The strategic network (trunk roads) is funded by central government and managed by Highways England. But other roads are the responsibility of local highway authorities – a mix of local authorities, counties or districts – all funded by council taxes, other charges and government grants.

In some cases, funds are pooled. In Greater Manchester, transport policy is set by the Mayor and the Greater Manchester Combined Authority (made up of ten local councils). It is then implemented Transport for Greater Manchester and funded by a combination of council tax and grants[5].

Similarly, in London, transport policies are the responsibility of the Mayor and the Greater London Authority, while implementation and budgets sit with Transport for London (TfL). However, Highways England is only responsible for the motorways within the Greater London boundary, which comprise less than half a percent of London's total road network.

TfL is left to manage the strategic road network (representing four percent of the total road length but carrying 30 percent of all traffic), and local roads are managed by local authorities.

TfL is funded purely by fare revenues and commercial income (previous central government grants have ended), leaving its roads budget in deficit. The problem is further exacerbated by public transport fares revenues being frozen – effectively declining in real terms.

Local authority budgets have also been squeezed. Income is drawn from parking revenues, some funding from central government for roads maintenance and money from TfL to pay for local transport plans[6]. But London boroughs are not eligible for the latest pothole and flood resilience funding (Budget 2018)[7], nor do they have access to the £2.5 billion Transforming Cities fund, for example[8].

Fuel Duty and VED, of course, go directly to the Treasury and are set to decline anyway with the de-carbonisation of transport. With revenues declining at all levels, road charging is a way for cities to ensure that roads are self-financing, and that funding is fairly allocated between the different authorities responsible for their management.

Giving cities the tools to act

Whitehall sees any implementation of road user charging as a matter for individual cities. The government has issued guidance on charging or non-charging for its Clean Air Zones (CAZ) in Birmingham, Leeds, Nottingham, Southampton and Derby. But legislation allowing all English cities to implement road user charging has long been in place, under the Greater London Authority Act 1999 and the Transport Act 2000 (as amended by the Local Transport Act 2008).

There is no requirement to hold local referenda or to obtain approval from the Secretary of State[9]. The legislation makes provisions for a scheme to include different charges for different days, times of day, roads, distances travelled and classes of vehicles, etc. The then London Mayor, Ken Livingstone, used these powers in 2003 for the Congestion Charge, but elsewhere there has been fierce public opposition.

Ten years ago, Manchester proposed a congestion charging scheme to fund public transport improvements, but those plans were heavily defeated in a 2008 referendum. Memories lingered. Greater Manchester's first elected Mayor, Andy Burnham, has vowed never to introduce a charge on car drivers.[10]

However, international examples show that the public can support road user charging proposals, if they get a chance to experience the outcomes in a trial period. And public opinion in the UK has shifted over time, with air pollution becoming a much greater concern. More people now believe that, for the sake of the environment, car users should pay higher taxes.[11]

One way to defuse opposition, of course, is to match new road charges with a reduction in other driver taxation – but cities have no control over fuel duty and VED. The government has now announced that VED will be hypothecated for road spending through the £28.8 billion National Roads Fund, but this will be allocated according to national priorities. The London Assembly recently recommended that a proportion of VED revenues should be devolved to London.[12] Alternatively, receiving an allocation from the National Roads Fund or another pot of funding could help alleviate the cost to drivers of a new scheme, potentially boosting support for a next generation road user charging system.

London has an opportunity to lead the way

As the only UK city with a widespread and long-standing road charging system, London can lead the way with new 21st century solutions. Road pricing – particularly if it feels fairer than the existing blanket charge – could win support from individual drivers and businesses. We believe it is the only viable and farsighted way to relieve congestion and air pollution, while ensuring roads are self-financing and providing a good level of service for essential road users.

1 Department for Transport (DfT) (2018). Road traffic statistics, https://www.gov.uk/government/collections/road-traffic-statistics
2 Walton, H. et. al. (2015). Understanding the Health Impacts of Air Pollution in London. London: King's College London for Transport for London and the Greater London Authority
3 Mirrlees, J. et. al. (2011). Tax by Design. London: Institute for Fiscal Studies, pp. 271-2, https://www.ifs.org.uk/docs/taxbydesign.pdf
4 https://media.rac.co.uk/pressreleases/drivers-more-than-twice-as-likely-to-breakdown-due-to-hitting-a-pothole-than-12-years-ago-2759961
5 https://www.greatermanchester-ca.gov.uk/who-we-are/council-tax/council-tax-transport-funding/
6 DfT (2018). Roads Funding: Information Pack; https://tfl.gov.uk/info-for/boroughs/local-implementation-plans
7 https://www.gov.uk/government/news/pothole-fund-boosted-to-repair-roads-after-winter-damage
8 DfT (2018). Roads Funding: Information Pack
9 Butcher, L. (2018). Local road charges, Briefing Paper Number SN01171. London: House of Commons Library
10 https://www.manchestereveningnews.co.uk/news/greater-manchester-news/mayor-andy-burnham-vows-never-13657145
11 DfT (2018). British social attitudes survey (ATT03), https://www.gov.uk/government/statistical-data-sets/att03-attitudes-and-behaviour-towards-roads-and-road-travel
12 London Assembly Budget and Performance Committee (2018). Transport for London Finances: The End of the Line?

