Written Evidence submitted by Uber (EVP0140)

Introduction

1.1 Uber welcomes the opportunity to submit evidence to the Transport Committee's inquiry into zero emission vehicles and road pricing. Transport remains the UK's highest emitting sector – the Committee on Climate Change's (CCC) Sixth Carbon Budget showed surface transport accounted for 22% of total UK GHG emissions in 2019, the bulk of this coming from the tail-pipe emissions of fossil-fuelled cars[1]. In the year of COP26, the UK Presidency is an opportunity to cement a position of global leadership on this issue, and for UK-based businesses to showcase their commitment to shared climate goals.

1.2 At Uber, we believe the future of mobility is **shared**, **active**, and **electric**. Technology allows us to make mobility a service that people consume only when they need it, not an asset that sits in a driveway unused for 95% of the time.

1.2.1 **Shared:** Our shared rides product UberPool uses technology to match people going in the same direction. Pre-COVID, this accounted for up to 20% of trips in the cities where it operated. Sharing vehicles removes the need for people to own a private car. This is good for the environment but also for cities: around 15% of space in the centre of some of our most crowded cities is given over to parked cars[2].

1.2.2 **Active:** To further reduce car ownership, we provide access to more options that help make a city move. Our aim is to become a truly multimodal transportation platform. In London we offer a number of mobility options on our platform including: JUMP e-bikes, Uber Boat by Thames Clipper and public transport travel options. In other markets we offer e-scooters through the Uber app and in some US cities we have partnered with local transit authorities to offer first-and-last mile rides.

1.2.3 **Electric:** With over 60,000 licensed drivers in over 40 towns and cities in the UK using our platform, we recognize our responsibility to address our environmental impact and help the cities we serve become more sustainable. We are also well placed to facilitate the early mass adoption of electric vehicles.

We strongly supported the Government's decision to bring forward the end of the sale of new petrol, diesel and hybrid cars to 2030. Last year, we committed to operating as a zero emissions mobility platform in Europe and North America by 2030, and globally by 2040. In London, our ambition is for every driver on the Uber app to use a fully electric vehicle by 2025. **Our Clean Air Plan has already raised £120 million and helped over 1,500 drivers on the app to switch to electric vehicles, with over 2.5 million EV trips taken since we launched in January 2019.**

We are further supporting the drive for electrification by **investing £5m in new electric vehicle charging infrastructure in London**, targeting areas

currently lacking the charging infrastructure they need. Later this year we will launch our Uber Green service in London. For the first time in a UK city, riders will be able to specifically request an electric vehicle in our app.

[1] Methodology Report, p.45; Sixth Carbon Budget - Climate Change Committee (theccc.org.uk)

[2] Making Better Places white paper, p.10; Making Better Places - White Paper | WSP

Accelerating the shift to zero emission vehicles

Feasibility, opportunities and challenges of bringing forward the 2030 ban on new petrol and diesel vehicles

2.1 In Uber's submission to the Office for Zero Emission Vehicles (OZEV) consultation in August 2020, on the phase out date of internal combustion engine (ICE) vehicles, we advocated for the Government to bring forward the phase out date for the sale of new ICE vehicles to 2030. We believe this step is necessary: both to ensure the UK transitions quickly enough to zero emission vehicles in order to meet its net zero ambitions, but also to allow enough time for a second hand market for EVs to develop, giving more people the opportunity to purchase an EV. The CCC's Sixth Carbon Budget shows that to set the UK on a Balanced Net Zero Pathway, electric vehicles will need to make up 43% of the car fleet by 2030, and 97% of new car sales. Bringing forward the ban was vital in order to achieve this goal and is already helping to drive behavioural change: 28% of respondents to the latest Department for Transport (DfT) Transport and Technology public attitudes survey[1] said that the ban would make them more likely to buy or lease a battery electric or hybrid vehicle.

2.2 Uber has undertaken its own research to understand the challenges that drivers face in transitioning to electric vehicles – many of these challenges are applicable to the acceleration of the 2030 phase out. In September 2020, we launched our SPARK! report in which we set out plans to electrify our platform in Europe. Part of this included identifying a range of areas in which we believe public and private bodies can come together to make electrification work for high mileage commercial drivers, like those who use the Uber app. Although relatively small in number, given the number of miles driven by commercial drivers, promoting electrification among this group will have an outsized environmental benefit. It will also help establish a cohort of early adopters that can stimulate the conditions needed for mass electrification across society.

