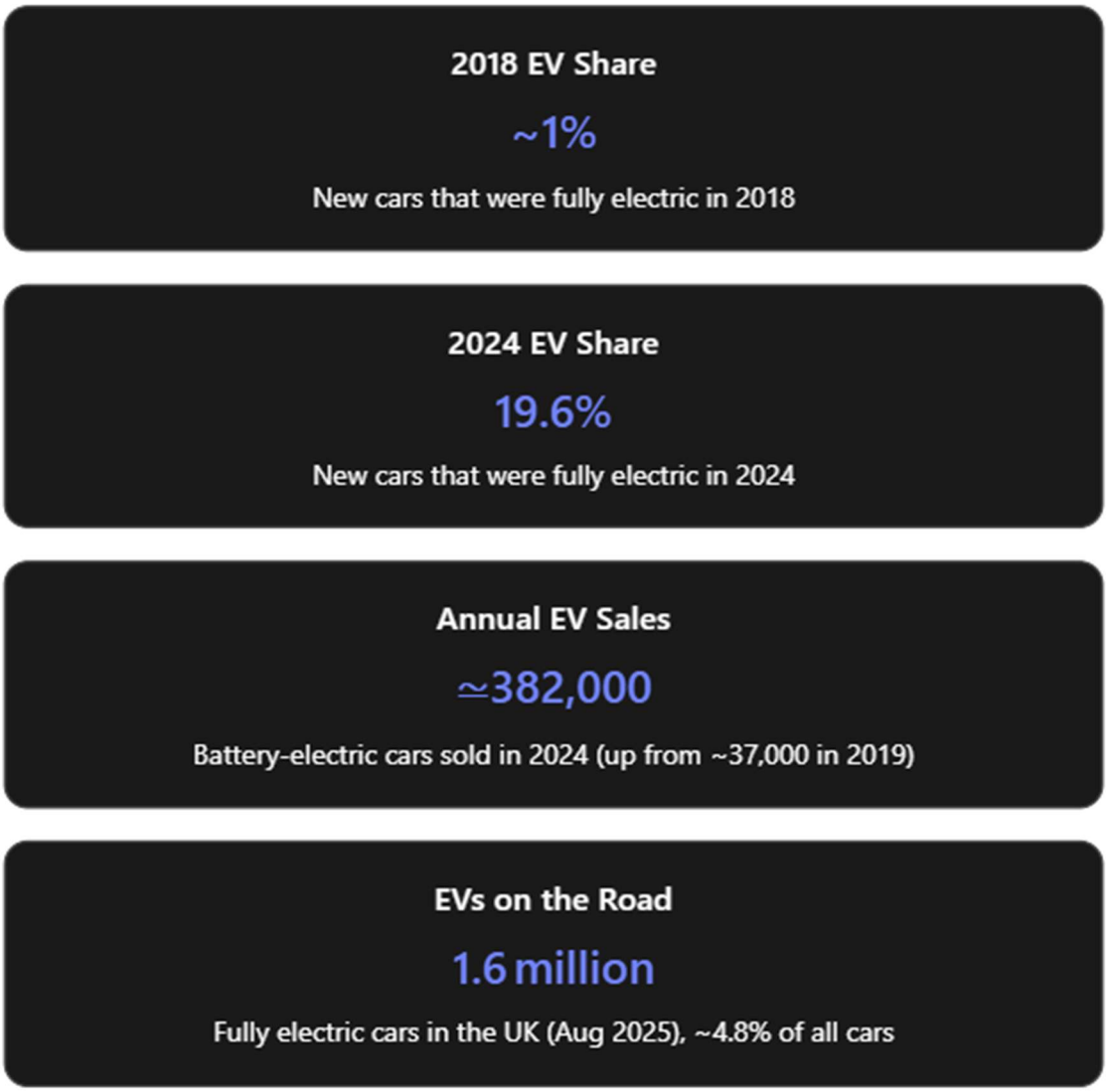
1 Electric Car Sales in the UK: Five-Year Growth and Key Challenges



2 Introduction

Electric vehicle (EV) sales in the UK have risen dramatically in the last five years, reflecting a rapid shift in the passenger car market toward zero-emission transport. In 2018, battery-electric cars made up only about 1% of new car registrations(1). By 2024, nearly one in five new cars sold was fully electric, an unprecedented jump driven by improved technology, government incentives, and wider model availability(2). The UK – alongside other European markets – has invested heavily in EV infrastructure and consumer incentives, resulting in a surge in EV adoption(3). However, electric cars still represent a small fraction of all cars on UK roads (roughly 3–5% by mid-2024)(1), and significant barriers are slowing further acceleration of EV uptake. This report reviews the growth of electric

passenger car sales over the past five years (approximately 2019–2024), projects future growth, and analyses the main issues holding back an even faster transition. Key challenges – from charging infrastructure gaps and policy uncertainties to consumer concerns and industry constraints – are identified and discussed. All figures are in UK English and focused on the UK passenger car market.