About Energy UK:

Energy UK is the trade association for the GB energy industry, providing a voice for over 100 suppliers, generators, and stakeholders with a business interest in the production and supply of electricity and gas. Energy UK members turn renewable energy sources as well as nuclear, gas and coal into electricity, supplying energy to over 27 million homes and every business in Britain.

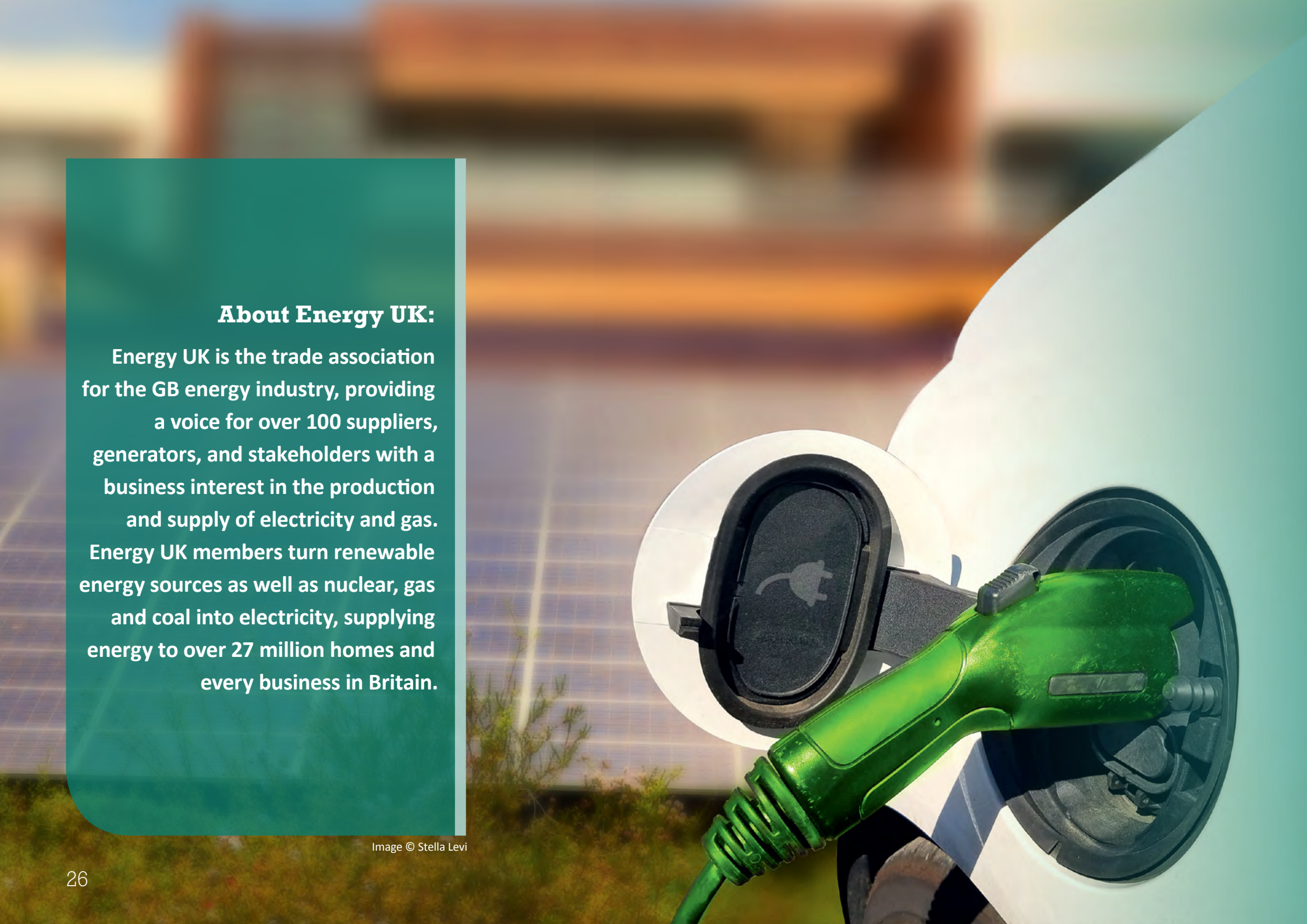

Image © Stella Levi

Background

The decarbonisation of transport is already upon us: uptake records are continually being broken, new models are being launched and performance measures across the board are rapidly improving. With an energy system increasingly supplied through low carbon generation, powering our cars with electricity – not petrol or diesel – is currently the cleanest choice to make.

However, alongside this progress new questions are emerging, not least the issue of how to ensure that the tax system can keep pace with the rapid transition from internal combustion engine (ICE) vehicles to low carbon transport.