2.3 The research outlined in our SPARK! Report revealed that most obstacles to electric vehicle adoption stem from one particular theme: **total cost of ownership (TCO)** . TCO encompasses all the costs of owning and operating a vehicle, including the upfront costs of acquiring the vehicle and all ensuing operating costs such as fuel, insurance and maintenance. The same principle will apply equally to professional drivers and the average consumer – vehicles with lower TCO will be more attractive to

[3] p.14, Wave 6 Summary Report, Transport and transport technology: public attitudes tracker - GOV.UK (www.gov.uk)

drivers and once the total cost of electric vehicles is below that of ICE vehicles, widespread uptake will ensue. Policies to tackle the TCO of electric vehicles predominantly fall between measures targeting upfront purchase cost and those aimed at improving availability of charging infrastructure.

2.4 The Government has made a number of welcome extensions to financial assistance schemes to **lower the upfront cost of electric vehicles**, including by extending the Plug-in Grant to 2022-23 and removing the subsidy for vehicles worth over £50,000 - meaning support is better targeted at drivers looking to switch at a lower price point, as opposed to those who would switch to electric anyway. Nonetheless, EVs still remain expensive luxuries for many UK citizens.

2.5 Even before the coronavirus pandemic, experts predicted that EVs would not be competitive for new car sales until the middle of the decade, and only then with substantial investment in charging infrastructure. Research from the Environmental Defence Fund[23] found also that half of electric vehicles were owned by individuals in the top quintile of income; the best-selling electric car in 2020 (with almost 3 times as many vehicles sold as the next most popular model) was the Tesla Model 3 which has a starting price of £42,500 [5] . This suggests that even with Government interventions such as the Plug-in Grant, rather than lowering the cost of electric vehicles for cost-sensitive users, current subsidies are mostly utilised to widen the choice for consumers already able to afford to switch to electric.

2.6 Another key challenge in accelerating the shift to zero emission vehicles is ensuring **charging infrastructure** is readily accessible. Charging concerns and range anxiety are the biggest causes of doubt among UK consumers[6] asked about the downsides of electric vehicles. This is also true of drivers on the Uber app: every hour that a driver spends charging or looking for a charger is time that they could have spent earning. Meeting charger demand is therefore key to encouraging more drivers to transition to an electric vehicle.

2.7 The Mayor of London's EV Infrastructure Taskforce has already taken significant steps to deliver more charging infrastructure in the Capital, including 300 rapid charge points, London's first rapid charging hub in Stratford and nearly 3,000 slower charge points on residential streets. This comes alongside significant additional £1.3 billion from the Government, outlined in the Prime Minister's Ten Point Plan.

2.8 While this investment is welcome, if the UK is to establish itself as a leader in electric vehicles, more needs to be done. Data from 2018 shows that in the Netherlands -

[4] https://www.edf.org/sites/default/files/documents/EDFE%20EV%20electrification%20report%20Oct%202019%20FINAL.pdf

[5] Electric vehicle market statistics 2021 - How many electric cars in UK ? (nextgreencar.com)

[6] Transport and transport technology: public attitudes tracker - GOV.UK (www.gov.uk)

widely acknowledged as a world leader when it comes to EV adoption and infrastructure - there were 19 EV chargers for every 100km of road, compared to 3 in the UK[4] .

2.9 Beyond the overall quantum of investment or numbers of chargers however, it is crucial to ensure chargers are in the right places. Our research has identified significant driver demand for both rapid charging and slow charging networks in the places where drivers park, often on public roads[5] . However, we have found that slow chargers are both less likely to be provided by the market and are also often cheaper and tend to be better for battery life.

2.10 Our experience in London shows that investment has so far been skewed towards wealthier boroughs. This is supported by others including the International Council on CleannTransportation (ICCT). Department for Transport (DfT) data from April 2020 shows that Redridge, for example, has only 15 charging devices per 100,000 inhabitants, compared to 190 charging devices per 100,000 inhabitants in Westminster.

2.11 Newham, Tower Hamlets, Brent and Redbridge are areas where the highest number of drivers on our app live. Low availability of off-street parking and a lack of existing charging infrastructure in these areas represents the biggest barrier for many of these drivers to switch to EV.