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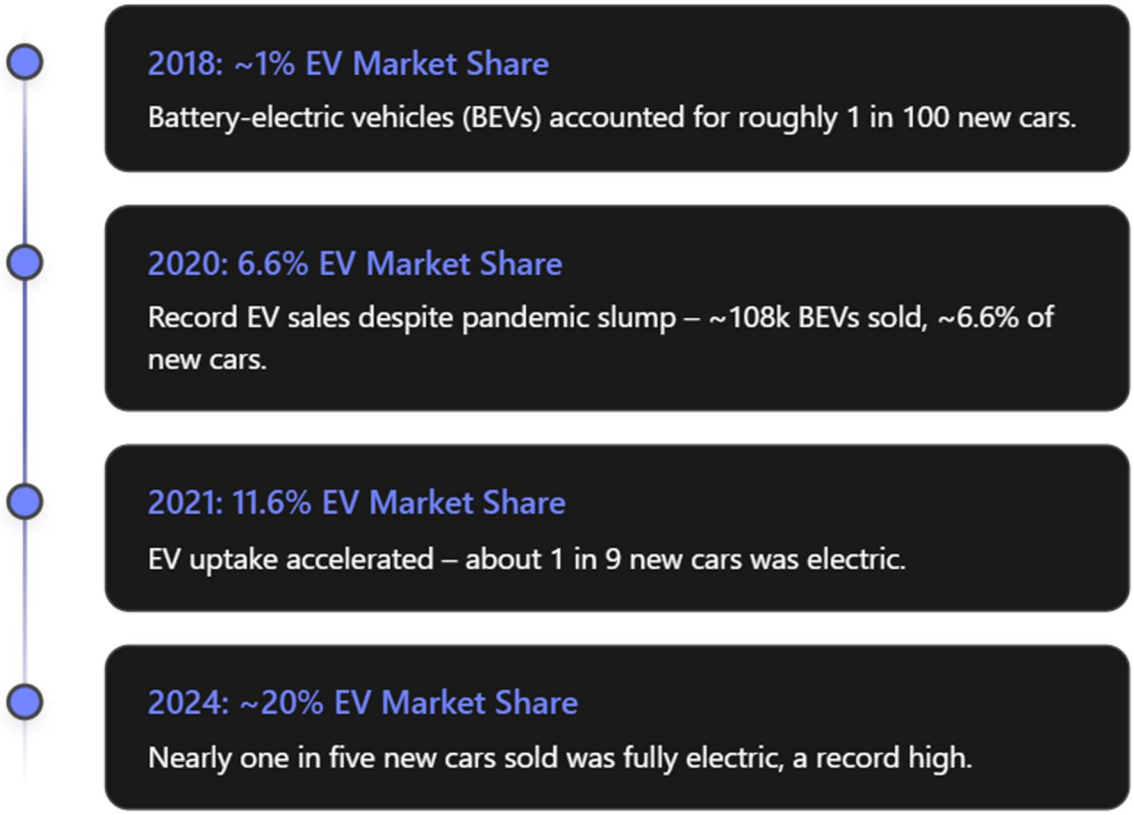
3 Five-Year Growth of Electric Car Sales (2019–2024)



The UK's electric car market has expanded exponentially since 2019. In 2019, plug-in vehicles were niche – battery-electrics (BEVs) were only around 1–2% of new car sales, and even including plug-in hybrids the total "EV" share was ~3%[4]. Sales began to climb rapidly from 2020 onward. **2020** marked a turning point: over **108,000 new BEVs were registered (a 186% increase from 2019)** despite an overall car market slump due to COVID-19. BEVs alone took **~6.6% of new car sales in 2020**, up from roughly 1.6% the year before[4]. Combined with plug-in hybrids (PHEVs), electric models exceeded **10% of annual registrations in 2020** – more than one in ten, up from

about one in thirty in 2019[4]. This made 2020 the UK's **"best-ever year" for electric cars** at the time[4].

Momentum continued into **2021**, which saw **190,727 BEVs sold**, surpassing the total BEV sales of the previous five years combined[5][5]. **Battery-electrics jumped to 11.6% of new registrations in 2021** (about one in nine cars)[5]. Including hybrids, **18.5% of new cars in 2021 could be plugged in** (either BEV or PHEV)[5]. This rapid growth was fueled by **wider model availability** (over 40% of car models offered a plug-in option by 2021) and improving range, as well as strong **fleet purchases** taking advantage of tax incentives[5][4]. The UK ended 2021 as **Europe's second-largest EV market by volume** (after Germany), though only ninth by market share – indicating other countries (like Norway) still led in percentage terms[5].

Growth in **2022 and 2023** was steady but less explosive, as the EV market began to mature and faced headwinds. New EV offerings kept coming, but **consumer demand plateaued somewhat** without additional incentives. Still, **annual BEV sales climbed from ~108k (2020) to ~190k (2021) to ~267k (2022) and ~315k in 2023**[6]. The **BEV share of new cars rose from 11.6% in 2021 to around 16% in 2022–2023**[6]. Industry reports noted that **EV uptake by private buyers lagged**, with company fleets driving much of the growth in these years[2]. By the end of 2023, **battery-electrics were roughly 16–17% of new car sales**, and around **25% if plug-in hybrids are included**[7]. This meant **over 314,000 new BEVs were registered in 2023**, up ~18% from 2022[6]. In total, the UK had about **1 million cumulative EVs on the road by early 2024** (all years combined, including hybrids), a milestone reached in January 2024.

2024 delivered a new record. As supply chains improved and manufacturers pushed to meet upcoming mandates, EV sales surged again. **Approximately 382,000 BEVs were sold in 2024**, capturing **19.6% of the new car market**[2]. In other words, **almost one in five new cars in 2024 was purely electric**, the highest annual share to date[2]. This was a **21% increase in volume over 2023** and the biggest year ever for EV registrations in the UK[6]. Petrol's share correspondingly fell to ~52% in 2024 (from ~90+% a decade

earlier)[8]. Notably, much of 2024's growth came from **fleet and business buyers** – only *"one in 10"* private buyers chose an EV that year, highlighting a continuing gap in the consumer segment[2]. Overall new car sales in 2024 recovered to ~1.95 million, and the **19.6% EV share fell slightly short of the government's interim target (22%)** for that year's Zero Emission Vehicle mandate[2][2].

