

# L'Observatoire Cetelem 2019

## The mystery of the electric car



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## THE MYSTERY OF THE **ELECTRIC CAR**

The automotive sector developed and prospered thanks to an abundance of cheap oil with high energy efficiency. For over a century, its domination has been unparalleled. Similarly, for decades, cars have become increasingly dominant without any consideration for the environmental factors.

Then the tide turned. Raw materials have become scarce and expensive, due to an unremitting rise in global demand and the realisation that the reserves may run out. The time to take action to protect the environment has also come. This has put the oil sector and the waste it generates firmly in the hot seat.

It has therefore become necessary to innovate and find solutions. Subject to increasingly stringent regulations, manufacturers have improved the performance of fuel-powered vehicles, by reducing fuel consumption and their polluting emissions. At the same time, the automotive industry has invested in the development of new types of engine like hybrid and fully electric cars.

Manufacturers have long been sceptical of the electrical car: 10 years ago, only a few people believed in it. Since 2012, L'Observatoire Cetelem has devoted its annual survey to the electric car. Since then, there have been a large number of public policies in support of EVs, which have been mirrored by manufacturer investments.

The success of COP21 prompted the nations to commit to taking measures to reduce greenhouse gases. The Dieselgate and rigged engine scandal has only added to the debate surrounding fuel-powered vehicles, forcing manufacturers to speed up the development of EVs. Consequently, many new fully electric models will be coming onto the market over the next few years. The price of batteries has dropped significantly, and their range is increasing.

On paper, the stars seem to be aligning for the electric car to occupy a significant share of the automotive landscape: technological progress, lower prices, public policy incentives, widening of the offer, positive image in the eyes of motorists, etc.

Although the electric car has everything it needs to succeed, sales are still relatively small. This is the mystery of the electric car.

Happy reading!



**Electricity,  
the clean energy  
of the future**

## Methodology

The economic and marketing analyses, as well as the forecasts, were conducted in partnership with **C-Ways** ([www.c-ways.com](http://www.c-ways.com)), a survey and consulting firm that specialises in Anticipation Marketing.

The field work of the **quantitative** consumer survey was steered by **Harris Interactive** in June and July 2018 in South Africa, Germany, Belgium, Brazil, China, Spain, United States, France, Italy, Japan, Mexico, Norway, Poland, Portugal, United Kingdom and Turkey. In total, 16 countries and more than 10,600 individuals were interviewed online (CAWI collection method). These individuals aged 18 to 65 come from national samples that are representative of each country. The quota method was employed to ensure that the sample was representative (gender, age). 3,000 interviews were conducted in France and 500 in each of the other countries.

**Norway** has therefore been included for the first time in L'Observatoire Cetelem de l'Automobile. Given that the 2019 topic deals with the electric vehicle, there was no option but to include the country in the world that is most concerned by the matter in terms of its share of electric vehicles, i.e. **21% of its vehicle sales in 2017**.

**A qualitative study – from which are extracted the verbatim accounts quoted during the study –** was added to complement the programme in France. Six focus groups on the electric vehicle were organised by Harris Interactive in Paris, Lyon and Bordeaux in July 2018.

## Country codes

Belgium (**BE**), Brazil (**BR**), China (**CN**), France (**FR**), Germany (**DE**), Italy (**IT**), Japan (**JP**), Mexico (**MX**), Norway (**NW**), Poland (**PL**), Portugal (**PT**), South Africa (**ZA**), Spain (**ES**), Turkey (**TR**), United Kingdom (**UK**), United States (**US**).

## Note – technical benchmark

The study will focus on the market and future of electric vehicles (EVs). EV refers to any vehicle that has only one electric motor powered by a battery and performs all of its journeys in electric mode. A range extender is sometimes associated with the EV. This is an auxiliary power unit that does not propel the car but recharges the EV before the battery runs out. In some cases, the plug-in hybrid vehicle (PHEV) may be combined with the EV. It has two engines, i.e. an electric motor for completing part of the journeys in electric mode (with a range of about 25 miles), while the other internal combustion engine is used for longer distances. These electrical solutions are often combined with so-called combustion engines, i.e. internal combustion or explosion-type engines. These engines, which run on fossil fuels (petrol, diesel, gas) made predominantly from oil, are sometimes slightly "hybridised". An electric motor supports the internal combustion engine and reduces the energy consumption during the key acceleration phases. These light hybrid vehicles are non-rechargeable and are therefore not included in the EV category. Finally, another solution that can be described as electric is the vehicle powered by a fuel cell that runs on hydrogen fuel. This vehicle can be used for long journeys that exceed the limits imposed by the range of a standard EV. Given its cost, which is still very high, it is currently restricted to demonstration sales and captive fleets. Only 3,000 were sold worldwide in 2017 and it is difficult to foresee its mass development before 2030. This is why it will not be addressed in this Observatoire.





1

## ELECTRIC VEHICLE: **POSITIVE VIBES**

Thanks to its specific technical features, it would seem that electric vehicles (EV) can provide a solution to some of the issues facing the environment, the economy, industry and society. However, there are still some real ongoing technical and organisational issues as well as certain potential obstacles to its development. Once these have been overcome, there can be no doubt that motorists will ultimately take full advantage of its strengths and merits.

# ENVIRONMENT: FROM PROMISES TO REAL ACTION

Road transport (cars and lorries), which produces about 17% of global greenhouse gas emissions, is the third largest source of emissions behind energy generation and industry. The impact on the environment is noticeable not only globally, but also locally.

## The global challenges of mobility

At COP21, which was held in Paris at the end of 2015, most states made a commitment to reduce their greenhouse gas (GHG) emissions in order to combat global warming, in a context where automotive fleets and car use are on the rise in the emerging countries. Although reducing per-vehicle emissions can contribute to achieving the objectives set, "promoting" electric vehicles is probably a more effective and sustainable solution to tackling this issue in part.

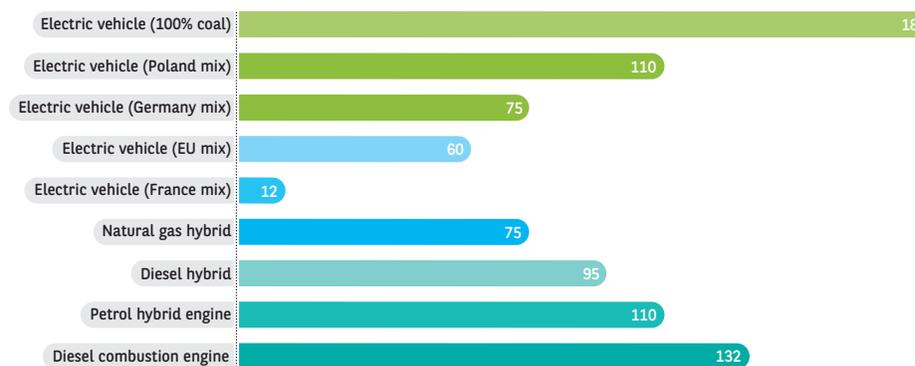
## The EV needs to come clean

EVs are often called "clean" because they do not emit any CO<sub>2</sub> or other gases or particles from "tank-to-wheel", while not taking into account the emissions generated when the electricity needed for the batteries is produced. A true analysis must actually go from "well-to-wheel" with the inclusion of upstream emissions (Fig. 1). In theory, this

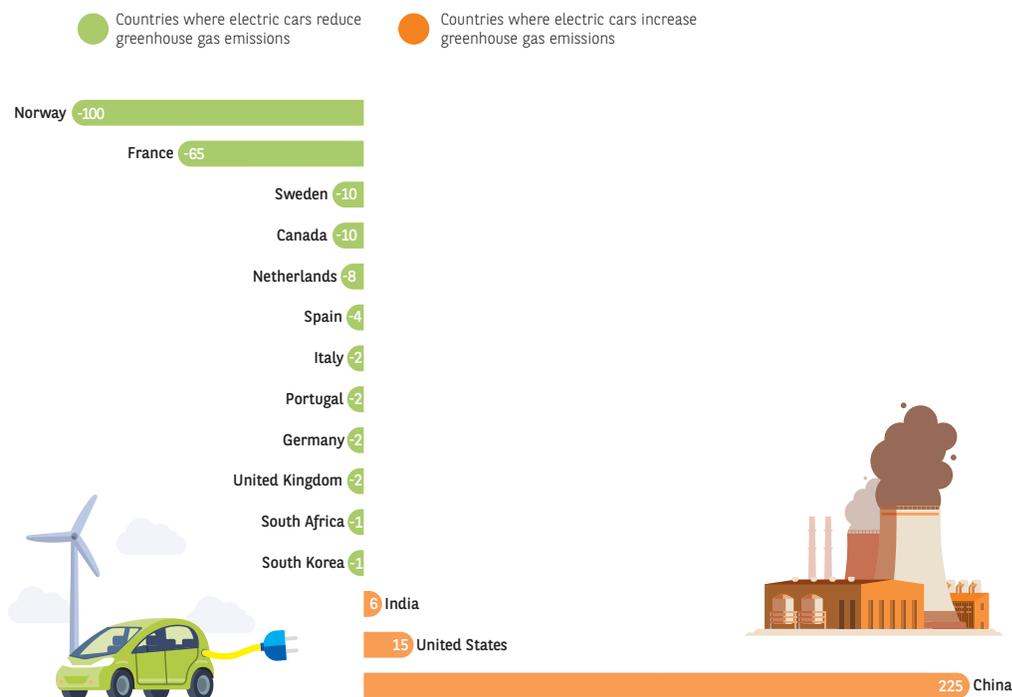
should be measured for each type of power station or source of electricity production. In most cases, it is calculated for the "energy mix" of a geographical area or country.

From "well-to-wheel", the EV dominates petrol and diesel in terms of CO<sub>2</sub> emissions in almost every case. Conventional combustion engines only outperform the EV when its electricity is generated from coal. Given their predominantly nuclear and hydroelectric energy capabilities, French and Norwegian EVs are particularly eco-friendly while those of the United States and China, to an even greater extent, are not yet using suitable primary energy sources (Fig. 2). In the future, the EV's advantage will continue to grow as electricity production becomes decarbonised with the increasing use of renewable energies as pledged by the COP21 signatories.

**Fig. 1** CO<sub>2</sub> emissions from well-to-wheel (WTW)  
In g/km WTW  
Source: IFP EN



**Fig. 2** Impact on the climate of electric cars per country in 2015  
In thousands of tCO<sub>2</sub>e  
Source: International Energy Agency



### Taking the life cycle into account

A truly global assessment must also rely on an analysis of the entire life cycle of the EV, including that of its battery, from its construction to managing its disposal at the end of its life. A report by the Ricardo firm estimates that the production of an "average" petrol-powered car produces emissions that are equivalent to 5.6 tonnes of CO<sub>2</sub> whereas the emissions of an equivalent electric car come to 8.8 tonnes, nearly half of which are associated with the production of the battery. However, the same report estimates that over its entire life cycle, the electric car will generate only 80% of the emissions of the petrol-powered car.

### The impact of batteries

Firstly, battery production has some very negative upstream environmental impacts in the developing countries where the lithium, cobalt, nickel or manganese, which are needed for its production, are extracted, processed and transformed. It is therefore necessary to ensure that the production is ramped up in accordance with the sustainable development requirements. The same goes for the cell transformation and battery production that is currently located in Asia for the most part.

Further downstream, recycling battery parts is also essential not only for the environmental assessment of the EV but also for its cost. The arduous process of recovering rare materials makes it possible to reduce recycling costs and can ensure the self-financing of dedicated structures. Since 2006, the law in Europe requires the recycling of 50% of the mass of lithium-ion batteries.

### A vehicle that is useful when it is not moving

From an environmental point of view, EVs also show themselves to be useful when they are immobile. A private vehicle spends most of its time parked. During periods of peak demand for power, the electricity available in the batteries could be used to help even out fluctuations in the electricity

networks, when the vehicle is connected to the grid with a so-called Smart Grid system. These same batteries could also be used to store renewable energy production, which is intermittent by nature and not necessarily available when it is needed. These two-way exchanges between the network and the battery can continue during a second life. After losing a significant proportion of their initial capacity, they would be removed from EVs and installed in apartment buildings, for example, to continue to play a role in supporting the network.

### The absence of pollutants, a local benefit

Although the global CO<sub>2</sub> assessment is not positive in every case, the benefit of electric vehicles at the local level is undisputed. Without combustion, there can be no emissions. Without an exhaust pipe, there can be no discharge. EVs do not emit any nitrogen oxide, volatile organic compounds, particles or other harmful gases. Although tyres and brake pads do indeed leave some materials on the roads, the EV's engine braking and energy recovery system reduces any such losses and emissions.

The lungs of those who live in cities have everything to gain. The same can be said for their ears. The electric car generates virtually no noise pollution. Only the sounds of the wheels rolling on the road and the displacement of the air are noticeable. As we will see below, this essential element did not go unnoticed by those interviewed by L'Observatoire Cetelem, 90% of whom said that EVs are quiet and non-polluting in the city.

## THE POWER OF THE PUBLIC AUTHORITIES

In order to shift the boundaries, develop a new sector and change buying habits that have become established over more than a century, public policies are essential.

### International awareness

Given the current situation, public policies are not always clearly understood, although this is the consistent expectation of 70% of the people interviewed for this study (Fig. 3). There are schemes to promote the electric vehicle, albeit on a variety of different scales. At the European level, Euro standards require manufacturers to reduce pollutant emissions from "tank-to-wheel", which in fact

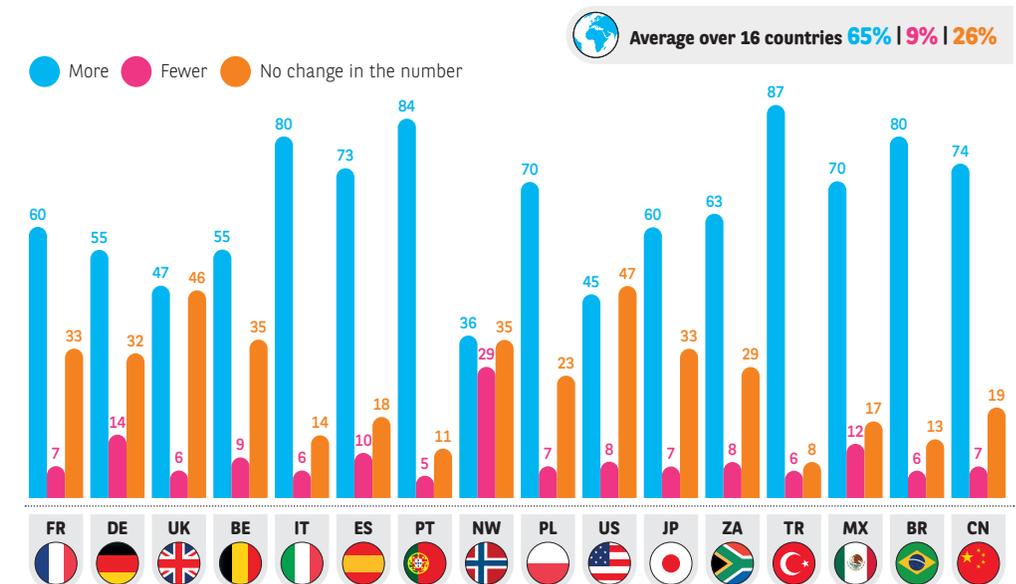
favours the EV. At the national level, most countries also promote the development of EVs using both coercive and incentive measures. The most polluting vehicles are discouraged by high taxes and low quotas while the registrations of clean vehicles like EVs are supported by various forms of subsidies.

Fig. 3

In your opinion, should there be more, fewer or no change in the number of policies (national and local, financial and non-financial) supporting electric vehicles?

In %

Source: L'Observatoire Cetelem



### Financial support for the transition

Most of the support measures concern allowances and subsidies to reduce the difference that still exists between the cost of an EV and its fossil fuel equivalent. Support schemes to finance charging station infrastructures and the implementation of public and shared e-mobility systems are also needed.

Today, the development of the electric vehicle cannot be done without strong and lasting financial incentives. "Indirect" support such as free urban tolls and car parks, or access to dedicated bus lanes,

could provide the needed impetus. In Norway, there have been multiple ambitious public incentive measures. Public subsidies have made EVs cheaper, while urban regulations have granted them many car parking spaces and facilities. As a result, EVs now account for 21% of total sales. In contrast, when the subsidies are removed or reduced too quickly before the cost to run electric cars has dropped below that of fuel-powered vehicles, the sales growth stops. This is what happened, for example, in Denmark.

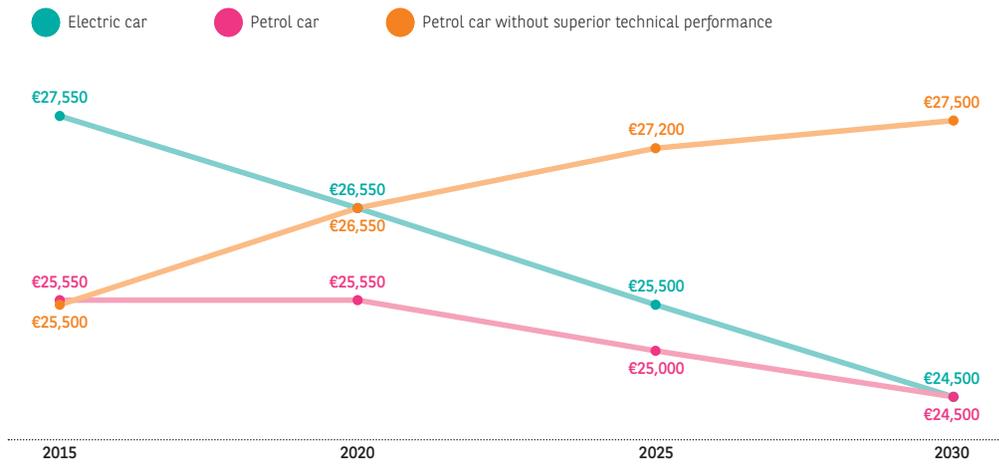
### COMPARATIVE ECONOMIC PERFORMANCE OF EVs

Comparing the total cost of different energy solutions is not easy (Fig. 4). Many parameters have to be taken into consideration: purchase price of the vehicle (including tax), maintenance costs, fuel or electricity usage expenses, depreciation and resale value on the second-hand market, etc. For a product that is still relatively new and rare on the market, such as the EV, the future value and second-hand prices can only be estimated approximately. Most of the comparative studies, however, indicate that the total cost (i.e. purchase cost plus running costs) of EVs is still higher than that of fuel-powered vehicles, but that this cost is shrinking rapidly. The European Consumer Organisation concluded that in a comparison between the fossil fuel Opel Astra and the fully electric Nissan LEAF, the total cost of the latter was 8% higher in 2015. This difference will drop to 4% in 2020, and then to 1.5% in 2025, to represent only 0.5% by 2030.