An ambitious approach to decarbonisation

The power sector has led the way in reducing carbon emissions in the UK economy. The government's own advisory panel, the Committee on Climate Change, reported in June 2018 that three quarters of emissions reductions since 2012 have come from energy generators[1]. In fact, since 1990 the power sector has cut its emissions by 57 per cent against an economy-wide reduction of 41 per cent.[2] By way of contrast, emissions from the transport sector remain virtually unchanged from 1990 levels.

Energy UK is proud of the progress achieved in the power sector and our members are clear that the UK should take an ambitious approach to wider decarbonisation, not only to meet our climate change and air quality obligations, but to capitalise on the economic opportunities the transition represents. The UK Government has made low carbon transport a priority; with its Industrial Strategy setting the future of mobility and clean growth as two of its four "Grand Challenges". >>

"It's important to remember that levies on electricity bills are paid by all consumers, regardless of ability to pay or whether they actually own a vehicle. Transferring fuel duty onto electricity bills would be a highly regressive approach to taxation".

A full and frank discussion

Financial support from government has been vital to the growth of the UK EV market to date. Assistance with the upfront cost of plug-in vehicles and charge points, alongside exemptions from vehicle excise duty (VED) and incentives in place for businesses and fleets, have been instrumental in delivering 170,000 plug-in vehicles onto UK roads.[3] Energy UK has been vocal about ensuring appropriate up-front incentives remain in place during the 2020s and that any removal of support is signposted in advance to avoid a 'cliff edge'. However, the retention of incentives and exemptions can form only part of the discussion.

Government receipts from fuel duty and VED totalled £28bn and £6bn respectively in 2017.[4] Zero emission vehicle drivers do not currently pay either, meaning that decarbonising will require a change in how and on whom fuel duty is levied if government revenue is to be maintained. This is a politically sensitive topic, as seen in the attention devoted to the fuel duty freeze each year, but a frank and full discussion is vital to enacting meaningful change on the right timeline.

Those responsible for negative impacts should pay

The energy sector has traditionally been financed through levies on customer bills to fund low carbon investment or installation of energy efficiency measures. Energy industry experience in these areas indicate that the regressive nature of levies on the bill means that vulnerable and fuel poor customers often pay more. Tax collection must be targeted properly to avoid the significant detrimental impacts of proportionally higher energy bills on low income households, which are not widely expected to benefit most from the uptake of low carbon vehicles.

Energy UK has, therefore, proposed three primary criteria that we believe should be applied when assessing our future vehicle tax system:

1. **Does it encourage drivers to transition from ICE vehicles to zero emission vehicles?**
2. **Does it introduce incentives to avoid driving on congested roads?**
3. **Does it abide by the 'polluter pays' principle, reflective of the costs of pollution's harmful impact on others?**

Firstly, as discussed above, we believe that continued financial support for low carbon vehicles, in terms of subsidy or tax benefits will be needed, for as long as there remains an upfront cost premium for low carbon vehicles over conventional vehicles. It has been suggested by industry colleagues that this would need to be in place until a set metric indicates that the low emission vehicle market is fully established. This could, for example, be identified when the majority of vehicle sales are low carbon, or when vehicle manufacturers have fully switched manufacturing to producing low carbon vehicles.

Secondly, as low carbon vehicles come to outnumber conventional vehicles the climate change and air quality imperative will lessen, one problem that will

persist is congestion. It's estimated that congestion cost the UK economy £37bn in 2017, over £1,100 per driver on average[5], so there is a significant prize for getting price signals right.

Thirdly, we believe that those responsible for negative impacts on climate change, air quality or congestion, should pay in proportion to the damage caused. It is important that the costs paid by drivers are clearly linked to mileage, which excludes blunt cost recovery methods that transfer fuel duty onto, for example, general taxation or electricity bills.

It's important to remember that levies on electricity bills are paid by all consumers, regardless of ability to pay or whether they actually own a vehicle. This means that transferring fuel duty onto electricity bills would be a highly regressive approach to taxation.

Long term policy over short term politics

Various alternative models have been suggested, including making greater use of congestion charging zones and toll roads, amending fuel duty and, more radically, introducing a national model of road pricing.

Of the proposed solutions, road pricing models including a per mile charge paid by the driver, and the introduction of congestion zones and toll roads, create the strongest incentives for drivers to avoid congested areas. If designed appropriately, these can be effectively linked to vehicle emissions and reflective of use rather than ownership.

While there are important advantages to road pricing on paper, there remain significant questions about the acceptability of such models, as was witnessed in the backlash against 2006 proposals to introduce a national road user charging scheme. However, it may be argued that, more than ten years on, we are much more comfortable with the thought of a governmental organisation using our data, and the technology that can support usage-based charging has become more prevalent.

Energy UK does not hold strong views on the most appropriate long-term solution for taxing transport, however it is clear that whatever solution is chosen must be guided by long term policy objectives over short term political decision-making, avoid penalising vulnerable consumers and be future-proofed against changes in vehicle ownership.