Cumulatively, the progress over five years is enormous. BEV market share has grown from near **1% in 2018 to roughly 20% in 2024**[1][2]. Annual BEV sales have increased almost **tenfold** (from tens of thousands to hundreds of thousands). The **total number of electric cars on UK roads** now exceeds **1.6 million** (as of August 2025), which is more than four times the count just three years prior[6][6]. However, because the legacy fleet is so large, these 1.6 million EVs still constitute only about **4–5% of the 34 million cars in use**[6]. In other words, **95% of cars on the road still run on petrol or diesel**, underscoring how far the transition has to go.

Figure: UK EV Market Growth (2018–2024). The timeline above highlights key milestones in electric vehicle uptake. In 2018, EVs were marginal. By 2020, amid the pandemic, EV sales bucked the trend and gained 6.6% share[4]. The introduction of more affordable long-range models and stronger climate policies helped push the share into double digits by 2021 (11.6%)[5]. After steady growth through 2022–23, the market hit ~20% in 2024[2]. This trajectory shows a classic **S-curve early phase**, with accelerating adoption, but also hints at a **potential plateau** if certain barriers aren't addressed (as seen in 2022–2023 where private sales slowed[2]). The next sections will discuss how this growth is expected to continue and the challenges that need to be overcome to sustain it.

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4 Market Outlook and Projections

The outlook for electric car adoption in the UK remains strongly positive, with projections showing continued growth in market share and volume. Government policy has set clear benchmarks that effectively **require EV sales to keep rising sharply** through this decade. Under the UK's **Zero Emission Vehicle (ZEV) mandate**, car

manufacturers must meet minimum quotas for EV sales each year – starting at **22% of new sales in 2024 and ramping up to 80% by 2030**[1]. By **2035, 100% of new car sales are expected to be zero-emission** (battery-electric or hydrogen fuel cell), aligning with the planned **ban on new petrol and diesel car sales** in 2030 (with hybrids allowed until 2035)[1][1]. These legally binding targets mean that, in projections, **EVs will dominate new car sales by the end of the decade**. For example, hitting the 2030 mandate implies **four out of five new cars sold in 2030 must be electric**[1]. Manufacturers and policymakers are working toward this goal, though recently some mandate rules were relaxed slightly to give manufacturers flexibility in meeting yearly targets[8].

Independent forecasts likewise anticipate rapid growth. Industry analysts forecast that **over 50% of new cars could be electric by around 2027–2028**, on the way to near-total electrification of sales by 2035. In terms of vehicles on the road, the EV parc (fleet) will expand more gradually (as new sales gradually replace older vehicles). One projection suggests the **UK's battery-electric car fleet will grow from about 1.3 million at the start of 2025 to around 7 million by 2030**[8]. That would be more than **five-fold growth in the EV fleet within five years**, and would mean roughly *20–25% of all cars on the road could be electric by 2030*. Looking further ahead, **over 20 million EVs** are envisioned by 2040 in the UK[8], which would represent the majority of the national fleet if realized. These projections hinge on continued declines in EV costs, improvements in charging infrastructure, and strong policy support.

Cost parity and technology improvements are expected to drive future growth. Battery prices have been falling over the long term (though recent supply hiccups caused short-term spikes); as affordable EV models proliferate, more consumers will be able to switch. Already by 2024/25, **one in five BEV models in the UK was priced below the average cost of an equivalent petrol car**[8], signalling that the price gap is closing for some segments. By the late 2020s, many analysts expect the **upfront price of EVs to meet or undercut petrol cars** in most categories, removing one of the biggest historical barriers to adoption. Furthermore, **range and**

charging speeds continue to improve – for instance, some 2024 models offered 400+ miles of range on a charge[8], and new fast-charge systems (like prototypes of 1,000 kW "megawatt" chargers) promise to recharge an EV in the time it takes to fill a fuel tank[8][8]. Such advances will make EV ownership more convenient and attractive, supporting higher sales.

However, **meeting ambitious targets is not guaranteed**. The strong 19–20% market share in 2024 needs to roughly **double to ~40% by 2026 and ~60%+ by 2028** to stay on track with the mandate trajectory[9]. Automakers and government agencies recognize this will require addressing the current bottlenecks. The Society of Motor Manufacturers and Traders (SMMT) warns that **demand is not rising fast enough among private consumers to hit the 2025–2030 goals without additional support**[2]. In fact, the 2024 EV market was about 20% smaller than what had been forecast a few years prior, due in part to weaker consumer uptake[2]. This has led to calls for **stronger incentives and infrastructure investment** to stimulate the mass market.

On the positive side, new government initiatives are being introduced. In mid-2025, the UK government announced a **£650 million "Electric Car Grant" scheme**, offering purchase discounts up to £3,750 for EVs under £37,000[8]. This revived grant (after the previous Plug-in Car Grant was discontinued in 2022) is aimed at boosting affordability through 2028. If implemented effectively, such incentives could accelerate adoption in the short term. Additionally, **vehicle taxation is being adjusted** – EVs will begin to incur road tax from 2025, but company car tax benefits and other perks are being extended to encourage fleets and businesses to electrify.

In summary, **the next five to ten years are expected to bring continued strong growth in EV sales, potentially even faster than the last five**. The UK's legal commitments to phase out ICE (internal combustion engine) cars provide a clear timeline. Projections indicate **electric cars will surpass 50% of new sales well before 2030**, and approach 100% by the early 2030s[1]. Achieving this will transform the car market – by 2030, millions of additional EVs will be on the road, and electric driving will become the norm for new car

buyers. The pace of this future growth, however, **depends on overcoming key challenges** in the current transition. The following section examines those critical barriers that must be addressed to unlock the next wave of EV adoption.

