

Shared Vision:

Tackling the barriers to electric car club cars

May 2021

Executive Summary

The average British car is used very inefficiently. It's parked for 96% of its life, and when used rarely travels very far: a quarter of car journeys are under two miles, and well under half are under five miles. An area larger than Birmingham is allocated to parking and 20-50% of lifetime CO2 emissions occur during car production. Increasing the use of car clubs is one way to tackle the appalling waste created by unnecessary car ownership. This would improve the quality of the urban environment and deliver a range of social and environmental benefits.

Increasing the use of car club cars significantly reduces the number of cars overall: 45% of long-term car club members in London cut their vehicle ownership on becoming members. Car club members drive fewer miles than car owners, and walk and cycle more. However, to increase the size of the electric car club network and, crucially, to increase its usage, a range of perceived and practical barriers must be addressed:

- The lack of a coherent national policy
- Inconsistent local authority policies: notably regarding access to parking bays
- Insufficient suitable charging infrastructure.

As a start, increasing the use of car clubs should become a policy priority for the Department for Transport, with allocated staff reporting to a Minister: initially with the aim of establishing a national framework as to how car club operators and local authorities should interact to support their development. Local authorities (particularly in urban areas) should identify and provide access to suitable parking bays with charging. This Cinderella of transport policy needs to be provided with the opportunity to thrive, as it has in Germany through supportive national policy.

1. Car Use in the UK Today

The number of registered cars in the UK has risen from 28.6m to 31.9m over the last decade, an 11.5% increase¹ (nearly one for each licence holder²). 76% of UK households own at least one car,³ but the average car is parked for 96% of its life,⁴ and fully one third of cars do not move on any given day.⁵ The amount of land given over to cars is also enormous. There are 3m to 4m regulated parking spaces in the UK⁶ including car parks run by local authorities, private sector parking companies, NHS trusts, universities, etc. In addition there are an estimated 17.1m driveway and garage spaces.⁷ Presuming that each space is 11.52m²,⁸ this amounts to *at least* 231.5km² of the UK being allocated to parking: an area just under the size of Birmingham.

The cumulative number of miles driven by the nations cars is also steadily rising⁹, but the average distance travelled by an individual car is falling¹⁰ (due to the increase in the number of cars outpacing

¹ Licensed Vehicles by Body Type (quarterly) Great Britain and United Kingdom (Table VEH0101). Retrieved 9th April, 2021 from:

<https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01#licensed-vehicles>

² Department for Transport (2020). *2019 National Travel Survey*. Retrieved from:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/906276/national-travel-survey-2019.pdf

³ Department for Transport (2020). *2019 National Travel Survey*. Retrieved from:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/906276/national-travel-survey-2019.pdf

⁴ RAC Foundation (2012). *Spaced Out: Perspectives on Parking Policy*. Retrieved from:

https://www.racfoundation.org/assets/rac_foundation/content/downloadables/spaced_out-bates_leibling-jul12.pdf

⁵ Reasons to be Cheerful (2019). *Electric dreams: the end of the petrol and diesel vehicle (29 mins)*. Retrieved 9th April 2021 from:

<https://play.acast.com/s/reasonstobecheerful/93.electricdreams-theendofthepetrolanddieselvehicle>

⁶ RAC Foundation (2012). *Spaced Out: Perspectives on Parking Policy*. Retrieved from:

https://www.racfoundation.org/assets/rac_foundation/content/downloadables/spaced_out-bates_leibling-jul12.pdf

⁷ RAC Foundation (2012). *Spaced Out: Perspectives on Parking Policy*. Retrieved from:

https://www.racfoundation.org/assets/rac_foundation/content/downloadables/spaced_out-bates_leibling-jul12.pdf. These figures are from 2009, so the actual figure now is undoubtedly higher.

⁸ Standard UK parking spaces are 4.8m in length, and 2.4m in width: AA (2020). Retrieved 9th April 2020:

<https://www.theaa.com/breakdown-cover/advice/parking-space-size>

⁹ Cumulatively, the UKs cars drove 278.2 billion miles in 2019. This is 33.4 billion miles than a decade previously. Department for Transport (2020). *Road Traffic (vehicle miles) by vehicle type in Great Britain (Table TRA0101)*. Retrieved from:

<https://www.gov.uk/government/statistical-data-sets/road-traffic-statistics-tra>