Reform cannot be delayed further

In terms of practical next steps, our position is similar to that for the potential options for decarbonising heat: there is currently no clear winner, hence we need to trial different solutions to understand what works best in practice.

WPI Economics, in research[6] undertaken for ClientEarth, suggests that a competitive prize fund should be created for combined authorities to bid for funding to trial new models. This would be on a large enough scale to provide meaningful results and, if pitched at combined authorities who often also have remit over local transport policy, could integrate into existing transport initiatives. Energy UK believes this idea holds merit and should be taken forward by Government.

While challenging, reforming long-term transport fiscal policy cannot be delayed further and steps need to be taken now to prepare the way for change further down the line. With an estimated 10,000 premature deaths a year and £6bn in health costs from poor air quality associated with cars and vans[7]; largely unchanged transport emissions from 1990 levels; and total vehicle miles on a continued upward trend[8], it is clear that more of the same is not an option.

1 https://www.theccc.org.uk/publication/reducing-uk-emissions-2018-progress-report-to-parliament/
2 https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2016
3 https://www.smmt.co.uk/2018/10/september-ev-registrations/
4 https://www.gov.uk/government/publications/industrial-strategy-building-a-britain-fit-for-the-future
5 http://inrix.com/press-releases/scorecard-2017-uk/
6 http://wpieconomics.com/publications/helping-people-business-move-towards-cleaner-forms-transport/
7 https://www.cleanairday.org.uk/Handlers/Download.ashx?IDMF=7eb71636-7d06-49cf-bb3e-76f105e2c631
8 https://www.gov.uk/government/statistical-data-sets/road-traffic-statistics-tra#traffic-volume-in-miles-tra01

About BP Chargemaster:

Founded in 2008, BP Chargemaster works with drivers, business, local authorities and car manufacturers on charging solutions. The company has installed over 40,000 Homecharge units for private users and manufactures and installs workplace and public destination and rapid charge points. It also operates POLAR, the UK's largest public charging network, with thousands of points across the country.

bp chargemaster

Background

The electric vehicle market has expanded dramatically in recent years, albeit from a very small base. From a total of just over 100 electric cars in 2010, there have been more than 184,000 pure electric vehicles and plug-in hybrids registered to date, with an expectation that the total number on UK roads will be somewhere between 800,000 and one million by 2023. The key difference in how electric vehicles are used, compared to their ICE predecessors, is in the method of fuelling. While petrol and diesel vehicles are all fuelled in the same way, electric vehicles will be charged at different times; at different rates; and in different places.

Affordability for households and organisations

It is likely that many drivers will prefer to charge where the cost of electricity is cheapest. For most people that is currently at home, provided they have access to suitable off-street parking and the local electricity grid can cope. While it is estimated that almost 60% of UK households have access to off-street parking, the remainder do not[1].

While most electric vehicle charging is likely to be domestic, it is worth recognising that households with roadside parking – or any driver unable to charge at home – will require access to public charging, including ultra-fast charging at easily accessible locations throughout the UK.

In terms of cost, one key factor is the average price of household electricity, which is around 14p per kWh[2]. Any significant rise in that figure would potentially have a negative economic impact, affecting its affordability for households and organisations across the private and public sectors. >>

bp chargemaster

"Any attempt to impose a uniform tax on all forms of charging, irrespective of location, is likely to face problems. In those circumstances, drivers have the option to charge their vehicles at home … moving them off the taxation "radar" altogether."

New taxes to plug the gap?

As for the impact on taxation, electric vehicles will clearly reduce fuel duty revenues, which currently stands at 57.95p per litre[3], or around 6p per mile. Plug-in hybrid drivers pay fuel duty, of course, on the petrol or diesel they use, but pure electric vehicle drivers pay none at all. While there is no fuel duty charged on electricity, it does attract VAT, charged at 5% for domestic properties and 20% for business and public charging. Some organisations qualify for the lower rate of 5%, including charities and some smaller firms[4].

At a macro-economic level, the sums involved are substantial, with fuel duty expected to raise £28.2 billion in 2018-19[5]. For every pure electric car driving the UK average of 7,800 miles per year[6], HM Treasury is 'missing out' on over £400 in fuel duties, compared to an equivalent petrol or diesel car driving the same mileage at 50 miles per gallon. With over 58,000 pure electric cars on UK roads, this could already equate to an annual reduction of £24 million in fuel duty, with that figure being greater if electric mileage for plug-in hybrids is considered.

As the number of electric vehicles on UK roads continues to grow, the direction of fiscal travel is clear to see. In the next 12 years (to 2030) it's estimated the cumulative losses on fuel duty receipts could be as much as £170 billion[7]. As a result, there may be a temptation to seek new taxes to plug the gap, either through fuel duty on electricity used for charging, or through road-pricing.

A fair and equitable regime?