2.12 Around 70% of drivers in London do not have access to off-street parking, and not all those with off-street parking are able to install a home charger. In some London boroughs, the number is even higher. In Tower Hamlets for example, over 90% of households do not have access to off-street parking[6]. **Expanding on street charging in these areas is at least as important as expanding the number of dedicated fast-charging locations and will help ensure the transition is a fair one that works for all parts of society.**

The actions required by Government and private operators to encourage greater uptake of electric vehicles and the infrastructure required to support them

2.13 Two years ago Uber made a commitment to ensure all 45,000 drivers on the Uber app in London are in an electric vehicle by 2025. This London commitment and the work we started in the UK is now at the forefront of Uber's efforts globally. In September 2020, we published a number of ambitious sustainability commitments that

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[7] https://www.statista.com/chart/15702/the-number-of-electric-vehicle-charging-points-per-100km-of-paved-r oad/

[8] Uber SPARK! Report, Page 15 https://d1nyezh1ys8wfo.cloudfront.net/static/PDFs/Uber_Spark_report.pdf?uclick_id=be98f6ac-e38d-49e4-8fed-234f801f4033

[9] https://onstreetcharging.acceleratedinsightplatform.com/

will see us become a zero emissions mobility platform in Europe and North America by 2030.

2.14 We made these commitments because we believe that professional drivers will be the early mass adopters of EVs. We also believe the private hire sector has a unique role to play in helping deliver greater uptake of electric vehicles.

2.15 To ensure all 45,000 partner-drivers who use the Uber app in London can transition to an electric vehicle by 2025, we introduced a Clean Air Fee of 15p per mile for all trips in London in 2019. This is expected to raise in excess of £200 million and will go to drivers to help them save on average £4,500 off the cost of an electric vehicle. This is in addition to existing incentives like the Government's £3,000 Plug-in Grant. We are also helping to make electric vehicles more affordable for drivers, through the deal agreed with car manufacturers such as Nissan who have made 2,000 Sunderland-made electric LEAFs available to drivers at a lower cost than a new hybrid Toyota Prius, another car that is popular among drivers who use the Uber app.

2.16 As a result of these steps, electric vehicles on the app have already increased substantially, from under 100 at the beginning of 2019 to over 1,500 in December 2020. We hope that the upcoming launch of Uber Green in London - where riders can request an EV to travel - alongside our continued support of the Clean Air Plan will help boost demand for EVs among drivers even further.

2.17 To address the issue of charging infrastructure, we have partnered with bp Pulse to improve drivers' access to rapid charging points in key strategic locations across London.

2.18 In October 2020, we also announced more than £5 million in funding to invest in new electric vehicle charging infrastructure in London and are keen to work with London boroughs to understand how this investment can best target areas currently lacking the charging infrastructure they need. **Our ambition is to install an initial 300 new on-street public charge points by 2021.**

Actions required by Government and infrastructure needs

2.19 Uber fully supports the work of the Mayor of London's EV Infrastructure Taskforce to drive up the number of rapid and slow chargers in the Capital. Likewise, the Prime Minister's Ten Point Plan for the environment has set out ambitious targets for investment in EV infrastructure, and recognises that a blend of rapid and slow - as well as strategically located and on street charging - will be needed if we are to accelerate the transition to EVs.

2.20 While these are important steps, the UK needs to go much further faster if it is to ensure the timely transition to EVs in order to tackle emissions from road transport.

2.21 Efforts must continue to tackle affordability concerns by **reducing the upfront cost of electric vehicles**. Additional financial support should continue until electric vehicles reach cost parity with conventional vehicles. We believe these incentives should be targeted towards high mileage users and those who need the most support in making the transition. Better targeting of support could enable faster uptake (as higher income purchasers will still be likely to buy electric) and could enable more generous grants. This would bring support more in line with the likes of Paris (which offers an €11,000 subsidy for battery electric vehicles), further addressing TCO concerns.

2.22 Enabling lower income households to make the switch not only helps them to access the lower running costs of an electric vehicle but is also more likely to remove older, higher emitting vehicles from the road and to ensure that high mileage drivers are using the cleanest possible technology, yielding significant environmental benefits.