¹⁰ Department for Transport (2020). *Average Distance Travelled by Main Modes - index: England (Table NTS0105)*. Retrieved from:

the increase in miles driven). In England in 2019, 13% of cars drove less than 3000 miles over the year (an average of up to 8.2 miles per day), with 29% doing less than 5000 (an average of up to 13.7 miles per day).¹¹ The majority of car journeys are short: around a quarter of all car/van journeys are under two miles, with well over half under five miles.¹² A majority of these trips could (should?) have been taken by a more sustainable mode like walking, cycling or public transport. However, the amount of walking that the nation does is declining with the number of walks over a mile taken by the population falling by 13% since 2002.¹³ There is also a clear divide between those households with a car/van, and those without. In 2019, on average those from a household without access to a car/van took 131 more walking trips, 12 more cycling trips, 44 more bus trips and 3 more rail trips than someone with access to a car.¹⁴ This means that of the 'excess' non-car trips, 75% are undertaken by 'active travel'.

Increased levels of traffic obviously have a detrimental effect on the environment. Whereas some sectors of the economy (notably the power sector) have seen dramatic falls in the amount of CO₂ produced annually, CO₂ emissions from the nation's cars have stayed at the same level since 2000.¹⁵ Whilst electric vehicles (EVs) have no tailpipe emissions, they are still responsible for CO₂ emissions from electricity generation and fine particle emissions from brake, tyre and road wear (although particulate matter emissions are reduced compared to a conventional car by 6-42%¹⁶). Cars also generate emissions through their production. In the UK, these account for half of the lifecycle emissions of an electric vehicle (10.6 tonnes of CO₂, out of 20.7 tonnes over an EV's lifespan¹⁷). The

<https://www.gov.uk/government/statistical-data-sets/nts01-average-number-of-trips-made-and-distance-travelled>

¹¹ Department for Transport (2020). *Annual mileage band of 4-wheeled cars, England: since 2002* (Table NTS0904). Retrieved from:

<https://www.gov.uk/government/statistical-data-sets/nts09-vehicle-mileage-and-occupancy>

¹² Department for Transport (2020). *Average number of trips by trip length and main mode: England* (Table NTS0308). Retrieved from: <https://www.gov.uk/government/statistical-data-sets/nts03-modal-comparisons>

¹³ T&E calculations derived from Table NTS0303: Department for Transport (2020). *Average number of trips, stages, miles and time spent travelling by main mode: England* (Table NTS0303). Retrieved from:

<https://www.gov.uk/government/statistical-data-sets/nts03-modal-comparisons>

¹⁴ Department for Transport (2020). *Travel by personal car access, gender and main mode or mode: England* (Table NTS0702). Retrieved from:

<https://www.gov.uk/government/statistical-data-sets/nts03-modal-comparisons>

¹⁵ Department for Transport (2020). *Road Traffic Estimates: Great Britain 2019*. Retrieved from:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/916749/road-traffic-estimates-in-great-britain-2019.pdf

¹⁶ Transport & Environment (2020). *How Clean Are Electric Cars?* Retrieved from:

<https://www.transportenvironment.org/sites/te/files/downloads/T%26E%E2%80%99s%20EV%20life%20cycle%20analysis%20LCA.pdf>

¹⁷ Based on the UK's electricity grid in 2020. Details retrieved 9th April 2020 from:

<https://www.transportenvironment.org/what-we-do/electric-cars/how-clean-are-electric-cars>

‘embodied emissions’ from electric cars are currently higher than equivalent combustion vehicles^{18 19}, but are gradually ‘paid off’ as the car is driven (and charged via the grid, compared to fuelled using petrol or diesel)²⁰. The exact payback period is wholly dependent on how the car is utilised and where the electricity comes from²¹, but the average period for an electric car in the UK is between 15,000km and 20,000km. Regardless, it should be recognised that producing any form of car requires energy which, for the foreseeable future, will result in greenhouse gas emissions.²²

For some car owners, it makes perfect financial sense to own their cars, however, for many, they would be financially better off by not owning a car and using car clubs, taxis and the public transport network for all their journeys. Pursuing policies that actively reduce the size of the UK’s car parc will reduce energy utilisation to produce the cars, and lower greenhouse gas emissions and air pollutants from operating them. In cities fewer cars also means more space for people.

Increasing the number and availability of shared EVs is one policy to both reduce car use and production and this briefing, and the associated report, focuses on tackling the barriers to increased use of electric car clubs. The UK lags behind other European countries (especially Germany) in implementing car clubs. The vast majority of cars in the UK’s collective car club fleet also have a combustion engine, but this will have to change over the coming years. Indeed, Zipcar, the largest car club operator in the UK plans to have a fully electric fleet by 2025²³.