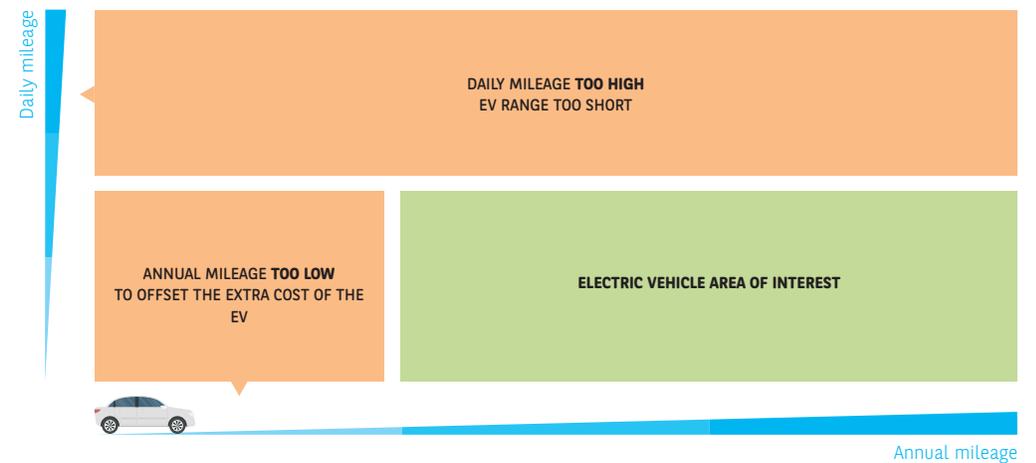
The changes in the price of oil and its taxation as well as the fall in the price of batteries, which account for half the price of an EV, will determine the exact rate of convergence. Obviously, these results deserve to be broken down by type of user, especially according to the annual mileage (Fig. 5). The higher it is, the greater the incentive will be for the motorist to bear an additional cost on buying the vehicle in order to recover the cost during its use.

To smooth out these ongoing price differences when buying a vehicle and resolve the uncertainty associated with the residual value of an EV and its battery, long-term leasing, with or without an option to purchase, can be a great alternative to the conventional option of buying the car outright. The investment is smoothed out over time, the maintenance costs are known in advance and the distributor is contractually liable for the residual value of the EV.

**Fig. 4** Evaluation of the total cost calculated over 4 years  
Source: BEUC



**Fig. 5** Mileage profile compatible with EVs  
Source: L'Observatoire Cetelem



## It's time to charge

Because the battery of the electric vehicle must be regularly recharged, having access to a charging point is an advantage. For people living in a house, it is easy to install a charging device, and particularly easy to recharge a vehicle overnight. For the residents of a block of flats, it will be preferable for the car park to have a network connection. If this is not the case, the regulatory framework could facilitate this. Another option is to recharge the battery at the workplace. Here again, appropriate regulations and taxation would speed up the deployment of charging points in the corporate world.

However, having access to a charging facility at home or at the workplace will be insufficient to fulfil every need – particularly that of reassuring those who are more concerned about running out of power. Given the current range limitations and the impossibility of replacing an empty battery with a full battery, it appears that a road char-

ging network will have to be deployed to reassure those who are hesitating to get an EV and those motorists who need a single vehicle for every type of journey. What's more, such an infrastructure will require particular specifications. Ideally, quick – and therefore more expensive – charging stations will be required, especially on motorways. Then, a typical "chicken and egg" problem arises. Charging stations will only be installed if enough EVs plug in to make them profitable, but there will only be enough EVs if there are enough charging facilities on the roads... The public authorities must, once again, take measures to bear some of the risk and costs borne by the motorway operators and energy providers. In 2016, the number of public charging points increased at the same rate as the number of EVs on the roads. The vast majority of EVs were being recharged on private roads (Fig. 6).

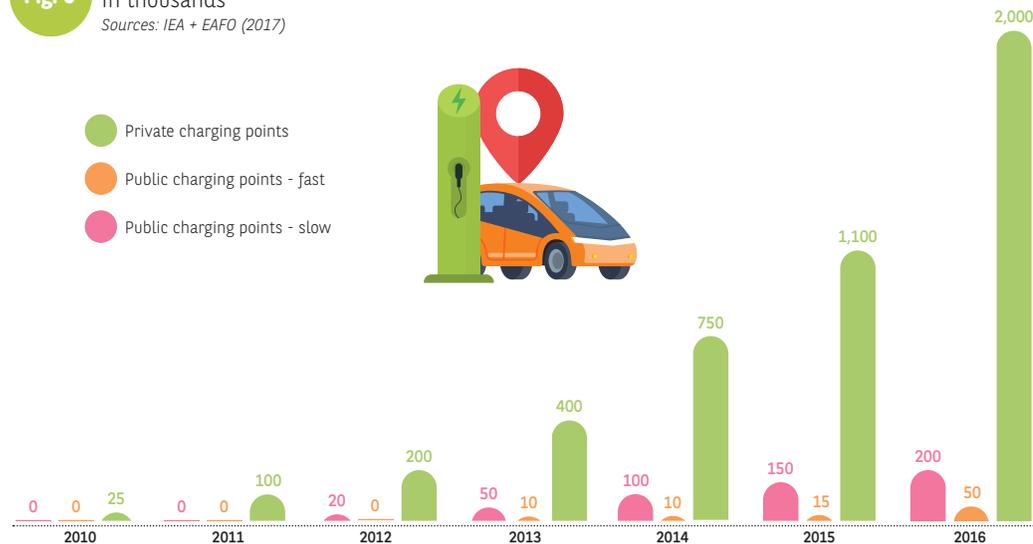
## Facilitating e-mobility systems

The experts agree that the EV will be all the more attractive economically and environmentally if it is used intensively. We're thinking of the last mile when delivering goods in a city, the shared fleets of company vehicles or even those used for shared mobility services (carsharing fleet). Thus, the coordination and structuring of public policies at the national and local level – cities and urban hubs – are essential for the promotion and development

of the EV. On the one hand, the increase in volumes generated by these shared EV offers will reduce battery production costs through accelerated economies of scale. On the other hand, it will prepare public opinion and motorists and get them used to the idea, thereby influencing their future personal choices.



**Fig. 6** Growth in the number of charging points in the world, 2010-2016  
In thousands  
Sources: IEA + EAFU (2017)



## CURRENT EXAMPLES OF POLICIES TO PROMOTE ELECTRIC VEHICLES



### China

- Exemption from acquisition taxes and indirect taxes from 5,100 to 8,700 USD.
- Local subsidies capped at 50% of the amount granted by the state subsidies.
- Starting in 2017, 20% reduction in 2016 subsidies, with the option to adjust this policy according to the impact on the market until 2020.
- In 7 major urban centres, the restrictions on electric vehicle number plates have been lifted.
- Locally, bus lanes may be used except at peak times, and the tolls and parking spaces are free.



### France

- No-claims bonus model based on CO<sub>2</sub> emitted per km: €6,300 no-claims bonus for EVs with a battery and €1,000 for plug-in hybrid vehicles, up to €10,000 for EVs with a battery and €3,500 for plug-in hybrid vehicles when replacing an old diesel vehicle.
- Tax credit for companies buying electric cars.
- Exemption from taxes on electric and hydrogen vehicles.
- Starting in 2017, 50% of the government's fleet of vehicles is to be replaced by electric vehicles.



### Germany

- €4,000 discount on the purchase of a battery EV and €3,000 discount on plug-in hybrid vehicles, for up to 400,000 vehicles until 2020 or €600 m of subsidies.
- The car manufacturers will finance 50% of the subsidy, while the government will finance the remaining 50%.
- Exemption from road tax for 10 years and then for 5 years from 2021.
- Reduction in taxes on company vehicles.
- Locally, free parking and access to bus lanes.



### Japan

- Purchase subsidies according to the battery capacity (e.g. the Nissan Leaf 30 kWh battery: 3,000 USD).
- Locally, exemption from paying tolls and access to restricted traffic lanes.



### Norway

- Exemption on the purchase tax: 11,600 USD.
- Exemption from VAT on EVs with a battery (25% of the price of the vehicle before tax), including for EVs with a leased battery. Purchase discount on plug-in hybrid vehicles.
- Exemption from road tax, tolls and ferry charges.
- Continuation of this policy on EVs with a battery until 2020.
- Since 2016, the free parking measures for electric vehicles have been managed by the town halls.



### United Kingdom

- Subsidy model based on the CO<sub>2</sub> emitted per km and the zero-emission vehicles (5,800 USD for the EVs with battery, 3,300 USD for the plug-in hybrid vehicles).
- Tax benefit: exemption from fuel taxes and import taxes for EVs and reduction for plug-in hybrid vehicles, reduced taxation for company vehicles.
- Government expenditure plan of more than 770 million USD between 2015 and 2020 to encourage the production and purchase of Ultra-Low Emission Vehicles (ULEV): target of achieving 100% sales of new zero-emission vehicles by 2040.
- "Go Ultra-Low City" model: measures to support very low emission vehicles in several cities including London (free parking, access to bus lanes, etc.).



### United States

- "Corporate Average Fuel Economy" (CAFE), a regulation designed to improve the average fuel consumption of vehicles that will provide bonuses for EVs.
- Tax credit of 2,500 to 7,500 USD capped at 200,000 units sold per manufacturer.
- Mandate to produce zero emission vehicles in 9 states.
- In some states, purchase discounts and tax exemptions.

## Much more than just protecting the environment

Whether it is saving the planet, improving air quality in the cities or reducing the dependence on oil without simply transferring this dependence onto another energy source (e.g. nuclear), there are many challenges to overcome that are of utmost importance for governments. However, the plan to build up an electrical sector while another is dismantled (i.e. the fuel-powered

vehicles) will take time and must be managed with skill. Otherwise, the European car industry could, for example, suffer from the decline in its sales of fuel-powered vehicles as they are replaced by EVs imported from China... the Middle Kingdom is driving this market more than any other country in order not only to improve the air quality of its cities, but also to impose its industrial clout in this sector.



## AN UNAVOIDABLE ENTERPRISE FOR THE AUTOMOTIVE INDUSTRY

For an increasing number of countries and cities, the days of the fuel-powered vehicle are numbered. The Netherlands in 2030, Scotland in 2032, France in 2040 and Paris 10 years before that.

### A choice that is disappearing

All over the world, there are already a large number of low-emission zones with restricted access to petrol and diesel vehicles. Mandatory quotas on EV sales have been in place for a long time in the United States and will be implemented next year in China. If you add CO<sub>2</sub> reduction standards, which are becoming increasingly draconian, manufacturers have no choice but to offer EVs.

### Changing programmes

With a varying degree of celerity and intensity, and sometimes only to protect brand image, all manufacturers have begun to develop specific programmes. Brands have been created (e.g. Polestar for Volvo, EQ for Mercedes, Sol for Volkswagen in

China, etc.), colossal R&D investments have been agreed and new dedicated production capacities have been installed.

### Increased range, but it comes at a price

The technical and marketing challenges are as important as the environmental and industrial issues. To win over customers, the EV market needs batteries that can deliver an adequate range and be recharged as quickly as possible. Not only must they be able to provide for 90% of everyday needs, limited to a dozen miles or so, but also for the rare long journeys, which are intimately associated with what motorists expect of a "real" car. However, the problem of electricity storage is as old as elec-

tricity itself. Although there are certain avenues of research and technical solutions, the progress will only be worthwhile if it is shared by all. In other words, if the improvements in batteries do not translate into prohibitive and unaffordable costs for the ordinary motorist.

### Innovating to make electricity the best solution

The sector is becoming more organised, research efforts are accelerating, and partnerships are forming between manufacturers and specialists in battery chemistry or recycling. It looks as if the gamble is paying off. Despite the improvements made in terms of range, charging speed, safety and durability, the cost of batteries has been falling for several years now. The scheduled increase in volumes would indicate that there is a good chance prices will drop further (Fig. 7 and Fig. 8). Better yet, the new so-called solid-state battery

technology could revolutionise EVs in the next five years. For a greatly reduced cost, the range would more than double, and the charging time would be limited to just a few minutes. The prospect of an electric car that is more practical and more competitive than any other engine.

The new generations of hydrogen fuel cells are often put forward as the future of the electric vehicle. Although the number of models could be counted on one hand and the hydrogen fuel cell distribution network is still in its infancy, this technology offers great promise with a recharging time of 3 to 5 minutes and a range of 700 km.

**Fig. 7** Cost of lithium-ion batteries per kilowatt hour  
Source: Bloomberg

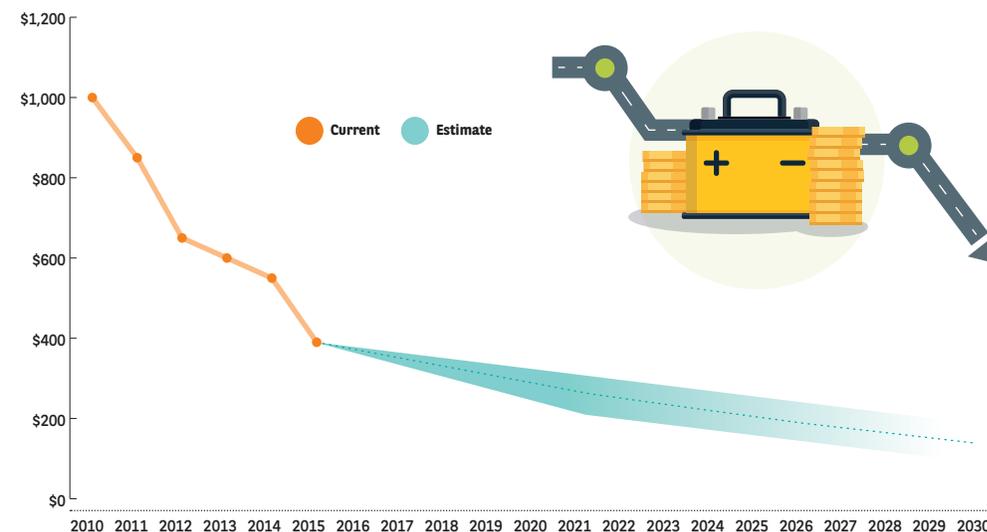


Fig. 8

**Annual demand for electric vehicle battery power**

In gigawatt-hour  
Source: Bloomberg

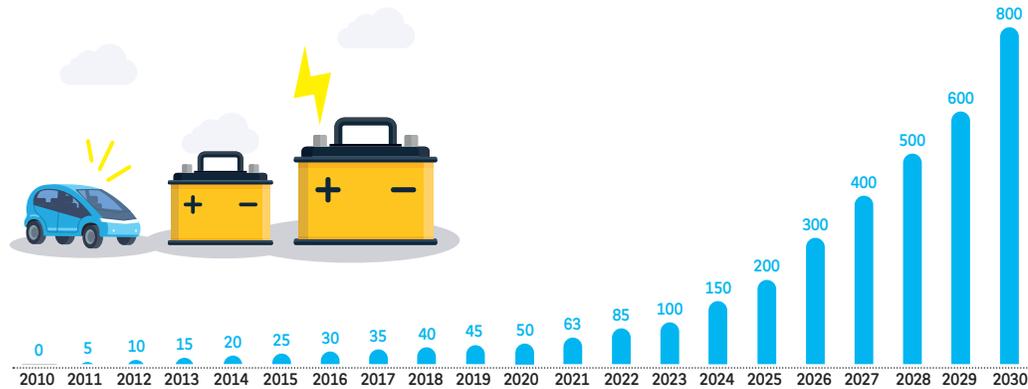
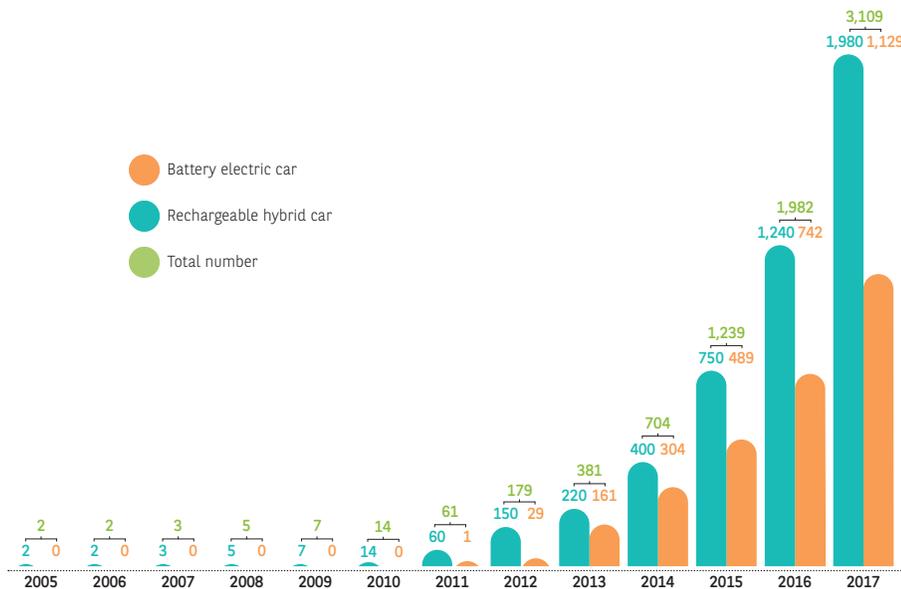


Fig. 9

**Fleet of electric cars in the world**

In thousands  
Source: AIE



**Unstoppable growth**

In 2017, EV sales reached 1.2 million units worldwide, i.e. an increase of 60% in 2016 (Fig. 9). However, this figure represents only 1.5% of new car sales. These sales are also concentrated in certain geographical areas. 8 countries (China, United States, Japan, Norway, United Kingdom, France, Germany and Sweden) account for 90% of global sales. China dominates the market with 600,000 units, 80% of which are electric vehicles and 20% are plug-in hybrid vehicles.

There is therefore still significant growth potential to recoup the investments made by the manufacturers in developing the EV. Because the manufacturers' objectives in terms of sales volumes are huge. Although, in the past, the announcements and projects of manufacturers have not always come to fruition, it would appear that the current impetus is irreversible. As we progress from a niche solution to its development for mainstream use, the current and future perception of EVs by motorists and their expectations becomes even more crucial.

**MANUFACTURERS' DECLARED OBJECTIVES IN TERMS OF ELECTRIC VEHICLE VOLUMES - 2017**

<b>BMW</b>	100,000 EV sales in 2017 15 to 25% of BMW group sales by 2025
<b>Chevrolet (GM)</b>	30,000 annual EV sales by 2017
<b>Chinese manufacturers</b>	4.52 million annual EV sales by 2020
<b>Daimler</b>	100,000 annual EV sales by 2020
<b>Ford</b>	13 new EV models by 2020
<b>Honda</b>	Two-thirds of sales in 2030 will be electric vehicles (including hybrid, plug-in hybrid, electric and "fuel cell" vehicles)
<b>Renault-Nissan</b>	1.5 million electric vehicles sold in 2020 (total sales)
<b>Tesla</b>	500,000 annual EV sales within 2 years 1 million annual EV sales by 2020
<b>Volkswagen</b>	2 to 3 million annual EV sales by 2025
<b>Volvo</b>	1 million electric vehicles sold in 2025 (total sales)

## 2

# A POTENTIAL AND SOME QUESTION MARKS

Cars are the most durable and most expensive consumer goods. Purchasing a vehicle is therefore a significant act. Not only do the environmental and macroeconomic issues run very deep, but certain conditions and criteria must also be fulfilled in the eyes of the motorists for them to be won over. The electric vehicle is no exception to these rules. There's no denying that the technology breaks with the past, yet it remains, first and foremost, a vehicle. Despite the fact that there is an emotional aspect to the act of purchasing, buying a car essentially boils down to the need for mobility. So, in order to determine the potential and future of the electric vehicle, it is necessary to check whether its different characteristics are compatible with the expectations of motorists.



