World EV Day™

Mobilising the next generation of EV drivers

Whitepaper 2022

INTRODUCTION:

Welcome Letter

World EV Day™ is here once more, presenting another opportunity to celebrate all things 'electric vehicle' (EV), and to showcase the many benefits that they can offer. Set against an ever-evolving climate crisis backdrop, EVs are moving into the mainstream faster than ever, as today's drivers and those considering making the switch recognise the environmental benefits and cheaper running costs they provide.

This a fast-moving market – the number of EVs on global roads has more than doubled in the last 12 months. More than 6.6 million EVs were registered globally in 2021[1], and in the UK, registrations increased by almost 50% from January to July 2022 when compared to the same period in 2021[2].

Along with the rise in vehicles, the scale of EV charging infrastructure has also increased, and the signs are that this will also continue, in part because of the incoming 2030 sales ban of petrol and diesel cars. The way forward is clear – EVs are here to stay.

Engaging the next generation of consumers with EVs

For this year's World EV Day™, we wanted to ask the question, 'How do we engage the next generation of electric vehicle drivers?' Working with LeasePlan, Auto Trader, Fastned, LV= General Insurance and ElectriX, Shell Recharge, Connected Kerb, Ohme, EVA England and Cenex, global research firm Ipsos was engaged to conduct UK-wide research to better understand how to encourage people to transition to an EV.

Qualitative research was undertaken by Ipsos in August 2022 via nine, 90-minute, online focus groups with EV owners and those aged 25-65-years old who are considering owning an electric vehicle. We wanted to understand how UK car drivers view electric vehicles with regard to potential purchase, as well as discover their concerns, questions, motivations and potential purchase barriers. Finally, the study aimed to identify key areas that can be used to engage car drivers and encourage wider EV adoption.

This was then followed by quantitative research conducted online. The online survey interviewed 2,197 adults aged 17-75, 1,928 of the participants hold a full or provisional UK driving licence or an international driving licence that is valid in the UK – and filtered from Ipsos' online Omnibus survey of UK adults, this aimed to quantify a selection of the findings from the qualitative research phase. Members of the general public, including EV owners and considerers and those who neither own nor would consider an EV, were present in both research groups.

[1] https://www.iea.org/commentaries/electric-cars-fend-off-supply-challenges-to-more-than-double-global-sales

[2] https://www.smmt.co.uk/vehicle-data/evs-and-afvs-registrations/

Encouraging results

Perceptions of EVs were generally positive. Our research shows that 64% of people who are intending to buy, lease or subscribe to, or replace a car or van in the future (n=1605) say they would definitely or probably consider an EV for their next car or van, 49% of those with a driving licence agree that they like the technology.

However, 53% of people agree that switching to an EV would be a confusing process, and some familiar concerns exist around the perceived purchase and running costs of an EV, the reliability of information about range and charging infrastructure, and the ways this is presented.

Moving forward, how do we mobilise the next cohort of EV drivers? Our research shows that while the perceptions of EVs are reasonably positive, there is still some work to be done. EVs need to become more *affordable* and perceived more positively, especially among younger people. Those who would consider buying an EV also need clearer cost comparisons with internal combustion engine (ICE) vehicles, along with more transparent charging costs. The language around the vehicles themselves and their charging infrastructure needs to be *simple*, to give EV considerers more confidence in making the switch to electric. Finally, the research indicated that EVs, and the infrastructure powering them, need to become more *intuitive* for drivers.

Affordable, simple, intuitive. Let's use this World EV Day™ to build on this positive and extensive piece of research, to give the next cohort of EV drivers the tools and the confidence they need to switch on to the benefits of electric vehicles.

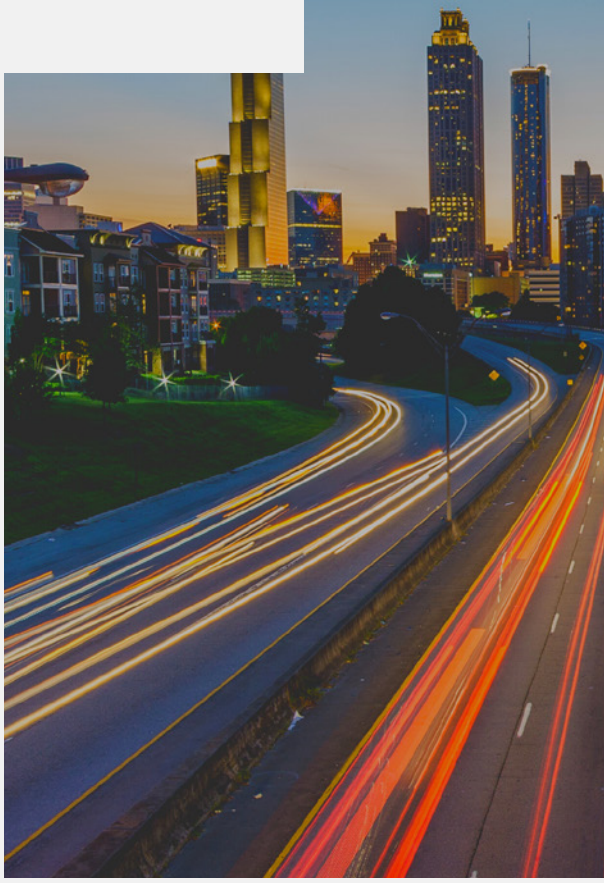
Ade Thomas, CEO Green TV,
Founder World EV Day™

Neill Emmett, Head of Marketing, LeasePlan UK,
EV Research Project Lead

Section 1:

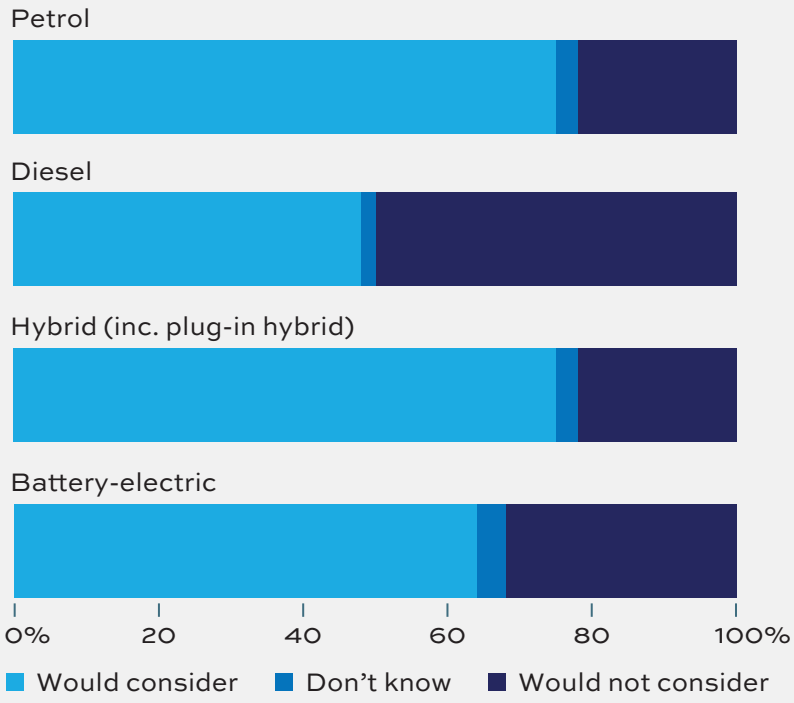
Choosing an Electric Vehicle

Who are the next generation of electric vehicle drivers?



Around half of all drivers (49%) agree that they like the technology, while 41% agree that they found electric vehicles exciting. In turn, they have become a mainstream option, with more drivers who would definitely or probably consider an electric vehiclefor their next car or van than a diesel:

However, some demographics are more likely to be considering an electric vehicle than others:



Sample: all adults aged 17–75 who intend to buy/lease/subscribe to a car or van in future n: 1605

- **67%** of men, compared to **60%** of women
- **72%** of under-45s, versus **53%** of older drivers
- **73%** of households with children under 17 years old, compared to **58%** of those without
- **76%** of drivers in Greater London – however…
- **64%** of urban and **63%** of rural drivers would consider an EV

The data also highlights that today's electric and hybrid drivers are broadly committed to the technology; **82%** and **84%** respectively said they would consider a battery-electric car or van when they next buy, lease or subscribe to a car or van.

"The findings of this study are definitive: people want to go electric, but are worried about affordability. Our industry, together with policymakers, must do everything possible to make EVs more affordable, so that they are the common sense choice for every driver. At the same time, we need to educate drivers about the reality of driving an EV, and to remove any unnecessary hurdles that would prevent EV drivers from having anything but a great experience.

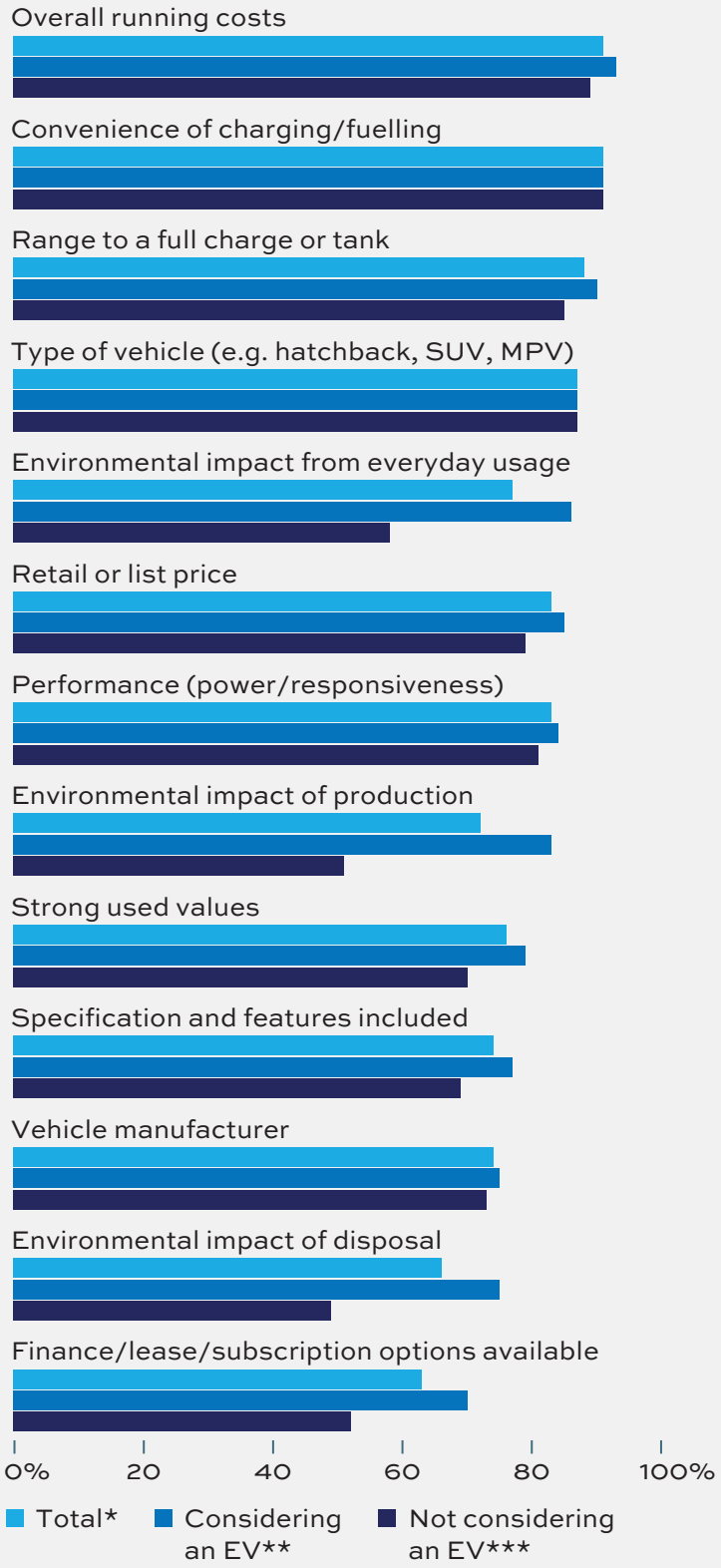
"Simply put: we need the electrification process to be affordable, simple and intuitive. Otherwise, we risk losing one of our biggest chances at fighting climate change."