¹⁸ 10.6 tonnes of CO2 for an electric car, Vs 7 tonnes of CO2 for a petrol car and 6.7 tonnes of CO2 for a diesel car. Details retrieved 9th April 2020 from:

<https://www.transportenvironment.org/what-we-do/electric-cars/how-clean-are-electric-cars>

¹⁹ It should be noted that EV batteries are becoming cleaner and cleaner. The carbon footprint of the most common type of battery for electric cars was estimated to be 61-106kg of CO2 emissions equivalent per kilowatt hour of battery capacity in 2019. This is 2 to 3 times lower than the 150-200kg of CO2eq estimate measured by the same researchers in 2017. Transport & Environment (2019). *EV batteries are getting cleaner and cleaner: 2-3 times better than 2 years ago*. Retrieved from:

<https://www.transportenvironment.org/news/ev-batteries-are-getting-cleaner-and-cleaner-2-3-times-better-2-years-ago>

²⁰ Transport & Environment (2020). *How Clean Are Electric Cars?* Retrieved from:

<https://www.transportenvironment.org/sites/te/files/downloads/T%26E%E2%80%99s%20EV%20life%20cycle%20analysis%20LCA.pdf>

²¹ A car predominantly charged by rooftop solar will have a far shorter payback period than one charged by the national grid.

²² Polestar is the only manufacturer that has both quantified and made publicly available the embodied emissions of its cars. To be fully transparent, Polestar has also laid out the methodology as to how it arrived at its figures. T&E strongly encourages other manufacturers to follow Polestar’s lead.

Polestar (2021). Retrieved 9th April 2021 from:

<https://www.polestar.com/uk/electric-sustainability/transparency/>.

²³ Retrieved 9th April 2021 from: <https://www.zipcar.com/en-gb/flex/electric>

2. UK Car Clubs

Car clubs allow individuals and businesses to have access to a car, without the need to own it. Users usually pay an annual membership fee, and can then rent a car for a specified time period. This time period can be very short -under an hour - and can also be outside of the normal operating hours of other legacy car rental organisations. Vehicles are unlocked via an app or RFID card, and billing is automatic.

There are currently over half a million car club members in the UK²⁴, with access to over 5000 cars. However, UK membership figures are dwarfed by Germany where 3% of the population are members of car clubs, in contrast to the UK's 0.5%. The large uptake in Germany has been attributed to a number of different factors. Germany was an early mover in car sharing, and the country now has over 200 operators. Local Governments tend to be supportive (including by granting parking bays and parking permits). There is also a national 'Car Sharing Law', introduced in 2017, that enabled local authorities to create public parking spaces specifically for car club cars. This means that car sharing is now offered in over 840 cities in Germany.

UK car clubs are currently focussed on London. Almost all of the major car club operators run London operations, and, in 2018, 70% of car club members were in London. The largest operator - Zipcar - has over 3000 cars in its UK fleet (including 325 electric cars). 2000 of those are in London. Enterprise is the second largest operator with cars in over 100 locations nationwide.

The environmental benefits of car clubs are positive. Car club operator's vehicles are newer, and therefore emit less per kilometre than an average UK car (43% cleaner for car club cars in England and Wales²⁵). The average car club user in London drives 526 miles less per year after joining a car club.²⁶ In Scotland, 16% of car club users walked more; 10% cycled more and 26% cut their private car use.²⁷ 45% of long-term car club members in London cut their vehicle ownership, meaning less land is

²⁴ Como UK (2021). *Shared Cars*. Retrieved 9th April 2021 from:

<https://como.org.uk/shared-mobility/shared-cars/where/>

²⁵ Transport Times (2020) *Best Friends Forever: shared transport and decarbonisation*. Retrieved 9th April 2021 from:

<https://www.transporttimes.co.uk/news.php/Best-Friends-Forever-shared-transport-and-decarbonisation-546/>

²⁶ Transport Times (2020) *Best Friends Forever: shared transport and decarbonisation*. Retrieved 9th April 2021 from:

<https://www.transporttimes.co.uk/news.php/Best-Friends-Forever-shared-transport-and-decarbonisation-546/>

²⁷ Information shared in private correspondence between Matt Finch, UK Policy Manager and Richard Dilks, CEO of CoMo UK.

needed to store cars. Incredibly, CoMo UK, the shared mobility trade body, estimates that in London there are 94 members per car club car.²⁸ Transitioning to shared car models, such as electric car clubs, reduces both car ownership and vehicle miles driven, resulting in less greenhouse gases overall. Furthermore, it frees up land, which could then be used for other uses.