If the government chose to tax the charging of electric vehicles, it would need to recognise that such activity could take place at home; at work; or at a public charging station. Domestic power supplies do not differentiate over use and electricity at home attracts VAT at a rate of 5%. Based on a cost of 4.99p per kWh for an overnight off-peak domestic tariff[8], an efficient electric vehicle could therefore be charged at a cost as low as 1p per mile.

Electricity used for charging at work would be paid for initially by the business concerned, attracting VAT at a rate of 20% in most cases. This could, of course, be recharged by an employer and – as employees do not incur benefit-in-kind tax for charging their own electric vehicles at work[9] – charging costs could vary significantly.

For public charging, electricity attracts VAT at a rate of 20%, even if it's billed on a different basis to the familiar "per kWh". But there can still be a wide disparity in price. Some public charging points are currently available free of charge, while others charge for electricity at a rate of up to 35p per kWh[10].

Beyond the direct cost, there are other issues to consider. There are already substantial differences on mileage reimbursement rates for electric vehicles. If an employee owns their vehicle, they can currently be paid an Approved Mileage Allowance Payment of up to 45p per mile for business mileage, with electric vehicles treated in the same way as petrol and diesel vehicles.

Company car drivers reimbursed for business mileage when they bought fuel (or reimbursing their employer for any private mileage if fuel is provided) would use Advisory Fuel Rates. For a plug-in hybrid, an employee would use a rate varying from 10p to 22p per mile, depending on fuel type and engine size. However, for a pure electric car, an employee would use the Advisory Electricity Rate of 4p per mile.

For an employee with a pure electric car this could be significant. By way of illustration, a driver charging at a rate of 12p per kWh would find it equating to 3-4p per mile. But an expensive domestic tariff can run at 24p per kWh, equivalent to 6-8p per mile. What's more, for public charging, the costs are generally higher again. This reflects not only the cost of the electricity, but also the cost of providing and maintaining the infrastructure. With some public charging costing up to 35p per kWh today – equating to 9-12p per mile – a pure electric company car driver could lose £360 per year due to the fixed level of the Advisory Electricity Rate[11].

A brave new world?

In these circumstances imposing a fair and equitable taxation regime will be a significant challenge. If the government chose to impose taxation on public or workplace charging, it is likely to lead to an increase in home charging, which could have a negative impact on local electricity networks. It will also be negative for those drivers who do not have access to off-street parking, creating further disparity between the cost of charging at home and out-of-home.

Any attempt to impose a uniform tax on all forms of charging, irrespective of location, is also likely to face problems. In those circumstances drivers have the option to charge their vehicles at home from a standard electricity socket, rather than a dedicated domestic charging point. This – at least currently – would move them off the taxation "radar" altogether.

In the brave new world of multi-location, multi-price vehicle charging, tax administrators and finance directors alike may come to regard the relative harmony on petrol and diesel taxation with some degree of nostalgia.

1 National Grid, Future Energy Scenarios 2017
2 Energy Saving Trust, 14.37p per kWh, June 2017
3 HM Treasury, October 2018
4 HM Revenue & Customs, VAT rates on different goods and services, 2018
5 Office for Budget Responsibility, Fuel duties, 2018
6 Department for Transport, National Travel Survey 2017
7 Policy Exchange, Driving down emissions: How to clean up road transport, 2017
8 Green Energy UK, TIDE tariff, 2017
9 Office for Low Emission Vehicles, Tax benefits for ultra-low emission vehicles, 2018
10 Zap-Map, 2018
11 Department for Transport, National Travel Survey 2017, Company car driving 4,500 business miles per year

About the Cebr:

The Centre for Economics and Business Research (Cebr) is one of the leading economics consultancies based in the UK and a renowned commentator on business developments. Cebr are experts in producing economic impact studies and regularly use innovative methodologies to quantify the economic contribution of new technologies and other aspects of the economy.

Background

The personal freedom and access to opportunities that motoring provides are greatly cherished aspects of modern life. Our economy and society have evolved in ways that make cars, for most of us, indispensable to our daily lives. We are approaching a paradigm shift in personal mobility that should spread these benefits further and offer substantive solutions to the various challenges that mass car use has given rise to, for people, places and the planet as a whole.

By announcing a future ban on the sale of new petrol and diesel powered cars, the Government has taken a major step towards the creation of an environment for long term investment in technologies where it hopes the UK will lead. Electrification (using fuel cells or batteries) will eventually eliminate most of the harmful effects of road traffic on the quality of air that people breathe and also increasingly tackle its climate change impacts, as the generation mix becomes more sustainable.

Other changes will arise through the deepening integration of digital information technology in vehicles and road infrastructure. Initially this will assist the driver but it will ultimately obviate the need for a human driver altogether. This technological shift will virtually eliminate accidents and increase the effective capacity of our roads by smoothing traffic and allowing vehicles to travel more closely together.