# RANGE, A KEY PRODUCT FEATURE

At present, the limited range is the main weakness of the electric vehicle and an undeniable obstacle to it gaining the acceptance of households.

## Short-term vision

83% of those who replied claimed this limitation to be a feature of the electric vehicle, with the Germans being the most inclined to think this (93%) and the Turks being the least likely to believe this, in relative terms (69%) (Fig. 10). This feature supports the image of a vehicle that is reserved for drivers making short trips for 70% of those who responded. Once again, the Germans are the most likely to say so (86%), while the Portuguese are far from sharing this point of view (59%).

## Always going further

The short range appears in the top 3 reasons why those who replied would not buy an EV. This weakness was pointed out by 42% of the sample (Fig. 11). 57% correctly estimate the range to be between 100 and 300 km. With the exception of the Tesla models, which boast a range of 500 km, most electric vehicles on the European market fall within this range. For example, the Citroën C-Zero, the Renault ZOE ZE 22 kWh and the Volkswagen e-Golf 7 respectively have a manufacturer's range of 150 km, 210 km and 300 km.

Fig. 10

**In your opinion, is the limited range apt or inapt when describing the features of fully electric vehicles?**

In %, total of the "Very apt" and "Apt" answers

Source: L'Observatoire Cetelem

 Average over 16 countries **83%**

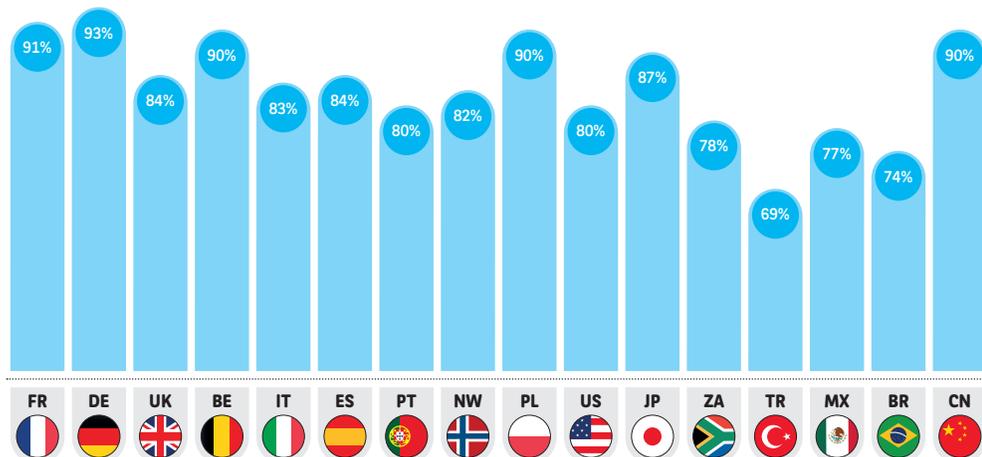
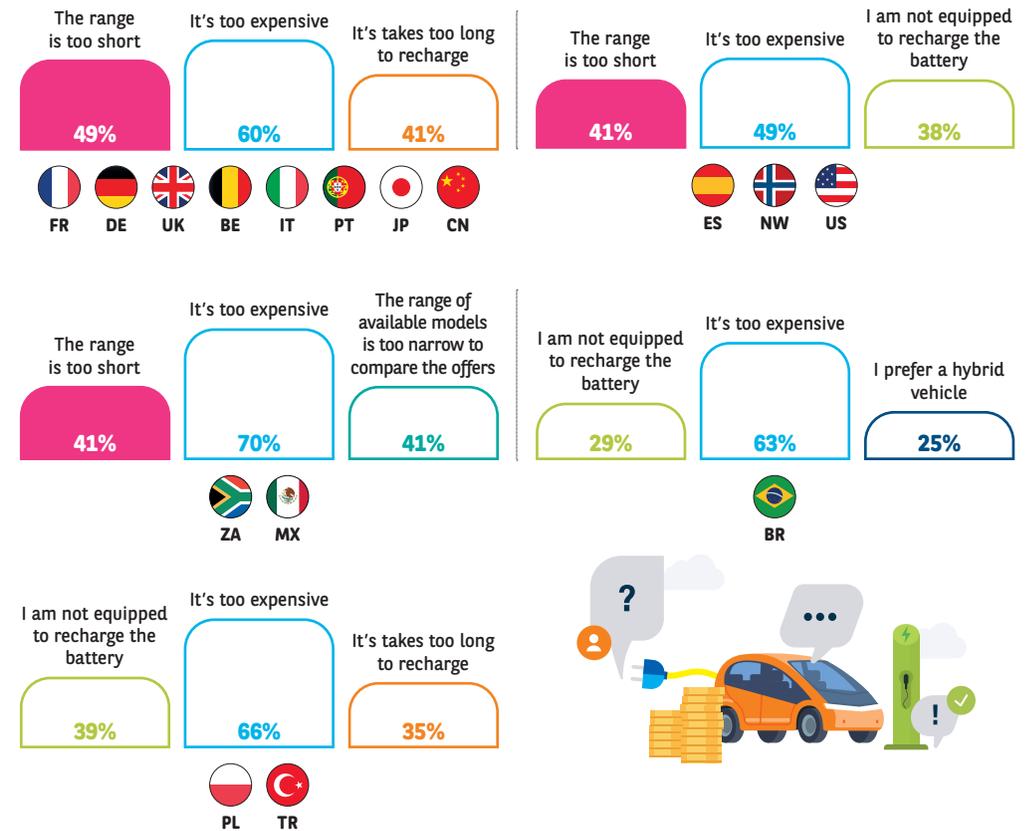


Fig. 11

**What are all the reasons why you could not choose a fully electric vehicle if you were buying a car?**

In %, several possible answers

Source: L'Observatoire Cetelem



## MOTORIST QUOTES

What's more, motorists are well aware of the difference between the declared range and the actual range. This difference is due to the style of driving, the use of comfort features such as the air conditioning, heating, radio and especially the weather - battery life is drastically reduced during periods of extreme cold.

*"It's scary to think that on leaving a city, you get 300 km and then, nothing. If you are off the beaten track, where can you recharge?"*

*"Driving with the heating switched off at a temperature of -9°C, or reducing the range by 40 km because the heating, ventilation, lights and wipers are on."*

In theory, battery life should not be an obstacle because 86% of those who replied cover less than 100 km per day. While an electric vehicle may be suitable for most of these motorists, the limit on the range, the journey planning, battery charge management and anxiety about running out of charge outweigh the benefits for many users. The barrier

is therefore attributable to psychological factors more than functional features. The reluctance to embrace the electric vehicle will remain strong as long as there is no significant improvement in battery life. 40% of motorists claim that they would only be ready to buy an electric vehicle when the range exceeds 400 km (Fig. 12).

**Fig. 12** What minimum range would you find acceptable in order to buy a fully electric vehicle?



### Always being able to recharge the batteries

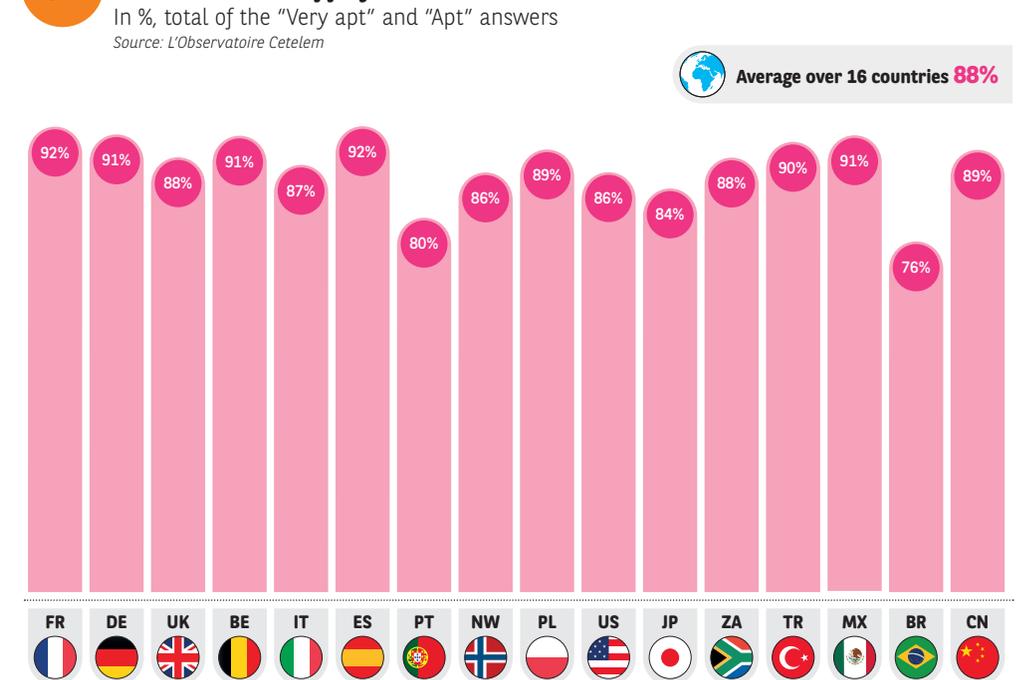
Given the battery life limitations, the need to have regular access to a charging station is important. 88% of those who replied associate electric vehicle use with the need to have access to a charging point at home or at work (Fig. 13). For many, the only solution to this limitation is to get some work done on your home and install a compatible charging socket with the corresponding extra cost. Indeed, this aspect comes up in Spain, Norway, United States, Brazil, Poland and Turkey as an obstacle to buying an electric vehicle.



### MOTORIST QUOTES

*"I have no way of charging my vehicle where I live because I don't have a basement. It's a city car that is not made for people who live in the city."*

**Fig. 13** Is the necessity to have a charging point at home or at work apt or inapt in describing the characteristics of fully electric vehicles?



Motorists expect better from the offer provided by charging stations on public roads: 76% of those who responded consider the current infrastructures to be very inadequate (Fig. 14), and 60% believe that the stations are not in the right locations (Fig. 15). Norway, the champion of the electric car, is a case in point. The country is actually overwhelmed by the success of its incentive measures. In Oslo, the 1,300 charging points are no longer sufficient to meet the needs of some 80,000 electric and rechargeable hybrid cars on the roads.

be standardised in 2014 in Europe with a Euro-uropean standard that trims the choice down to the so-called type 2 terminals.



**MOTORIST QUOTES**

*"In terms of the charging stations, work still needs to be done. I was sent to a charging point and it was not the right one."*

*"If they can produce an electric car that will do 500 km without stopping and that can be recharged in a quarter of an hour, I will take it."*

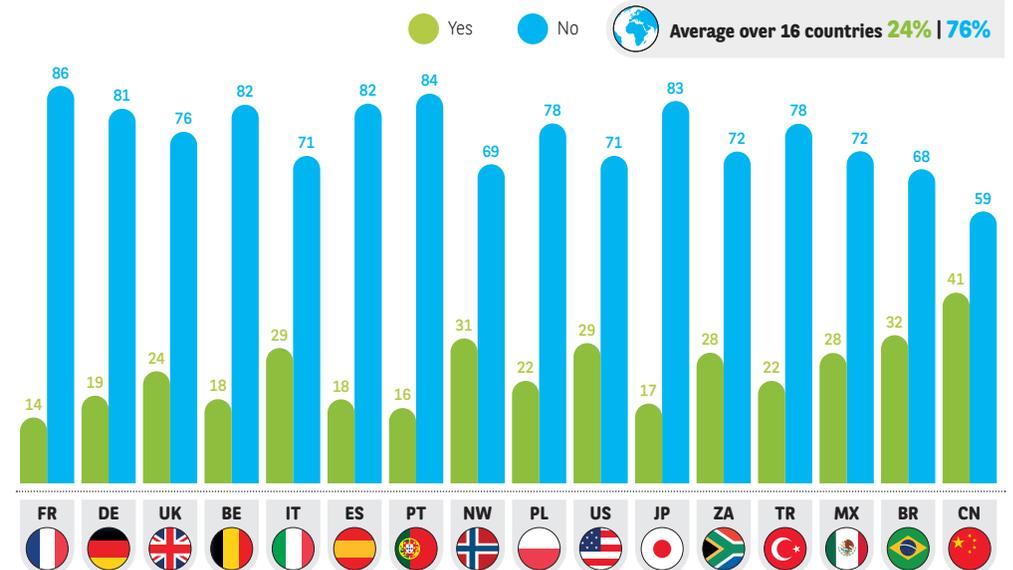
Planning and optimising long journeys where the battery needs recharging, can sometimes prove difficult due to incompatibilities between the socket and the charging cable. In order to simplify charging systems, the sockets began to



**Fig. 14** Would you say there are enough public charging stations for electric vehicles on the roads?

In %, Yes: total of the "Strongly agree" and "Agree" answers, No: total of the "Disagree" and "Strongly disagree" answers

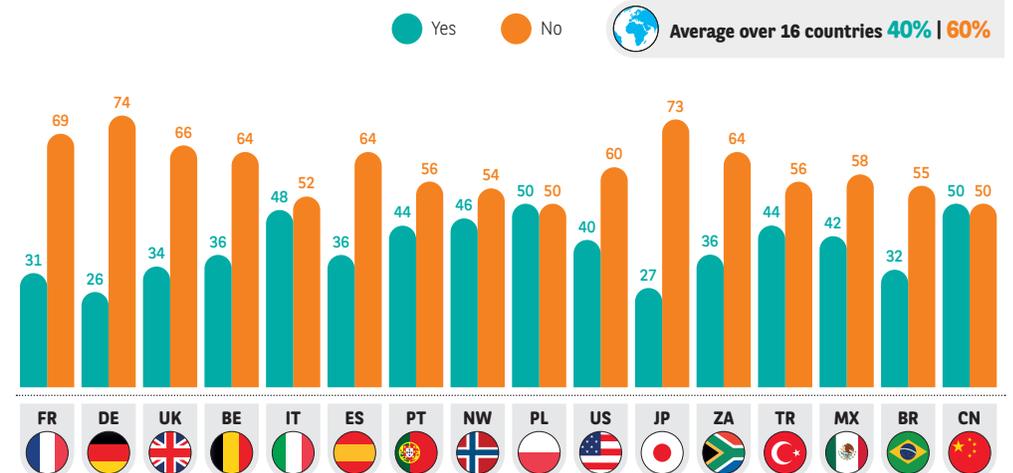
Source: L'Observatoire Cetelem



**Fig. 15** Would you say that the public charging stations for electric vehicles available on the roads are in the correct locations?

In %, Yes: total of the "Strongly agree" and "Agree" answers, No: total of the "Disagree" and "Strongly disagree" answers

Source: L'Observatoire Cetelem



**Fig. 16** Is a long battery charging time apt or inapt when describing the characteristics of fully electric vehicles?

In %, total of the "Very apt" and "Apt" answers  
Source: L'Observatoire Cetelem

Average over 16 countries **75%**



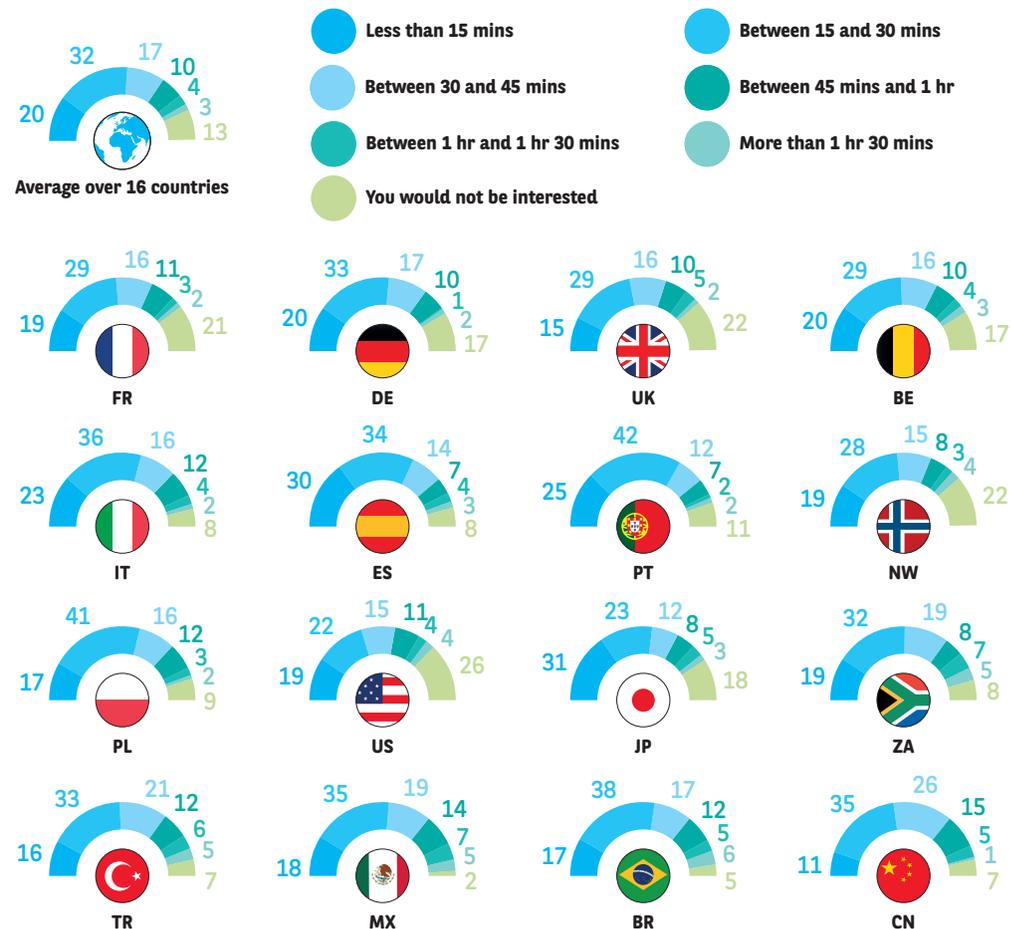
**Saving time**

Whether at home or in a public space, the issue of the battery charging time is paramount. 75% of those who replied associate the electric vehicle with a long battery charging time (Fig. 16) and 70% demand a charging time of less than 45 minutes to be interested in an electric vehicle (Fig. 17). Although this level of performance would have

been inconceivable a few years ago, it is now being considered possible. While recharging a battery to 80% takes nearly 10 hours at home, this time drops significantly when using the public charging stations. The massive deployment of "fast charge" stations in the coming years will satisfy the most reluctant motorists by delivering an 80% charge in just 30 minutes.

**Fig. 17** What is the minimum fast battery charging time on the public roads or at a motorway service station that you would require during a long-distance journey to be interested in an electric vehicle?

In %  
Source: L'Observatoire Cetelem



# EVs ARE FOR THE CITY!

The electric vehicle has several advantages that make it suitable for city motorists.

