

A man in a blue checkered shirt is smiling while charging an electric car in a field of lavender. The background is a bright, sunny outdoor setting with green plants and purple flowers. The man is holding a yellow charging cable connected to the car. The car is partially visible on the right side of the frame.

LeasePlan

**When is the right time to
switch to electric vehicles?**

What's next?

Introduction

When it comes to mobility, the private sector can have a significant impact on sustainability; over half the cars on the road today belong to companies. Electric vehicles (EVs) hold the key to What's next. Although the percentage of electric vehicles in European fleets is still only small, their share is growing fast. Governments and car manufacturers alike are increasingly favouring EVs, and many of LeasePlan's clients are interested in the opportunities they offer. The choice of vehicles is growing rapidly, and all major OEMs have announced plans to launch an electric vehicle line-up over the coming years. With zero emissions, a decreasing total cost of ownership, ever-wider availability and an improved range, EVs are well positioned for What's next.

Although electric vehicles (EVs) currently account for less 1% of all vehicles on the road globally, there has been a recent surge in growth. Last year, worldwide sales of pure battery EVs (excluding hybrids) grew by 57% over 2016¹ and sales in the European Union increased by 39%². Volvo estimates that electric vehicles will make up 50% of its total car sales by 2025³, and a report by ING suggests that the car market, in Europe at least, will be fully electric by 2035⁴.

So the question is **not if, but when** the time is right to switch to EVs. An EV strategy must carefully balance the impact on costs, driver satisfaction and operational processes. This white paper discusses the various factors that affect your EV business case and advises on how to start transitioning to electric.

How safe a bet is a 4 or 5-year lease contract for a diesel vehicle?

Only time will tell with certainty, but our advice is to start taking action now. One mitigating action could be a move to include more petrol vehicles in your fleet. After all, petrol engines produce lower levels of the pollutants that local governments dislike, such as NOx and PM. However, Low Emission Zones are also targeting petrol vehicles (albeit mostly to a lesser degree). Besides that, CO₂ figures for petrol vehicles are generally higher, and the diesel engine still outperforms the petrol engine when it comes to costs in the case of high mileages. Therefore, the long-term viability of including petrol vehicles in your fleet to mitigate the risk of being excluded from Low Emission Zones is unclear. Nevertheless, including more petrol vehicles will better position your fleet to endure the evolving LEZ trends, since a mixed fleet is more agile and resilient to change.

1. Tighter emissions regulations for internal combustion engines (ICEs) are moving electric vehicles from a niche to the mainstream

The implementation of ever-more – and stricter – Low Emission Zones (LEZs) in cities across Europe is continuously strengthening the business case for zero emissions. Companies cannot afford to run the risk of being unable to enter a city centre to conduct their core business activities. Whilst today's relatively new ICEs are still allowed in almost all city centres, the speed with which new LEZs are being introduced and the trend in terms of the restrictions they impose underline the risks associated with ICE vehicles (see our white paper on Low Emission Zones for more insights⁵).

Electric vehicles are well placed in this respect. With zero tail pipe emissions and 30-70% lower CO₂ emissions than ICEs when compared over the entire vehicle lifecycle (from well to wheel)⁶, EVs are the right solution in the face of tighter regulations and Low Emission Zones. Especially in combination with renewable energy and the ability to deliver electricity back to the power grid, EVs have a bright future.

2. OEMs are improving the EV offering

The battery electric vehicle market is expected to increase fivefold by 2021 with over 100 different models becoming available⁷. Table 1 shows a selection of full electric cars that are already – or will soon be – on the market. The offering includes many medium-sized cars.

Make	Model	Battery capacity (in kWh)	Range (in km based on NEDC)
BMW	i3	33	300
Jaguar	I-pace	90	400
Hyundai	Ioniq Electric	28	280
Hyundai	Kona	40	250
Nissan	Leaf	40	378
Opel	Ampera-e	60	520
Renault	ZOE	41	400
Tesla	Model 3	50	350
Tesla	Model S	75	390
Tesla	Model X	75	417
Volkswagen	e-Golf	36	300

Table 1: Overview of a selection of available Battery Electric Vehicles (BEVs)



The assortment of electric cars has improved compared to last year, with plenty of choice in the medium sized (C segment) and the luxury segment in particular. When the scope is extended to include plug-in hybrids as well, the number of vehicle models grows significantly and includes many choices in the larger D and E vehicle segments. The average range of such plug-in hybrids is around 45 km based on the New European Driving Cycle (NEDC) method. In our experience, the actual range is slightly lower than the NEDC figures imply, which increases the fuel spend for hybrids and limits electric driving in practice.