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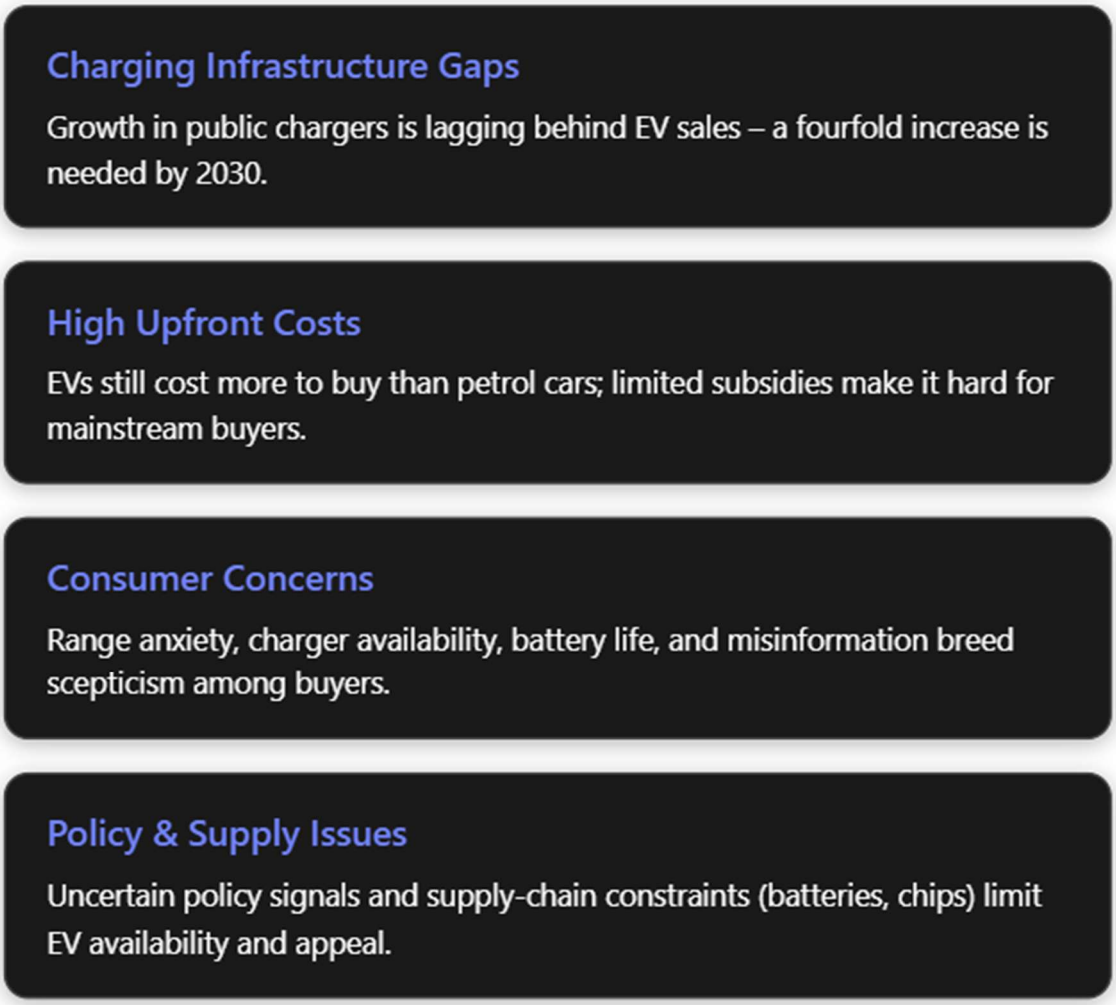
5 Challenges Slowing Further EV Adoption

Despite the impressive growth of electric car sales, **several factors are preventing an even faster acceleration** of EV adoption in the UK. These barriers span infrastructure, economics, consumer behaviour, and industry capacity. **Major issues include: insufficient charging infrastructure, high upfront vehicle costs (and diminishing incentives), consumer concerns (range anxiety, charging convenience, etc.), policy uncertainties, and supply-side constraints**. Addressing these will be essential to move from early adopters to the mass market "early majority" of car buyers. Below, we analyse each of the main challenges in detail and how they impact the EV transition.



6 1. Infrastructure Limitations: Charging Network and Energy Capacity

Inadequate charging infrastructure is often cited as the number one barrier to faster EV adoption. Drivers need convenient, reliable places to charge – at home, work, and on the road. While progress has been made, the current charging network is **not expanding quickly enough to match the growth in EVs on the road**. As of April 2025, the UK had about **76,500 public chargepoints** installed in total(1). This number has been rising steadily (it was roughly 25,000 in 2019, 40,000 in 2021, etc.), but **analyses suggest a massive scale-up is required**. The government estimates that by 2030, around **300,000 public chargers will be needed at minimum** – possibly up to **600,000** in a high-EV scenario(1). In other words, the infrastructure must grow **four to eight times larger within the next 5–6 years** to support the projected EV fleet. Currently, the rollout is **behind pace**: only ~¼ of the lower-end 2030 target has been achieved so far(1). The National Audit Office noted regional disparities and shortfalls

especially in rapid chargers along motorways[1][1]. *Motorway services, for instance, were supposed to have at least 6 high-speed chargers each by end of 2023, a target that was missed in many locations[1].*

For consumers, **the perception (and reality) of an insufficient charging network creates range anxiety and inconvenience**, discouraging them from choosing an EV. A **2024 survey of mainstream car buyers** found *"public charging availability"* to be the top concern about switching to an electric car[9]. 16% of people polled named lack of charging points as their #1 worry, and an additional 20% said it was a significant concern[9]. Drivers worry that they won't find a working charger on a long trip, or that local streets don't have enough chargers for those without driveways. This worry is compounded by issues of charger reliability and ease of use – until recently, many public chargers required different apps or RFID cards; payment could be cumbersome (though new regulations now mandate contactless payment on public chargers)[1]. **Charger reliability** is also critical: inconsistency or downtime at charging stations undermines confidence. The government and industry are working on standards for uptime and accessibility (including measures for disabled drivers using chargepoints)[1][1], but user experience can still be hit or miss on some networks.