## The ultimate city car

Indeed, this is the opinion of 68% of those who replied (Fig. 18). 65% agree that EVs avoid the problems associated with car use in cities (Fig. 19). This percentage is even higher in countries where there are heavy traffic restrictions on fuel-powered vehicles: 81% in China, 86% in Italy, 84% in Spain, 78% in Mexico, 70% in Belgium, 68% in the United Kingdom and 66% in France. The electric vehicle appears to be an effective solution to reducing the noise generated by road traffic, with 92% of those who responded endorsing the silence of electric vehicles.

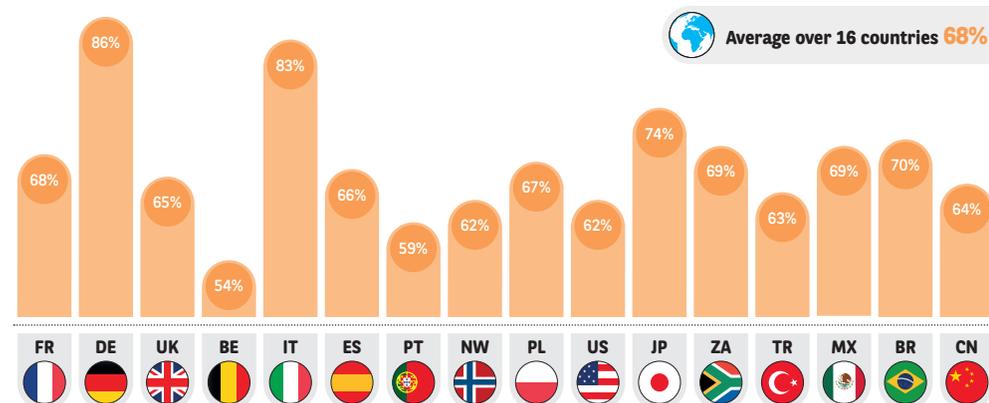
## A flawed offer?

But although EVs would appear to be destined for great things in the city, the offer still needs to be appealing. 86% of those who replied claim that there are still too few models available (Fig. 20). As you

would expect, the Norwegians are the least likely to agree with this statement (64%). Even though manufacturers have rushed to take advantage of the market potential, the models sold in Norway are the same as those offered in the rest of Europe. It would therefore seem that motorists become less demanding when they experience EV use. Contrary to what most of those who replied seem to think, there is a relatively wide variety of electric vehicle models available. The European (Renault, Peugeot, BMW, Volkswagen, Smart, etc.), Japanese (Nissan, Mitsubishi, etc.), South Korean (Hyundai, Kia, etc.), Chinese (Baic, BYD, Zhidou, Byton, Kandi, etc.) and American brands (Tesla, Ford, etc.) cover the segments from the small city car to the utility vehicle, including saloons and MPVs. However, the most recent models, although theoretically available, usually require a long or very long waiting time before delivery.

**Fig. 18** In your opinion, are EVs only for people who live in big cities?  
In %, total of the "Strongly agree" and "Agree" answers

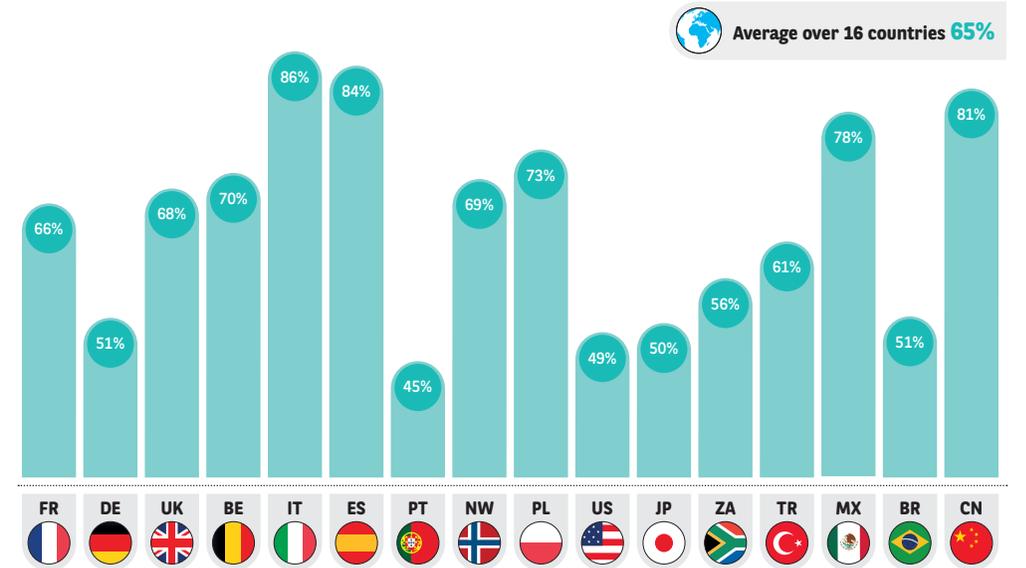
Source: L'Observatoire Cetelem



**Fig. 19** In your opinion, is the statement "you can avoid the urban restrictions imposed on vehicles (tolls, traffic restrictions in the city centre, alternating traffic, paid parking, etc.)"; apt or inapt when describing fully electric vehicles?

In %, total of the "Very apt" and "Apt" answers

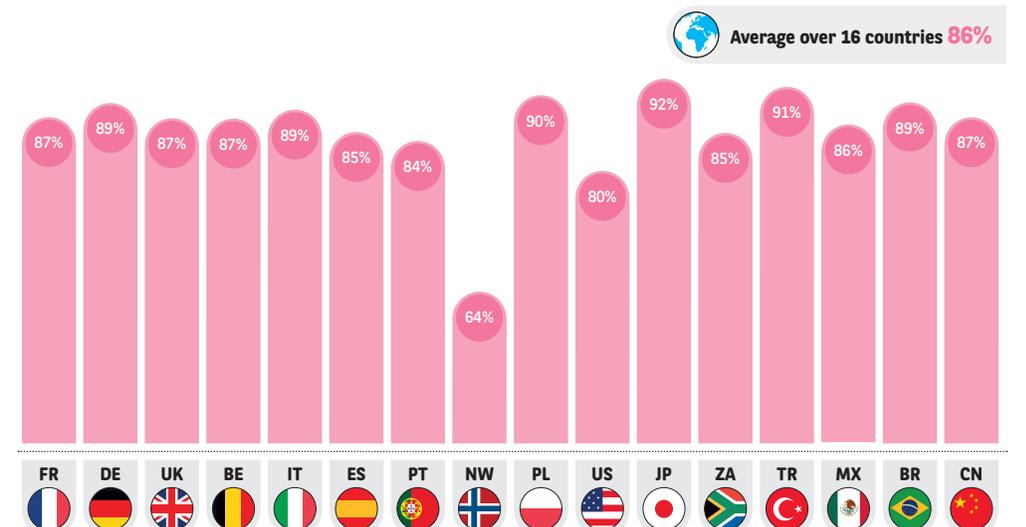
Source: L'Observatoire Cetelem



**Fig. 20** In your opinion, is the statement "the range of available models is still small"; apt or inapt when describing fully electric vehicles?

In %, total of the "Very apt" and "Apt" answers

Source: L'Observatoire Cetelem



## PORTRAIT OF AN E-MOTORIST



**More male**

**43%** of men want to buy an electric vehicle in the next 5 years, compared to **35%** of women

**Mostly aged between 25 and 34 years**

**51%** of those who replied in this age group want to buy an electric vehicle in the next 5 years, compared to **44%** of 18-24 year olds, **42%** of 35-54 year olds and **29%** of those aged 55 and over

**Mostly city-dwellers**

**48%** of people living in cities with a population of more than 100,000 want to buy an electric vehicle in the next 5 years, compared to **36%** of those who live in cities with less than 100,000 inhabitants and **29%** in rural areas

**Who cover the following distances, on average:**  
60 km every day  
18,400 km annually  
12 long journeys of more than 400 km in the year

## A LACK OF COMPETITIVENESS

**G**iven its specific features, the EV is technically suited to the driving habits of a large number of motorists. To be fully embraced, there still remains one obstacle to be overcome, i.e. competitiveness. Most households will only opt for the electrical solution if it is financially advantageous.

### Purchase price that is deemed more expensive

For 86% of those who responded, an electric vehicle costs more to buy than its fuel-powered equivalent (Fig. 21). This is actually true, given that an electric vehicle is still generally more expensive than a fuel-powered vehicle, mainly due to the cost of the battery. For motorists, this is the number 1 argument for not wanting to buy an electric vehicle, and this applies in the 16 countries surveyed (Fig. 22).

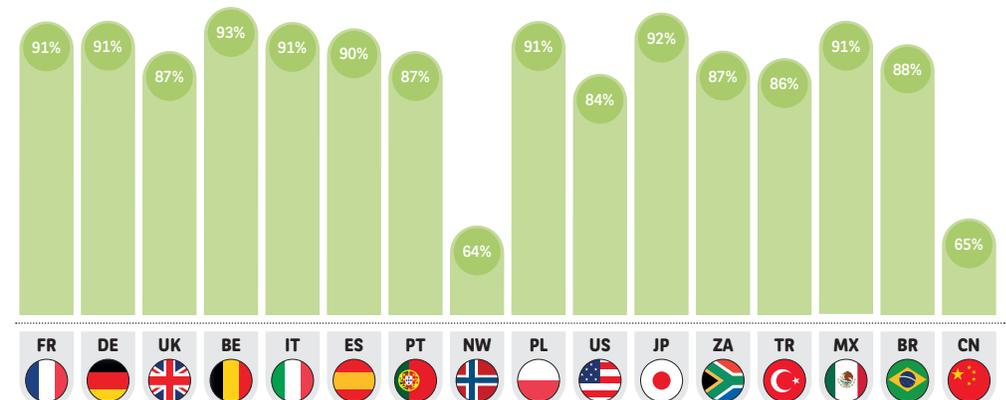
Regarding this issue, the Chinese and Norwegians stand out somewhat (65% and 64%). Their more moderate viewpoint is probably influenced by

the strong financial incentives they receive for the purchase of an electric vehicle. Yet China and Norway are not the only countries to offer such financial incentives. But surprisingly, 49% of those who responded do not know if subsidies or incentives to buy an electric vehicle are available in their country, and only 32% say yes (Fig. 23). With 65% and 55% respectively of those who responded declaring that they are aware of the financial assistance available for the purchase of an electric vehicle, the Chinese and French believe they are properly informed, reflecting the commitment of their governments to communicate widely on this subject.

### Fig. 21 In your opinion, is the statement "it is more expensive to buy", apt or inapt when describing fully electric vehicles?

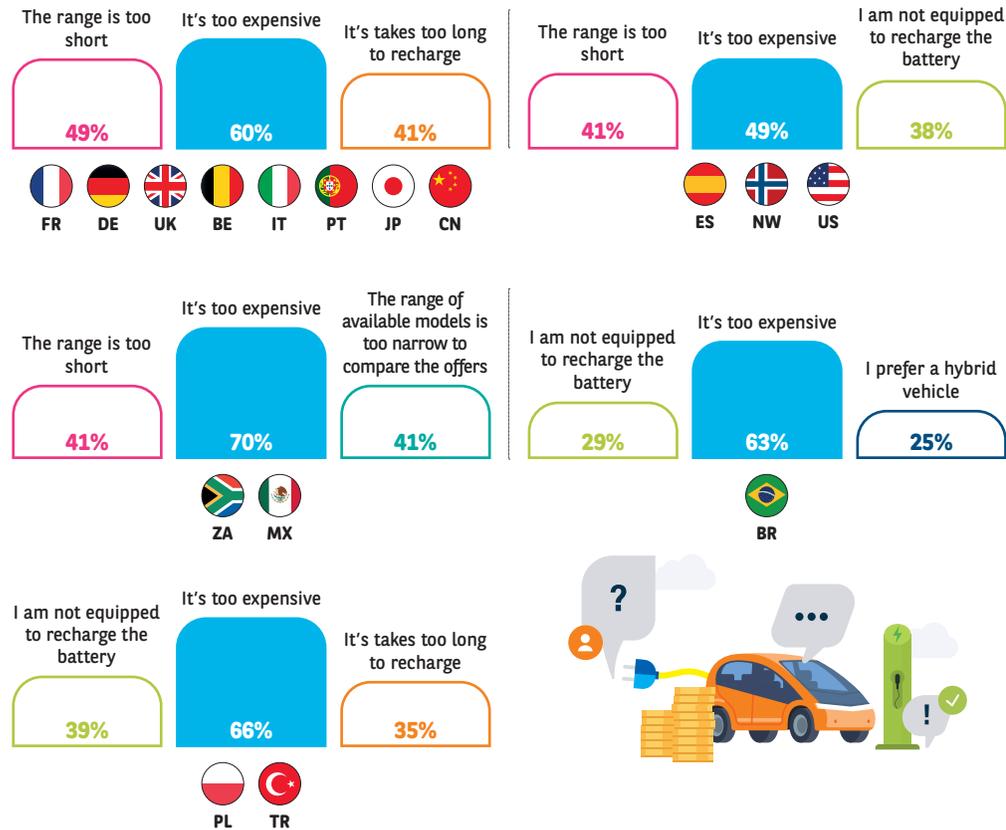
In %, total of the "Very apt" and "Apt" answers  
Source: L'Observatoire Cetelem

Average over 16 countries **86%**



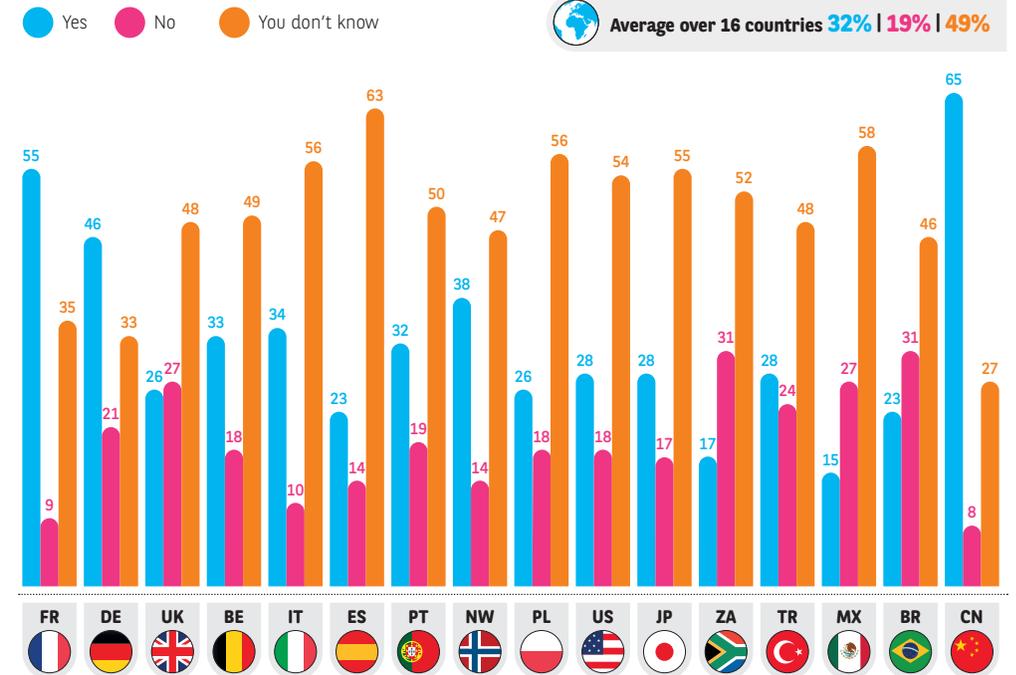
**Fig. 22** What are all the reasons why you could not choose a fully electric vehicle if you were buying a car?

In %, several possible answers  
Source: L'Observatoire Cetelem



**Fig. 23** To your knowledge, are there any subsidies or incentives to buy an electric vehicle (cash reward for replacing an old vehicle, tax credit or other non-financial measures such as free parking, access to reserved lanes)?

In %  
Source: L'Observatoire Cetelem



**Running costs that are more appealing**

But the cost of running an EV restores the financial balance. Whether it is installing a charging station at home (if needed), maintenance, energy, insurance or the battery rental (if needed), all the costs are much lower than those of an equivalent fuel-powered vehicle. Given that electricity is cheaper than fossil fuels, the biggest saving comes from the energy supply. Motorists are well aware of this financial benefit. 68% claim that an electric vehicle requires less maintenance than a fuel-powered vehicle (Fig. 24) and 77% deem that it is economical to run (Fig. 25).



**MOTORIST QUOTES**

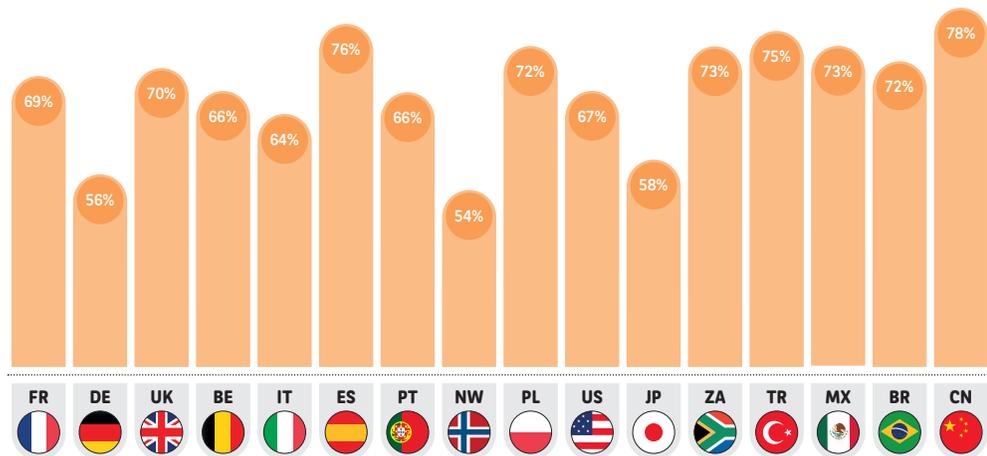
*"There's no comparison when it comes to the running costs of an electric vehicle. I use the vehicle and recharge it for nothing, all from my own home."*



**Fig. 24** In your opinion, is the statement "it requires less maintenance than a fuel-powered vehicle (petrol or diesel)", apt or inapt when describing fully electric vehicles?

In %, total of the "Very apt" and "Apt" answers  
Source: L'Observatoire Cetelem

Average over 16 countries **68%**



**Fig. 25** In your opinion, is the statement "it is economical to run (less maintenance, cheaper energy)", apt or inapt when describing fully electric vehicles?

