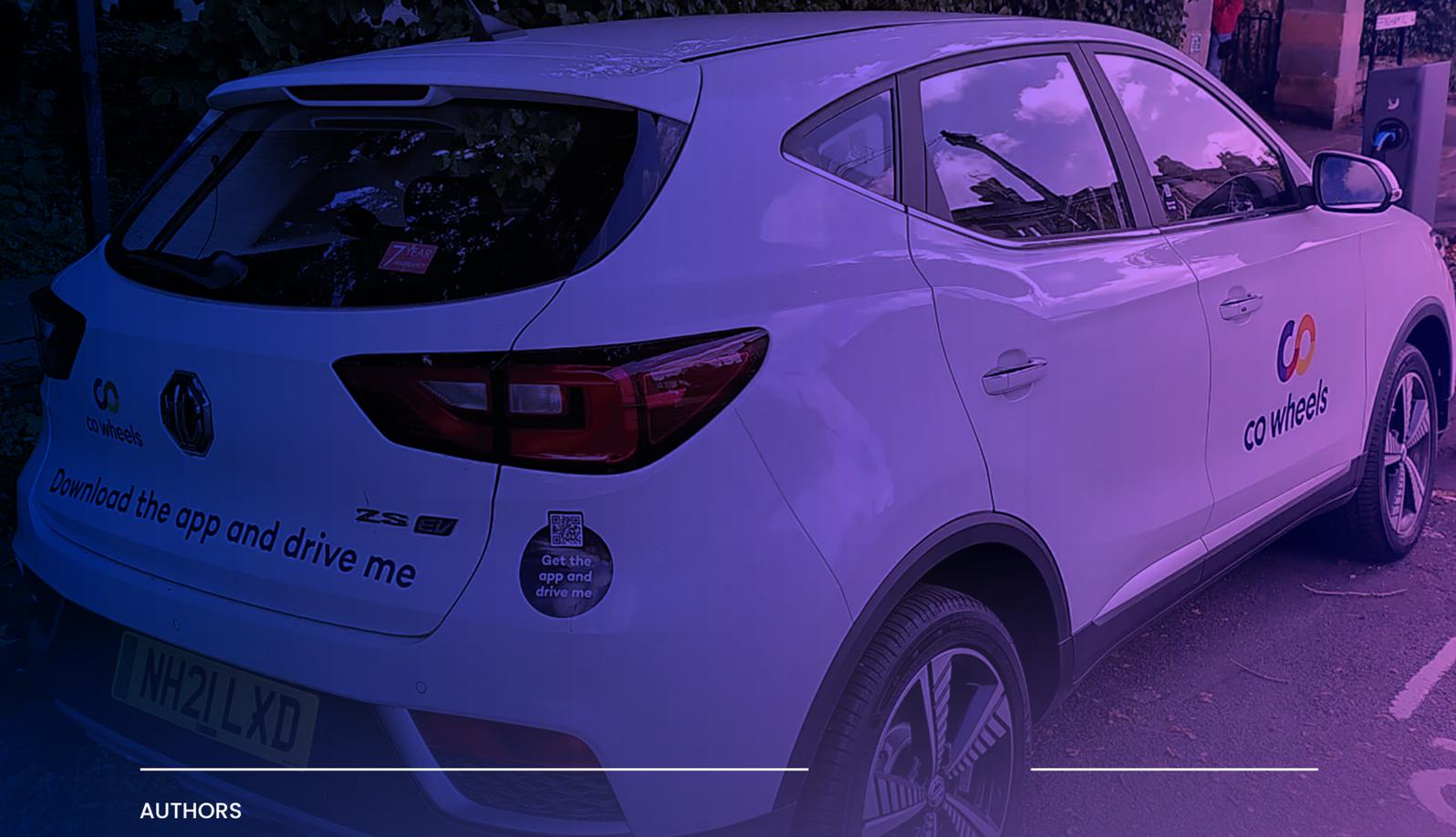


Opportunities and Obstacles for EV Car Sharing



Car Club permit holders only



AUTHORS

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CoMoUK is the national charity for the public benefit of shared transport. They bring together stakeholders from the public and private sector to develop best practice and set standards as well as producing the annual research reports on car clubs referred to in this document.