Another aspect is **home charging availability**. The majority of early EV adopters charge at home (about 84% of UK EV owners have home charge access)[1], enjoying the convenience and lower cost of overnight charging. However, not everyone has that option – many urban and apartment-dwelling motorists lack private driveways or garages. For these drivers, the public or communal infrastructure is even more crucial. If charging is perceived as too much hassle (e.g. hunting for a free public charger in your neighbourhood), such consumers may delay switching to an EV. The **cost differential** is also a factor: Charging at home on a cheap overnight tariff can be *less than half the cost per mile of petrol*, whereas relying solely on public rapid chargers can actually be *more expensive per mile than petrol* in some cases[8]. For example, one analysis found that a driver using public fast chargers for all

charging would spend ~£766 more per year than running a petrol car, while a driver able to charge at home could save ~£400–£900 a year compared to petrol[8]. This split incentivizes home charging and makes EV ownership less attractive for those who can't easily do so – a structural inequity that policymakers are trying to address via on-street residential charger programs and the **Local Electric Vehicle Infrastructure (LEVI) fund** to help local councils install more public chargers in neighborhoods[1][1].

Energy grid capacity is frequently raised as a concern, though experts generally believe this is a manageable challenge. As EVs proliferate, electricity demand will indeed rise – the **National Grid ESO** (Electricity System Operator) projects a noticeable uptick in power demand by 2030 due to EV charging. However, studies indicate the **grid can handle the increase with planned upgrades and smart charging** strategies[1]. National Grid ESO has stated that the EV transition will be **"within the range the grid can handle"** as long as the roll-out is managed and accompanied by investments in network capacity[1]. Smart charging (incentivizing EVs to charge during off-peak hours or when renewable energy is plentiful) and even **vehicle-to-grid (V2G)** technologies (allowing EVs to feed energy back to the grid at peak times) could help balance loads[1]. So, while local electricity distribution upgrades (e.g. reinforcing neighborhood transformers) are needed in many places, **energy supply is not expected to be a fundamental limiter** to EV adoption – it's more an engineering/logistical task to upgrade infrastructure in time. The bigger short-term worry is the **availability of chargers where and when people need them.**

In summary, **the charging infrastructure gap is a critical issue**. The UK must dramatically accelerate installation of public chargepoints – particularly rapid and ultra-rapid chargers along highways and in underserved regions – to give drivers confidence that they can charge whenever necessary. Government programmes (like the promised Rapid Charging Fund for motorways, which has been slow to roll out[1][1]) need to move faster. Without a dense and reliable charging network, many consumers will simply stick to petrol cars for the perceived convenience. **Infrastructure is the backbone of the**

EV transition, and right now it is a few steps behind the booming EV sales. Bridging this gap will be vital to sustain high growth.

7 2. High Upfront Cost and Policy Incentives

The initial purchase price of electric cars remains higher on average than that of equivalent petrol or diesel cars, and this **cost premium is a major barrier for many consumers**. Although EV running costs are usually lower (electricity is cheaper per mile, and maintenance is simpler), car buyers are often swayed most by the sticker price. A typical new EV in the UK costs around £40k–£50k (the average BEV price was ~£49,700 in 2024)[8], whereas the average new petrol car costs ~£34k[8]. Even though this gap is closing as cheaper models enter the market, **EVs are still more expensive to buy upfront**, especially in segments like SUVs and family hatchbacks, where electric versions carry a premium due to costly battery packs.

This high upfront cost leads to **affordability issues**, particularly as government purchase grants have diminished. Early in the EV rollout, the UK had a **Plug-In Car Grant** which provided up to £3,500 (later £2,500) off the price of a new EV. However, that grant was completely phased out by June 2022. After its removal, **the full burden of the higher EV price fell on consumers**, and many in the industry believe this contributed to the softening demand among private buyers in 2022–2023[2]. The SMMT and others have argued that the **withdrawal of purchase incentives was premature** and that it "should be reversed" to keep EVs attractive to cost-conscious buyers[5]. Indeed, the 2024 House of Lords inquiry concluded that *upfront cost* is one of the top three constraints on demand[1]. Surveys consistently show **cost as a key concern**: in the T\&E study of the "early majority" segment, **13% of people said expensive upfront cost was their top worry** about EVs (with another 17% saying it was a significant worry)[9]. This combined 30% citing cost aligns with many anecdotal reports that while drivers are interested in EVs, the price needs to be right for mass adoption.

The government's new **Electric Car Grant (mid-2025)**, offering up to £3,750 for certain models[8], aims to partially address this. However, it has a cap on vehicle price (only EVs under £37k qualify) and is time-limited. There are also generous **tax incentives for company car**

users – benefit-in-kind tax rates for electric company cars have been kept very low (2-3%), which has spurred many businesses and salary-sacrifice schemes to choose EVs. This is one reason fleets are ahead of private buyers in EV uptake[2]. But private motorists do not directly benefit from these tax breaks. Starting in 2025, EVs will also begin paying Vehicle Excise Duty (road tax), which removes one minor advantage of EV ownership (though initially the rate will be low).