So are plug-in hybrids a good alternative to include in your car policy? Well, if you facilitate the charging by providing your drivers with home and/or workplace chargers, these vehicles can reduce your emissions, but you will not achieve zero emissions. It is best to view hybrid technology as a way to gain experience and provide vehicles for short journeys while taking a step closer to electrifying your fleet.





3. Technological advancements are reducing the TCO for electric vehicles

EVs are still regarded as expensive when considering the upfront catalogue price, since the battery cost adds to the overall cost of the vehicle. However, when approached from the perspective of the total cost of ownership (TCO), the cost difference is smaller and EVs actually compare favourably to internal combustion engines in some markets.

Electricity is less expensive than fuel and the repair and maintenance costs are lower for EVs, simply because the vehicles have fewer moving parts. Taxation, such as road tax, CO₂ tax and tolls, typically favours electric vehicles. In Norway, for example, EVs are exempt from tolls, and in the Netherlands the vehicle taxation is based on CO₂ emissions and is therefore zero for electric vehicles.

So how does the TCO of an EV compare to an ICE? Needless to say, this depends on the lease term, mileage and vehicle choice. At LeasePlan, we can support you by calculating the potential costs for your fleet. In general terms, almost all EVs show a lower TCO compared to ICEs in Norway⁹, for instance, and similar examples can be found in other markets, such as a Nissan Leaf which can cost roughly the same overall as a Volkswagen Golf in the UK and as a Ford Focus in Portugal. Meanwhile, in the Netherlands, the Hyundai Ioniq has a lower TCO than the diesel versions of the Opel Astra and the Volkswagen Golf based on 35,000 km/year.

Battery costs are declining

The main factor driving an improved TCO in recent years is the decline in the cost of batteries. The average battery price dropped by 24% from 2016 to 2017 and now stands at just a fifth of the level in 2010⁸.

4. Positive driving experience and low taxation are making drivers more open to an EV policy

Driving an EV is different than driving an ICE vehicle. There is no need for a gearbox. Many EVs do not have a separate brake pedal; it is sufficient to remove your foot from the accelerator (so-called 'one-pedal driving'). Instant torque and the lack of noise inside the vehicle are other convincing arguments for drivers to go electric. Furthermore, once the right infrastructure is in place, time-consuming trips to petrol stations are a thing of the past.

Besides the improved driving experience, a lease driver's vehicle decision is largely determined by their budget. The driver taxation ('benefit-in-kind taxation') in Europe often depends on CO₂ values, and this is beneficial for EV drivers. Table 2 shows a comparison of benefit-in-kind taxation based on the diesel, petrol and electric version of the same model (the Volkswagen Golf) in selected countries:

Country	Diesel version	Electric version
Belgium	100%	78%
Germany	100%	113%
Italy	100%	112%
Netherlands	100%	23%
Norway	100%	62%
Spain	100%	97%
UK	100%	35%

Table 2: Overview of driver taxation for the Volkswagen Golf indexed against the diesel version (based on 30,000 km/year and a 50/50 split for private/business usage)



The taxation impact of the electric version is very positive in many countries. Only Germany and Italy show an increase in driver taxation, which can be explained by the assumptions used and the fact that the catalogue price of the electric Golf is more expensive. Choosing an electric vehicle with the same catalogue price as the diesel version would favourably reduce the driver taxation for the EV.

In conclusion, lower driver taxation and a better driving experience are two stimuli for drivers to embrace EVs. Based on our previous experience, a European company's decision to amend its car policy to include EVs will not be blocked by the works council. After all, a transition to electric makes sense from a driver's/employee's perspective.





Average charging distribution per driver

- 60% Home charging
- 30% Working charging
- 10% En-route charging

Figure 1: Average charging behaviour based on drivers in the UK

5. It is important to provide the right charging infrastructure for drivers

The charging ecosystem is of paramount importance in the acceptance of EVs, because drivers need to be able to charge their EVs quickly and easily. The experience should be hassle-free and optimally integrated with the other vehicle services to offer a complete service experience.

In general, there are three main types of charging behaviour:

- 1. Home charging:** at the driver's home or, if the driver does not have their own off-street parking, at a public charging station. Usually this is a full charge overnight.
- 2. Workplace charging:** during the day at the driver's place of work.
- 3. En-route charging:** when the driver is out on the road and stops off somewhere, such as to go shopping or at a motorway service station. This adds sufficient range to finish the trip.

Based on LeasePlan UK's experience, charging behaviour can be broken down as shown in Figure 1.