2.23 The withdrawal of the Plug-In Car Grant for vehicles that cost more than £50,000 is a welcome step to ensure incentives do not go to those who need them least or risk subsidising second vehicles that may be used less. However, as many high mileage drivers tend to be on lower-incomes, the Government should also consider the provision of means tested interest-free loans for electric vehicles. This could help overcome the financing barrier for those on low incomes. As the availability and lifecycle of electric vehicles increases, the Government should consider extending OZEV grants and incentives for second-hand electric vehicle purchase.

2.24 The Government must ensure that **charging infrastructure continues to expand in areas of high demand.** We welcome the additional funding announced in the Spending Review and in January, with the expansion of the On Street Residential Chargepoint Scheme, but further action is still needed to support rollout in less well served areas. Uber is working with

Centrica and Hitachi and other major players in the charging ecosystem, such as UK Power Networks, through the Ofgem-managed Optimise Prime project, to ensure infrastructure goes to where it is needed and in the right quantities. The results of this work are at a preliminary stage, but we would be happy to share them with the Committee once ready.

2.25 The Government could further ensure equitable access to EV charging infrastructure by **introducing a Right to Plug**, allowing anyone who purchases an electric vehicle, no matter where they live, to have a right to request a charger to be installed at or near their home. Amsterdam has three times the number of chargers per capita of many other European cities (with the exception of Oslo and Utrecht)[7]. The city authority there will install a charger upon request within four to six months if there are no existing chargers nearby. This has shown to be an extremely effective way of ensuring EV charging infrastructure goes to where it is needed most.

[7] https://theicct.org/sites/default/files/publications/EV-charging-metrics-aug2020.pdf

2.26 In addition to the above, there are a number of steps that the UK should consider that would help accelerate the transition to EVs:

2.26.1 **Focus investment in charging infrastructure on urban areas** where future demand is likely to be highest and a greater number of people are impacted by poor air quality, prioritising the expansion of on street slow charging networks. Consumers in low income, densely populated areas, are less likely to have easy access to off-street home charging. Focusing investment on high mileage drivers in these areas will not only have the biggest impact on emissions, it will also generate the best return for the public purse as chargers are utilised more.

2.26.2 **Create a strategic framework that sets greater standardisation for charging equipment** and requirements for related infrastructure. This harmonisation would increase consumer choice by ensuring that all charging infrastructure is able to operate with all vehicle makes and models, in time providing greater incentives to switch. This should be coupled with greater involvement from local authorities in determining provision in their areas, allowing the rollout of a broad, deep charging network.

2.26.3 **Adopt a data led approach to charger rollout**, based on a detailed understanding of the current utilisation of public chargers (as in Amsterdam) as an indication of where more are needed. Government should support data-sharing enterprises and ensure that national, regional and local government embrace a data driven approach.

2.26.4 **Lift the restriction on network providers that currently prevents them from investing in energy networks ahead of demand**. Ofgem currently stipulates that investments in energy networks must only be made where there is proven need, a requirement that is not conducive to meeting the transformational shift in demand for zero emission vehicle charging. Lifting this restriction would allow charging points and associated grid updates to be made ahead of time, in anticipation of the rapid expansion of the electric vehicle market.

2.27 Uber's data analytics capabilities have enabled us to work closely with other firms to model the charging needs of drivers and ensure that infrastructure is being built where it is needed and in the right quantities. We are happy to share these insights with the Committee.

Road pricing

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

2.28 When implemented effectively, road pricing can be used both to **discourage individual behaviours that generate 'negative externalities'** - **such as pollution**

or congestion, degradation of public assets, like roads or public land - and to collect compensation. Motoring charges can be a vital tool for influencing the level of private vehicle ownership as well as where, when and how far vehicles are driven.

2.29 As such, when making the case for road pricing, **we believe it is important to consider *all* the costs car usage imposes on society.** *Owning* a car and *using* a car impose (separate) costs on society that are not fully captured in the costs paid by the individual car owner:

- Owning a car - emissions from the production of the car and the use of scarce land for parking.
- Using a car - tailpipe emissions, emissions from fuel production, congestion, accidents, noise, wear and tear on infrastructure.