Mike Lightfoot, Chief Corporate Affairs and Sustainability Officer, LeasePlan

What do drivers want from their next vehicle?

Drivers reported similar priorities, regardless of which vehicles they were considering next. Cost and convenience-related aspects – including the body style (for example, SUV, MPV) were the highest ranked characteristics. However, environmental considerations were noticeably higher among those who said they would consider an electric vehicle.

Qualities selected as "important" when choosing their next car or van ranked as follows:



The results are backed up by our qualitative research. Participants were aware of the higher purchase price for electric vehicles, but added that they are comfortable with options including leasing to break down any additional costs. Some also noted that electric vehicles also don't become significantly more affordable once they reach the used market.

"Our own research found that over half of UK retailers (51.6%) feel unprepared and not strategically ready to respond to growing EV demand. However, by 2030 there will be nine million EVs on UK roads, at which point half of all five to three-year-old cars will be an EV. There's a massive opportunity for retailers to think about how they will sell EVs and how they will arm themselves with the right information, and crucially, the right training, and we'll be launching a special EV Retailer Performance Masterclass later in 2022. Overall, EVs aren't to be feared, and they certainly shouldn't be ignored, as they will soon become a meaningful part of a retailer's forecourt."

Ian Plummer, Commercial Director, Auto Trader

Sample: *all adults aged 17-75 who intend to buy/lease/subscribe to a car or van in future n: 1605

Sample: **all adults aged 17-75 who would definitely or probably consider an electric vehicle for their next car or van n: 1068

Sample: ***all adults aged 17-75 who would definitely or probably not consider an electric vehicle for their next car or van n: 488

Case Study:

How used EVs can offer an accessible entry point

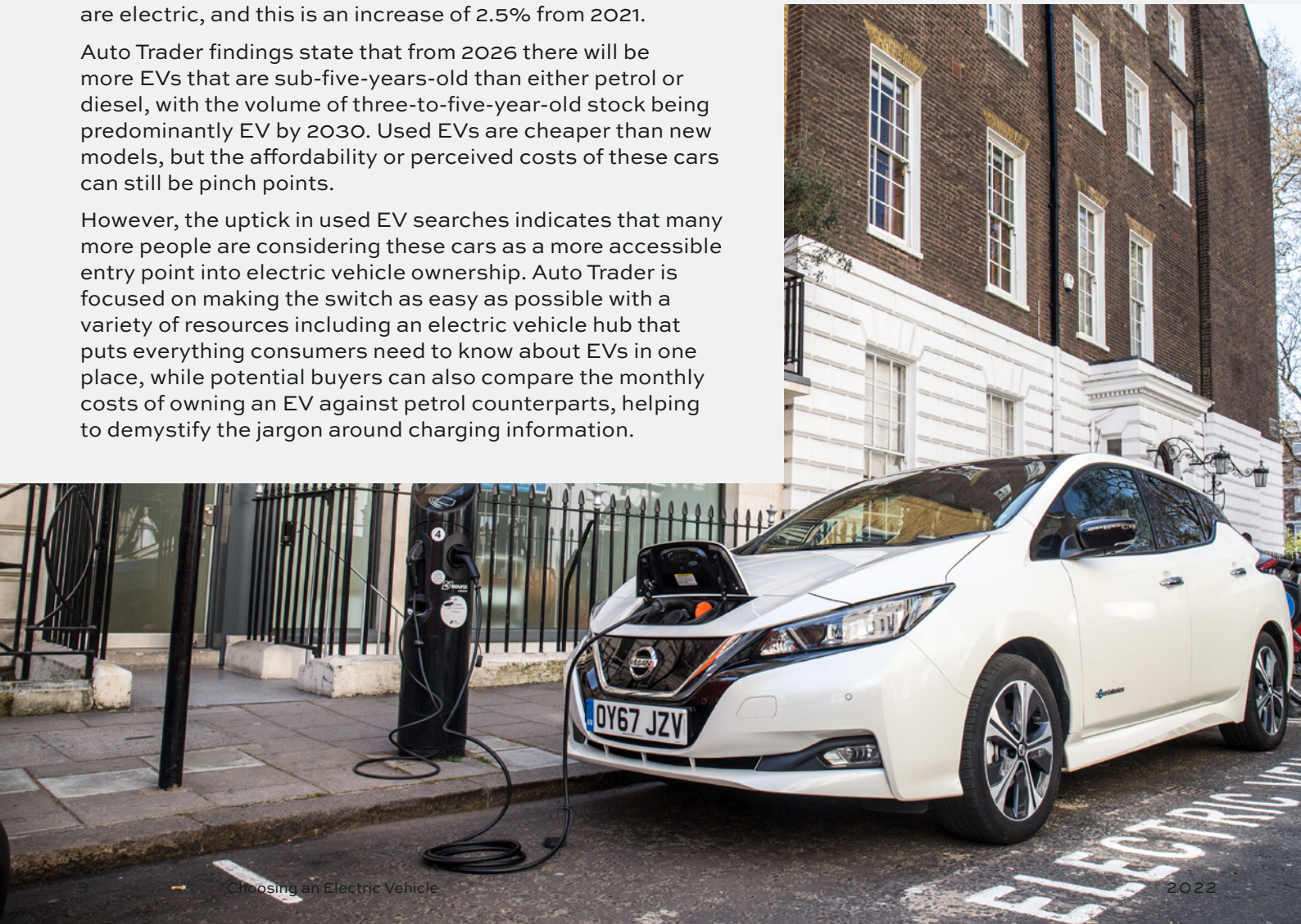
Qualitative research among EV driver and EV considerers suggested they are aware of the 2030 restriction on new petrol and diesel vehicle sales there is a realisation that switching to electric vehicles will become more common. With perceived costs a concern for the next generation of EV drivers, the used car market could offer an alternative to those looking to drive an electric vehicle.

While car digital automotive marketplace Auto Trader reports that one in four new cars leads it receives are now for electric vehicles, used, not new, EVs could hold the key to achieving more widespread adoption.

There is a clear growing consumer interest in EVs, and demand for used, therefore more affordable, EVs – is growing rapidly and remains well ahead of supply. Auto Trader witnessed a 51% increase in demand in the second quarter of 2022, when compared to 2021. This demand streaked ahead of both supply and the demand seen in the wider market. As of June 2022, 5% of used (cars less than five years old) cars searched for on the Auto Trader website are electric, and this is an increase of 2.5% from 2021.

Auto Trader findings state that from 2026 there will be more EVs that are sub-five-years-old than either petrol or diesel, with the volume of three-to-five-year-old stock being predominantly EV by 2030. Used EVs are cheaper than new models, but the affordability or perceived costs of these cars can still be pinch points.

However, the uptick in used EV searches indicates that many more people are considering these cars as a more accessible entry point into electric vehicle ownership. Auto Trader is focused on making the switch as easy as possible with a variety of resources including an electric vehicle hub that puts everything consumers need to know about EVs in one place, while potential buyers can also compare the monthly costs of owning an EV against petrol counterparts, helping to demystify the jargon around charging information.



Where are the next generation of drivers going for information?

Although around half of drivers (53%) agree that choosing an electric vehicle would be a confusing process, a majority (69%) are confident they could find the information they needed to be able to choose one. However, this was significantly higher among younger drivers; 76% of under-45s feel confident about finding what they need, compared to 62% of older age groups.

Among those who said they had owned, or have considered and researched an electric vehicle (n=813):

- **42%** had visited manufacturer websites – the highest ranked source of information
- **40%** had looked at car sales websites, such as Auto Trader, Carwow or Cazoo
- **42%** had spoken with people they know – for women, this was more popular than any other source

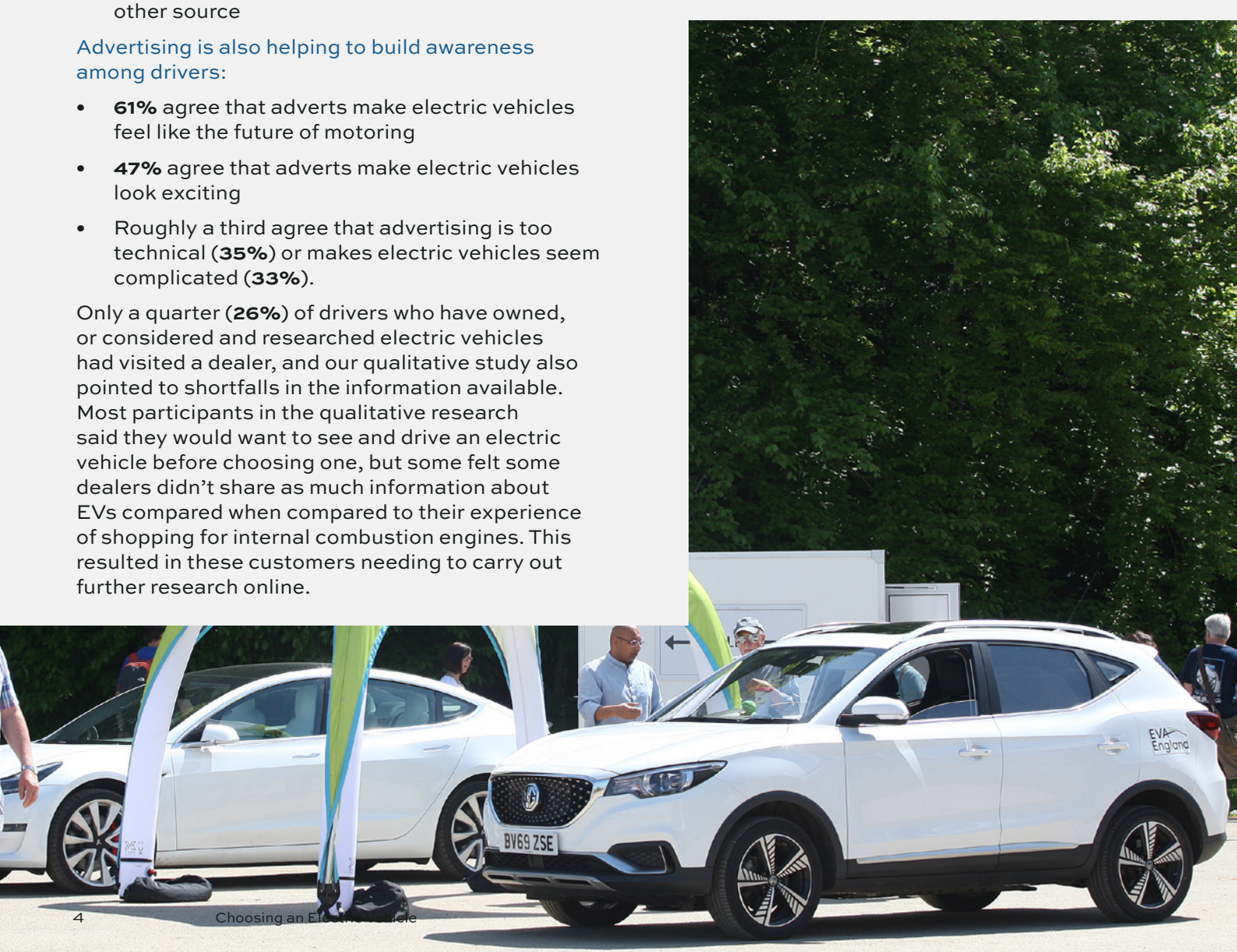
Advertising is also helping to build awareness among drivers:

- **61%** agree that adverts make electric vehicles feel like the future of motoring
- **47%** agree that adverts make electric vehicles look exciting
- Roughly a third agree that advertising is too technical (**35%**) or makes electric vehicles seem complicated (**33%**).