In %, total of the "Very apt" and "Apt" answers  
Source: L'Observatoire Cetelem

Average over 16 countries **77%**



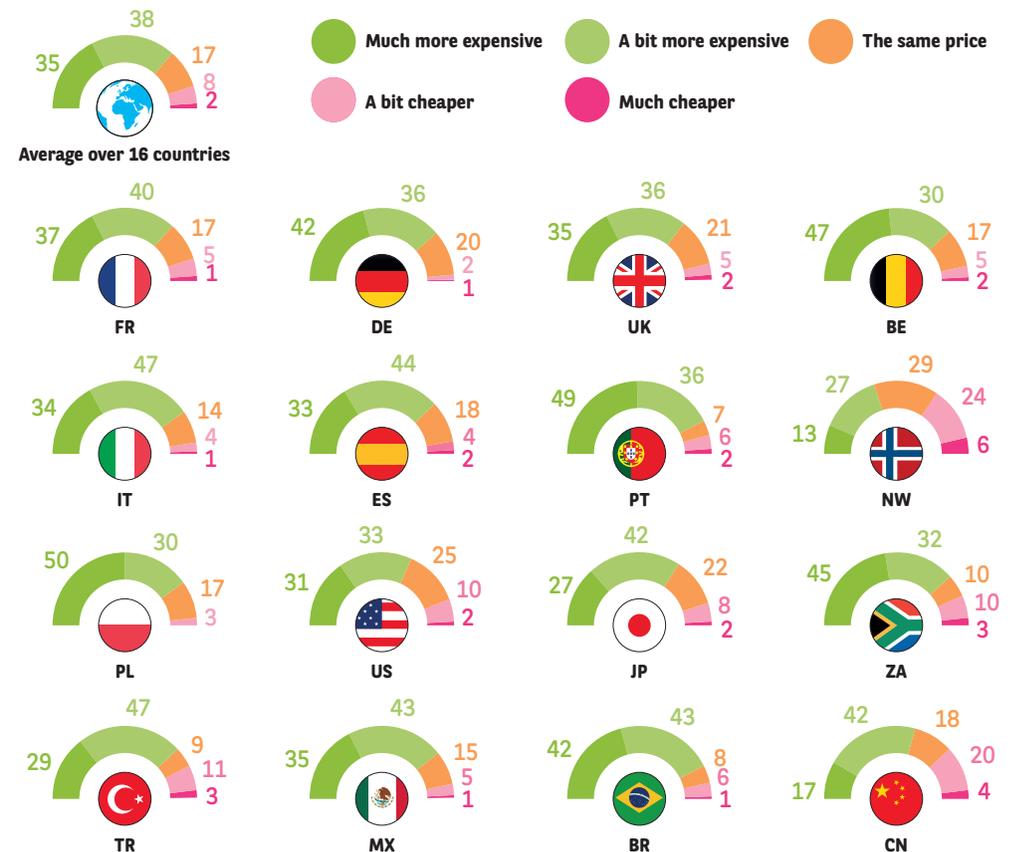
**The need for financial assistance**

However, even this advantage in using an EV is not enough to win over motorists for good. The purchase price, which is deemed to be prohibitively high, outweighs all the other arguments. When all the costs associated with an EV are taken into account, 38% find it a bit more expensive and 35% much more expensive (Fig. 26). As a result, 42% of those who responded would not pay any more to buy an EV and only 28% would agree to pay 10% more than they would for the fuel-powered version (Fig. 27).

Financial incentives are therefore essential to reduce the purchase price and the difference in the total cost of ownership (TCO) between electric and conventional cars. They are particularly critical in the current phase of the technology's deployment in order to trigger and facilitate a virtuous circle. A circle based on increased sales, increased production volumes and improved technology, including battery performance, which will help to reduce the financial barriers.

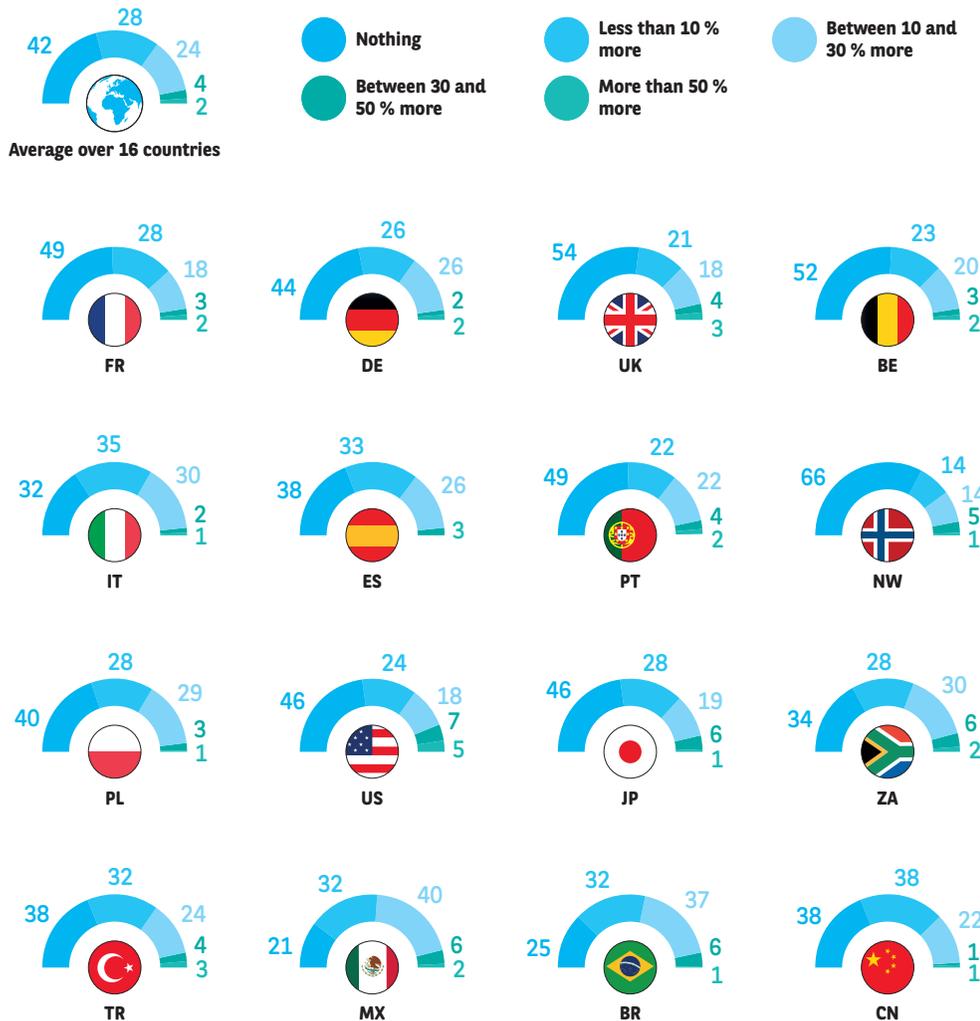
**Fig. 26** In your opinion, if we take into account all the costs (buying and running) and the resale price, does an EV now cost more or less than a fuel-powered vehicle (petrol or diesel)?

In %  
Source: L'Observatoire Cetelem



**Fig. 27** How much more would you be prepared to pay to buy an electric vehicle rather than its fuel-powered version (petrol or diesel)?

In %  
Source: L'Observatoire Cetelem



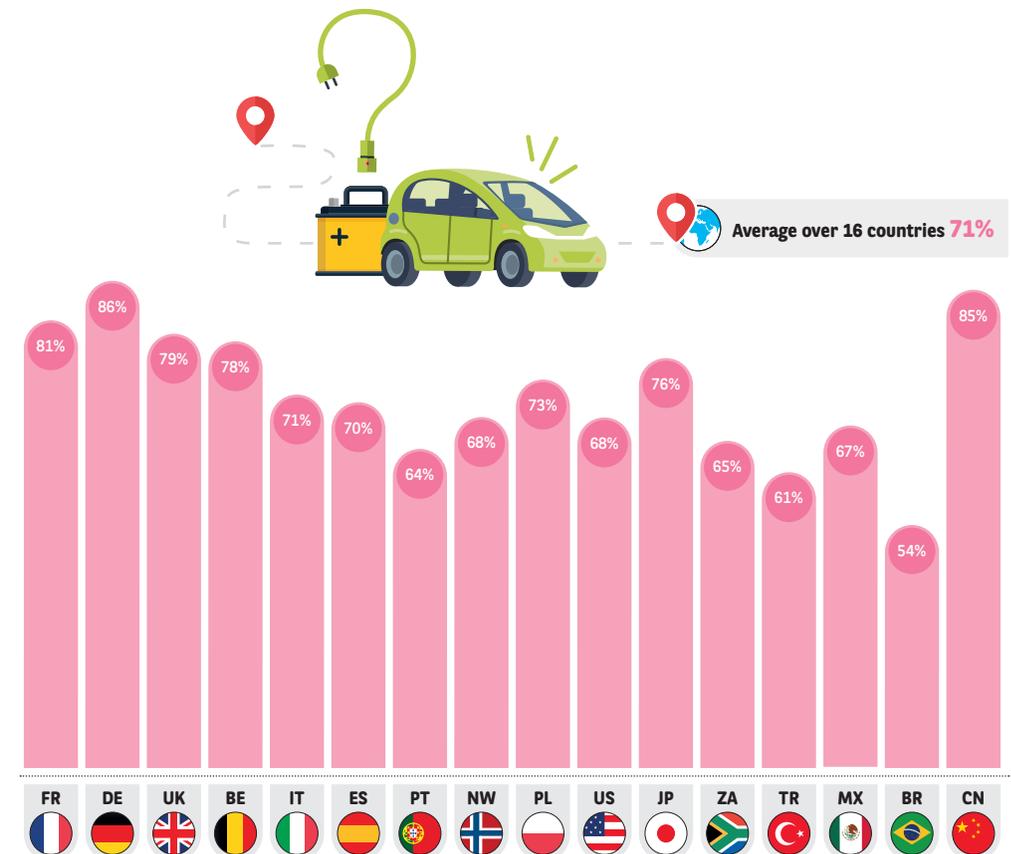
**Doubt regarding the life expectancy of batteries**

Once again, we come back to the issue of batteries that crystallises the problems of the EV. 71% of motorists believe that their lifetime is too short (Fig. 28). 27% believe that they last 3-4 years, 20% claim that they last 5-10 years and only 4% claim that they last beyond the age of 10 years (Fig. 29). Although batteries do indeed lose capacity, it is gradual. After completing a set number of charging and discharging cycles, they do not lose all of their

capacity, but a significant part of it. Below 75%, they are no longer really suited for use in a vehicle. For a lithium battery, the initial results show a life-time of about ten years. The manufacturers offer a guarantee of about 5 years for motorists who wish to buy them (8 years at Tesla). For those who prefer to hire a vehicle, the manufacturers replace them when they reach the 70% threshold. Although this provides some security, it comes at a cost for those who are concerned about the obsolescence of their battery.

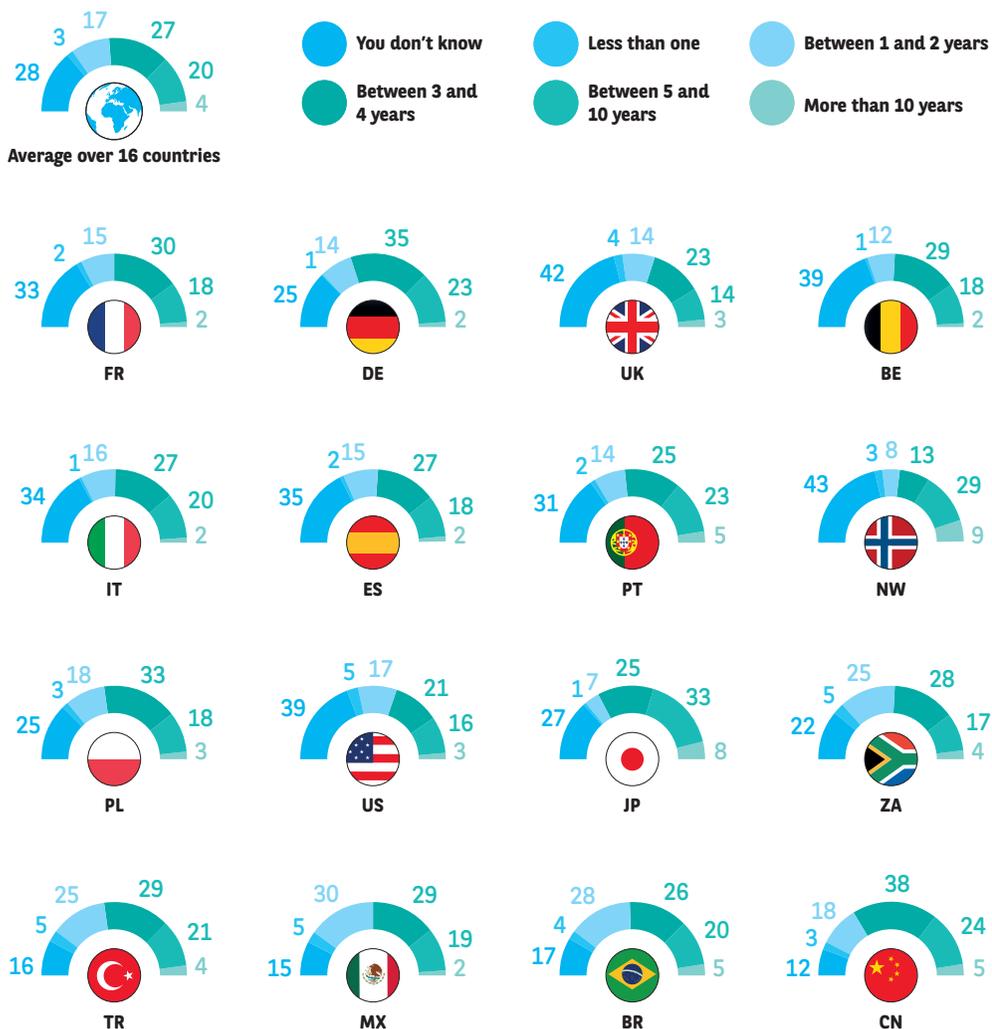
**Fig. 28** In your opinion, is the statement "the battery life is too short" apt or inapt when describing the characteristics of fully electric vehicles?

In %, total of the "Very apt" and "Apt" answers  
Source: L'Observatoire Cetelem



**Fig. 29** In your opinion, what is the lifetime of a battery?

In %  
Source: L'Observatoire Cetelem



**Used batteries can be sold, but to who and at what price?**

When adopting a new technology, it is reassuring to be able to estimate the residual value of your vehicle and sell it easily. However 84% of those who responded believe that we cannot yet foresee the development of the second-hand market over time, hence their second-hand value (Fig. 30). Such an assessment is particularly challenging because about a third of the value resides in the battery whose capacity is gradually decreasing and because there are so few EVs on the market. 74% of the motorists surveyed agree about this scarcity (Fig. 31). Unsurprisingly, the Norwegians stand out in this respect (49%) because the greater maturity of the local market has created a second-hand market for EVs earlier than elsewhere.

What's more, the extremely fast progress being made on new models is having the effect of rapidly reducing the value of electric vehicles, which is generating additional uncertainty among future buyers. As an example, the latest generation ZOE,

which was marketed in early 2017, offers almost twice the range. This has the effect of making the first models less attractive.

In order to reassure potential buyers, manufacturers are creating specific brands or offers that are entirely dedicated to the resale of a UEV (used electric vehicle), such as the Nissan Club and the Renault ZE Occasion. This is to encourage motorists to take the plunge by partially avoiding the high price of a new EV while being able to count on the manufacturer's brands to guarantee the reliability of their used vehicle.

Car leasing, which has been around for a long time in the English-speaking countries and is becoming increasingly popular elsewhere, also offers a solution to the anxiety surrounding battery durability. Indeed, by renting an EV or its battery for 3 or 4 years as is often the case, the risk and worry of driving long distances with an outdated battery can be managed effectively. Similarly, because it is negotiated beforehand, the uncertainty surrounding the residual value of the battery disappears.

Fig. 30

In your opinion, is the statement "we do not know the resale value of the vehicles given that we don't know how the second-hand market will develop over time", apt or in apt when describing fully electric vehicles?

In %, total of the "Very apt" and "Apt" answers  
Source: L'Observatoire Cetelem

Average over 16 countries **84%**



Fig. 31

In your opinion, is the statement "there are no second-hand vehicles available", apt or inapt when describing fully electric vehicles?

In %, total of the "Very apt" and "Apt" answers  
Source: L'Observatoire Cetelem

Average over 16 countries **74%**



### THE ELECTRIC VEHICLE FOR ALL THOSE WHO RESPONDED



It is...

- Silent
- Eco-friendly
- Requires access to a charging station
- Modern
- More expensive to purchase
- Few models available

It is not...

- A second vehicle
- Sophisticated
- Reserved for car sharing
- Dangerous
- A trend
- A woman's car





### 3

## THE EV TRANSITION, A GOOD REASON FOR HOPE

In terms of mobility, the electric vehicle has many advantages. Economically, under certain conditions, and within a relatively short timeframe, there is no doubt that there will be some good arguments to put forward in favour of EVs. But buying a vehicle is not a purely objective matter. Force of habit, preferences, perceptions and attitudes are just some of the many emotional, hence subjective, factors that need to be taken into account when making a choice.



## FIND OUT MORE

**A**s a genuine technological breakthrough, the electric vehicle is gradually gaining ground in the automotive world. And the way it works using an electric motor/battery combination that is actually broken down into three different versions by drivetrain (fully electric, plug-in hybrid or range extender) does not seem to be a secret in the eyes of motorists.

### Sufficient knowledge

69% claim that they understand EVs and how they work (Fig. 32). Surprisingly, Norway and China, the EV pioneers, and not among the motorists that understand EVs best. Poland, Turkey and Italy are leading the way in this area.

### Insufficient information

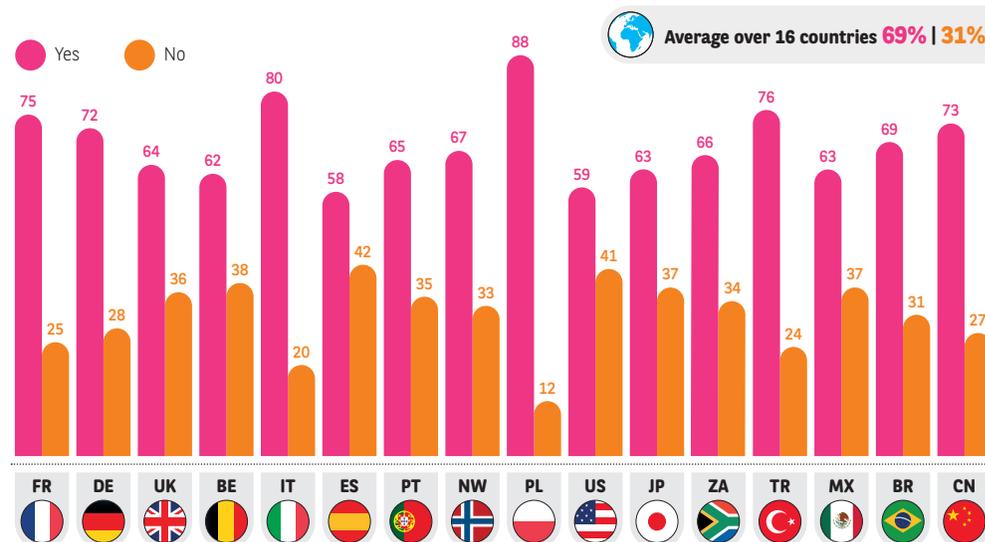
But knowing something does not mean that you are familiar with it. 70% of those who responded claim that they lack information (Fig. 33). This lack of

information even reaches 83% in Japan, the home of the car manufacturers Nissan and Toyota, which are very active in the EV and hybrid market. Providing every kind of information on the actual performance of electric vehicles, the public incentives to purchase and the reviews from the first users will probably change perceptions about electric vehicles.