Transport & Environment commissioned Element Energy to review the barriers to faster adoption of shared battery electric vehicles in the UK, and to make recommendations as to how these barriers could be overcome.

3. Barriers to Faster Adoption

3.1 Car Club Operator Perspective

The key barrier identified to electric vehicle uptake by the car club operators was the lack of suitable charging infrastructure. The different usage profile of car club cars means that they are more likely to need rapid charging, however there are insufficient car club bays that have charge points (which is a common model in France and Germany). Other perceived barriers include the lack of a coherent national policy around car clubs, and the limited access to public parking bays. This problem is exacerbated by inconsistent policies and competing priorities within local authorities.

3.2 Local Authority Perspective

Decisions at local authority level are crucial for the expansion of car clubs. However, lack of capacity and funding barriers, and an overall lack of national co-ordination or guidance from national government all contribute to a general apathy towards car clubs at a local level in many areas.

Local authorities (LAs) also suffer from competing priorities. For LAs, parking is a source of revenue,²⁹ and therefore any measures that are introduced that a) reduce car ownership, and b) reduce the number of revenue-raising parking spaces could be seen as negative. Conversely, LAs have air pollution targets, and many have declared climate emergencies. Furthermore, if LAs do

²⁸ Transport Times (2020) *Best Friends Forever: shared transport and decarbonisation*. Retrieved 9th April 2021 from: <https://www.transporttimes.co.uk/news.php/Best-Friends-Forever-shared-transport-and-decarbonisation-546/>

²⁹ Parking revenues currently represent 3-10% of operational revenues for Councils. Element Energy (2021) *Barriers and opportunities for shared battery electric vehicles*

reserve parking spaces for electric car club cars, then there needs to be agreement who supplies and maintain any charging infrastructure.

3.3 Consumer Perspective

Consumer barriers are both perceived and practical. Perceived barriers include low awareness of available nearby car clubs, and a fear of lack of availability. Practical barriers include the fact that car clubs do not cater for some groups: e.g. car seats are not provided. One specific worry around using an electric vehicle is that it will have little or no charge when being collected.³⁰

The shift to an entire fleet of EVs will not be complete until around 2050, but the speed of transition, and resulting CO2 savings, will be largely dependent upon how quickly the share of new sales grows in coming years. Early adopters of EVs have predominantly had off-street parking, enabling easy home charging. The UK charging network is far better than widely perceived, but early adopters have needed to tolerate an incomplete, sometimes unreliable and user unfriendly charging system that currently operates in the UK. However, for a large roll-out of shared EVs to happen, the public charging network needs to improve. Car club business models and incentives also need to change, to ensure users charge appropriately. Currently, there are comparatively few fully electric car club cars on the roads, however, due to the high replacement rate of car club cars, the number of electric versions can, and will, ramp up quite quickly over this decade.

4. Recommendations to Support the Adoption of Shared BEVs

For a dramatic increase in the number of shared BEVs in the UK, a number of actions need to be taken, including:

1. A clear and consistent policy towards car clubs from national government.
2. A clear mandate from national Government to local government as to what should be done by local authorities for car clubs.
3. An appreciation from both local and national government as to the parking and charging requirements of car clubs.
4. An increase in the suitable charging infrastructure required for car club driving needs.

These recommendations rely on some input from car club operators. Operators should work with national government and local authorities to help them understand just how much of an effect

³⁰ A usual requirement of existing ICE car clubs is that the tank is at least a quarter full when left by a user. Since the move towards BEVs as car club cars is so new, there is not a 'norm' yet.

car clubs can have on the local air pollution conditions, and how much they can contribute towards the drive to net zero.

4.1 Recommendations for National Policy

The Climate Change Committee has called for a national framework to be created for the delivery of net zero emissions by 2050, which should incorporate both local and national climate action. This framework should incorporate clear guidance for local authorities on how and when car clubs should be implemented in a local area. This framework should accompany appropriate long-term financing to support local authorities.

Crucially, this guidance should also include clear advice that enables local authorities to draw up a holistic solution for charging needs for their area, based on the local circumstances. Charging needs should take into account all users, including car clubs, visiting drivers, residents and the needs of the local council fleet.

National policy should ensure that a consistent and standardised reporting framework should be applied, which should allow the overall local emissions impact of shared EVs to be monitored. As a starting point, the RAC Foundation's proposed car club-local authority data standards report *Better Data for Smarter Decision-Making*³¹ should be considered.