Only a quarter (**26%**) of drivers who have owned, or considered and researched electric vehicles had visited a dealer, and our qualitative study also pointed to shortfalls in the information available. Most participants in the qualitative research said they would want to see and drive an electric vehicle before choosing one, but some felt some dealers didn't share as much information about EVs compared when compared to their experience of shopping for internal combustion engines. This resulted in these customers needing to carry out further research online.

"It is clear that the general public and drivers are open to electric vehicles, yet there remains a lack of understanding stopping people from making the switch. Industry needs to make sure we use clearer and more consistent language in promotional materials, websites and at dealerships, to help reassure drivers and give them the information they need."

James Court, CEO, EVA England



Is 'range anxiety' still a barrier for electric vehicles?

Range has been an important and relatable yardstick for comparing electric vehicles to internal combustion engine vehicles, but it's also been a sticking point for wider adoption. Although two thirds (65%) of drivers agreed that new vehicles' range is improving and 44% agree that they are confident they could get to most destinations on a single charge, many (46%) agree that it's hard to understand the information around the range of electric vehicles.

Agreeing that the information around the range of electric vehicles is hard to understand:

- **46%** of all drivers surveyed
- **51%** of those who had considered and researched electric vehicles (n=558)
- **58%** who had considered and researched them in detail (n=206)
- **59%** of those who currently drive an electric vehicle (n=203) – suggesting familiarity doesn't always help

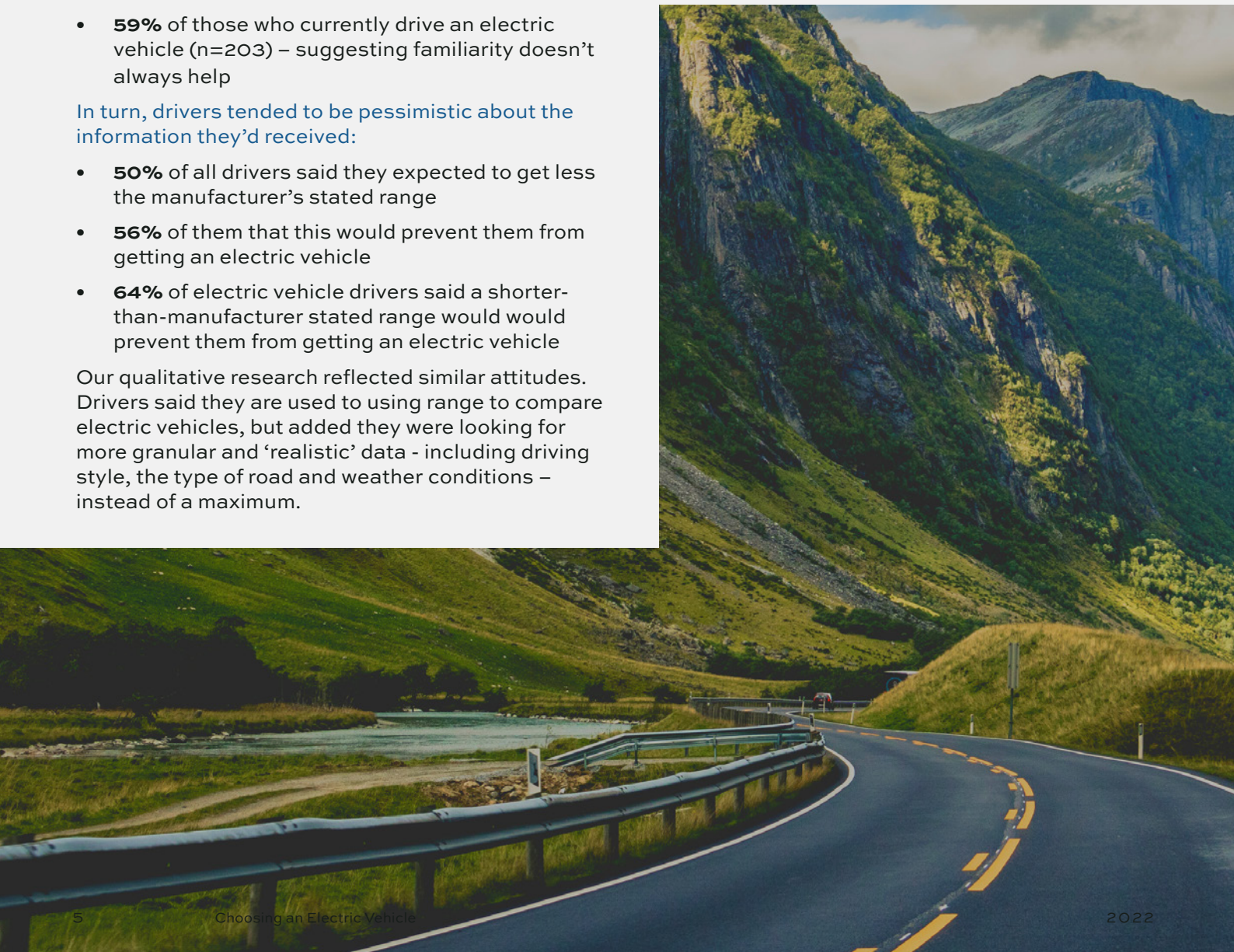
In turn, drivers tended to be pessimistic about the information they'd received:

- **50%** of all drivers said they expected to get less the manufacturer's stated range
- **56%** of them that this would prevent them from getting an electric vehicle
- **64%** of electric vehicle drivers said a shorter-than-manufacturer stated range would would prevent them from getting an electric vehicle

Our qualitative research reflected similar attitudes. Drivers said they are used to using range to compare electric vehicles, but added they were looking for more granular and 'realistic' data - including driving style, the type of road and weather conditions – instead of a maximum.

"While much of the focus has been on range anxiety for early EVs, many of the latest models have ranges of above 300 miles. When the UK daily average mileage is less than 30 miles, if you're leaving your home with a full charge, range anxiety needn't be an issue for the majority of drivers. Furthermore, the RAC Foundation found that the average car is parked for 23 hours a day, spending almost three-quarters of its time parked at the owner's home address. This means many drivers don't drive anywhere near as much as they think they do."

David Watson, CEO, Ohme



Section 2:

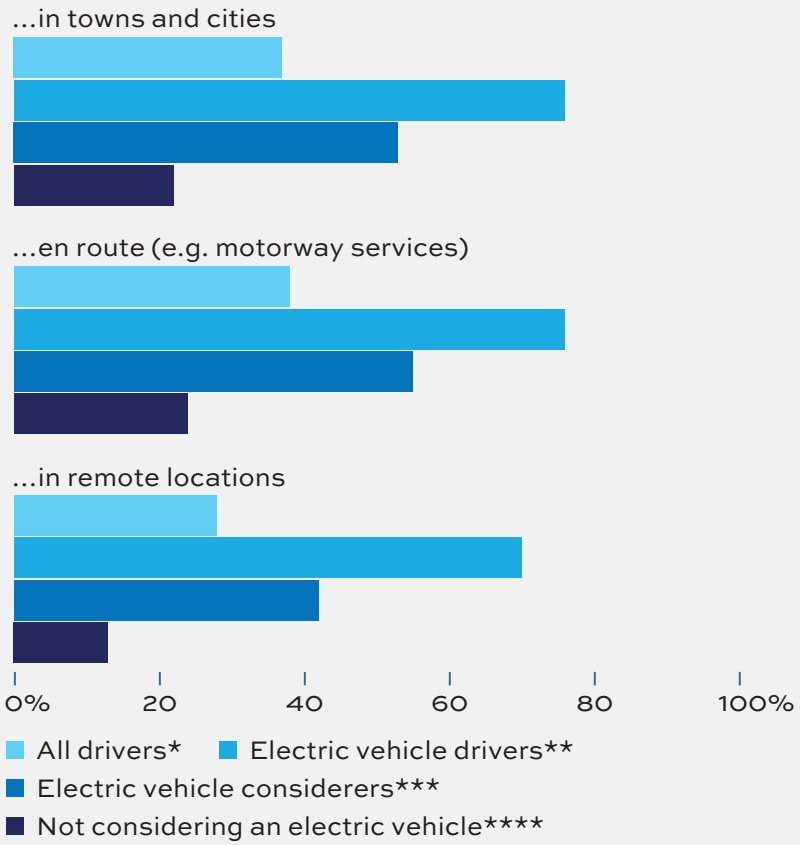
Charging an Electric Vehicle

How confident are drivers about public chargepoints?

The UK has one of Europe's largest and fastest-expanding public charging networks. According to Zap-Map [1], there were more than 33,000 chargepoints at 20,000 locations nationwide at the end of July 2022 – a 35% year-on-year increase. However, drivers aren't necessarily aware of how widespread this network is, especially in remote locations, which can exacerbate range anxiety.

This anxiety eases with experience. Electric vehicle drivers were much more confident about the availability of public chargepoints than other groups – including those who were at the consideration stage.

I would be confident that there are enough chargepoints... (% very/fairly confident)

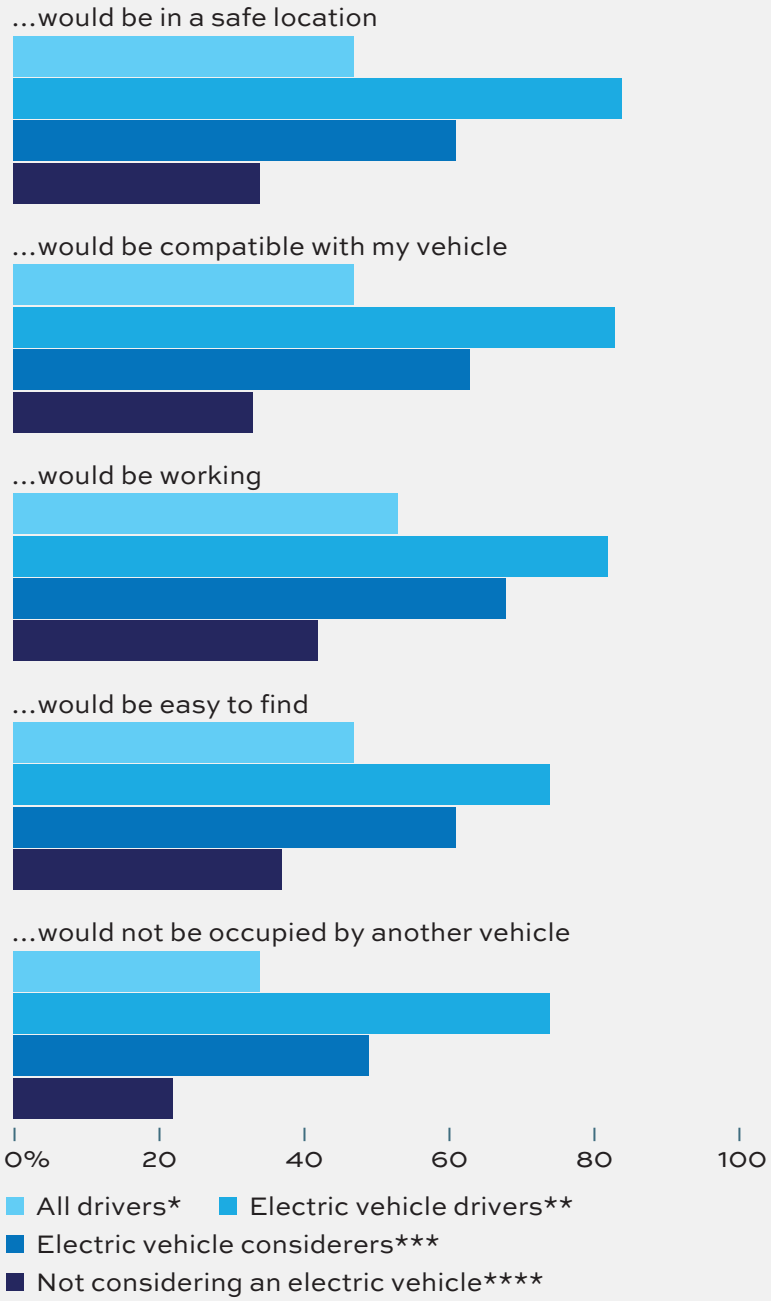


Sample: *all adults aged 17-75 with a driving licence n: 1928
Sample: **all adults aged 17-75 who already buy/lease/subscribe to or have continual use of an electric vehicle n: 203
Sample: ***all adults aged 17-75 who would definitely or probably consider an electric vehicle for their next car or van n: 1068
Sample: ****all adults aged 17-75 who would definitely or probbaly not consider an electric vehicle for their next car or van n: 488