In the longer term we will start to see traditional technological distinctions dissolve. Public transport will be more tailored to individuals while the exclusivity of private transport may become less common as smart options for different kinds of sharing develop. For example, future driverless taxis will mimic the benefits of cars while being cheaper and more convenient. >>

In the meantime, governments will need to coordinate policy to make the most of the opportunity. If successful it could lead to:

- **a more efficient, reliable and inclusive transport system that will stimulate higher economic growth by enabling more of the economically beneficial activities that transport enables;**
- **a safer, cleaner transport system with improved air quality and reduced climate change impacts;**
- **regenerated towns and cities offering vastly improved quality of life;**
- **lucrative industrial development, with the UK as the world leader.**

Arrangements for the taxation of motorists and charging for road use will need radical overhaul if they are to promote a successful transition that delivers these benefits.

A case for requiring users to pay

The heavy burden of tax paid by motorists for owning vehicles and consuming fossil fuels is only justifiable as a way of (a) paying for the costs of providing the roads and, (b) attempting to close the gap between the private costs of using cars and the social and environmental costs they impose, i.e. the harmful emissions, accidents, and congestion. As new technology tackles these social impacts, there will be a strong argument for letting motorists reap much of the benefit. Travel is a means to an end and making it cheaper will ultimately boost economic output (by making markets more competitive). Ultimately receipts of other forms of taxation that are linked to economic activity will increase. This implies that the burden of funding general government expenditure that currently falls on motorists should shift to more broad based sources, i.e. income or property taxes, VAT etc. This should be politically achievable, provided governments are prepared to adopt a consistent, long term approach. There is however a strong case for road users continuing to be responsible for some costs, which we explore below.

Firstly, the social impacts of motoring will not be entirely eliminated by new technology alone. While connected vehicle technology will enable the use of the available road capacity to be optimised, rationing will be needed in some locations during periods of peak demand. The technology lends itself to the creation of highly differentiated markets for rights to use road space, whereby willingness to pay for 'slots' or 'paths' in different parts of the network and at different times of day replaces queuing as the rationing mechanism – major economic and social benefits would be generated by giving people choices, and therefore control over journeys, in place of delay and unreliability.

Secondly, ongoing funding is needed for operating and maintaining the existing road network and to make it ready for the advent of connected vehicle technology; establishing markets for access to road capacity will provide a means of allowing price signals to determine what road capacity is needed and where, which is far more efficient than government planning. There may be a case for new capacity, such as urban road tunnels, to alleviate remaining bottlenecks, particularly as many of the other social and environmental 'harms' will have been addressed. These would avoid the loss of valuable land at surface as well as severance effects on surrounding areas. Tunnels for the exclusive use of non-polluting, autonomous vehicles could be far cheaper to build, with less expensive engineering solutions such as smaller bores and less expensive safety features. Such tunnels could provide bypasses or replacement routes in high value, congested locations, including the main road corridors in London.

Thirdly, roads occupy space that has alternative use value and it is reasonable to expect road users to pay some 'rent' to land owners to reflect this. As motorists have been used to access that is free at the point of use, it has been politically unattractive to introduce such charges. In the context of (a) diminishing revenues from fuel taxes and (b) the case that exists for using the tax system to incentivise the transition to cleaner vehicles, the case for implementing charging on this basis appears to be strengthening. Clearly this could be more easily achieved if integrated into a wider system of road user charging. The revenue could either be retained by local and central government, which together own most of the roads, or be used to support some form of privatisation of road space.

In summary, there appears to be a case for requiring users to pay for individual trips or 'paths' through the network with:

- **a non-time dependent (fixed) element to cover the rent of the land on which the road is built together with the cost of constructing, operating and maintaining the required infrastructure; and**
- **a time dependent (variable) element for managing congestion in high demand sections of the network.**

This is likely to be accompanied by a progressive move away from the mass ownership of cars towards a rental model of personal mobility, which will facilitate greater sharing of fixed costs, i.e. lower average costs of trips, and a more rapid deployment of technological advances. The existing vehicle leasing industry could provide a channel for securing early wins such as accelerating the uptake of cleaner vehicles, through appropriate incentives.

The transfer of roads from political control

Road users have felt exploited by successive governments and might not trust that new payments would benefit them. On the other hand it seems reasonable to expect this opposition to diminish over time, in the context of the above discussion. The key is that people will need to feel they are paying for a service that is responsive to their needs. Additional capacity may be needed where there are no good alternatives. Decisions about capacity should be integrated across modes to ensure the right solutions in the right places. For example, central London will always be reliant on a high capacity rail network. The need for complex trade-offs suggests a less political and more 'technocratic' approach is needed. In this light we propose the following steps are taken:

- **Control of the entire road system to pass to a National Roads Authority with a level of political independence like that of the Monetary Policy Committee.**
- **That authority would be statutorily responsible to Parliament for managing roads in the interests of road users. The scope of its powers and duties would include the integrated planning of future road capacity and capability, the regulation and integration of new connected vehicle technology, and the development and administration of a user charging system. There may be a case for devolving some of these activities to regional authorities in the large city regions.**
- **A 'Barnett formula' could be used to set 'rents' from road users , initially providing something close to the current net surplus of £30 billion p.a. or 1.5% of GDP but tapering down over time as the burden for general revenue raising is shifted to more broad based forms of taxation.**
- **We estimate that the fixed element of a charge averaging 7.5p per mile should provide an adequate budget for operating and maintaining a high quality road system (around £25 billion per year). This could be introduced gradually over the next twenty years or so;**
- **Variable charges[1] would be introduced to manage demand at busy periods and fund capacity enhancements. Capital markets could also play a role in financing such investment, with funding secured on the basis of future payments.**