**Fig. 32** Would you say that you know exactly what an EV is and how it works?

In %, Yes: total of the "Strongly agree" and "Agree" answers, No: total of the "Disagree" and "Strongly disagree" answers

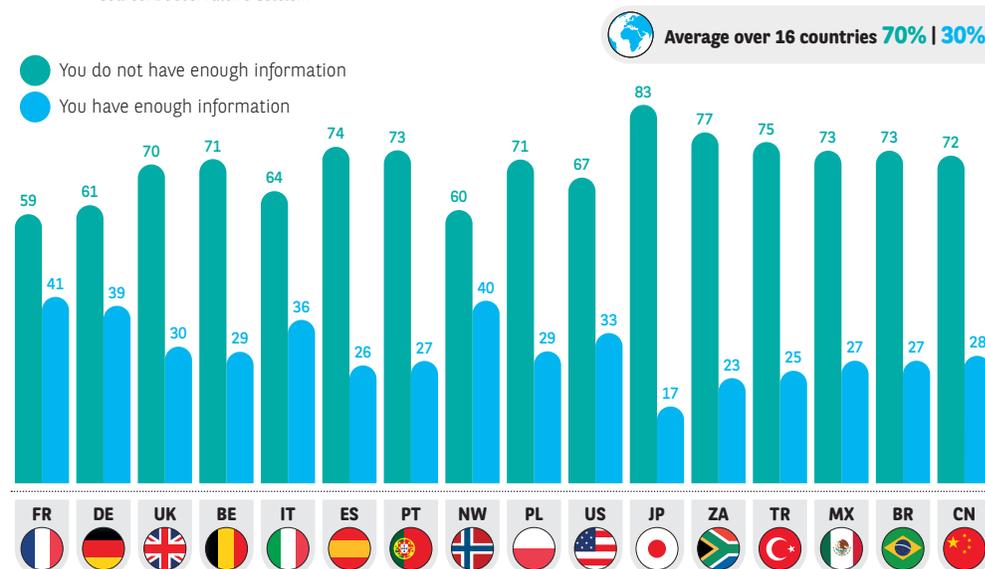
Source: L'Observatoire Cetelem



**Fig. 33** And still concerning EVs, would you say that...?

In %, total of the "You do not have enough information and you want more" and "You do not have enough information but you do not want more" answers

Source: L'Observatoire Cetelem



# ECO-FRIENDLY MATURITY

Although, for now, the economic argument is not fully in favour of EVs, its positive impact on air quality could perhaps tip the balance. Nearly 90% of those who responded consider EVs to be eco-friendly (Fig. 34). On this question, the Norwegians are slightly behind the other countries (73%). Greater familiarity with the EV makes them more measured on this issue.

## Electricity from a controlled origin

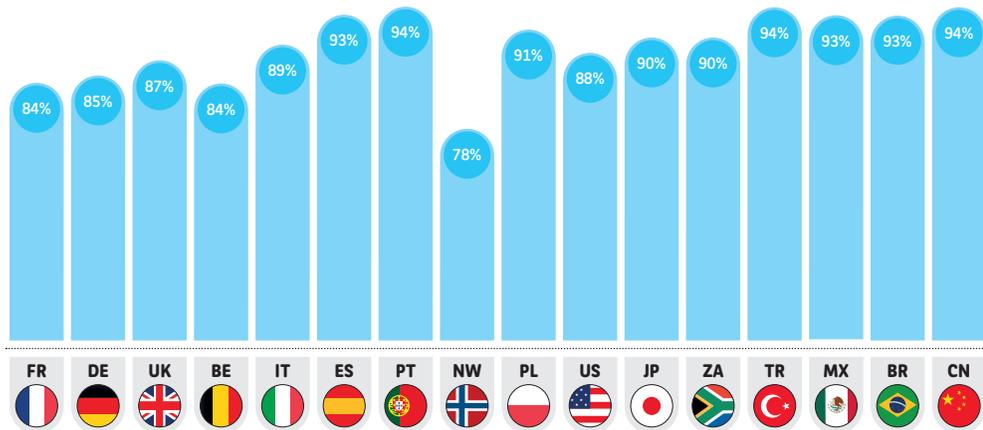
89% of those who responded believe that the massive use of electric vehicles in dense urban areas will significantly reduce pollution (Fig. 35). But most of those questioned remain realistic in emphasising that the overall environmental safety

of the EV depends on how the electricity is generated (Fig. 36). 76% support the idea of using an EV powered by renewable energy while only 15% of those who responded favour the idea of driving an EV that uses electricity generated by burning coal.

**Fig. 34** In your opinion, is the statement "it is eco-friendly (no pollution in cities)", apt or inapt when describing fully electric vehicles?

In %, total of the "Very apt" and "Apt" answers  
Source: L'Observatoire Cetelem

Average over 16 countries **89%**



**Fig. 35**

Do you agree with the following proposal: "The massive use of electric vehicles in dense urban areas will significantly reduce pollution (fine particles, nitrogen oxides, etc.)?"

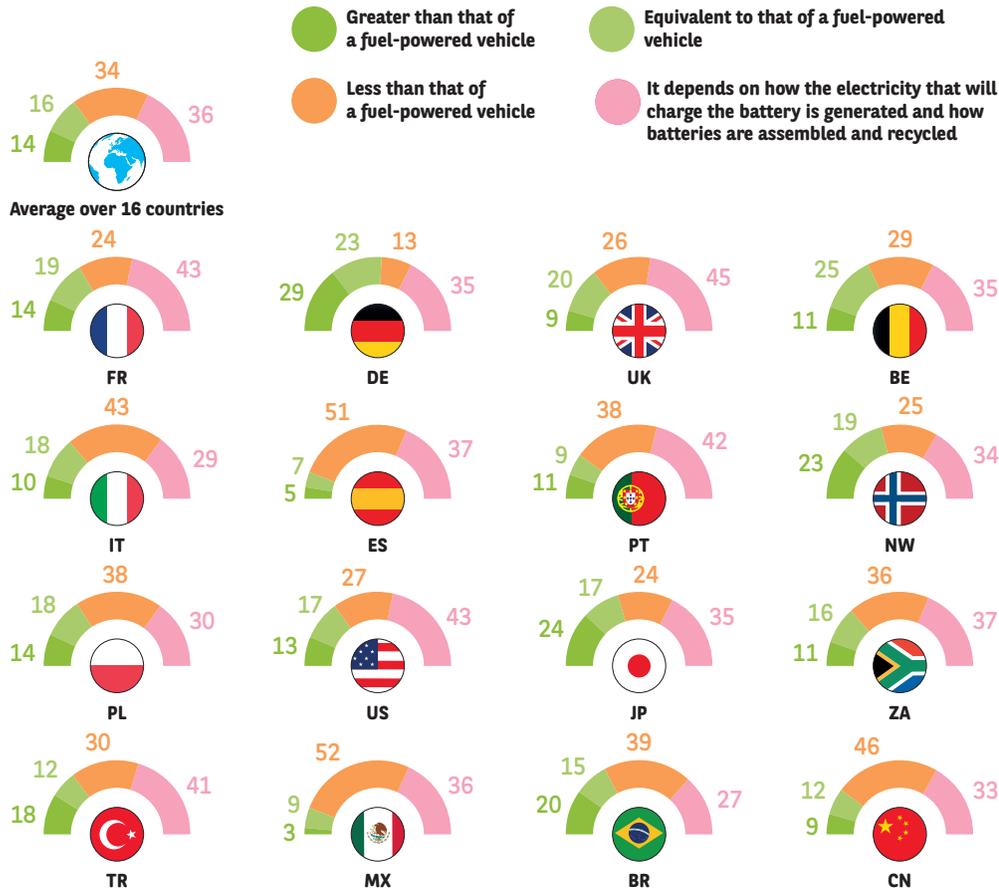
In %, Agree: total of the "Strongly agree" and "Agree" answers  
Source: L'Observatoire Cetelem

Average over 16 countries **89%**



**Fig. 36** In your opinion, is the overall impact (production, use, dismantling) of electric vehicles in terms of greenhouse gas emissions...?

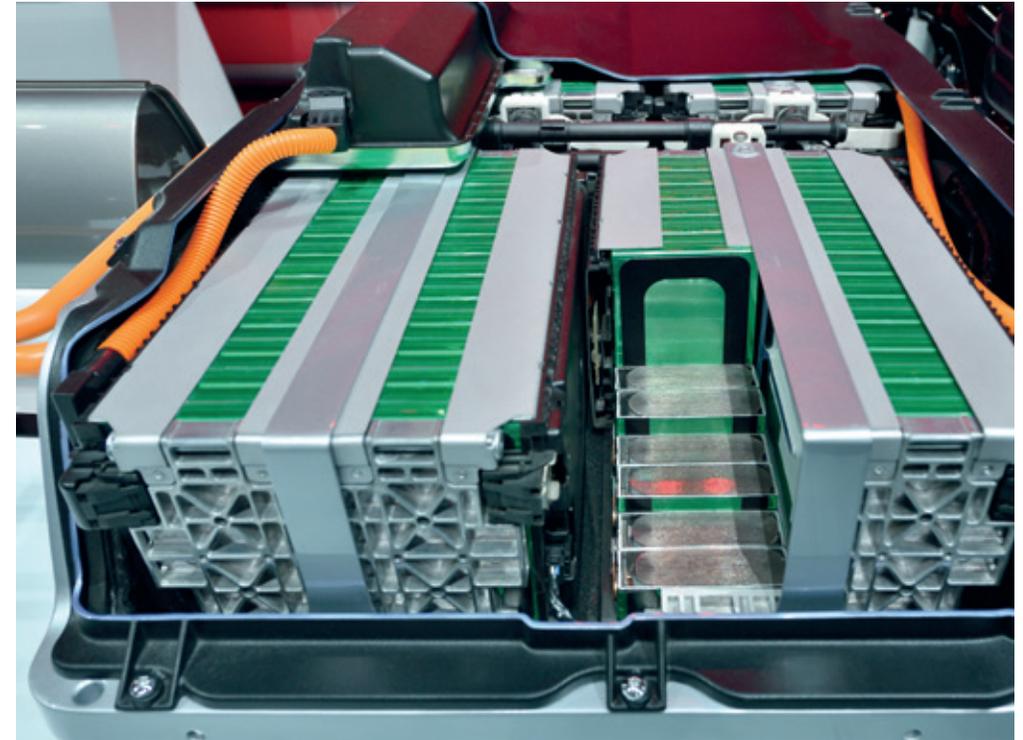
In %  
Source: L'Observatoire Cetelem



**Once again, the issue returns to the batteries**

Another environmental sticking point: the batteries. Their production and recycling generate a large amount of CO<sub>2</sub> and use rare materials that are extracted under questionable conditions for the

environment and the workers concerned. Those who responded are aware of this as 82% agree that the use of these rare materials and the production and recycling of used batteries pose a serious environmental problem (Fig. 37).



**Fig. 37** Do you agree with the following proposal: "The production and treatment of used batteries pose a serious environmental problem"?

In %, Agree: total of the "Strongly agree" and "Agree" answers  
Source: L'Observatoire Cetelem



# A CHOICE THAT GENERATES VALUE

In a world where the choice of a vehicle is not yet completely neutral, 85% of those who responded claim that the EV reflects a positive, modern and responsible image (Fig. 38). Not surprisingly, the Norwegians are the least likely to share this view, given that the widespread deployment of electric vehicles in Norway has made their use commonplace.

## A surprisingly enjoyable driving experience

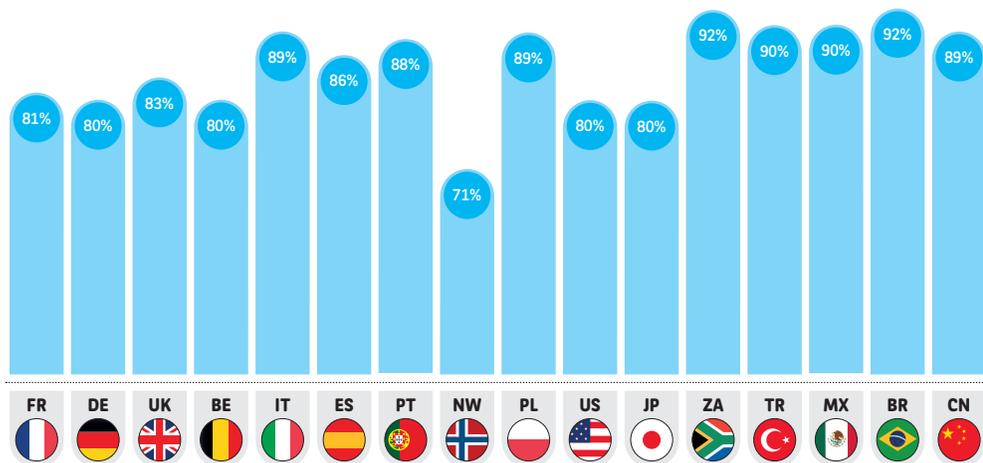
But this positive attitude is not to be confused with a form of automotive elitism. Only 1 in 2 deem the EV to be reserved for the more sophisticated car aficionados (Fig. 39). This is the majority view in Brazil (72%), Mexico (68%), Turkey (66%) and South Africa (67%), while it is a minority view in China (37%) and Norway (33%). This is because the EV is associated more with pleasure than sophistication. A key criterion at a time when hedonism is high.

86% find EVs pleasant and smooth to drive (Fig. 40) and 84% believe that they accelerate fast, giving you a feeling of instant power (Fig. 41). No gear stick, no clutch pedal – these are features that make city driving a more pleasant experience. However, some people feel as if they have less control compared with a fuel-powered vehicle. The silence of its cabin is generally appreciated but sometimes unsettling, or even a source of anxiety, especially in relation to pedestrians.

**Fig. 38** In your opinion, is the statement "it projects a positive (modern, responsible) image", apt or inapt when describing fully electric vehicles?

In %, total of the "Very apt" and "Apt" answers  
Source: L'Observatoire Cetelem

Average over 16 countries **85%**

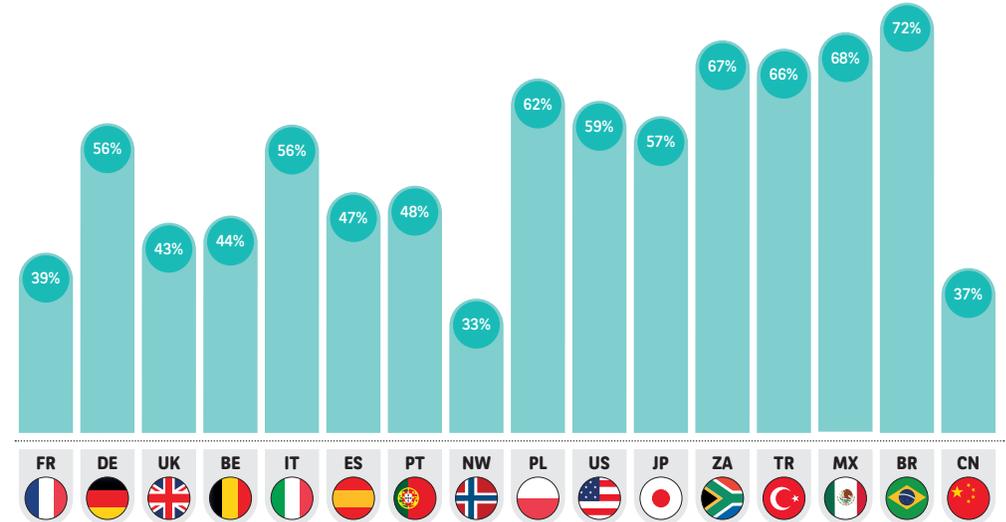


**Fig. 39** In your opinion, are EVs only for those who love modern, sophisticated cars?

In %, total of the "Strongly agree" and "Agree" answers

Source: L'Observatoire Cetelem

Average over 16 countries **53%**





MOTORIST  
QUOTES

*"It is not at all sluggish. It's extremely powerful. I have driven electric vehicles before, they take your breath away."*

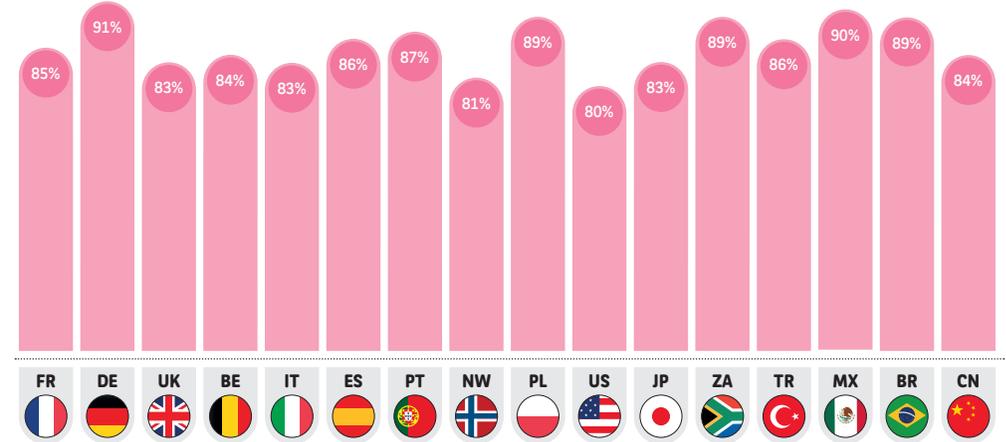
*"Thanks to the electric car, I actually enjoy traffic jams a little: It is much more relaxing: I listen to the football, sports and debates, because the noise levels are now so low..."*



**Fig. 40** In your opinion, is the statement "it is pleasant to drive and runs smoothly", apt or inapt when describing fully electric vehicles?

In %, total of the "Very apt" and "Apt" answers  
Source: L'Observatoire Cetelem

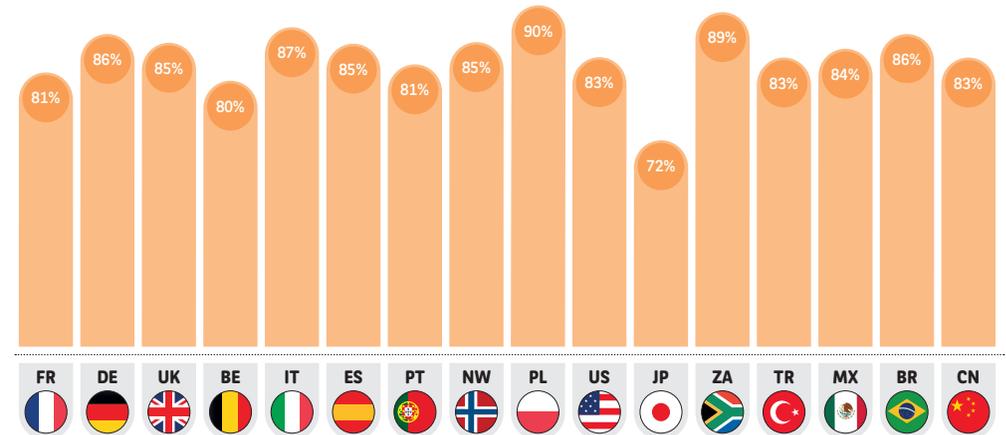
Average over 16 countries **86%**



**Fig. 41** In your opinion, is the statement "it accelerates quickly", apt or inapt when describing fully electric vehicles?