Opportunities for EV Car Sharing

Whilst there is no one-size-fits-all policy to overcome the barriers to widespread adoption of electric vehicles (EVs),¹ EV car sharing provides opportunities to enable more car drivers to adopt an EV sooner and accelerate the decarbonisation of transport. CoMoUK research shows that 12% of car club vehicles on UK roads are now electric, compared to ~1% of private cars.²

The transition to electric vehicles (EVs) is the flagship policy to decarbonise transport in the UK, with the UK government pledge to end the sale of new fully internal combustion engine (ICE) vehicles from the year 2030 and hybrids from 2035.³



BARRIER

AFFORDABILITY

Purchase prices should be falling as manufacturers commit to the transition, but supply chain failures are increasing the price of all new cars and slowing the growth of the second-hand market,⁴ resulting in reduced availability as well as affordability of EVs.

ENVIRONMENTAL CONCERNS

Although research indicates that the lifecycle emissions of EVs are lower than ICE vehicles, the manufacture of an EV is more carbon-intensive, and there are also concerns about the mining of rare metals. For those worried about the environment, climate change forecasts⁵ indicate that travel demand reduction is also necessary.

ANXIETY AROUND CHARGING

Our primary research indicates that range anxiety and lack of public charging infrastructure are not the only charging-related barriers to EV adoption. There are concerns about the skills and materials needed to charge, as well as the certainty, security and convenience of public charging options for households without driveways.⁶

OPPORTUNITY

AFFORDABILITY

EV car clubs eliminate the burden of up-front purchase cost, whilst still providing new vehicles that are often available at cheaper mileage rates than ICE vehicles.⁷ For each available EV, more drivers can switch, reducing pressure on the supply chain.

ENVIRONMENTAL ACTION

EV car sharing means fewer EVs need to be made and on the road to meet the needs of more drivers – for every car club vehicle, 20 cars are removed from the roads. Research by CoMoUK shows that those who share cars drive less overall, use public and active transport more, and emit less carbon from transport even before the switch to EV.⁸

CONFIDENCE CHARGING

Dedicated, secure charge points are installed alongside many car club bays, or car club operators take responsibility for charging between hire periods. The former provides a convenient space to park and charge for those who cannot charge an EV at home, whilst the latter gives confidence of a full charge at the start of hire.

1) e.g. Biresellioglu, M.E., Kaplan, M.D. and Yilmaz, B.K., 2018. Electric mobility in Europe: A comprehensive review of motivators and barriers in decision making
2) <https://como.org.uk/wp-content/uploads/2022/04/CoMoUK-Car-Club-Annual-Report-UK-2021.pdf>
3) <https://www.gov.uk/government/news/government-takes-historic-step-towards-net-zero-with-end-of-sale-of-new-petrol-and-diesel-cars-by-2030>
4) <https://theconversation.com/electric-car-supplies-are-running-out-and-could-dramatically-slow-down-the-journey-to-net-zero-182787>
5) <https://www.theccc.org.uk/wp-content/uploads/2020/12/Sector-summary-Surface-transport.pdf>

The impact these opportunities have on EV uptake and EV car sharing participation will vary depending upon the local context. Our survey about EV adoption and charging preferences asked 2001 car drivers who did not have a driveway or attached garage if they planned to reduce the number of vehicles [in their] household and join a car club with EVs or join a car club which allows [them] to drive EVs as soon as one is locally available. Although just 16% agreed or strongly agreed with at least one of these two statements, a simple regression⁹ suggests that the following characteristics have the greatest influence (in descending order) on whether drivers say they intend to join a car club:

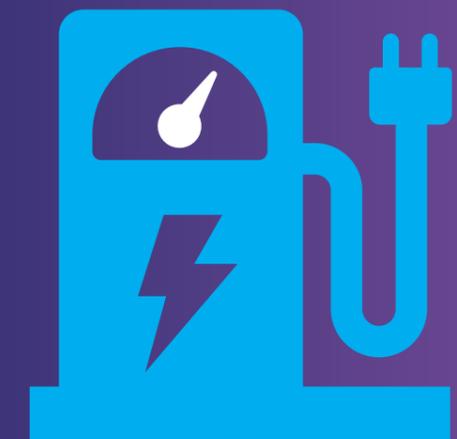
- If they pay for their residential parking space already (15% of our sample).
- If there are children in the household (31% of our sample).
- If they are younger (Those under 30, who make up 20% of our age-representative sample of car drivers in England, were most likely to want to join a car club).
- If they have access to more than one private vehicle (approximately half the total sample) – suggesting that EV car clubs would be a way of reducing car ownership and trying out an EV.
- If they live in rented (or shared ownership) accommodation (42% of our sample).

1 in 6

OF A REPRESENTATIVE SAMPLE OF UK CAR DRIVERS WANT TO JOIN A CAR CLUB



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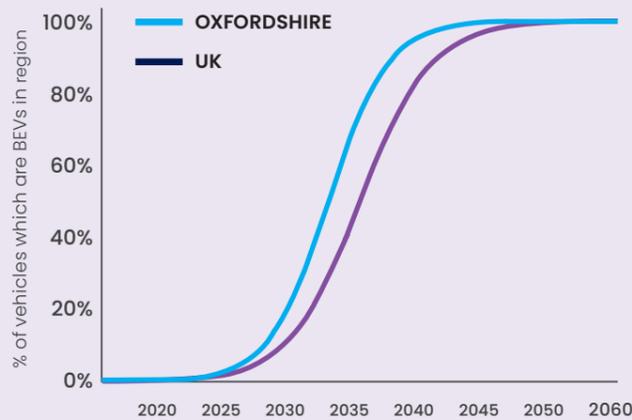


Further research is needed to understand who would want to share EVs, where and what motivates or prevents them from doing so. However, by looking at data already gathered for Oxfordshire, a frontrunner in EV uptake with an active and growing car club market that includes some electric vehicles, we can start to understand the scale of the potential opportunities.

6) <https://www.tsu.ox.ac.uk/research/park-and-charge/>. See especially the policy briefing note: Budnitz and Schwanen, Preferences for public electric vehicle charging.
7) <https://www.co-wheels.org.uk/pricing>
8) <https://como.org.uk/wp-content/uploads/2022/06/CoMoUK-UK-Car-Club-Report-2021-Key-Findings.pdf>
9) Adjusted R² = 0.14

OXFORD CASE STUDY

Oxfordshire is in the top ten counties in England for EV adoption, and forecasts¹⁰ based on this historic sales data show that 80% of vehicles registered in Oxfordshire will be battery electric by 2037 – three years earlier than the UK average.



Oxford is also home to two main car club operators: Co-Wheels and Enterprise, offering a mix of electric, hybrid and ICE vehicles. The Co-Wheels fleet in Oxford includes 6 full plug-in, battery electric vehicles and 38 other vehicles. Analysis of booking data for January 2021–February 2022 shows that the shared EVs in Oxford are always more in demand than other car club vehicles, particularly among younger club members who have joined more recently.

	EV	Non-EV
Average trips per vehicle	330	288
Average unique users per vehicle	91	36
Number of days booked in advance	6	5
Average length of membership of bookers	2 yrs	2.6 yrs

Peer-to-peer car sharing is also available in Oxford, where local residents founded ‘ShareOurCars’,¹¹ the UK’s first ‘neighbourhood closed loop’¹² system in collaboration with Hiyacar, which also operates a platform and insurance for its members to share their own vehicles. There are already EVs in the peer-to-peer network in Oxford, and the vision of ShareOurCars is fewer cars on the streets, all of which are electric.

A survey conducted on behalf of Oxfordshire County Council as part of the Park and Charge Oxfordshire project demonstrated that Oxfordshire residents recognise how car clubs can address all three of the barriers to EV adoption initially described. Only 2.5% of the 1700 respondents currently use a car club, but 22% said they would consider joining one to use an EV.