2.30 Uber does not benefit from congestion - it is bad for drivers, bad for riders and for everyone who lives in the cities in which we operate. We want to help find real solutions to addressing this issue. In building our services we spend a lot of time thinking about how to match riders and drivers efficiently. Tackling congestion - ensuring the total number of vehicles in a city is well matched to the available space - is a very similar problem, and it is one we care deeply about.

2.31 Given our experience, we believe the following factors should be taken into account when considering road pricing:

2.32 **The current UK system of motoring taxes centres around fuel duty - a blunt tax on vehicle usage**. Fuel duty does not distinguish where and when someone drives. Tax rates are set and accrue centrally. Local considerations and real-time traffic conditions are not factored in. Parking charges and tolls (such as the London Congestion Charge Zone) are more locally targeted but make up only a small percentage of national motoring taxes, and are typically fixed fees rather than dynamic. Since each authority requires its own people and infrastructure to collect these charges, operating costs can also be high, making up a significant fraction of total receipts. Meanwhile, for private car owners (where a large part of the cost of the vehicle is already 'sunk') the static nature of fuel tax means that the marginal cost of a single trip is typically lower than alternatives such as public transport, even at those times when road capacity is exhausted. High pre-existing levels of car ownership in cities therefore 'lock in' high levels of car use - largely agnostic to the externalities that are generated.

2.33 **The cost driving imposes on society varies sharply depending on the type of car, where and when it is used, how far it is driven, and current traffic conditions on that specific route**. Driving a long way in a polluting vehicle in certain parts of cities during rush hour will impose a greater cost on society than a short trip in an electric vehicle on a rural road at midnight. Likewise, owning and parking a car is more costly in places where land is scarce. The Institute for Fiscal Studies (IFS) estimates that the social cost of over half of all kilometres driven in the UK is significantly less than the driver pays in fuel duty[8]. However, for a small fraction of

kilometres driven in the UK, the social cost can rise as high as 275p / km - about 40 times what would currently be paid in fuel duty.

2.34 **Motoring taxes should therefore vary, at least in part, by time, place and distance driven**. Ideally, they should be based on conditions on each given road at a given moment.

They should also reflect 'actual' conditions - not 'averages', 'historical', 'expected' or 'citywide' conditions which are too crude to analyse and influence the kinds of local, transient, sometimes unpredictable patterns of congestion which are characteristic of real roads. 'Averages' are misleading, even within cities, leading to charges that are much too high for many trips and much too low for others.

2.35 **Implemented well, road pricing can sharply reduce the social costs of motoring, tackle emissions and congestion, increase the value of infrastructure investment and provide a good alternative to fuel tax.** If badly implemented however, road pricing could also worsen social inequality, especially for those living in suburban or rural areas, or whose circumstances require them to drive. An individual's ability and willingness to pay depends on both their economic and personal circumstances as well their access to affordable and convenient alternatives, like public transport. There are however, many practical ways in which inequalities could be tackled in such a system - for example by giving all road users a regular balance of road use credit based on factors such as where they live and their level of need; using some of the monies raised to increase investment in public transport; and / or subsiding clean and active modes like bikes, scooters & carpooling

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

2.36 We believe in the potential for comprehensive road pricing - where all road users pay a fair share for the use of our crowded roads - to radically improve cities. We agree with the views of numerous urban planners, transit experts and academics who regard road pricing as the single best way to improve traffic flow and quality of life.

2.37 However, congestion is a very local phenomenon. Any system that does not price at the local level (potentially, in some cases, a single street), and in a dynamic way, is unlikely to be effective at preventing congestion at the times it matters; without charging so much that it excessively penalises the majority of trips on roads and at times where congestion is not an issue.

2.38 In developing our ridesharing service we have faced challenges very similar - often identical to - those faced by developers of congestion pricing schemes. As such, we have formed a strong point of view on how a congestion charging system should be implemented:

[8] https://www.ifs.org.uk/uploads/GB2019-Chapter-9-A-road-map-for-motoring-taxation-update2.pdf

2.38.1 Since congestion changes from road to road and minute to minute, **a dynamic road pricing system** is needed. It should be capable of:

- Understanding where and when someone is driving in order to provide an appropriate price
- Forecasting traffic flows in advance based on historical data, as well as measuring them in real time, in order to set that price
- Charging different amounts based on distance and specific roads / routes used
- Changing prices dynamically based on actual and forecast congestion to match road use to available capacity and smooth out demand across the road network
- Clearly communicating pricing and other information to drivers
- Seamless payment, with a system of 'road use credit' allocated to drivers based on need

2.38.2 **A GPS and software-based solution** should be used to manage all motoring charges, for driving, parking and other forms of tax. The core technologies are already widely used in the rideshare sector to manage trips, offer a convenient experience to riders and drivers and to balance the network to ensure a steady supply of available cars. Singapore - a leading innovator in road pricing and motoring taxation - is currently upgrading its system along these lines. Compared to 'traditional' road tolling, such a system would be much cheaper, more effective, responsive, easy to change and customisable to local needs.