Finally, central Government should provide a policy roadmap which outlines as and when grants and subsidies for EVs and charge points will be reduced and withdrawn. This would provide car club operators with certainty when planning future expansions of all electric fleets.

To achieve this, a named individual - possibly at ministerial level - within the Department for Transport should be appointed to take responsibility for enhanced levels of electric car club deployment in the UK.

4.2 Recommendations for Local Authorities

Electric car club uptake would both decrease car ownership and reduce the number of vehicle miles driven in a local area, which would have the effect of reducing local air pollution levels. Local authorities will need to assess the locations where car clubs should be deployed, dependent on local characteristics. Furthermore, they will need to engage with car club operators as to their needs, and work with the operators as both an enabler and a partner. Car clubs are

³¹ RAC Foundation (2020) *Better Data for Smarter Decision-Making*. Retrieved from: https://www.racfoundation.org/wp-content/uploads/Car_clubs_better_data_for_smarter_decision_making_Wu_Sivakumar_LeVine_December_2020.pdf

beneficial, but they should be adopted as part of an overall transport strategy which aims to reduce the number of miles driven in a local area. Complementary actions are:

- **Improving the local public transport offering** by expanding bus services, either through Enterprise Partnerships with operators or franchising (in Mayoral Combined Authorities), or via on-demand services. Improvements in infrastructure to ensure priority access (such as bus lanes) reduces journey times and ensures a service that is more attractive to users.
- **Improving cycling and walking infrastructure** including secure cycle parking and ensuring a cohesive network of high-quality cycle lanes.³²
- **Improving efficiency of multi-modal trips** through initiatives such as mobility-as-a-service and transport hubs.
- **Designing new developments to encourage sustainable travel.** Incorporating public transport links, active travel infrastructure, and shared mobility into the design plans alongside incentives for residents should decrease reliance on private cars.
- **Implementing access and charging measures** to disincentivise private car use, such as reallocating on-street parking, increasing parking charges, workplace parking levies, and low or zero emissions zones.

As part of a local authority's transport and climate strategy, it is imperative that adequate parking infrastructure is allocated to car clubs. This is a key barrier that was identified by car club operators.

Currently there are few electric car club cars. However, EVs will be increasingly deployed over the coming decade as the UK ramps up its push towards a complete phase out of combustion engines in 2035. This means that operators must identify and implement a strategy for how its fleet will be charged. The current lack of suitable charging infrastructure for EVs is a key barrier: one which local authorities should work with car clubs to alleviate.

Local authorities should work with car clubs to promote consumer and community engagement. Local authorities regularly engage with their residents, and know the best ways to reach them at hyper-local level. As car clubs may be new concepts for some residents, the provision of information is crucial to support uptake.

³² Revised guidance and active travel ambitions in England were announced in July 2020: Department for Transport (2020) *Cycling and Walking Plan*. Retrieved from: <https://www.gov.uk/government/publications/cycling-and-walking-plan-for-england>

Finally, some local authorities have already done more to encourage uptake of car clubs than others, and those that have should share best practice with others. Useful information to share includes:

- **Local characteristics and suitability assessment** procedure.
- **Tendering process** including whether charge points were included in the tender.
- **Wider charging infrastructure installed**, such as density and type of slow, fast and (ultra)rapid charge points.
- **Supporting measures implemented** such as integrated ticketing and/or journey planning.
- **Impact and value for money** including number of private car journeys avoided, increases in public and active transport etc.

Sharing best practice would help those local authorities that may have limited resources and funding. Furthermore, this should standardise the ‘onboarding’ process that car club operators have to go through with different local authorities.

5. Conclusions

It is clear that increasing the number of car club cars in the UK represents a huge decarbonisation opportunity - one that is currently being widely overlooked. Increasing the number of shared electric cars in the UK’s car fleet will decrease the number of cars overall and will bring environmental benefits through avoided greenhouse gas emissions. Encouraging greater car club use will also bring health benefits (by increasing the amount of walking and cycling undertaken). Additionally, the low membership costs of car clubs will enable all sectors of society to access the latest clean technology cars, in contrast to the current situation of new cars being the reserve of those that can afford the initial capital expenditure or higher monthly lease costs.

Increasing the use of shared EVs represents a largely unutilised opportunity to decarbonise the vehicle fleet, but doing so currently faces a number of barriers that require policy interventions at both central and local government level to be solved. As a start, assigning responsibility to a named team within the Department of Transport reporting to a Minister is an important first step to addressing these.

Further information

Matt Finch
UK Policy Manager
Transport & Environment
matt.finch@transportenvironment.org

Mobile: +44(0) 7881812398