[1] https://www.zap-map.com/statistics/#region

Electric vehicle drivers were also more confident about the charging experience than other groups – especially those who are not considering one for their next vehicle:

I am confident that the chargepoint...
(% very/fairly confident)



Confidence in the charging network was lower among women across all statements. Notably, only 45% of women said they were confident that chargepoints would be in a location where they felt safe stopping – compared to 60% of men.

Sample: *all adults aged 17-75 with a driving licence n: 1928
Sample: **all adults aged 17-75 who already buy/lease/subscribe to or have continual use of an electric vehicle n: 203
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"Accessibility is key – from making public charge points accessible for all drivers, to ensuring women's safety at all times of day and night across all locations, to introducing clear signage so that drivers know where to plug in. And while the upfront sticker cost is still understandably an issue for many people, the running costs for those able to make the switch are, on average, 50% less annually than for a petrol or diesel car. Over half a million people have already made the switch to EV in the UK. Let's work together to help millions of others do the same."

Gill Nowell, Head of EV Communications, LV= General Insurance and ElectriX

Case Study:

Shell and Aldi partner for more convenient EV charging

Although the findings point to a perceived insufficient number of chargepoints, but there are an increasing number of companies working on improving the availability of charging infrastructure. Most notably, these schemes are for public use to help alleviate any fears EV drivers may have over a lack of suitable chargepoints away from home.

Shell Recharge Solutions' partnership with supermarket Aldi UK aims to provide more publicly accessible chargepoints for electric vehicles. The three-year deal sets out to add around 140 new 22kW chargers to the UK public charging network, with convenience high on the priority list, as shoppers can charge their EV while stocking up on their groceries. A company-wide approach, Aldi is also installing EV chargepoints at its UK headquarters in Atherstone, aiming to encourage and support the uptake of sustainable driving.

Aldi Ireland has also announced plans to double its number of on-site EV chargepoints over the next 12 months. Plans for an additional 41 units to be added to its network will bring the total of chargepoints to 79, spread across a total of 19 stores. The new points are scheduled for installation in Cork, Dublin, Galway, Kerry, Louth, Mayo, Meath and Wexford.

Niall O'Connor, Aldi Group managing director, said: "We want to help Aldi shoppers live more sustainable lives and are constantly looking at new, innovative ways to make it easier for them to shop with Aldi. By increasing our EV charging offering across our store network, our aim is to support customers in making environmentally friendly choices so that together we can work towards a greener future."

Shell hopes that by putting EV charging infrastructure in places where it's highly visible will mobilize the next cohort of EV drivers, and it plans to have 100,000 public EV chargers dotted around the UK by 2030. As EV popularity increases, the company believes now is the time for businesses to invest.

Charging speeds can be hard to understand

Chargepoints have evolved quickly over the last decade, catering for vehicles with much larger capacity batteries with and a need for high power outputs to deliver short charging times. The latest 350kW 'ultra-rapid' chargers are 100 times faster than a lot of units installed with the earliest 'Plugged-in Places' local infrastructure schemes of 2010, and up to seven times faster than the first Electric Highway 50kW rapid chargers, installed in 2012.

However, the pace of change has left a legacy of terminology about charging speeds which can be confusing for drivers. Only **44%** of drivers feel confident that if they needed to charge an EV away from home, they would know how long a vehicle would take to charge before they started charging, and this varies by location.

Although more than half (**53%**) are confident about charging speeds at home, this falls to:

- **45%** for at home using on-street public chargepoints
- **40%** for chargepoints in motorway services
- **40%** for workplace chargepoints
- **38%** for chargepoints at destinations (such as shops or tourist attractions) – these tend to offer the greatest spread of charging speeds.

Drivers adjust quickly. Most (**77%**) (n=203) electric vehicle drivers felt confident that they would know how long their vehicle would take to charge if they needed to charge away from home and were around twice as likely (**38%**) to be prefer the speed of public charging points to be displayed using kilowatt power ratings than the overall average (**18%**).

This was also evident in our qualitative research; participants noted that they were prepared to familiarise themselves with kilowatt-based power outputs, as long as they were applied consistently. Some drew comparisons between terms such as 'fast' or 'rapid charging' and the inconsistent speeds published by broadband providers.

Accessing and paying for charging could be easier

Running costs were the most important priority (considered by 93% as very/fairly important) for drivers who would consider an electric vehicle, and 50% of them believe charging costs would be lower than refuelling a petrol or diesel vehicle. This information isn't always straightforward to understand.

Half (**52%**) of drivers are confident (very/fairly) that they know how much it would cost to charge an EV at home, compared to:

- **41%** public on-street chargepoints at home
- **39%** for chargepoints in motorway services
- **39%** for charging in workplaces
- **37%** for destinations, such as shops or tourist attractions

It can also be hard to relate this to running costs. Only 38% of drivers agreed that it's easy to understand the information about electric vehicles' energy efficiency. Even among those who said they had considered and researched EVs in detail (n=206), less than two thirds (62%) agreed with the same statement.

Drivers also expect payment to be as straightforward as paying for petrol or diesel:

- **74%** agree that they would expect to be able to pay using contactless (card or mobile)
- **58%** agree that smartphone apps would be a convenient way to pay for charging
- **36%** agree that they would be happy to have different apps for various public charging providers

Electric vehicle drivers weren't entirely positive about this experience. Although they were more likely to agree that apps were a convenient way to pay and more aware of the information they offered, 70% agree that there are too many different apps for public charging points.

"This research underlines, once again, that fit for purpose charging infrastructure is pivotal to enabling the UK's transition to EVs. That's why Fastned is busy building safe, reliable and easy to use rapid charging stations right across the country, giving drivers the confidence to switch to electric. That's what our Electric Freedom mission is all about."

Tom Hurst, UK Country Manager, Fastned

Case Study:

Fastned powers up easier charging at Energy Superhub Oxford

In addition to a significant increase in the availability of chargepoints at strategic locations, the next wave of EV drivers need to have confidence in the quality of that infrastructure. As the research shows, charging stations need to be easy to find and use, and drivers need to feel comfortable and safe while using them.

The new Energy Superhub Oxford (ESO), situated at the city's Redbridge Park and Ride site, is one of a nationwide network of Energy Superhubs being developed by Pivot Power (part of EDF Renewables), and aims to meet all of these needs. Initially, fast and ultra-rapid charging for 42 vehicles will be available from chargepoint operators Fastned, Tesla and Wenea.

Supplied entirely with renewable energy, and with 10MW of installed capacity on site, the hub can scale up with EV adoption to provide charging for 400 vehicles[1]. This will help to support the estimated 36 million EVs expected on UK roads by 2040.

Fastned, the European rapid EV charging company has initially installed 10 charging bays at the hub. The chargepoints have 300kW of available power, capable of adding 300 miles of range in only 20 minutes, and are easy to find, as the Fastned station features the company's easily-recognised canopy. Not only easier to locate, the canopy also provides lighting and protection from weather. This ensures the station is obvious, safe and welcoming for consumers, feeding into concerns found in the research.

The wider ESO project at Oxford also features a cutting-edge – and the world's largest – hybrid energy battery system to store renewable energy at times of high supply, and a four-mile underground cable which directly connects the hub to National Grid's high voltage transmission network. This means that hundreds of EVs can charge simultaneously without putting additional strain on the local electricity network, and there will be no need for costly upgrades.

[1] Assumes 350 cars charging at 7kW and 50 cars charging at 150kW.

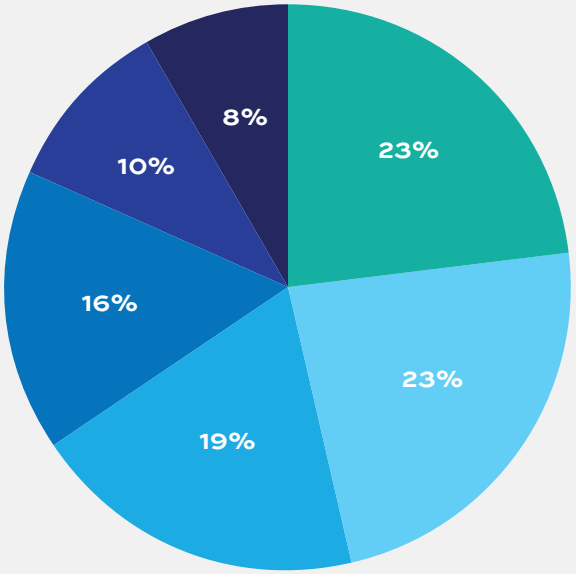
Section 3:

Running Costs for an Electric Vehicle

How important are running costs for drivers?

Our research took place during a once-in-a-generation cost of living crisis so, not surprisingly, day-to-day expenses were an important topic. However, the research shows electric vehicles aren't necessarily seen as a way to reduce motoring costs; **46%** of drivers who would consider an electric car or van expected them to have higher whole-life costs than their petrol or diesel counterparts.

How do electric vehicle whole-life costs (price of vehicle plus all running costs) compare to a petrol or diesel car?



Sample: all adults aged 17-75 who would consider an electric vehicle in future n: 1068

Higher vehicle costs aren't perceived as a barrier. Many (70%) of those who would consider an electric vehicle recognised that the initial retail/sticker/list price was higher, while 38% expect higher monthly lease or finance costs to drive one.

Even among this demographic, awareness of in-life savings was relatively low. Comparing EVs with petrol or diesel cars:

- **48%** expected lower charges for parking or entering a city centre (such as clean air zones)
- **47%** said cheaper taxation for electric vehicles (such as road tax or Benefit-in-Kind) would be lower
- **42%** believe they will reduce their overall running costs (such as fuel, servicing, insurance and maintenance)

Case Study:

How transitioning to EV has helped balance the books

For many fleet managers, it's equivalent to the Holy Grail: moving drivers into more efficient cars while keeping management happy at by saving tens of thousands of pounds on your fuel bill. It might sound too good to be true, but that's what Eddie Forrester, fleet manager at EDSB, has done over the past 12 months by switching to electric vehicles – and there's more to come.

Founded in 2008, Leeds-based EDSB is a systems and maintenance supplier offering fire and security compliance solutions and employing 115 staff nationwide. Until a year ago, its fleet would have been typical of similar businesses; 60 cars and 90 vans, all diesel-powered and mostly from premium brands. Then things changed.