2.38.3 **Rates should be set / adjusted locally but within a national framework.** This would give a high level of control to local policymakers to manage levels of car ownership, as well as managing road and public transport demand in aggregate across the network.

2.39 A system designed using the above principles would allow any ancillary policy goals to be enacted with greater precision. For example, imposing higher costs to use a car at the exact moments when it would cause congestion, while also reducing the cost of motoring outside cities. A system to precisely control road use will also increase the value of investment in city infrastructure by better matching usage to capacity, escaping well known paradoxes in transport planning whereby certain kinds of road building can actually worsen congestion.

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;

2.40 We believe road pricing could be an effective measure to solve many environmental and congestion problems — and potentially generate economic, social and societal benefits as well.

2.41 The best way to ensure a road pricing scheme has public support is by considering and mitigating any equity impacts that may result from it. Imposing charges on access to roads that were previously free may be perceived to harm some groups, especially those on lower incomes, as they will either have to pay the fees or be priced off the roads. However, there is also potential for this system to be more equitable and less regressive than the current systems (e.g. Vehicle Excise Duty, fuel duty), especially if revenues are used for improving public transport[12] .

2.42 Implementing road pricing programmes with a clear focus on equity can lead to more frequent and affordable public transit, safer pedestrian and bicycle routes, and improved health outcomes for vulnerable communities — all important components of an equitable transportation system.

2.43 As mentioned above (2.34), discounts and exemptions for priority groups such as low-income households, local business owners or those with other needs (disabled residents for example) can be easily designed, managed and implemented within a software based system and can also help to create progressive pricing structures[13] .

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

2.44 While operating in Singapore, London and Stockholm, Uber has had the opportunity to study some of the world's most well established road tolling and congestion pricing systems up close. Listed below are some key observations from these systems.

2.44.1 **Cheap GPS and smartphone penetration have changed everything:** Existing congestion pricing systems, such as the congestion charges in London and Stockholm, were implemented before smartphones were widely available. Without an obvious way to i) establish the location of a vehicle and ii) bill a driver based on that location, the commissioning agencies were forced to develop systems entirely from scratch.

2.44.2 Establishing the locations of vehicles can require hundreds of millions of pounds of investment in roadside transponder and / or license plate recognition hardware; and billing drivers requires a significant investment in payment processing and support systems. Both involve large ongoing operating costs which reduce the net income of the schemes available to invest back into public transport. The dependence on physical infrastructure also reduces effectiveness and flexibility. While it is possible to charge a driver for driving into a zone, it is not practical to charge for how long, how far, or where they drive within the zone. These are all crucial factors in determining the true congestion impact. The shape of a physical charging zone is also hard to change. For example, the short

[12] https://www.sciencedirect.com/science/article/abs/pii/S0965856405001618

[13] https://www.transformca.org/sites/default/files/Pricing_Roads_Advancing_Equity_Combined_FINAL_190128_0.pdf

lived 'western extension' of the London CCZ required new physical infrastructure to be built, and then later decommissioned. With a GPS-based system such changes could be made at the touch of a button.

2.44.3 With the advent of smartphones and the development of ridesharing, companies operating in the ridesharing sector such as Uber have developed advanced technology systems to perform many of the same functions required of a modern, GPS-based road pricing system. These systems were originally developed for ridesharing, but are designed in such a way that they can be readily repurposed.

2.44.4 Since they do not rely on building physical infrastructure, software based systems can also be incrementally improved, step by step, as needed. This would allow commissioning authorities to start with a simple approach to setting pricing zones and rates; which become more local and precise over time, while still presenting a clear and simple upfront cost to drivers before each trip.