Total Cost of Ownership (TCO) calculations often show that over several years, an EV can be cheaper than a petrol car when fuel and maintenance savings are counted. Yet many buyers are sensitive to the immediate purchase price or monthly finance payment. Without strong incentives or subsidized financing, lower-income and average consumers may find it difficult to justify the higher purchase price of an EV. This creates a risk that EV adoption remains skewed toward wealthier early adopters, while others hold onto older combustion cars longer – which is counterproductive for broad decarbonization goals.

Another cost-related issue is the resale value and second-hand market for EVs. The used EV market in the UK is still relatively young. There have been some concerns about battery degradation and unknown resale values, which can make potential buyers anxious about an EV's long-term value. However, data is beginning to show that many EVs hold their value reasonably well and batteries are lasting much longer than people assume (most come with 8-year warranties, and degradation is often modest)[9]. As more 3-5 year old EVs enter the used market, prices in second-hand channels should become more accessible, helping budget-conscious buyers go electric. For now, though, the limited supply of used EVs means second-hand prices have been relatively high, keeping some would-be buyers in petrol cars until cheaper EV options appear.

In short, the economics of buying an EV need to improve for the average consumer. This can happen through market forces (declining battery costs, economies of scale making EVs cheaper) and/or policy support (grants, tax credits, scrappage schemes, low-interest green financing). Other countries have robust incentive programmes (for example, many EU nations offer purchase rebates

or VAT exemptions on EVs). The UK's current incentives are less generous than some peers, relying mainly on mandates to push supply. The risk is that **without demand-side support, EV sales might not keep growing at the needed rate**, as was hinted by the "just one in 10 private buyers" statistic in 2024[2]. The government's own Climate Change Committee and the auto industry have urged more consumer incentives and *mandated targets for charger rollout* to boost confidence[5][1].

On the positive side, prices are slowly coming down. New EV entrants from more affordable brands (like MG, BYD, etc.) and price cuts from Tesla and others in 2023–2024 have started to make EVs in certain segments (compact SUVs, family cars) more attainable. If this trend continues, the **price gap could largely close by late 2020s**, organically accelerating adoption. Additionally, innovative business models such as battery leasing (where you buy the car but lease the battery to reduce upfront cost) or expanded financing options could alleviate the sticker shock.

Key point: High upfront cost remains a **critical hurdle** in the EV transition. **Bridging the price gap with either subsidies or cost reductions is essential to capture the mass market.** Many consumers are interested in the fuel savings and environmental benefits of EVs, but if the vehicle is thousands of pounds more expensive, they hesitate. Ensuring that electric cars are financially attractive choices for **average households** (not just early adopters or company fleets) is a major task in the coming couple of years.

3. Consumer Behaviour and Perceptions

Even when infrastructure and cost issues are addressed on paper, **consumer attitudes and awareness play a big role in EV adoption.** Currently, there is a segment of car buyers who remain **sceptical or nervous about going electric**, due to concerns about the unknown. The House of Lords Climate Committee noted "**general consumer scepticism**" as a barrier holding back demand[1]. This scepticism encompasses a few things:

- **Range anxiety:** Fear that an electric car will run out of charge and leave one stranded, or that it cannot handle long journeys. Despite most new EVs having

200-300 mile ranges (more than enough for the average daily driving), many consumers worry about those occasional long trips. This is directly tied to charging infrastructure confidence, as discussed. If people aren't sure they can easily recharge on a road trip, they shy away from EVs. Education and first-hand experience often help; many EV owners report that range anxiety fades once they adapt to the car's capabilities, but for non-owners it remains a psychological hurdle.

- **Charging convenience:** The idea that "fueling" an EV is less convenient than fueling a petrol car. Petrol refueling takes 5 minutes at ubiquitous stations; charging an EV typically takes longer and requires planning. Even though most charging is done at home (which is very convenient, akin to "refueling while you sleep"), prospective buyers without direct EV experience often imagine worst-case scenarios of waiting an hour at a public charger. **Charging time** was cited as a top concern by 9% of people (and a moderate concern for 23% more) in the T\&E survey of mainstream consumers[(9)]. This indicates a sizeable group is put off by the perceived time and hassle of charging.

- **Battery longevity and technology fears:** Some consumers harbor worries about **battery lifespan, safety, and replacement costs**. For instance, the idea that the battery might only last a few years and then cost tens of thousands to replace (which is generally a misconception – EV batteries typically last the life of the car, with most retaining 70-90% capacity after 8-10 years). According to the survey, **battery life and replacement was a top concern for 9% of people** (and a concern for 19% more)[(9)]. There's also caution around new technology – people comfortable with what they know (combustion engines) may distrust an unfamiliar electric drivetrain, worrying about unknown maintenance issues or simply feeling it's unproven (even though EVs are mechanically simpler and often more reliable in practice).

- **Lack of awareness or misinformation:** There are still myths about EVs that persist. For example, some believe *"EVs won't work in the rain"* or *"the battery will die if I don't drive daily"* – false notions that indicate a need for better consumer education. Others aren't aware of current improvements: many people surveyed didn't realize that **manufacturers already offer 8-year battery warranties** or that charging an EV at home can be dramatically cheaper per mile than fueling a petrol car[(9)][(9)]. This lack of accurate information can make the switch to EVs feel "riskier than it should be," as the

T\&E report puts it(9). Overcoming this will require awareness campaigns and perhaps **hands-on exposure** (e.g., more EV test-drive events, public showcases, etc., to let drivers experience EVs first-hand).