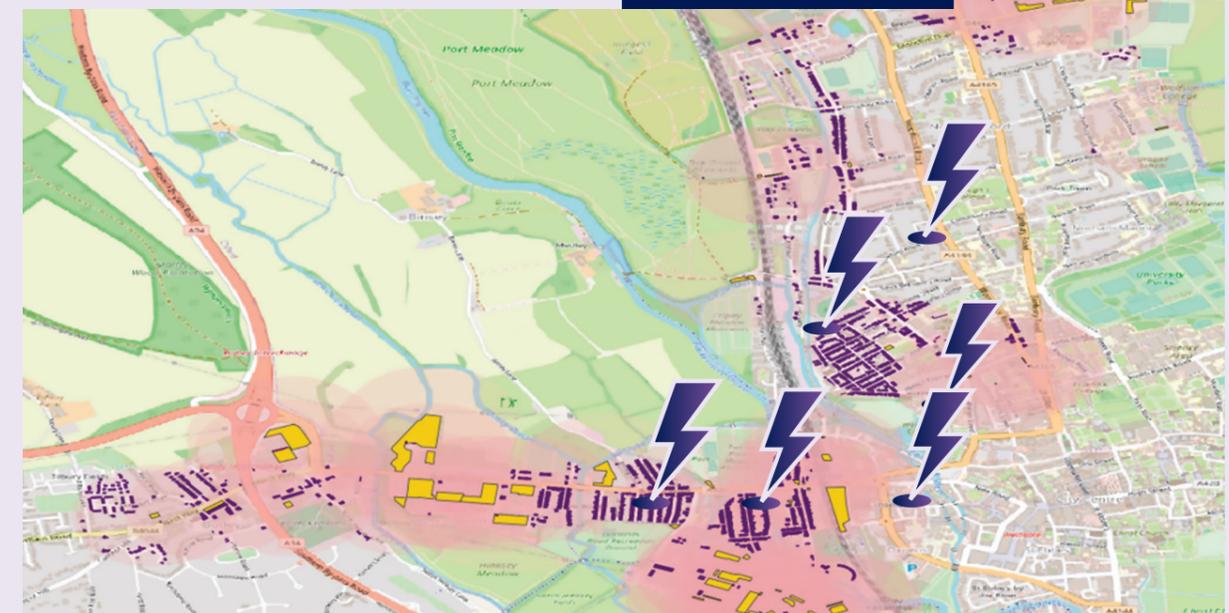
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10) Collett et al. Forecast of electric vehicle uptake across counties in England: <https://www.sciencedirect.com/science/article/pii/S2352340921009379>
 11) <https://sites.google.com/view/shareourcars/home>
 12) <https://www.hiyacar.co.uk/blog/benefits-of-closed-loop-sharing/>
 13) <https://parkandchargeoxfordshire.co.uk/>
 14) Collett et al., Geospatial analysis to identify promising car parks for installing electric vehicle charge points. <https://www.sciencedirect.com/science/article/pii/S0966692322000771#>
 15) <https://www.ez-charge.co.uk/> EZ Charge are looking to offer membership and payment cards to the car club, discussing how it affects contractual arrangements with the local councils who own the car parks, and investigating longer term opportunities to integrate car sharing into their EV charging software.

Government funding supports on-street charging infrastructure for residents who park on-street, but it is often expensive to install, challenging to operate commercially, and may result in cluttered pavements and unwanted liabilities for local governments. Charging for car club bays, like charging hubs in car parks that were the premise of the Park and Charge Oxfordshire project,¹³ offer an alternative to minimise the amount of on-street charging infrastructure needed.

Oxford University created a tool that identifies areas where there is a lack of private driveways for EV drivers to be able to charge from home and whether there are nearby car parks where public charging hubs could be installed.¹⁴ The figure below shows how this tool is applied in an area of Oxford, with Co-Wheels car club bay locations added to show how these vehicles also meet the needs of those who would struggle to park and charge from home.

Car club bays



As a final comment succinctly noted, whether for purchase / grant support, or for parking and charging, “there needs to be priority for jointly owned vehicles such as car clubs, rather than for household-owned vehicles.” However, obstacles remain, as one participant the University interviewed at a Park and Charge Oxfordshire event explained, “we haven’t got enough

OXFORDSHIRE RESIDENTS SAID

AFFORDABILITY

EV car sharing is a “good way to reduce barriers to entry” and challenges the view that “EVs are currently for the better off.”