2.44.5 **Road pricing needs to apply to ALL road users:** Some cities in which Uber operates have focused road use charges on narrow groups of road users (for example private hire vehicles and taxis) while eschewing charges on private vehicles which are responsible for the vast majority of travel on roads. In order to be effective however, road pricing needs to apply to all road users. Otherwise, any group of meaningful size that is excluded from the system will continue to have a tendency to overuse the network until congestion reasserts itself. While the 'distributional' impact of road pricing can be addressed by providing free credits to road users based on need, the principle of charging all road users (in cash or credits) for the trips they take is key to the system's success.

2.44.6 Taxing only PHVs or taxis can be especially counterproductive if those modes are complementing public transportation and other sustainable modes to support a car-free lifestyle. In London for example, the Uber app offers journeys by e-bike and Boat as well as public transit options. Occasional, affordable rideshare trips combined with public transport may allow a city resident to give up a car; whereas if they feel they need to own a car then they may use it even for trips they might otherwise have taken on public transport.

2.44.7 **Ensure revenue raised from road pricing goes towards public transport**: As stated above, the equity impacts of road pricing can be mitigated if revenues are used for improving public transport. This approach has been followed by New York City where money which is collected as part of its congestion charge scheme will be reinvested into the modernisation of the whole subway system. This, in turn, will reduce congestion as more and more travellers choose to travel via public transport[9].

[14] https://www.intelligenttransport.com/transport-news/77852/new-york-congestion-charge/

2.44.8 **Tackle parking to help tackle congestion:** Cities like Copenhagen - often seen as Europe's most walkable city - have eschewed road pricing in favour of parking reduction. Between 1986 and 1996, the Government eliminated 2 to 3 percent of its parking spaces per year and used the space freed up by parking to create new pedestrian streets and bike crossings[15] . Copenhagen has also introduced emissions-based permit pricing[16] . In 2020, owners of the least economical diesel and petrol cars saw a hundredfold increase in the cost of an annual parking ticket. Vehicles with low emission ratings saw a doubling of the price levels. Even electric and hydrogen cars will have to pay more to park in the city.

2.44.9 **A comprehensive road pricing system can be fine tuned to tackle each of the social costs of owning a car, of parking that car, and then of using that car:** in Singapore - a small, wealthy city state - many more people can afford to own a car than the roads can carry. To limit congestion, emissions and overall land requirements, Singapore uses a sophisticated system of variable charges that target all three aspects - owning, parking and driving a car - to manage the use of the roads. Such charges - in total - make up around 10% of government income.

2.44.10 These charges work together to make the cost of driving more accurately reflect its potential social cost - for Singapore as a whole. While running a private car is much more expensive - and less common - than in other cities, it creates strong incentives for vehicles and road space to be used much more efficiently than in other cities. Singapore has a low level of car ownership; an affordable and efficient taxi & private hire sector; a system of road pricing that flexes over time to match vehicle numbers to the capacity of individual roads; and a convenient and comfortable public transport network - making it easy and economical to get around the city without owning a car.

2.44.11 In Singapore, buying a car is taxed in multiple ways, including via the 'Additional Registration Fee' of between 100-180% of the value of the car, and the need to buy a 'Certificate of Entitlement' - the right to own a car. COE supply is controlled to keep the number of vehicles on the road stable at just under 1 million.

2.44.12 As well as taxing ownership of cars, Singapore also taxes their use. The 'Electronic Road Pricing' system is the world's most sophisticated road pricing system. A driver is charged every time they pass through any of 77 control points across the island, meaning congestion can be controlled at the level of individual roads. The charges also change over time in response to actual levels of congestion - too many cars and they will rise, sufficient capacity and they fall.

2.44.13 The system is currently being upgraded to an even more modern, flexible, GPS system which would - in principle - allow prices to vary dynamically from road to road, and minute to minute based on real time traffic conditions[17] . Based on our own experience of using GPS and dynamic pricing to match supply and demand in ridesharing, this is a system that we believe has the potential to be very effective in tackling congestion.

[15] http://www.newurbanism.org/pedestrian.html

[16] https://www.eltis.org/in-brief/news/copenhagen-increase-parking-costs-100-times-reducing-cars-city

[17] https://www.zdnet.com/article/singapore-readies-satellite-road-toll-system-for-2021-rollout/

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