There will be some concern about the transfer of roads from political control to an independent body. Politicians have however lost credibility by trying to reconcile inconsistent objectives – wanting to be seen to tackle the social and environmental impacts of road traffic while relying heavily on it for revenue raising. A more technologically complex, highly managed road system requires a high degree of trust and credibility and this can only be achieved if politicians keep themselves at arm's length from those who manage and administer it.

[1] This would be comparable to 'surge pricing' on the Uber model. Customers booking an Uber taxi when demand is high are asked to accept higher charges and are then required to agree that they wish to continue with the booking on this basis.

About Cambridge Econometrics:

Founded in 1978, Cambridge Econometrics is an independent economic consultancy that supports decision-makers by providing them with robust evidence that they can rely on. CE's economists work with a diverse range of organisations around the world, providing them with clear insights across a broad spectrum of complex 21st century challenges facing our economies, societies and the natural environment.

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Background

The British tax system, like many others around the world, taxes car ownership (Vehicle Excise Duty, VED) and vehicle use through the consumption of fuel (Fuel Duty). VED contributed just under £6bn to government tax receipts in 2016/17, while Fuel Duty contributed around £28bn. As we head towards a zero-carbon economy in the next two or three decades, zero emissions and shared vehicles are expected to significantly reduce these tax revenues. This article explores the implications of the transition to a zero-carbon economy on fuel duty receipts, the relative importance of fuel duty revenue and what the alternative options might be.

Fuel duty is a tax levied on fuels used for transport and some heating applications, including petrol and diesel, liquefied petroleum gas (LPG), natural gas as a fuel in vehicles and fuel oil. However, most of the revenue generated arises from the large volume of petrol and diesel consumed to power our cars, vans, buses and trucks.

Since the turn of the century, fuel duty revenue has contributed between £22bn and £28bn to government tax receipts each year. Without reform, pressure to rapidly decarbonise means that fuel duty revenues will fall to near zero over the next thirty years.

Facing such a loss to the Exchequer, it's worth asking a few questions about the future of fuel duty:

- **How quickly will fuel duty revenues erode?**
- **Does it matter?**
- **If it does matter, what can be done to minimise any adverse impact?** >>

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"Even if ULEV sales were to reach 100% of new sales by 2030, we'd still have plenty of internal combustion engines on UK roads. In this case, the phasing out of fuel duty would be gradual at around £1bn a year."

How quickly will fuel duty revenues erode?

Some context to start. In the tax year 1999/2000, fuel duty revenue accounted for 7.7% of total HMRC receipts; by 2017/18 this had already reduced to 4.7% as total receipts doubled to £594bn while fuel duties only increased by 24% from £22.5bn to £27.9bn. The story behind the relatively small increase in fuel duty is two-fold.

1. **Firstly, total fuel sales have remained flat; from 37.0 million tonnes in 2000 to 37.9 million tonnes in 2016.**
2. **Secondly, since 2011/12 fuel duty rates have remained constant in cash terms (falling in real terms), with the result that fuel duty has remained around £28bn since then.**

To the future: even supposing failure to reduce carbon emissions (and therefore fuel consumption) from road transport, fuel duty's relative contribution to total government receipts will continue to decline; assuming the government continues the popular measure of freezing rates.

By comparison, large contributors to government receipts such as VAT (21%), income tax (30%) and National Insurance contributions (22%) are expected to maintain or increase their relative shares, simply by virtue of being expressed in relative terms that allow for inflation (e.g. twenty pence in the pound), not cash terms (e.g. twenty pence per litre) and because they are coupled to economic growth, while fuel duty is not.

But carbon emissions must be reduced, and so a decline in absolute fuel duty revenue to near zero levels is inevitable by 2050 if we're to meet our legally binding carbon emissions targets. Theoretically, the fastest this could happen is probably around twelve years from now since it would require a complete turnover of the country's entire fleet of cars, vans, lorries and buses. Cars and vans, which account for just over three-quarters of combined petrol and diesel consumption, have an average lifetime of around twelve years.

The implication is that any petrol and diesel cars and vans sold today will still be in use in 2030 and therefore still generating fuel duty revenues for the Exchequer. Even if the government were to ban the sale of petrol and diesel cars and vans today, instead of the proposed date of 2040, fuel duty would only be expected to fall by around £1.5-£2.0bn a year for the next decade as the current fleet of vehicles is gradually replaced.