ENVIRONMENTAL ACTION

EVs should not replace ICE vehicles “like for like”, but “more has to be done to encourage active... [and] public transport for the health of the population and for the health of the environment,” so “EV Car Clubs please.”

CONFIDENCE (PARKING AND) CHARGING

“I am not near a public car park, I park on the street not near my house but would like... more electric [car club] cars. Then we could sell our ICE.”



charging points [in town for the car club] to go all electric.” The lack of charging in this particular location is being addressed by the Park and Charge project hub operator, EZ Charge,¹⁵ and the car club operator, but it points to the obstacles car club operators face in making the best of the opportunities discussed previously.

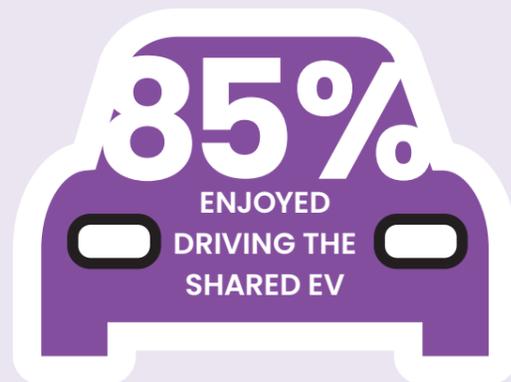
OBSTACLES FOR EV CAR SHARING

Car club users and operators report that issues around charging and charging infrastructure form the main obstacles preventing them from both expanding and switching more of their fleets to EV. These obstacles undermine the previously-described opportunities car clubs and car sharing should offer to accelerate the transition to electric.

Indeed, as CoMoUK research shows, user satisfaction with electric car club cars decreases as customers have to get more involved in charging:

- 85% enjoyed driving the shared EV
- 61% said they were satisfied with the charging experience at the end of a hire
- 45% of those who charged during a hire, were satisfied with the charging experience¹⁶

This dissatisfaction results from and impacts upon car club operations and their ability to maintain and expand their EV fleets.