"We're a modern, forward-thinking company, so our managing director, Jonathan Parker, wanted us to switch our entire fleet over to electric," explains Forrester.

Although cynical at first, Forrester says the majority of drivers were won over once they had been given a demonstration of the cars and Tesla's Supercharger charging network. The proof is in the numbers; previously 12 employees opted out of the company car scheme, now only two do so.

If that doesn't raise your eyebrows, then these figures certainly will. EDSB's high-mileage fleet was averaging around £410,000 in annual fuel bills, but, having replaced a fifth of its fleet with electric vehicles, Forrester estimates the company has saved £43,000 in a year – more than £3,500 per month. And those savings will only get larger as the EV share grows.

The transition is backed up by crucial additional hardware and software. EDSB has fitted Ohme Home Pro EV chargers at employees' homes and its offices. Ohme's software portal is linked to Allstar EV cards and Mina software, which automatically refunds drivers for the cost of business mileage then gives a monthly report of EV usage across the company.

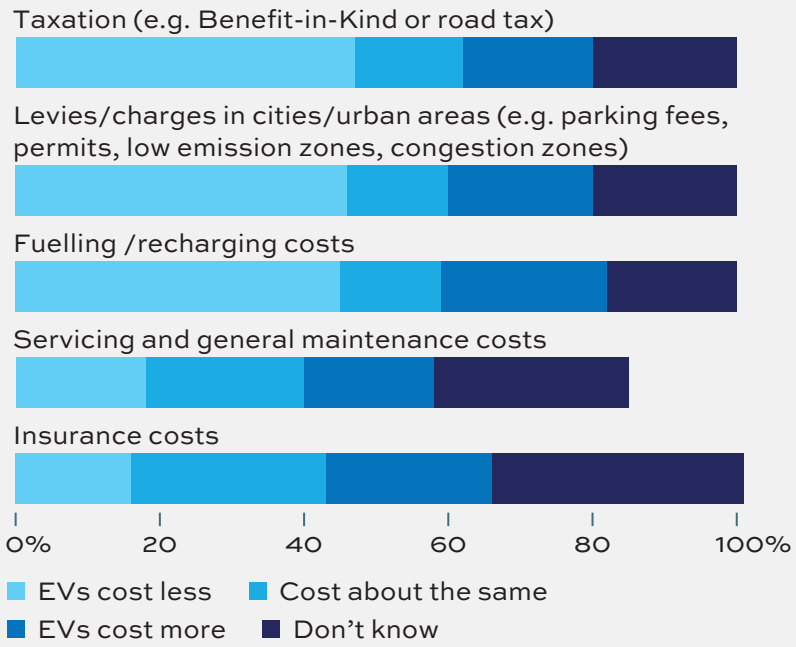
However, progress is slower with the van fleet. Only one of EDSB's 62 vans is electric and, with limited range and high annual mileage, Forrester expects a slower transition than its company cars – all of the van fleet will be electric by 2025.

"With the current Government mentality for more sustainability, we now actively use our EV fleet as a selling point for the company," says Forrester. "And with many business tenders demanding greater sustainability from those pitching, if you're not doing it, then you won't even be considered. Along with the savings, switching our fleet to EVs has been an absolute win-win situation."

How much do drivers understand about running costs?

According to the latest LeasePlan Car Cost Index [1], driving an electric car could reduce drivers' whole-life costs by between 20% and 27% compared to a petrol, diesel or hybrid. That potential has resonated with drivers.

During qualitative research sessions, participants generally recognised that electric vehicles are cheaper to run, but focused on day-to-day expenditure (such as charging). Other costs tended to be bundled together without understanding how they compare to a petrol or diesel vehicle.



Sample: all adults aged 17-75 with a driving licence n: 1928

Surveys were carried out during a period where energy costs were top of the news agenda, potentially influencing drivers' perception of charging costs. However, there are some significant knowledge gaps. Four in ten (38%) drivers say they know nothing/hardly anything about what an electric vehicle costs to run.

Even those who rated running costs as important had some uncertainties about savings for going electric.

- **29%** don't know if electric vehicles are cheaper to insure
- **26%** don't know how leasing and finance costs compare
- **23%** don't know whether electric vehicles are cheaper to service and maintain
- **15%** don't know about levies associated with city driving
- **14%** don't know about tax incentives
- **13%** don't know whether charging costs less than fuel

[1] https://www.leaseplan.com/-/media/leaseplan-digital/lu/documents/2021/car-cost-index-2021/cco-2021-report.pdf

Case Study:

Helping drivers understand running costs

The research points to a belief that whole-life costs – including buying and running – are higher for an electric car, but also an awareness that EVs can save owners money, but the reasons why are unclear. Additionally, there is a large knowledge gap in terms of how much money could be saved by running an EV.

The total cost of ownership (TCO) of an EV is perhaps one of the best kept secrets of having one. Analysis by LV= General Insurance and consultant battery electrochemist Dr Euan McTurk, of Plug Life Consulting, found when the purchase (outright ownership), financing (lease or PCP) and running costs (fuel or charging, maintenance, insurance, tax) for 13 EVs and their ICE equivalents was examined, there were savings to be made.

Key findings in the 'Electric Car Cost Index' established that buying an EV outright saves, on average, £3,862 over a seven-year ownership period. Seven EVs would also provide savings over a four-year lease. 'Fuel' costs were found to be cheaper, too. EV drivers would pay 61% less over an 8,000-mile distance, whereas ICE diesel drivers would pay £732 more per year over the same distance.

Lower maintenance – there are fewer moving parts to wear out than an ICE and brake components aren't typically used as heavily due to regenerative braking – and insurance costs also drive down annual EV running costs, which are, on average, 47% cheaper than ICE cars. EV savings are heavily driven by lower average annual running costs, which totalled £1,147.21 compared with £2,201.58 for an ICE car.

All outright purchase, lease and PCP costs are correct as of February 2022. Purchase price of vehicles includes VAT. All running costs are averaged across a seven-year period (the assumed length of ownership) and are correct as of March 2022.

How do drivers expect electric vehicles to age?

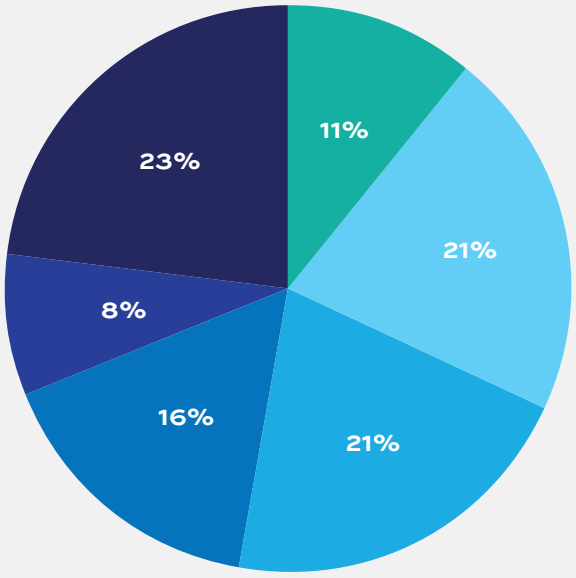
Manufacturers have spent billions engineering electric vehicles to offer a familiar driving experience, but the technology underneath the skin is very different.

This left some drivers with concerns about how well they will last – and how this will affect resale values too.

- **30%** agree that electric vehicles will offer a long lifespan, but...
- **49%** don't know (24%), or neither agreed or disagreed (25%) with the same statement
- **46%** agree that the technology of electric vehicles will become out of date quickly, and yet...
- **32%** agree that electric vehicles would be easy to sell on to others (i.e. as a second hand car) – compared to 19% who said the opposite

Concerns are largely focused on battery durability. During qualitative research, drivers related this to degradation of smartphone batteries, while the survey highlighted similar uncertainty. Only a third (32%) of respondents agreed that batteries will last a long time:

The battery of an electric vehicle will last a long time before needing to be replaced



Sample: *all adults aged 17-75 with a driving licence n: 1928

This creates a perceived risk, with **38%** of all drivers and **53%** of those who wouldn't consider an electric vehicle disagreeing that the cost of replacing a battery would not be affordable to them.

Section 4:

Sustainability

How important is sustainability for drivers?

Sustainability is at the top of the public and political agenda, and drivers interviewed during qualitative sessions said they recognised a need to 'do their bit'. Although cost and convenience are seen to be more important overall, **77%** of all drivers said day-to-day environmental impact is an important part of their purchasing decisions.

This differed across different groups:

- **83%** of women, compared to **72%** of men
- **79%** of under-45s, versus **72%** of older drivers
- **82%** of households with children under 17 years old, compared to **73%** of those without

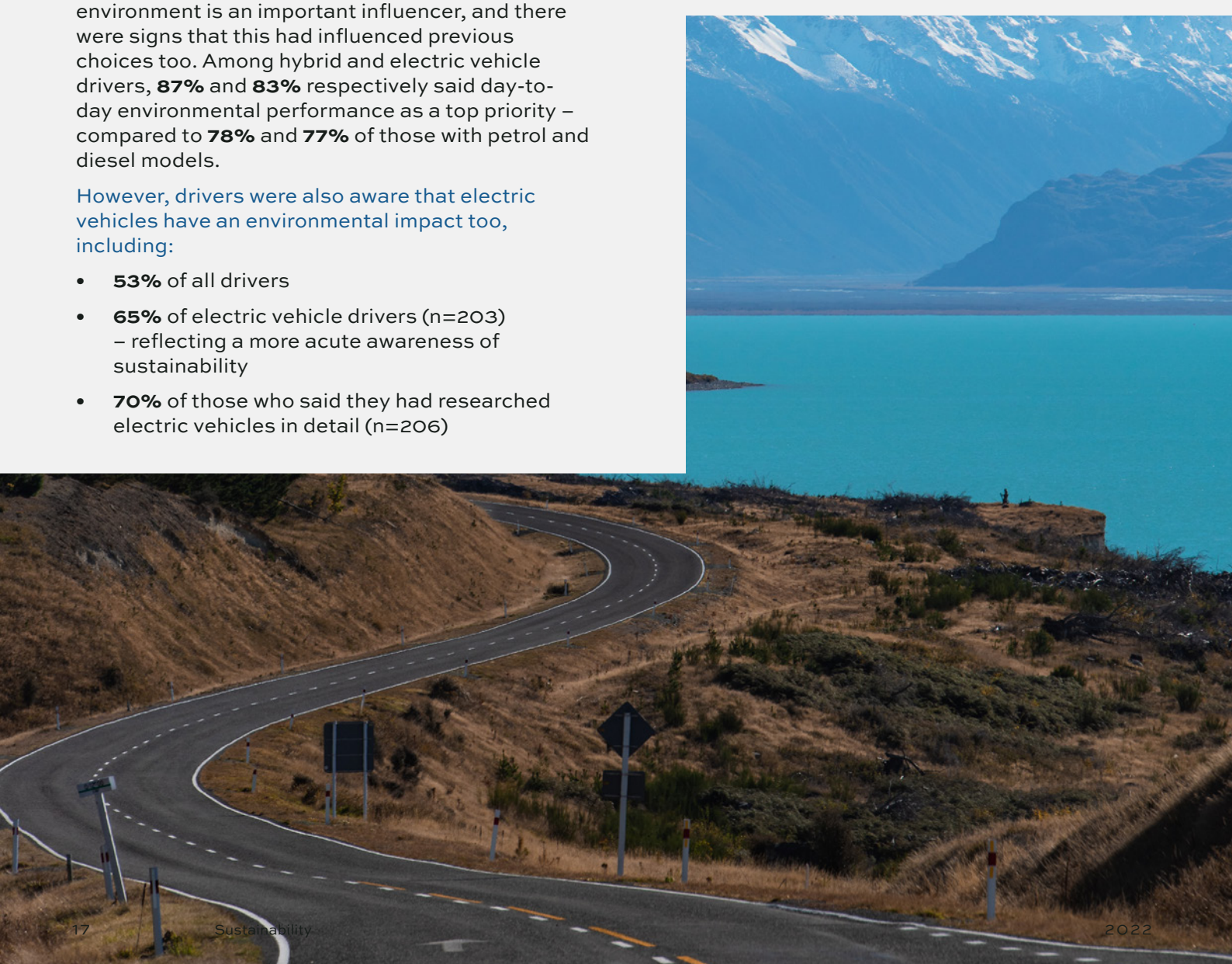
Most (**86%**) drivers who would consider an electric vehicle said the impact of everyday use on the environment is an important influencer, and there were signs that this had influenced previous choices too. Among hybrid and electric vehicle drivers, **87%** and **83%** respectively said day-to-day environmental performance as a top priority – compared to **78%** and **77%** of those with petrol and diesel models.