The reality, however, is that a transition to ultra-low emission vehicles will be much slower. Even if ultra-low emission vehicle sales were to reach 100% of new sales by 2030, we'd still have plenty of internal combustion engines on UK roads in 2030 and some in 2040. In this case, the phasing out of fuel duty would be gradual at around £1bn a year (less than 0.2% of annual government receipts in 2017/18)

Does the loss of fuel duty matter?

Economically, no. Even at the implausible rate of replacing the fuel consuming vehicle fleet in twelve years, an annual reduction in fuel duty of £2bn is only 0.3% of 2017/18 total HMRC receipts. Moreover, the money previously spent on fuel will now be spent on other things.

Firstly, there will be additional spending to pay for the extra cost of electric cars, the home charging infrastructure required and the electricity to charge the vehicle. These will all generate new tax receipts that will go some way to offsetting the lost fuel duty revenue.

Secondly, within the next few years, electric cars will become cheaper to own and run over the lifetime of the vehicle and so consumers will also have more to spend. This will boost the economy, generating some offsetting tax revenue through VAT and income taxes.

Indeed, research by Cambridge Econometrics et al[1] shows that because the United Kingdom imports oil, the economy tends to perform slightly better when spending on oil is reduced. Although the UK meets some of its demand with oil from the UK Continental Shelf, we expect a significant reduction in imports. In turn, the improvement in economic performance will lead to slightly higher tax revenues from income tax, VAT and social security (national insurance) which go a long way (if not all the way) to offsetting the lost fuel duty.

Politically, it might matter. In the public conscience, fuel duty is ring-fenced to be spent on the roads. While the Treasury doesn't ring-fence tax revenues in this way there will, nonetheless, be pressure on future governments to raise taxes specifically against motorists, to pay for road maintenance and investment in new roads.

What can be done?

As this tax base will eventually disappear if we're to meet our climate commitments, the government will need to consider alternatives.

- **It can do nothing. As discussed, the gradual erosion of fuel duty revenue will have little economic consequence and it would appeal to the many advocates of a simpler tax system, to simply have one less tax.**
- **It can slow the reduction in revenue by increasing the rate of fuel duty as fuel consumption falls. That will lead to higher revenues from fuel duty before fuel duty revenues reach zero, but it might also bring forward sales of ultra-low emission vehicles by making petrol and diesel cars ever-less cost competitive.**
- **It can raise income and VAT tax rates. If government decides it needs to recoup the foregone fuel duty revenue, it could of course raise other taxes. In practice, this rarely happens explicitly. Instead, Chancellors regularly tinker with tax rates to suit the politics of the day. Even small changes in income tax or VAT rates would be sufficient to offset any fuel duty shortfall.**
- **Perhaps most likely, though, is that government will phase in national road pricing or mileage charges to raise income directly from motorists that can be spent on maintaining our roads and, most importantly, to manage our congestion problem. After all, who wants to buy a new electric vehicle just to sit in traffic?**

[1] https://www.camecon.com/how/our-work/fuelling-britains-future/

In conclusion

As this collection makes clear, getting the taxation of motoring right as we change the composition of the vehicle fleet and perhaps the way we use and own cars, is going to be a fraught and complex process.

Taxation obviously matters to the Treasury. Even despite a prolonged period during which tax revenues from motoring have been declining, they still raise approaching £40 billion a year, or more than 5% of all tax revenue. Fuel duties (and the VAT on those duties) make up the great majority of those revenues. Nearly a decade of duty freezes has already reduced their importance. They are bound to keep falling, eventually towards zero if we are to meet our climate targets and government intentions to phase out the sale of all petrol and diesel cars are realised.

We know that taxation matters to motorists. The French "gilets jaunes" have perhaps reminded us of our own fuel duty protests back at the turn of the century. The current government appears to have decided that even raising fuel duty in line with inflation is no longer politically saleable. Yet the repercussions of the million plus signatures on the 2007 petition against road pricing mean that serious discussion of alternatives to fuel duty has remained very difficult, at least until recently.

We can't continue to ignore this issue and pretend that the status quo is sustainable. We need a tax system which aids the move towards zero carbon transport. And we need one which continues to levy a charge on road users, not so much because that will be important to the public finances – though it will – as because we need some way of taxing the external costs created by road users. Since by far the greatest of those external costs is the congestion created by driving, the move away from burning petrol won't, in fact, change that consideration all that much.

This is going to require a tax system which changes over time. But it needs to change in a planned and transparent way, or it risks being no more publicly acceptable than big fuel duty increases or proposals for road charging have been in the past.

The endpoint almost certainly needs to involve some sort of road user charge linked to congestion. This a much more plausible outcome than ever before as technology has advanced and we have all become so much more comfortable with it. The number of contributors to this document essentially accepting the same point is a tribute to how far that debate has progressed. But we won't get there without engagement and leadership from government. As we go through the transition to a new sort of vehicle fleet, that needs to come soon. Leave it too late and there is the real risk that we manage the transition inefficiently, lose huge amounts of revenue over the long run and see ever growing congestion on our roads.

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