- **Habitual behavior and inertia:** Many consumers are simply comfortable with what they know. Buying an EV often means a change in routine (like charging overnight, planning charging stops on long trips, etc.). For some, this change – however manageable – is a deterrent. There can be a *cultural* or emotional attachment to traditional cars (sound of the engine, refuelling ritual, etc.). These softer, psychological factors shouldn't be underestimated. The adoption curve beyond early enthusiasts will involve convincing more conservative consumers that EVs can seamlessly fit into their lives or even improve their driving experience.

> To address these behavioural and perceptual issues, a few actions are important:

- **Communication and education:** Both government and industry groups are recognizing the need to disseminate accurate information about EVs. The T\&E UK branch called on the government to work with consumer groups and the auto industry on a **"robust communications strategy"** to effectively communicate the *benefits of switching to a BEV and the support in place*(9)(9). This might include public information campaigns highlighting facts like running cost savings, improving charger networks, long battery warranties, and debunking myths.
- **Peer influence and word of mouth:** As more people own EVs, their friends and family are exposed to them. Many EV purchases today come after someone has a neighbour or colleague who demonstrates how it works. Encouraging EV uptake in communities (for example via local initiatives or EV ambassador programs) can help normalize the technology. There's evidence that **once adoption hits a critical mass (around 10-15% of market)**, the social diffusion accelerates as seeing EVs becomes commonplace.
- **Dealer knowledge and sales approach:** Interestingly, one practical barrier has been car dealerships. Some mystery shopper studies found that not all dealers actively promote EVs – possibly due to longer sales cycles or unfamiliarity. Improving dealer training so that salespeople can confidently address customer concerns about EVs is key. If a buyer walks into a showroom

on the fence and the dealer can't answer questions on charging or TCO, the sale may be lost.

> **Consumer perceptions are gradually shifting in a positive direction**, especially with more EVs visible on the roads each year. However, we're in a phase where the "low-hanging fruit" (enthusiasts and eco-conscious early adopters) are already on board; the next segment of buyers will include more skeptics who need reassurance on practicality and reliability. It's encouraging that surveys show **most people are at least open to the idea of an EV** – the early majority is not fundamentally against it, they just need their concerns mitigated(9). If infrastructure improves and costs come down as noted, much of their anxiety will naturally ease. But proactive efforts to **increase consumer confidence** (through information, test drives, guarantees like battery health certificates, etc.) can greatly accelerate the comfort level with EVs.

9 4. Industry Constraints and Other Factors

> On the supply side and broader industry context, there are additional factors that can impede the acceleration of EV adoption:

- **Manufacturing and supply chain constraints:** The auto industry has faced notable supply challenges in recent years (the global semiconductor chip shortage, for instance, which hit all car production in 2021–2022). EV production in particular is sensitive to **battery supply chain issues**. Critical minerals like lithium, cobalt, and nickel are required for batteries, and there have been concerns about shortages or bottlenecks as demand soars globally. If battery prices spike or supplies tighten, it could slow down EV rollouts or make them more expensive. Carmakers are investing in new battery gigafactories and securing mineral contracts to alleviate this, but it's an ongoing risk. **Vehicle supply constraints in 2021-22 meant long wait times for some EV models**, which doesn't help encourage buyers; though this eased by 2023, any future disruptions could hamper the momentum.
- **Model availability in all segments:** While there are now over 130 electric models available in the UK (as of 2024)(2), some segments still lack options, especially at the affordable end. For example, there are very few electric city-cars or truly low-budget models; most EV offerings skew toward medium

to higher-end segments. The industry is addressing this, but until there's a full range of EV choices (from small £15k runabouts to family estates to MPVs, etc.), some consumers won't find an EV that suits their specific needs or price point. *Manufacturers have poured billions into EV R|&D*(2), but they also face the challenge of balancing production of combustion vehicles (still a majority of sales and profit today) with ramping up EVs. Navigating this transition without hurting their financials is tricky – if EV demand doesn't naturally meet the mandated targets, carmakers either have to artificially push more EVs (with discounts, which they did to the tune of £4.5bn in 2024)(2) or risk fines. The SMMT warned that the current situation of heavy manufacturer discounting to sell EVs is **"not sustainable in the long term"**(2). A healthier market would be one where consumer demand pulls the EVs without needing such incentives from automakers.

- **Policy consistency and uncertainty:** Rapid shifts or uncertainty in policy can deter industry investment and consumer confidence. The UK government's targets and mandates are ambitious, but if they appear subject to change, it could create confusion. (For instance, debates in 2023 about potentially delaying the 2030 petrol ban to 2035 caused some concern, though as of 2025 the 2030 date remained official(1).) The recent slight relaxation of the ZEV mandate rules(8), and introduction of new incentives, illustrate policy adjusting to reality. It's important that government maintain a credible commitment to the EV transition while also responding to on-the-ground progress – a difficult balance. The **automotive industry has called for clearer long-term plans** (on things like road taxation for EVs, or extension of purchase incentives) so they and consumers know what to expect(5).
- **Charging infrastructure business model:** A subtle issue is ensuring the **business case for charger operators** so that infrastructure investment flows. Early in the EV era, some charging sites weren't profitable due to low utilization, which slowed private investment. Government grants (like LEVI and Rapid Charging Fund) aim to kickstart deployment in areas that might not immediately be lucrative. Over time, as EV numbers grow, using a charger will become a normal paid service like buying petrol, and private companies are increasingly investing (we see oil companies converting petrol stations into EV hubs, etc.). But any delays in setting up infrastructure could circle back to dampen EV sales (a classic chicken-and-egg). Thus, aligning the growth of chargers with growth of cars is an ongoing coordination challenge.