This data implies that employers should facilitate home and workplace charging for drivers. After all, these two categories account for 90% of all driver charging behaviour. For a truly hassle-free solution for drivers as the basis for a smooth transition to electric vehicles, an integrated charging solution must take account of all three types of charging:

1. Home charging solution
2. Workplace charging solution
3. Charge card for public chargers en-route



Cost breakdown of a home charging solution

- 40% Charging hardware
- 40% Installation
- 10% Maintenance & support services
- 10% IT services for connectivity and re-imburement services

Figure 2: Average cost breakdown of home charging solution based on 48 months (average of selected countries)

What about the costs of the chargers? Figure 2 shows an average cost breakdown for a home charging solution based on LeasePlan's experience.

The actual charging hardware makes up around 40% of the cost. At LeasePlan, we advise you to select hardware that is geared up for the new generations of vehicles as well. After all, technology moves fast and you don't want to have to upgrade your charging solution in the near future. The installation cost varies hugely from one driver to another, since no two homes are the same, but on average it too comprises around 40% of the cost. The maintenance and support services (repairs, updates and maintenance) for the home chargers account for another 10%, and the IT services make up the remaining 10%.

These IT services enable the 'smart' part of the charger, such as insights for the drivers and fleet manager based on automated reporting from the charger. Another important aspect of a smart charger is the automatic reimbursement service based on each driver's (business-related) mileage. When charging at home, drivers typically draw power from their own electricity supply and those costs must be reimbursed. A smart charger automates the reimbursement process and ensures that the driver automatically receives the correct amount back from their employer to compensate for the electricity consumed at home.

Who should pay for the home charger?

Whereas the policy for electricity costs typically follows the same approach as for standard fuel costs, it is a different story when it comes to installing a home charger.

For example, the company car policy could stipulate that the driver pays for the home charging unit. After all, the driver is the homeowner and the charging unit typically remains at the property even if the driver moves to another company.

However, leading companies who believe in the future of EV will usually offer services such as charger installation as part of the lease since an optimal overall experience is the best way to facilitate a smooth transition. From a financial perspective, our research shows that the electric energy consumption based on home charging saves 30% on the fuel spend associated with ICE vehicles. This provides sufficient financial scope for the employer to include a home charger in the lease and still have a lower spend compared to ICE.

Conclusion

You can start electric vehicles today. With increased pressure on emissions and a wider range of choice, EVs already make sense. Thanks to an acceptable TCO, growing driver acceptance and the right charging solutions, the business case is increasingly resonating with companies. Zero emissions are becoming reality – now you just need to make a start.

So, What's next? How can you start electric?

The best approach is to carefully consider your geographic scope. Countries with a higher percentage of EVs on the road and with well-developed infrastructure are easier to start with.

Table 3 shows the top 10 countries based on our EV country readiness index¹⁰. These countries are considered the best countries in which to get your EV transformation under way.

Ranking	Country
1)	Norway
2)	Netherlands
3)	Austria
4)	Sweden
5)	United Kingdom
5)	Belgium
5)	Luxembourg
8)	France
9)	Germany
9)	Denmark
9)	Portugal

Table 3: Best countries for start electric based on the LeasePlan EV readiness index

Besides the geographic scope, we have four tips to help you add EVs to your fleet:

1. One fast and easy method of introducing EVs in your fleet is to start with the **shared vehicles**, such as pool cars, and by installing **workplace chargers**. This allows multiple employees to get used to driving an EV, supporting smoother adoption in the long run.
2. **Allowing EVs in your car policy** rather than excluding them will enable 'early adopters' to move to electric as soon as they are ready. Drivers who select an EV will make a conscious decision to do so, choosing the range, charging option and vehicle that suits them. This does not mean forcing all your drivers to select EVs; position it as a free choice.
3. **Include the home charging solution** as part of the lease to lower the barriers to EVs for drivers. This can be cost-neutral for the employer since the lower electricity spend compared to ICE vehicles compensates for the installation costs. Since 60% of the charging is done overnight at home, we advise you to always include a home charging solution for each driver, or alternatively a public charging station should be readily available close to the driver's home.
4. **Provide EVs for the senior management.** Leading by example is an effective method for introducing EVs within your organisation. This will emphasise the importance and possibilities of EVs for your company, and there are some very appealing vehicles that typically suit executive-level employees.

Sources

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The future is electric. At LeasePlan we are here to support you with a complete EV solution that optimises the benefits for your fleet. Furthermore, the electrification of your fleet brings the potential for additional revenue streams, such as leveraging battery capacity with a vehicle-to-grid solution or selling the energy from your workplace chargers to visitors. These concepts still need further exploration and commercialisation, but things are moving fast and the signs look very promising for additional revenue generation. **So will EVs ultimately achieve not only zero emissions, but also zero costs?**

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