However, drivers were also aware that electric vehicles have an environmental impact too, including:

- **53%** of all drivers
- **65%** of electric vehicle drivers (n=203) – reflecting a more acute awareness of sustainability
- **70%** of those who said they had researched electric vehicles in detail (n=206)

"With a projected 36m electric vehicles on the world's roads by 2040, the challenge of providing and managing accessible, reliable and affordable EV charging infrastructure to enable this transition is critical, especially for the majority who cannot charge at home. Public smart charging will be an essential for addressing shortfalls in local grid capacity, while enabling local residents to take advantage of cheaper overnight tariffs and the cleanest energy sources. It's a vital technology as organisations set increasingly stringent sustainability goals."

Chris Pateman-Jones, CEO of Connected Kerb



Case Study:

How LeasePlan UK is helping giving fleets the confidence to go electric

As one of the world's largest vehicle-as-a-service providers, LeasePlan has long sought to reduce both its own environmental impact and that of its customers. A founding member of the EV100 electric fleet initiative with a commitment to deliver net zero emissions by 2030, it's spent over a decade of working closely with businesses deploying electric vehicles – and become familiar with the obstacles they face.

LeasePlan UK's Electric Moments campaign set out to address those concerns. Built on extensive research identifying the barriers preventing businesses and drivers from making the switch from combustion engines, the company developed multi-layered and content-led marketing strategy focused on the 'lightbulb moments' where people realise the benefits of going electric.

At its heart was an innovative online hub, jam-packed with more than 80 items of creative, consumer-style content including podcasts, road tests, 'getting started' guides and FAQs for businesses and their drivers. This was accompanied by an informative and easily digestible video series, produced with Robert Llewellyn and the team at Fully Charged, discussing potential concerns and solutions with experts and current owners. With more than 147,000 views since its launch, there's clearly a strong appetite for this information among consumers and businesses.

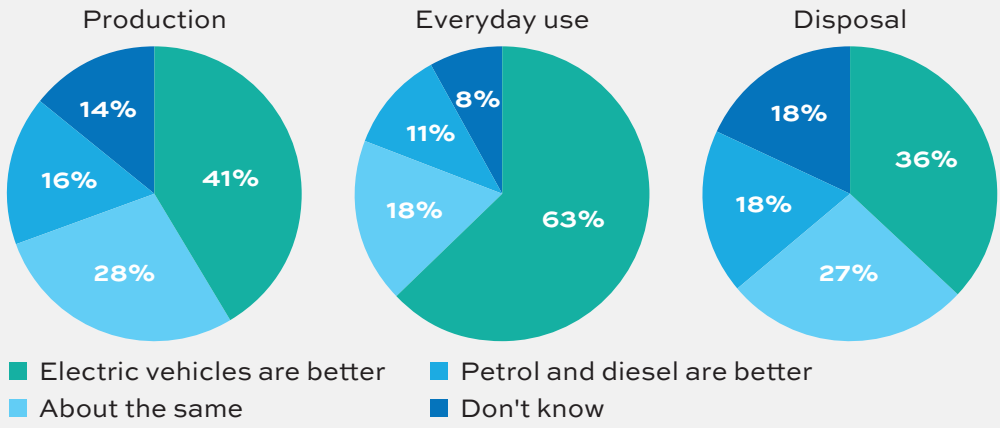
The campaign has generated widespread coverage, including webinars, e-books, articles and an interactive white paper, which have amassed national, regional and trade press attention. Importantly, the team also designed four innovative, interactive online tools – each engineered to give people the confidence to switch to electric cars and vans – before developing bespoke versions for LeasePlan UK's broker community, thereby supporting indirect clients too.

Lauded as a "lighthouse" campaign by other LeasePlan marketing teams globally, Electric Moments has successfully engaged with tens of thousands of people, and it hasn't stopped there. LeasePlan UK's campaign tools and resources have also been shared with the firm's colleagues worldwide, ensuring they too can deliver a 'lightbulb moment' for their own customers too.

Where do drivers' environmental concerns come from?

The survey results show a widespread perception that electric vehicles are better for the environment in day-to-day use than their petrol or diesel counterparts. However, they were less convinced about the advantages during production and disposal.

How does an electric vehicle's environmental impact compare to a petrol or diesel?

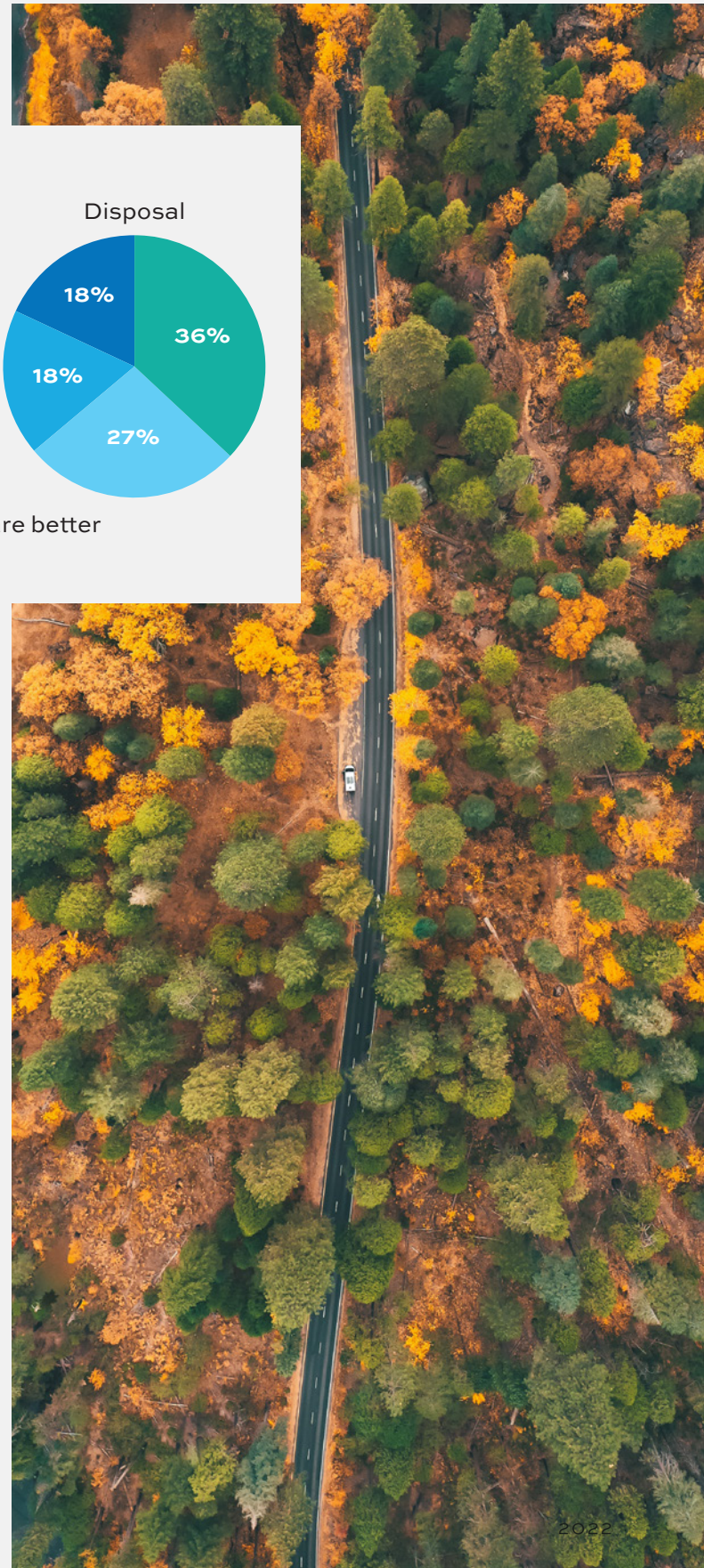


Sample: all adults aged 17-75 with a driving licence n: 1928

Over half (**51%**) of those who said electric vehicles have some negative impacts (n=1063) cited concerns about them using electricity from fossil fuels, and this included a similar proportion of those who currently drive them (**52%**) (n=135). This was higher among drivers who would not consider electric vehicle (**61%**) and much lower among those who had researched the technology in detail (**35%**) (n=143).

In-use environmental benefits for electric vehicles are improving all the time. New smart charging regulations, introduced in June 2022, require all new home and workplace chargepoints to have features enabling drivers to pre-set charging to less carbon-intensive, lower-cost off-peak periods.

Meanwhile, National Grid ESO, which is responsible for the UK's electricity transmission network, has set a 2025 target for net-zero carbon operation – and it's aiming for 100% green energy by 2035 [1]. With sources such as coal being phased out, carbon emissions fell to an all-time low of 181grams per kilowatt-hour (g/kWh) in 2020, equating to a two-third reduction compared to the 529g/kWh average for 2013 [2].



[1] https://www.nationalgrideso.com/future-energy
[2] https://www.nationalgrideso.com/news/record-breaking-2020-becomes-greenest-year-britains-electricity

Batteries remain a sticking point

Among drivers who said electric vehicles have some negative impacts on the environment, most (87%) expressed some concerns related to production, recycling and disposal of the high-voltage battery. This was similar among those who would consider an electric vehicle (87%) and those who would not (89%).