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OBSTACLE

AFFORDABILITY

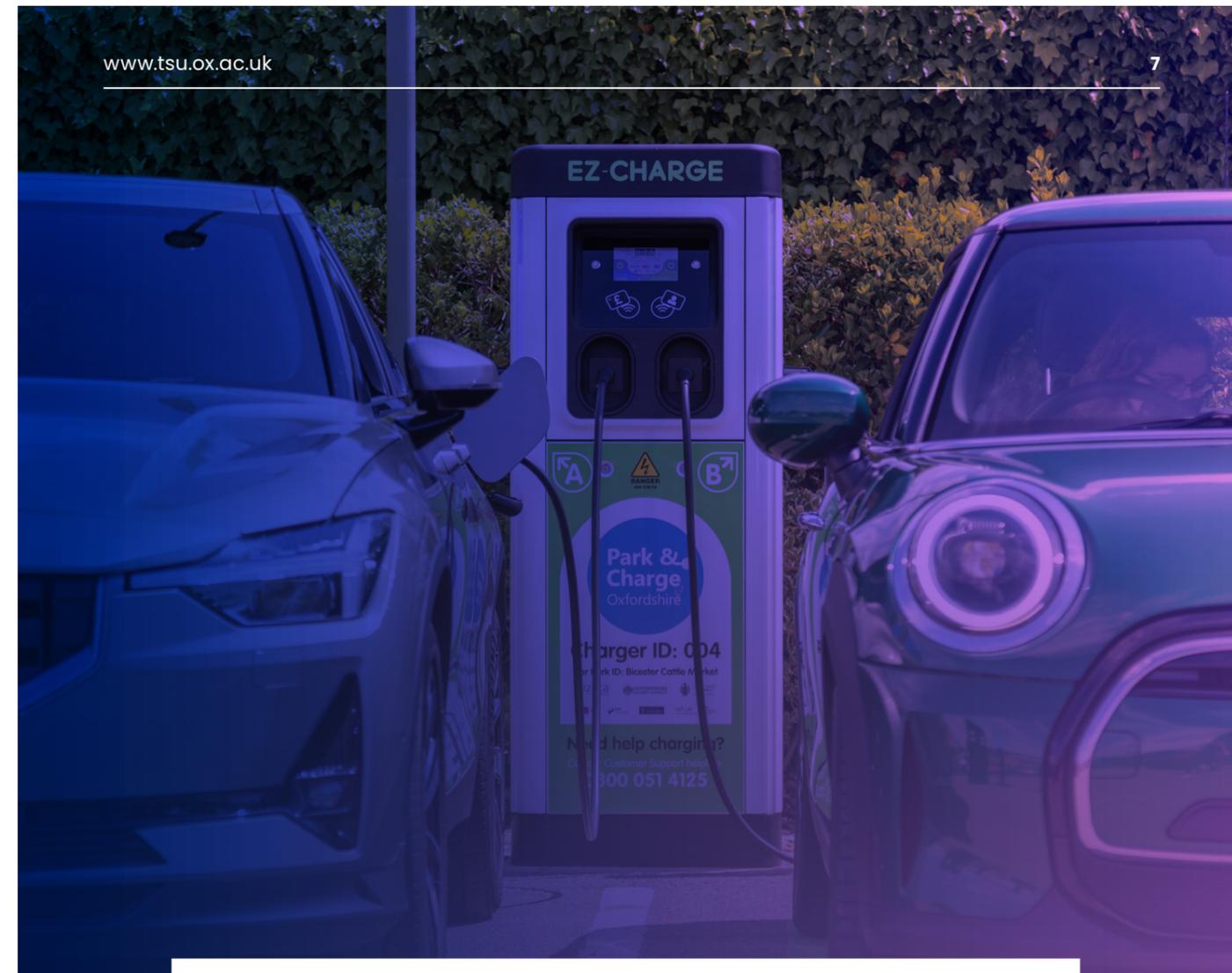
The leasing costs of EVs are currently higher than for petrol cars, and the operational costs are higher due to the limitations of the charging infrastructure, especially where staff are required for recharging. Revenue from EVs can also be lower than petrol cars, due to downtime needed to recharge the cars.

RECOGNITION

There has been no dedicated funding scheme, discounts nor prioritisation for the installation of EV infrastructure for car clubs or shared EVs within workplace and residential charging grant schemes, and some grants available to local authorities exclude use for car clubs and ignore other e-mobility and micromobility vehicles.

CHARGING SUPPORT

Users may leave a car uncharged, due to difficulties using chargepoints or chargepoint faults resulting in problems for the next customer. This can lead to reduced utilisation and/or loss of members. There is a lack of coordination between contracts for chargepoint operation and car clubs, causing maintenance delays.



Providing better access and integration with EV charging infrastructure can make EV car clubs and other types of EV car sharing more viable

Providing better access and integration with EV charging infrastructure can make EV car clubs and other types of car sharing more viable, more able to meet social and environmental policy goals, and make more efficient use of charging infrastructure, accelerating the transition to EV. Improving the quantity and quality of chargepoints for shared EVs requires action at three levels:

- Inclusion of shared EVs and EV car clubs as a key user group in any strategies, proposals, plans, procurement, business models or operation of EV infrastructure, public or private.
- Availability of dedicated funding and policy support for chargepoints serving shared EVs at car club bays on-street and at residential

and workplace charging hubs. These support 'back to bay' car club cars, which currently make up the majority of British car club cars.

- Priority access to networks of both fast and rapid public chargepoints with customer support. These support 'back to area' or one-way car club cars as well as 'back to bay' car club members who may need to charge quickly whilst travelling or more slowly while the vehicles are parked during their period of hire and between hires, including overnight.

With further research on the opportunities, as well as action to overcome the obstacles, EV adoption can be accelerated and EV car clubs and car sharing have the potential to spread much more widely across the UK.

¹⁶ <https://como.org.uk/wp-content/uploads/2022/04/CoMoUK-Car-Club-Annual-Report-UK-2021.pdf>

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