In %, total of the "Very apt" and "Apt" answers  
Source: L'Observatoire Cetelem

Average over 16 countries **84%**



### Confident but not reckless

There are some lingering concerns surrounding the EV. Among those who responded who do not want to buy an EV, 16% say that they are sceptical (Fig. 42). This percentage varies significantly: The Chinese, Brazilians and Portuguese are the most confident, unlike the Americans and Norwegians, who are warier. First, the fear of running out of power and a slight concern about unreliability compared with a fuel-powered vehicle are significant. 1 in 2 people point out the unreliability of EVs (Fig. 43). 41% believe the EV to be dangerous, probably because they have not used one. But only 10% of those who do not intend to buy an EV mentioned danger as a reason for not buying one (Fig. 44). While it is true that lithium-ion batteries are vulnerable to short circuits, there are very few cases of electric vehicle

incidents due to the battery catching fire. To quell any fears, car manufacturers are pinning their hopes on a new generation of safer solid-state batteries with a solid electrolyte that is more stable.



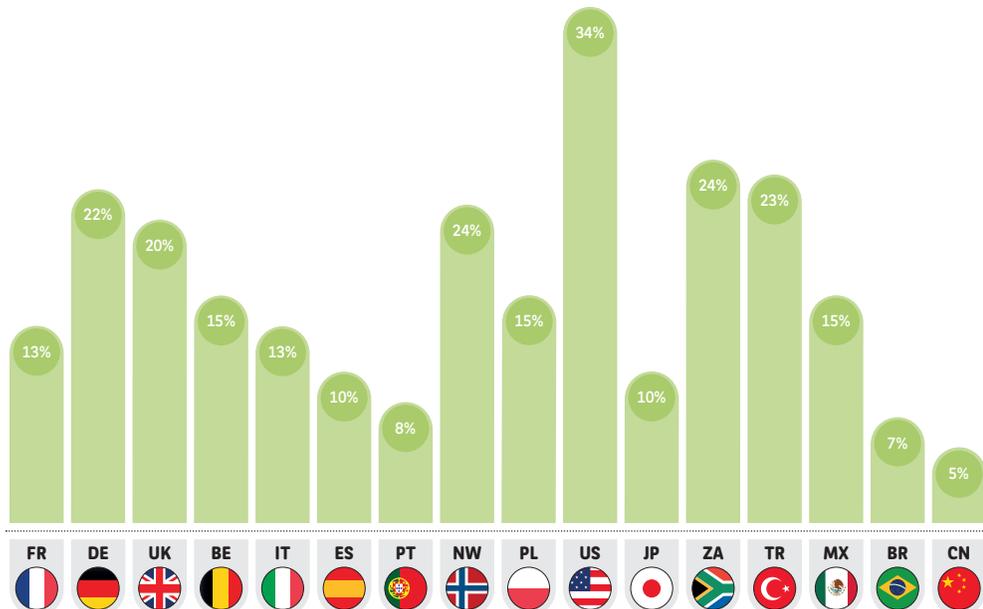
### MOTORIST QUOTES

*"It can explode. I have a friend who's a mechanic who told me that when you tamper with the engine, it can be dangerous."*

**Fig. 42** Would this lack of confidence be reason enough for you not to buy a fully electric vehicle if you were buying a car?

In %  
Source: L'Observatoire Cetelem

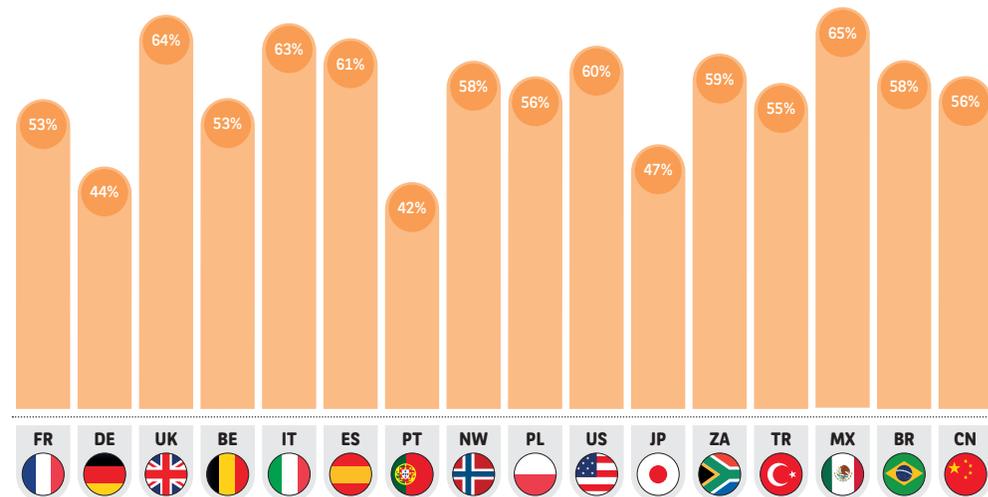
Average over 16 countries **16%**



**Fig. 43** In your opinion, is the statement "it is reliable and does not break down", apt or inapt when describing fully electric vehicles?

In %, total of the "Very apt" and "Apt" answers  
Source: L'Observatoire Cetelem

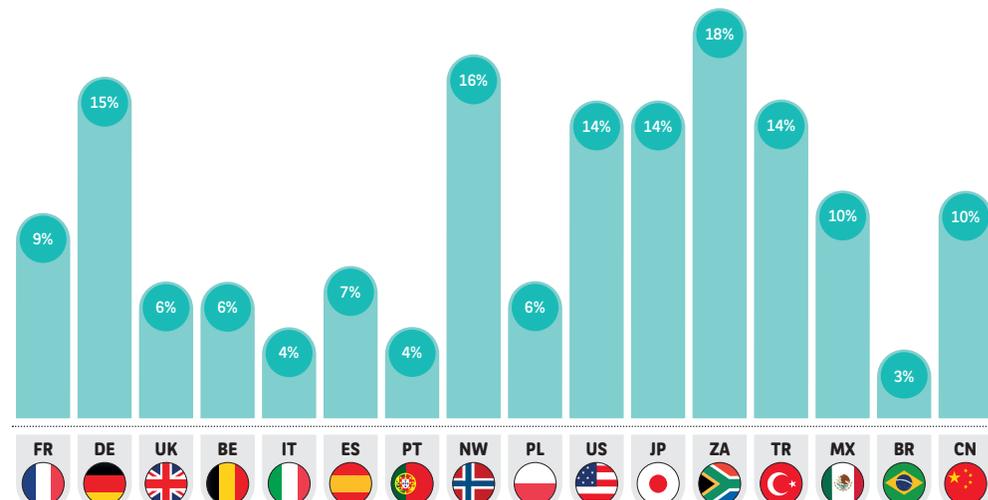
Average over 16 countries **56%**



**Fig. 44** What are the reasons why you would not choose a fully electric vehicle if you were buying a car?

It's dangerous (battery-related risks)  
In %  
Source: L'Observatoire Cetelem

Average over 16 countries **10%**



# A PROMISING FUTURE, YES BUT...

The electric car is a source of contradiction. Motorists know about it, but they lack information. It is a clean car, provided that "carbon-free" electricity is used, but the environmental impact of the batteries is not negligible.

## The key to future success

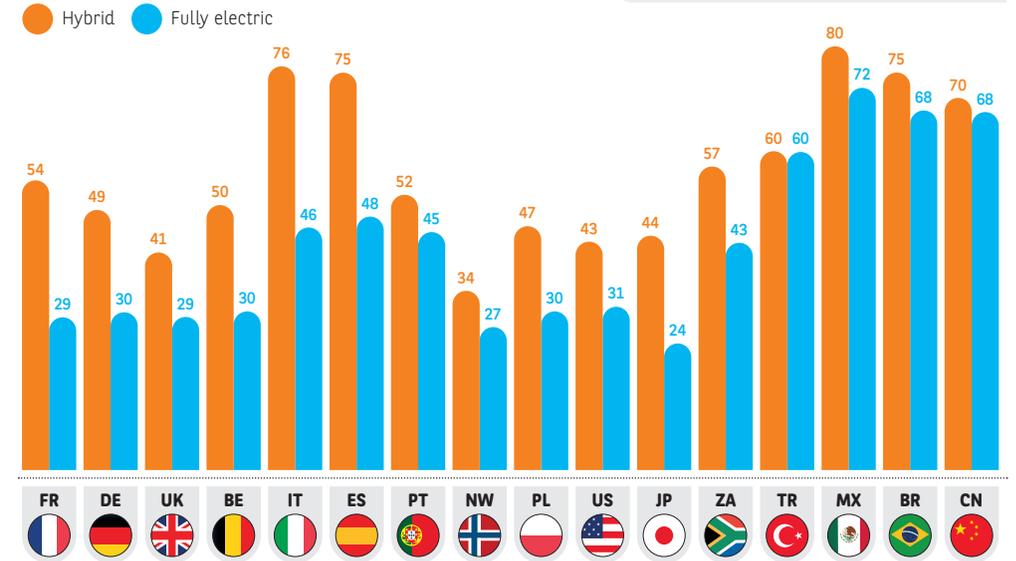
The offer of a pleasant driving experience is appealing, but its reliability and safety remain in doubt. Despite the relatively small market share, the numbers who intend to buy are much higher, i.e. 57% for a hybrid and 43% for an EV within 1 to 5 years (Fig. 45). Because no, the EV is not just a trend – only 37% consider it as such (Fig. 46). And yes, the electric vehicle has a future, a bright future. 85% of motorists are convinced of this (Fig. 47).

However, to transform this stated optimism into an actual purchase, the electric vehicle will have to make further improvements to reassure the more sceptical, particularly regarding the battery, which is the focal point of concerns. The key to winning people over will probably be achieved by the all-important customer experience. To finally remove itself from the realm of fantasy and establish itself in the real world.



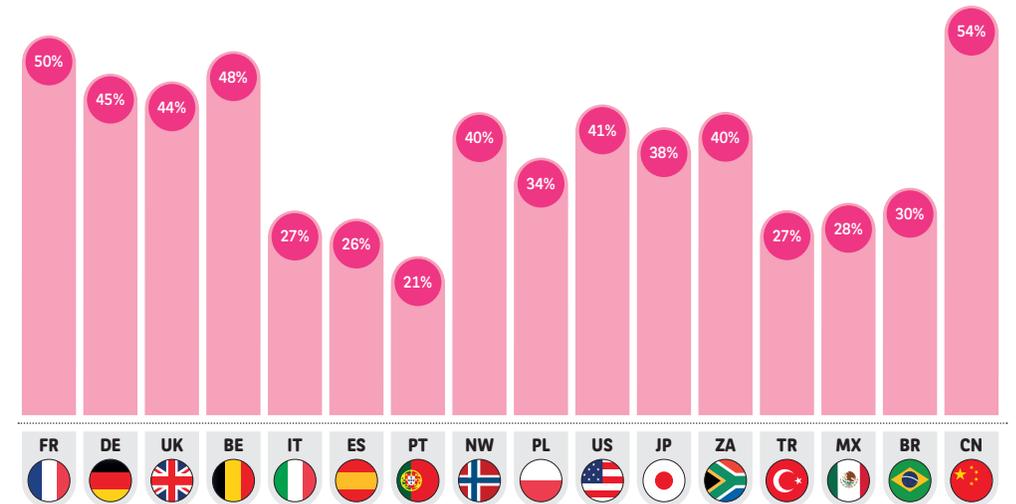
**Fig. 45** Are you planning to buy within the next 5 years...? In %, total of the "Strongly agree" and "Agree" answers  
Source: L'Observatoire Cetelem

Average over 16 countries **57%** | **43%**

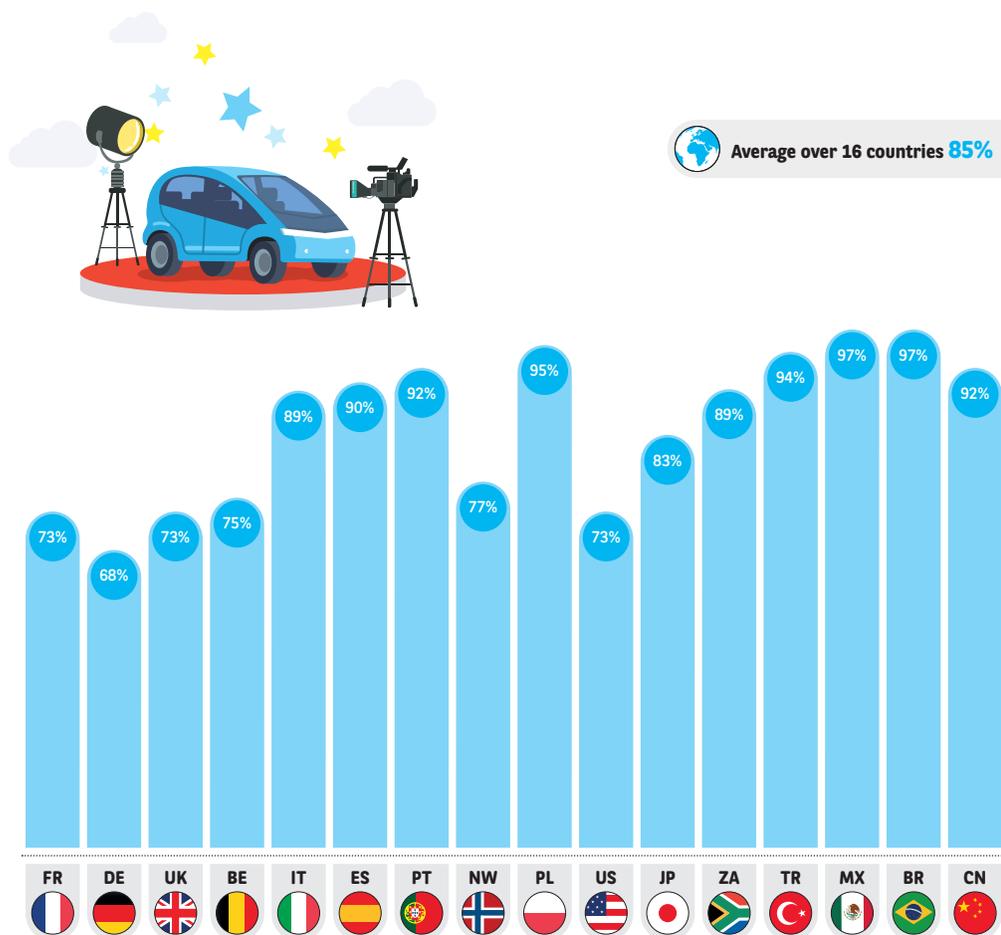


**Fig. 46** In your opinion, is the statement "it is a trend that will pass", apt or inapt when describing fully electric vehicles? In %, total of the "Very apt" and "Apt" answers  
Source: L'Observatoire Cetelem

Average over 16 countries **37%**



**Fig. 47** Do you believe in the future of the electric vehicle?  
In %  
Source: L'Observatoire Cetelem



### SUMMARY – THE ELECTRIC VEHICLE IS NOT FAR FROM OCCUPYING ITS RIGHTFUL POSITION IN THE MARKET

Between the 2012 issue of L'Observatoire devoted to the EV and this 2019 survey, the technologies, infrastructures and regulatory framework of EVs have progressed. The perceptions and intentions of households have also changed.

With the passage of time, the communications and the first models on the roads, people are gradually becoming familiar with the novelty. As evidence of this, the lack of confidence in the technology, which was the third reason for not buying in 2012, now ranks sixth.

As for the standard required by motorists in relation to the EV, it has not changed in recent years, particularly in terms of purchase price and range, which remain the main obstacles to adopting an EV. However, some interesting positive changes regarding the undeniable savings in terms of running costs have been noted. Perceptions have significantly improved, probably accompanied by a rise in the allure of EVs, since the share of those who responded who are willing to spend more in Europe to buy an EV has increased by 7 points compared to 2012.

Whichever way you look at it, there can be no doubt that progress has been made and the EV is advancing. In some parts of the world, sales are increasing noticeably, but for the upsurge to become more widespread, the efforts will need to be sustained by all the stakeholders. States must continue to subsidise purchases, support the development of the charging infrastructures and the electric car-sharing fleets. Car makers and parts manufacturers have to innovate further and make progress

on battery technologies. As for the energy companies, they have to adapt energy production and the networks to the EV.

The future of the EV is everyone's business, but the extra effort to be made probably rests with the buying public. Until now, the inability to compromise on the range has meant using batteries that are increasingly complex and heavier, hence more expensive.

By abandoning the idea of the all-singing, all-dancing vehicle and accepting to buy a car that covers 95% of their needs, they will overcome both obstacles as well as the vicious circle of the "price/range" that is holding them back. And once this milestone has been passed, the Norwegian experience shows that there is no turning back. The local figures show that only 1% of EV owners do not plan to replace them with another EV.

When everything comes together, the EV will take off and deliver the promised economical and ecological benefits.