Asked what the perceived negative impacts were:

- **52%** are worried about the environmental impact of manufacturing electric vehicles
- **56%** expressed concerns about the shortage of natural resources used to produce batteries

There are similar concerns about end-of-life processing:

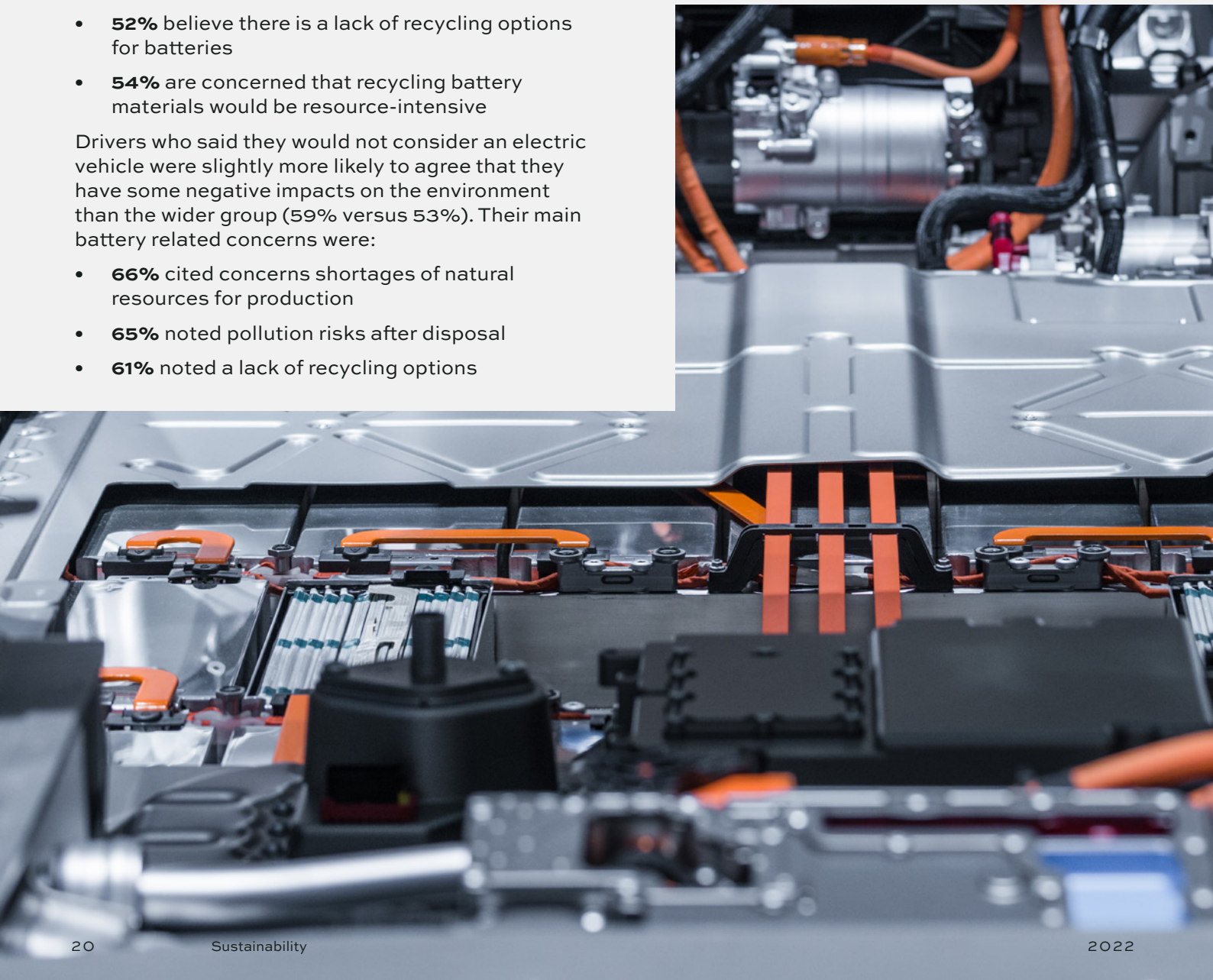
- **56%** are worried about pollution risks from battery disposal
- **52%** believe there is a lack of recycling options for batteries
- **54%** are concerned that recycling battery materials would be resource-intensive

Drivers who said they would not consider an electric vehicle were slightly more likely to agree that they have some negative impacts on the environment than the wider group (59% versus 53%). Their main battery related concerns were:

- **66%** cited concerns shortages of natural resources for production
- **65%** noted pollution risks after disposal
- **61%** noted a lack of recycling options

The public is clearly concerned about the environmental impact of EVs. Net-zero is a once-in-a-lifetime opportunity to think strategically, including challenging current assumptions about transportation. This means considering sustainable transport options, modal shift, vehicle sharing and other innovative solutions to ensure that EVs are deployed effectively. And when they are, they must be sustainable from a whole lifecycle perspective to avoid undermining the environmental benefits they bring."

Chris Rimmer, Infrastructure Strategy Lead, Cenex



Case Study:

How Volkswagen's carbon-neutral production is enabling more sustainable EVs

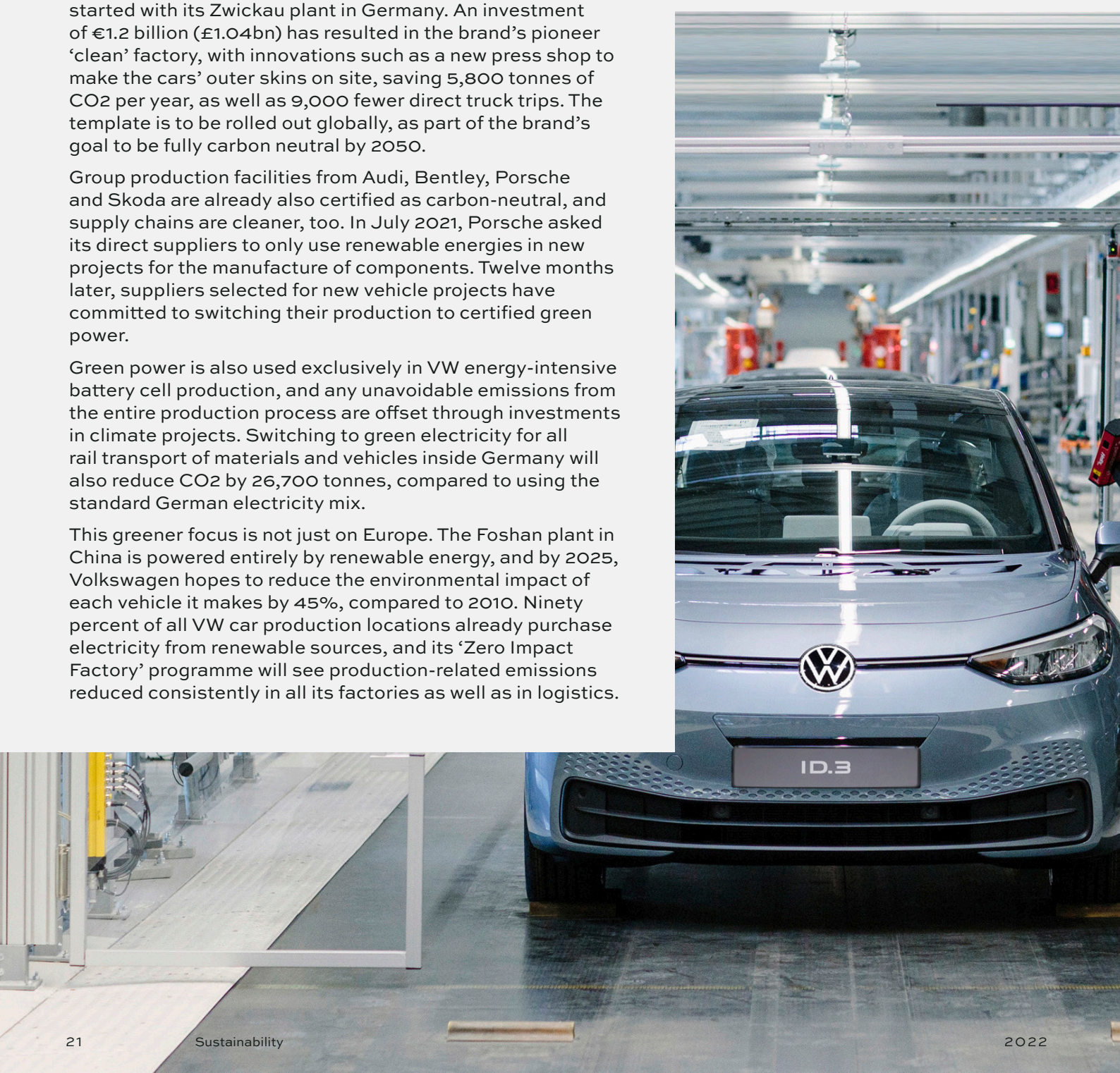
As the electric vehicle market gathers pace, manufacturers are slowly shifting towards more sustainable production to complement in-use environmental improvements.

Volkswagen is investing in technologies to not only make its cars greener, but its production plants cleaner, too. Manufacture of the ID.3 and ID.4 EVs is carbon-neutral – and the new ID. Buzz van and MPV will be too – and this started with its Zwickau plant in Germany. An investment of €1.2 billion (£1.04bn) has resulted in the brand's pioneer 'clean' factory, with innovations such as a new press shop to make the cars' outer skins on site, saving 5,800 tonnes of CO2 per year, as well as 9,000 fewer direct truck trips. The template is to be rolled out globally, as part of the brand's goal to be fully carbon neutral by 2050.

Group production facilities from Audi, Bentley, Porsche and Skoda are already also certified as carbon-neutral, and supply chains are cleaner, too. In July 2021, Porsche asked its direct suppliers to only use renewable energies in new projects for the manufacture of components. Twelve months later, suppliers selected for new vehicle projects have committed to switching their production to certified green power.

Green power is also used exclusively in VW energy-intensive battery cell production, and any unavoidable emissions from the entire production process are offset through investments in climate projects. Switching to green electricity for all rail transport of materials and vehicles inside Germany will also reduce CO2 by 26,700 tonnes, compared to using the standard German electricity mix.

This greener focus is not just on Europe. The Foshan plant in China is powered entirely by renewable energy, and by 2025, Volkswagen hopes to reduce the environmental impact of each vehicle it makes by 45%, compared to 2010. Ninety percent of all VW car production locations already purchase electricity from renewable sources, and its 'Zero Impact Factory' programme will see production-related emissions reduced consistently in all its factories as well as in logistics.



Section 5:

How do we encourage the next generation of electric vehicle drivers?

Our research highlights room for improvement to help give drivers the confidence to switch to electric cars and vans, and this is underway. The electric vehicle sector is working hard to deliver a better user experience, and World EV Day shows the breadth of collaborations involved.

We believe there are some simple steps that government and industry can take to remove some of the perceived roadblocks:

Make it Affordable

Motoring costs are a top priority for drivers. Most recognised that electric vehicles have a higher list price, but that this is offset during its lifespan. Highlighting the savings and, where possible, enhancing them would help drivers make an informed choice.

- **Show where drivers can save money:** Comparisons with petrol and diesel vehicles – including funding options, servicing and maintenance and other incentives – can help reassure them about long-term savings of going electric. This is especially important for batteries, which are perceived as a potentially unaffordable repair cost, with significant environmental implications for increasingly sustainability-minded consumers.
- **Encourage smarter charging:** Off-peak energy tariffs can help drivers take advantage of cheaper charging costs and less carbon-intensive electricity. Comparisons could be highlighted in promotional material.
- **Reduce VAT for public chargepoints:** As electric vehicles become more mainstream, drivers will have more varied charging habits. By equalising VAT rates between charging in public (currently 20%) and at home (5%) would make electric vehicles more affordable for the incoming population of EV drivers who don't have off-street parking.
- **Support the used EV market:** Purchase incentives have tended to focus on new vehicles, but used cars and vans are an important entry point. Schemes such as the Transport Scotland's interest-free loan for used electric vehicles could help encourage more drivers to switch.

Make it Simple

Electric vehicle drivers quickly become comfortable with new terminology, and considerers are prepared to learn new terms as long as they are consistent. Today, these terms are often varied – especially in brochures and manufacturer websites – which makes the technology seem harder to understand.