- **Environmental and supply concerns:** Some critics point out other challenges such as the **environmental impact of battery production** and the need for battery recycling. While these do not directly slow sales in the short term, they are factors that need to be managed to make the EV transition truly sustainable. The UK is looking at battery recycling facilities and second-life uses for EV batteries(1). Ensuring ethical sourcing of materials (e.g. avoiding cobalt from problematic mining) is also key for public acceptance. Generally, these issues are being addressed through regulations and innovation, but they remain part of the narrative around EVs (sometimes fueling skepticism).
- **Alternative technologies and competition:** Battery EVs are the main focus, but some have pinned hopes on hydrogen fuel cell vehicles or other technologies. In the car sector, hydrogen hasn't taken off in the UK (fewer than 300 fuel cell cars were on the road by 2023)(7). Nonetheless, if consumers hear conflicting messages (e.g. "maybe we should wait for hydrogen or synthetic fuels"), it could cause hesitation. Currently, the policy direction is firmly behind BEVs for cars, so this is less of a barrier than it used to be, but clarity that **BEVs are the primary solution for passenger cars** is important to avoid confusion.

Finally, we should highlight **one encouraging sign: the automotive industry's commitment to EVs is now very strong**. All major carmakers have announced electrification strategies, many planning to phase out petrol/diesel production in Europe in the 2030-2035 timeframe. New entrants (like Tesla, and Chinese brands such as BYD) are increasing competition and innovation in the EV space. This competitive drive means consumers are seeing better EVs each year (with longer range, more features, and often reduced prices). The UK, having set an end date for combustion sales, is a market that no global manufacturer can ignore in terms of EV offerings. So while the industry does face constraints, the overall trend is that **supply of EV models will not be the limiting factor in the long run** – the focus is shifting to creating enough **demand** and supportive conditions.

10 Summary of Barriers:

To sum up, **the main issues preventing a faster acceleration of electric car adoption in the UK** are:

- Charging Infrastructure – The need for a vastly expanded, evenly distributed, and reliable network of charging stations. Current rollout is improving but must accelerate to alleviate range anxiety and convenience concerns[9][1].
- Upfront Cost and Incentives – Electric cars are still pricier to buy than conventional cars. Limited financial incentives and the removal of grants have made this more acute, dampening mainstream consumer uptake[9][5]. Lower prices or renewed incentives are needed to broaden adoption.
- Consumer Confidence and Awareness – Many consumers remain wary due to concerns about range, charging, battery life, and general unfamiliarity. Misconceptions and lack of experience with EVs slow acceptance[9]. Building knowledge and trust is crucial for the mass market.
- Policy and Industry Challenges – Consistent government policy (with supportive measures, not just mandates) is required, along with resolving supply chain issues like battery production and ensuring that a variety of affordable EV models are available[5][2]. The auto industry's ability to meet demand with supply will influence how quickly the market grows.

> Each of these barriers is **surmountable** – and indeed, progress is being made on all fronts. The UK government's 2025 infrastructure report noted it is broadly on track with charger targets but acknowledges regional gaps[1]. Consumers are gradually warming up to EVs as they see more of them around and hear of positive experiences. Car prices are slowly trending down or being offset by innovative ownership models. With sustained effort, the current issues can be mitigated, unlocking the next phase of growth where EVs truly move from a fast-growing minority to the dominant form of car on the road.

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11 Conclusion

> Over the past five years, **electric vehicles have shifted from a niche to a significant and growing portion of the UK car market.** Sales of electric passenger cars have grown dramatically – from around 1% of new car purchases in 2018 to about 20% in 2024[1][2]. This reflects one of the most rapid technological transitions the auto industry has seen in decades. The UK's commitment to phase out petrol and

diesel cars, coupled with improvements in EV technology and expanding infrastructure, has propelled this growth. The trend is clear: **electric cars are on track to become the new normal** for new vehicle sales well before 2030, with projections indicating a majority of new cars will be electric by the late 2020s[1].

However, the journey to full electrification is **not without challenges.** Key barriers – notably the **availability of charging infrastructure, the high upfront cost of EVs, consumer awareness gaps, and various policy and supply constraints** – are currently slowing the pace of adoption. To sustain and accelerate the EV momentum, these issues need to be tackled head-on. This means **major investment in charging infrastructure** to keep pace with vehicle growth, **financial incentives or market innovations to make EVs affordable** to the average buyer, robust **public education efforts to increase confidence**, and **stable policy support along with industry action** to ensure supply meets demand.

Encouragingly, steps are being taken on many of these fronts: the charger network is expanding month by month, new EV models (including lower-cost options) are arriving, and the government has introduced measures like the new EV purchase grant and zero-emission vehicle sales mandate to push the transition[8][1]. The issues that remain are largely those of execution and scaling – the *how* and *how fast* rather than *if*.

In conclusion, **the past five years have demonstrated the viability and appeal of electric cars in the UK, with robust growth in market share**. The next five to ten years will determine how quickly that growth translates into a near-complete transformation of the vehicle market. Overcoming the current barriers to adoption will require concerted effort from government, industry, and society. If successful, the UK is poised to achieve an electric mobility revolution: a future where electric cars are not only cleaner and cheaper to run, but also convenient and accessible to all drivers. The benefits – from reduced emissions and improved air quality to new economic opportunities in EV industries – are substantial, which is why addressing the challenges to EV adoption is so important. The UK's experience so far shows strong progress, and with the right strategies

in place to tackle the hurdles identified in this report, the acceleration of electric car uptake can continue unabated into the future.

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