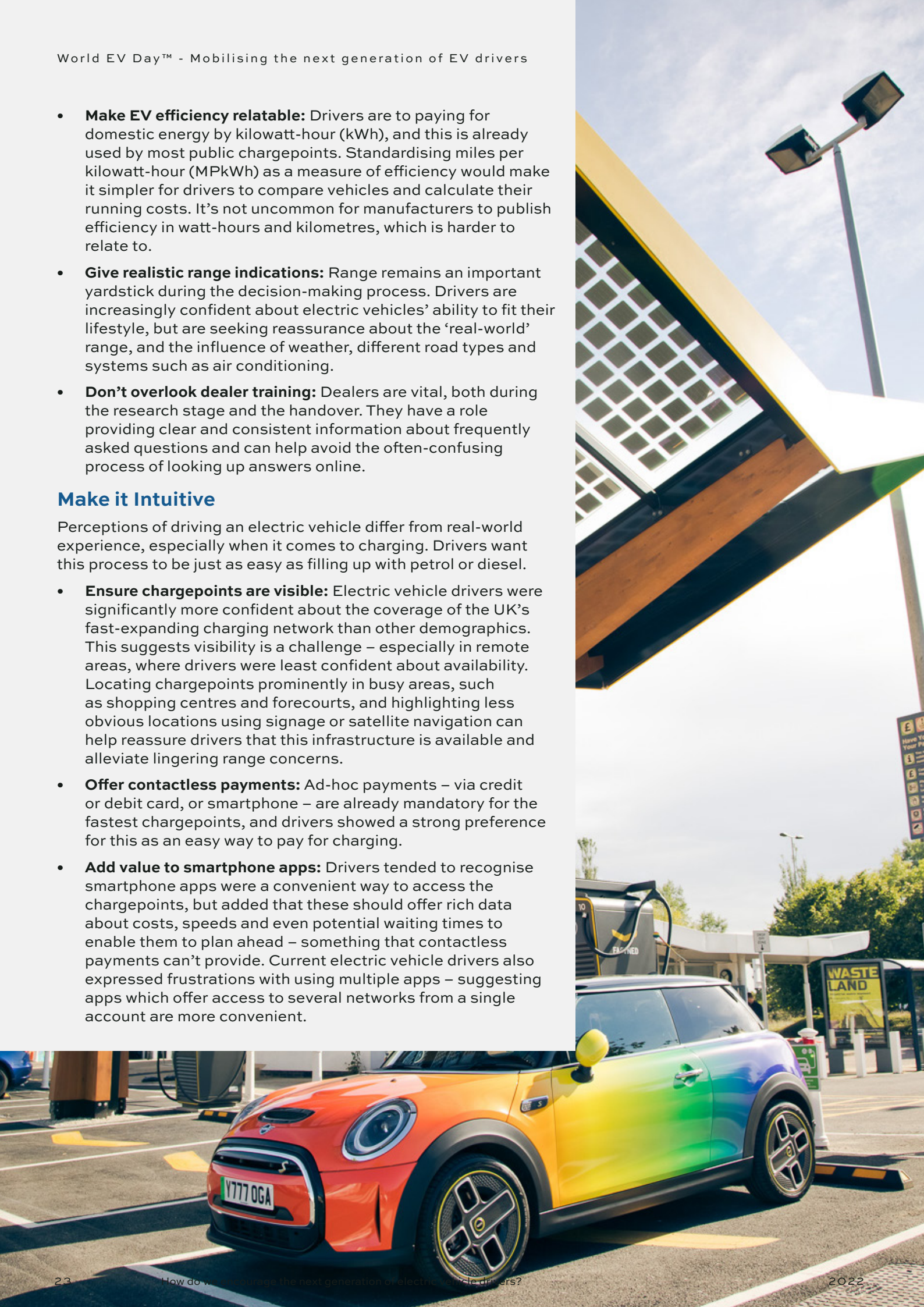
- **Keep charging speeds consistent:** Providing chargepoint output in kilowatts (kW) alongside terms such as 'fast', 'rapid' and 'ultra-rapid' would give a consistent measure of charging speeds for drivers. Manufacturers could also adopt this, alongside an indication of charging times between a standardised state of charge (e.g. 10-80% in 30 minutes) as this often differs between brands.

- **Make EV efficiency relatable:** Drivers are to paying for domestic energy by kilowatt-hour (kWh), and this is already used by most public chargepoints. Standardising miles per kilowatt-hour (MPkWh) as a measure of efficiency would make it simpler for drivers to compare vehicles and calculate their running costs. It's not uncommon for manufacturers to publish efficiency in watt-hours and kilometres, which is harder to relate to.
- **Give realistic range indications:** Range remains an important yardstick during the decision-making process. Drivers are increasingly confident about electric vehicles' ability to fit their lifestyle, but are seeking reassurance about the 'real-world' range, and the influence of weather, different road types and systems such as air conditioning.
- **Don't overlook dealer training:** Dealers are vital, both during the research stage and the handover. They have a role providing clear and consistent information about frequently asked questions and can help avoid the often-confusing process of looking up answers online.

Make it Intuitive

Perceptions of driving an electric vehicle differ from real-world experience, especially when it comes to charging. Drivers want this process to be just as easy as filling up with petrol or diesel.

- **Ensure chargepoints are visible:** Electric vehicle drivers were significantly more confident about the coverage of the UK's fast-expanding charging network than other demographics. This suggests visibility is a challenge – especially in remote areas, where drivers were least confident about availability. Locating chargepoints prominently in busy areas, such as shopping centres and forecourts, and highlighting less obvious locations using signage or satellite navigation can help reassure drivers that this infrastructure is available and alleviate lingering range concerns.
- **Offer contactless payments:** Ad-hoc payments – via credit or debit card, or smartphone – are already mandatory for the fastest chargepoints, and drivers showed a strong preference for this as an easy way to pay for charging.
- **Add value to smartphone apps:** Drivers tended to recognise smartphone apps were a convenient way to access the chargepoints, but added that these should offer rich data about costs, speeds and even potential waiting times to enable them to plan ahead – something that contactless payments can't provide. Current electric vehicle drivers also expressed frustrations with using multiple apps – suggesting apps which offer access to several networks from a single account are more convenient.



Section 6:
Partner Profiles

Auto Trader is focused on changing how the UK shops for cars by providing the best online car buying experience. We aim to use our voice and influence to drive more environmentally friendly vehicle choices. Climate change and our response to it are very important to our business and that's why we're excited to be a World EV Day partner. As the UK's largest online automotive marketplace, we have a role to play in helping the industry and consumers to make the transition to EVs. EVs need to be easier to afford, charge and buy and there's a collective responsibility to make this happen.

Cenex was established as the UK's Centre of Excellence for Low Carbon and Fuel Cell technologies in 2005.

Today, Cenex lowers emissions through innovation in transport and energy systems & infrastructure, and operates as an independent, not-for-profit research technology organisation (RTO) and consultancy, specialising in the project delivery, innovation support and market development.

Cenex also organises Cenex-LCV, the UK's premier transport decarbonisation event, and Cenex-CAM, comprising three exhibition halls and a two-day seminar programme demonstrating the latest innovation in the industry.

Connected Kerb is one of the UK's leading charging point providers, delivering future-proof, cost-effective and sustainable EV charging solutions for the public sector, developers, fleets, workplaces, car parks and other organisations to help accelerate the transition to EVs for all. Our unique solution combines power and data at the kerb to deliver user-friendly and reliable charging and provide the foundation for connected cities and communities.

The Electric Vehicle Association (EVA) England is the voice of EV drivers in England. We advocate for the uptake of EVs, and speak to government, media and industry to promote positive policies and action that will speed up the transition away from the internal combustion engine (ICE), and to make the consumer experience of driving an EV the best it can be.

FASTNED

Fastned has been developing rapid charging infrastructure for electric vehicles across Europe since 2012, with a mission to accelerate the transition to sustainable mobility by giving freedom to electric drivers. Based in Amsterdam, Fastned currently has 200+ charging stations in the Netherlands, Germany, the United Kingdom, Belgium, France and Switzerland. The company specialises in developing and operating rapid charging infrastructure where drivers can charge their EV with up to 30 miles of range in 20 minutes, before continuing their journey. Fastned is listed on Euronext Amsterdam

Green.TV is a media company focused on telling and propelling stories through a broad portfolio of award-winning digital content, channels and live events which bring sustainability to life. As organisers of World EV Day, we're celebrating the global transition to electric mobility, and encouraging drivers, authorities and fleets to recognise its contribution to a cleaner future. With a potential outreach of over a billion people in 2020 and 2021, and mentions in both the UK parliament and White House this year, it's at the spearhead of helping to #DriveChange, together.

At LeasePlan, we have the knowledge and experience that you need to help you transition to electric vehicles (EVs). We have been supporting individuals and business fleets for over 50 years and offering EVs for more than a decade. We manage 1.9 million cars and vans across 29 countries, and as an EV100 Founder Member, we are committed to moving our entire fleet to net zero-emissions by 2030. You can see all our latest EV offers at leaseplan.com, where our experts have created tools and guides to help you decide if an electric car or van is right for you.

ElectriX

ElectriX powered by LV= General Insurance is taking the hassle out of electric car ownership by giving drivers access to useful information, products and services, demystifying some of the common jargon used and acting as a source of truth when it comes to zero tailpipe emission driving.

Many drivers are interested but are potentially confused or put off by up-front costs, unknowns when it comes to range anxiety and battery life, or the challenges of charging while on the road. We're helping to demystify the buying experience and make it easy to make the switch by providing everything in one place – electric car leases, home charging and insurance. Visit www.LVelectrix.co.uk

Meanwhile, LV= General Insurance's Electric Car Cost Index is addressing the challenge of upfront costs head on, by crunching the data on total cost of ownership to demonstrate the value in going electric.

Ohme

Ohme is on a mission to speed up the global transition to clean energy, by providing an easy-to-use, smart EV charging system. From day one, we've always put the customer at the heart of everything we do. We've built a product that makes EVs cheaper to run, and allows our customers, business partners, and energy suppliers to work together to support the global transition to renewables. The 'feast or famine' nature of green energy sources is a big issue, and Ohme is a smart EV charging system that helps customers charge at off-peak times using excess energy that can't be stored on the grid, with the added benefit of saving money.

Shell Recharge

Shell Recharge Solutions offers access to over 10,000 public EV charging points across the UK, including over 230 Shell Recharge electric vehicle charging points on our UK forecourts. We plan to grow our public EV charging network to 100,000 by 2030. This means that 90% of all UK drivers will be within a 10-minute drive of a Shell rapid charger. This includes chargers on forecourts and in new locations like our all-EV hub in Fulham and Waitrose stores. Our network of on-forecourt charging points in the United Kingdom currently numbers at over 230 and is growing every month. These include rapid 50kW chargers and ultra-rapid 150kW and 175kW chargers.

Thank you to our project team

Ade and I wanted to thank all the participants who've been hugely helpful in pulling the research together. Firstly, there's the IPSOS team: Stephanie Mensah, Steven Watt, Adam Bright and Alex King. Our project management and writing team: Rebecca Whittaker, Jimmy Burnham, John Hills, Scott Staniland, Alex Grant and Rich Gooding. And finally, our research project sponsors: Gill Nowell, Jodie Brown, Charlene Cabral, Chris Rimmer, Jamie Muir, Geraldine Michel, Vicky Read, and James Court.

As we transition to electric vehicles, we can see that drivers and fleet managers need help to navigate the change. It's when the community comes together that we can achieve things that are bigger thank ourselves. We truly couldn't have done it without you all. Thank you.

Ade Thomas and Neill Emmett

Ipsos

Quantitative research:

Ipsos interviewed a sample of 2,197 adults aged 17-75 in UK using its online i:omnibus over 17–18th August 2022. 1,928 of those sampled hold a current UK-valid driving licence and are termed "drivers" in this media release. Data has been weighted to the known offline population (covering drivers and non-drivers) for age and working status within gender as well as Government Office Region and social grade.

Qualitative research:

In August 2022 Ipsos undertook nine online discussion groups with consumers in the UK, each lasting 1.5 hours. Three groups were with EV drivers who purchased and use an EV and six groups were with EV considerers who were people with a driving licence and were seriously considering their next car to be an electric vehicle. All the group participants were aged between 25–65, a mix of genders, and all of them had not participated in any qualitative research related to automotive topics in the past 3 months. Each group included 4 participants.