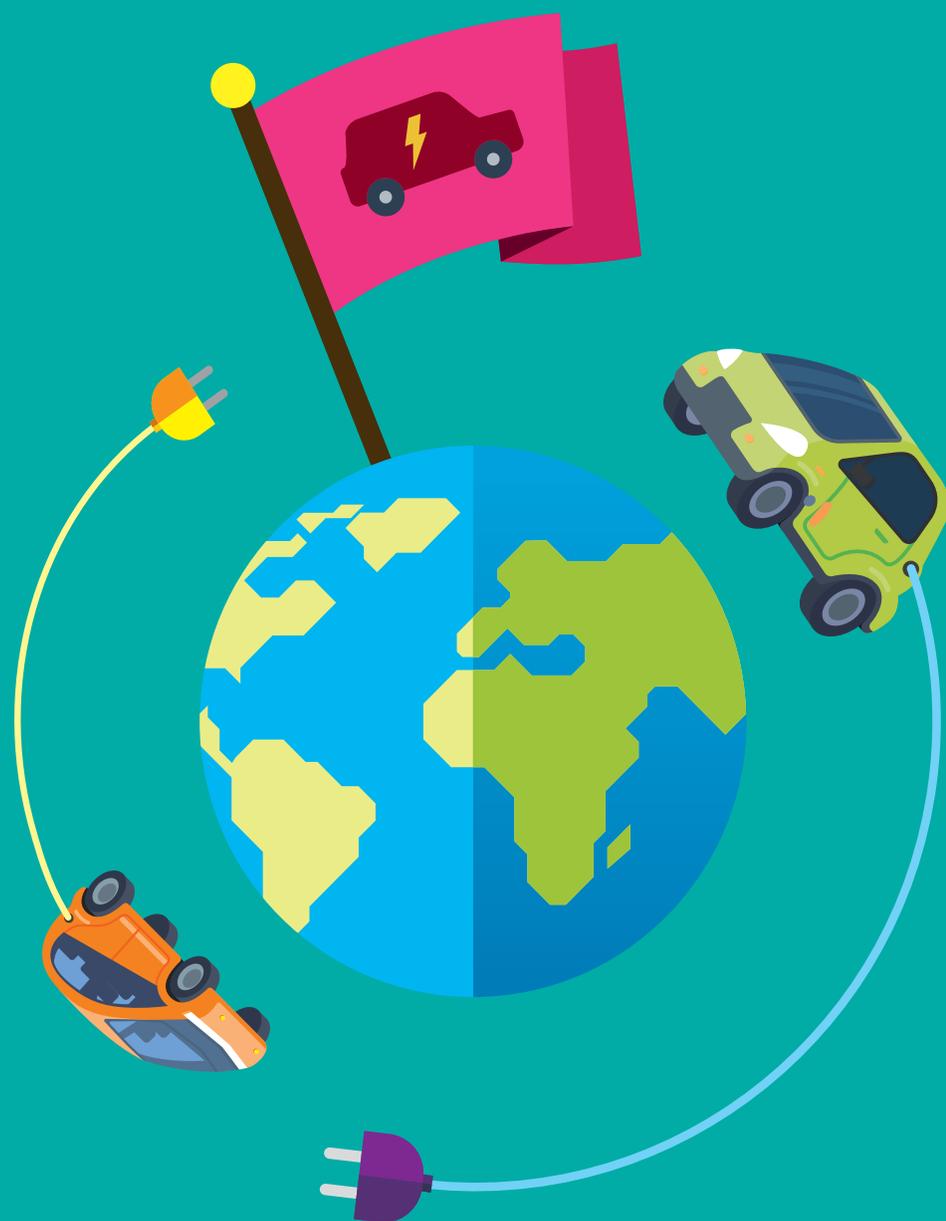
Then, it will occupy its rightful position, nothing more, nothing less.

It would be unrealistic, futile and even dangerous to expect or demand that the EV completely take over and replace fuel-powered vehicles entirely. Once again, the instructive case of Norway – where all the economic and technical conditions as well as those of society have come together for several years to maximise EV sales – shows that non-rechargeable fuel-powered vehicles still appeal to one out of every two motorists.

# 4

## COUNTRIES OF L'OBSERVATOIRE CETELEM

The survey of motorists' perceptions about electric vehicles was conducted in 16 countries, in Europe and around the world. In the following pages, you will find the profiles, buying intentions and reasons for not buying an EV of the motorists interviewed in each country.



## BELGIUM

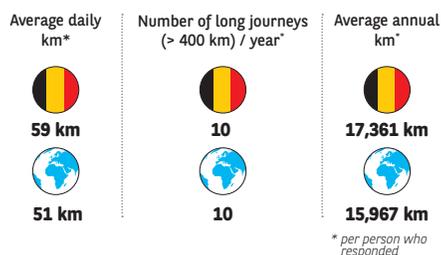
### VEHICLE FLEET



### 2017 MARKET SHARES



### MOTORIST PROFILE



### WHAT THE BELGIANS SAY ABOUT EVS

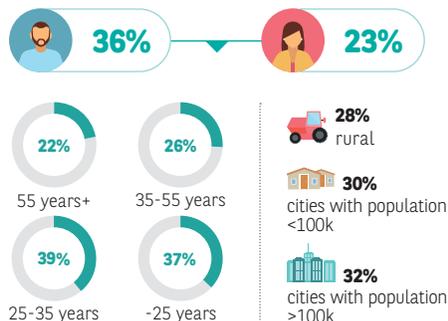


### EV MARKET SHARE IN 2030

according to those who responded



### TYPICAL PROFILE OF THE FUTURE EV BUYER\*

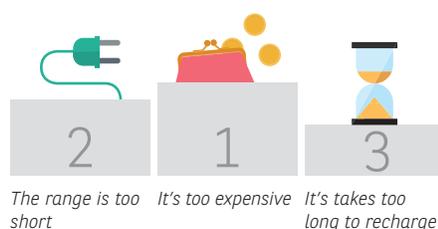


\* share of those who responded in each group intending to buy an EV within 5 years

### INTENTIONS TO PURCHASE AN EV...



### REASONS FOR NOT BUYING AN EV



### OVERVIEW

In a similar way to other North European countries, Belgium has a less optimistic view of the future of the EV than the rest of the world. Those who responded admit to being poorly informed about EVs, and Belgians account for the highest proportion of those who do not know how an EV works. The price is cited as the main obstacle to purchase. This is one of the highest rates among the countries surveyed.

## BRAZIL

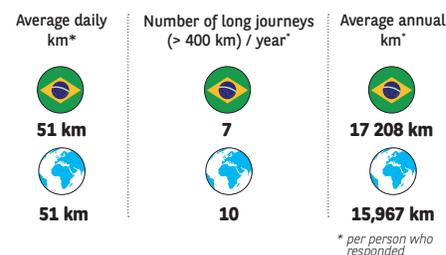
### VEHICLE FLEET



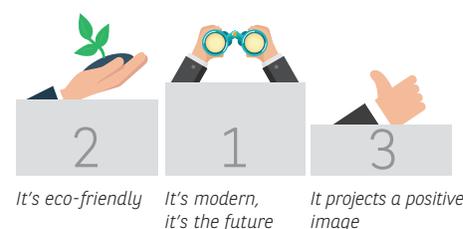
### 2017 MARKET SHARES



### MOTORIST PROFILE

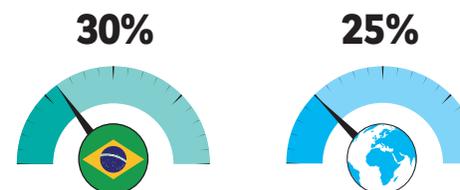


### WHAT THE BRAZILIANS SAY ABOUT EVS

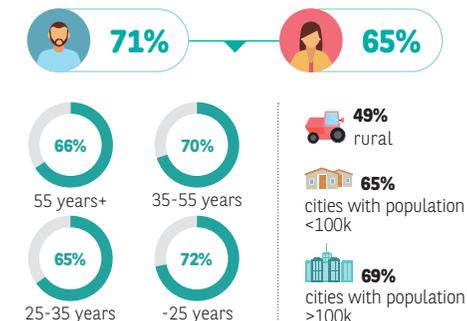


### EV MARKET SHARE IN 2030

according to those who responded



### TYPICAL PROFILE OF THE FUTURE EV BUYER\*

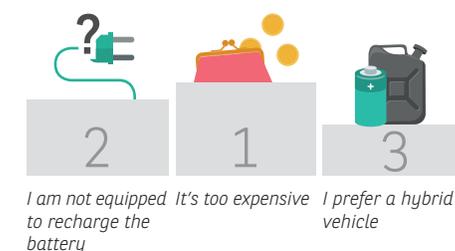


\* share of those who responded in each group intending to buy an EV within 5 years

### INTENTIONS TO PURCHASE AN EV...



### REASONS FOR NOT BUYING AN EV



### OVERVIEW

Brazil has a very optimistic view of the future of the EV, i.e. the highest in the world, equal with Mexico. It has one of the highest 5-year purchase intention rates. Brazilians have a demand for more public subsidies for EVs that is well above the global average (the Brazilian government has chosen to give added support to the ethanol sector). As for the price, this is the main obstacle to purchasing, very far in front of the concerns regarding range.

# CHINA

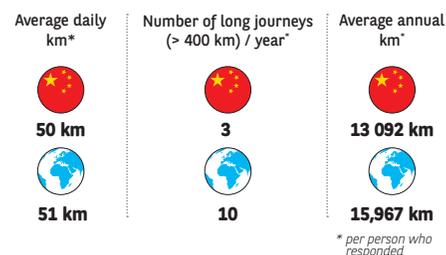
## VEHICLE FLEET



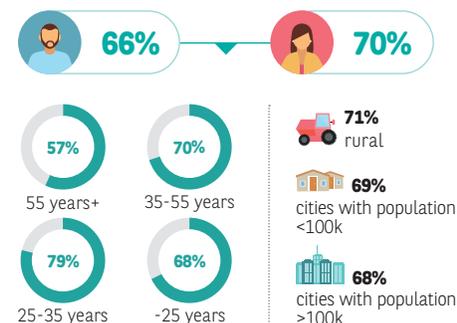
## 2017 MARKET SHARES



## MOTORIST PROFILE

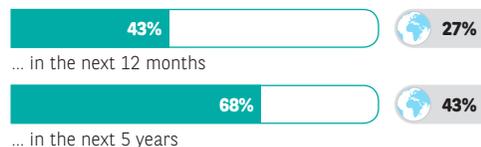


## TYPICAL PROFILE OF THE FUTURE EV BUYER\*



\* share of those who responded in each group intending to buy an EV within 5 years

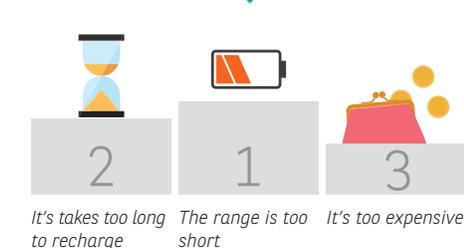
## INTENTIONS TO PURCHASE AN EV...



## WHAT THE CHINESE SAY ABOUT EVS



## REASONS FOR NOT BUYING AN EV



## EV MARKET SHARE IN 2030

according to those who responded



## OVERVIEW

China has the highest purchase intention rate (within a 12-month period), with a very high confidence in the future of the EV.  
The Chinese people who responded are by far the best informed about the availability of public subsidies. They are also the most convinced of the ecological benefits, especially in dense urban areas.  
The range and charging time are the main obstacles to buying, outstripping the price by a long way.

# FRANCE

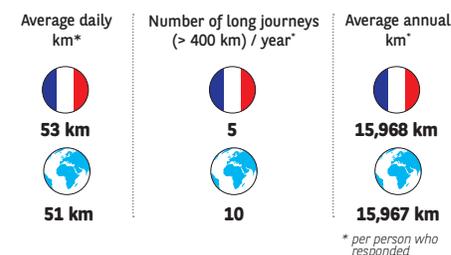
## VEHICLE FLEET



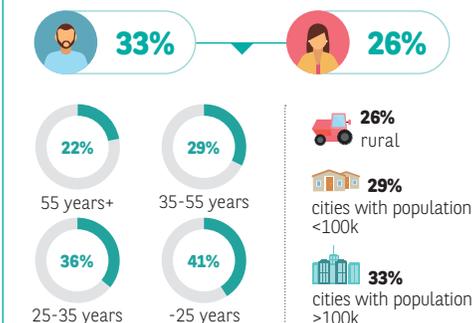
## 2017 MARKET SHARES



## MOTORIST PROFILE



## TYPICAL PROFILE OF THE FUTURE EV BUYER\*

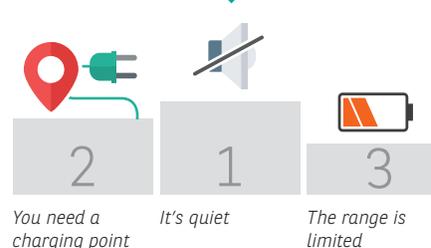


\* share of those who responded in each group intending to buy an EV within 5 years

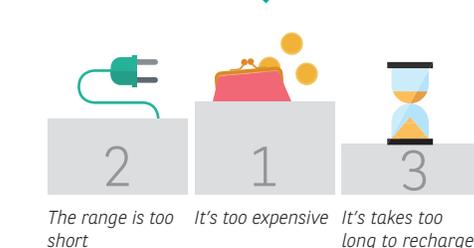
## INTENTIONS TO PURCHASE AN EV...



## WHAT THE FRENCH SAY ABOUT EVS



## REASONS FOR NOT BUYING AN EV



## EV MARKET SHARE IN 2030

according to those who responded



## OVERVIEW

France is the country where those who responded are most aware of the availability of subsidies to buy an EV and the best informed about this type of vehicle.  
The French are both the most sensitive to the potential of the EV to reduce pollution in urban areas but also the most pessimistic about its future.

# GERMANY

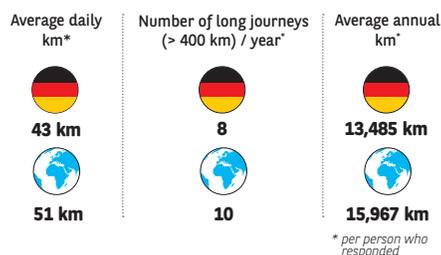
## VEHICLE FLEET



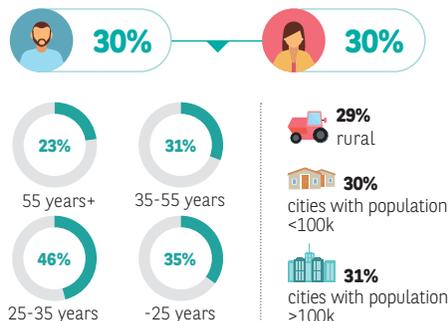
## 2017 MARKET SHARES



## MOTORIST PROFILE



## TYPICAL PROFILE OF THE FUTURE EV BUYER\*

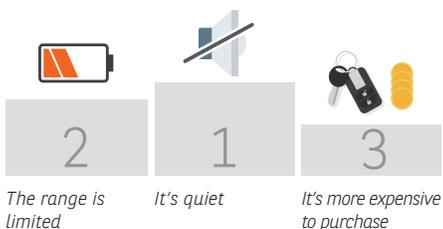


\* share of those who responded in each group intending to buy an EV within 5 years

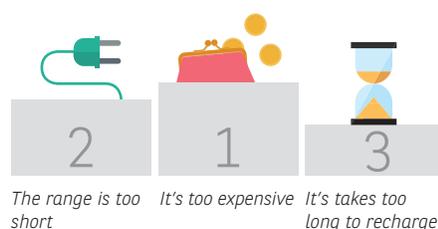
## INTENTIONS TO PURCHASE AN EV...



## WHAT THE GERMANS SAY ABOUT EVS



## REASONS FOR NOT BUYING AN EV



## WHAT THE ITALIANS SAY ABOUT EVS

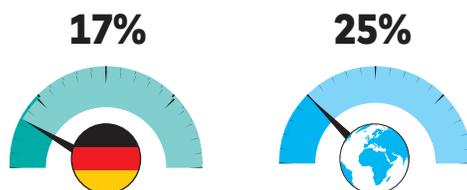


## REASONS FOR NOT BUYING AN EV



## EV MARKET SHARE IN 2030

according to those who responded



## OVERVIEW

Germany is the country where the proportion of those who are optimistic about the EV's future is the lowest in the world.

The Germans are the most likely to believe that the EV is reserved for those who live in big cities and cover short distances. These are the least likely to apply for EV subsidies and the most sensitive to the limited range and cost of buying an EV.

# ITALY

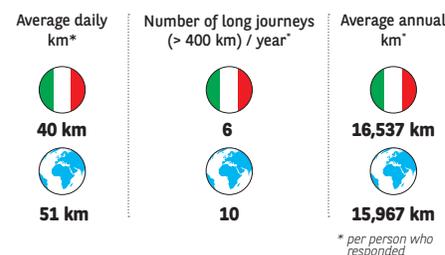
## VEHICLE FLEET



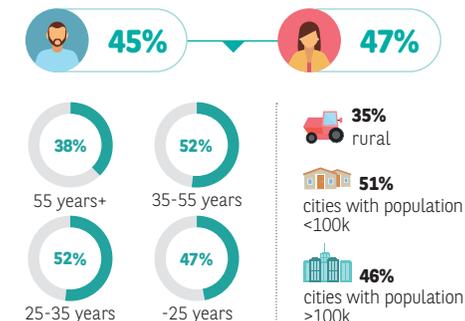
## 2017 MARKET SHARES



## MOTORIST PROFILE



## TYPICAL PROFILE OF THE FUTURE EV BUYER\*



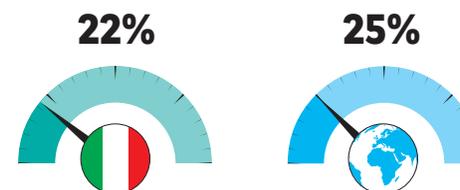
\* share of those who responded in each group intending to buy an EV within 5 years

## INTENTIONS TO PURCHASE AN EV...



## EV MARKET SHARE IN 2030

according to those who responded



## OVERVIEW

Italy is very confident about the future of the EV, unlike the North European countries, but those who responded specify a 2030 market share that is lower than the world average.

Many say they know how an EV works, although they still have a strong preference for hybrid vehicles.

In any case, there is a high demand for more public subsidies.

# JAPAN

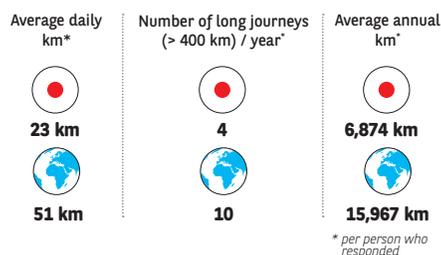
## VEHICLE FLEET



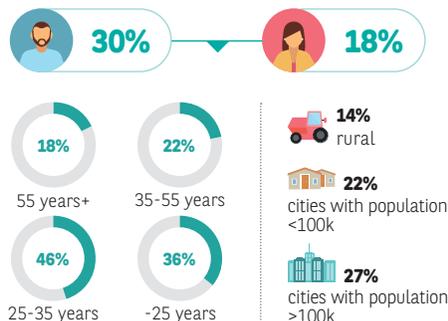
## 2017 MARKET SHARES



## MOTORIST PROFILE



## TYPICAL PROFILE OF THE FUTURE EV BUYER\*

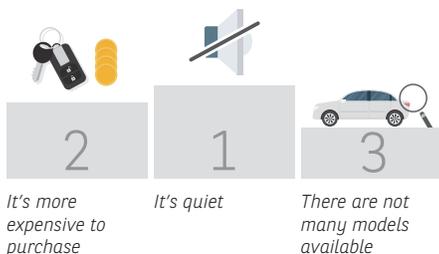


\* share of those who responded in each group intending to buy an EV within 5 years

## INTENTIONS TO PURCHASE AN EV...



## WHAT THE JAPANESE SAY ABOUT EVS



## EV MARKET SHARE IN 2030

according to those who responded



## REASONS FOR NOT BUYING AN EV



## OVERVIEW

In the country of Nissan and Toyota, the vision for the future of the EV is slightly more pessimistic than the world average.

The Japanese who responded are the highest in number who reported a lack of information on the EV and their intention to purchase within 5 years is the lowest in the world.

These are the most sensitive to the narrow range of different models, and a very high proportion consider EVs dangerous because of the batteries.

# MEXICO

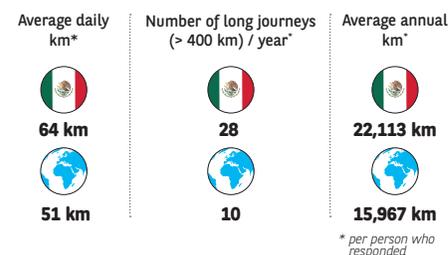
## VEHICLE FLEET



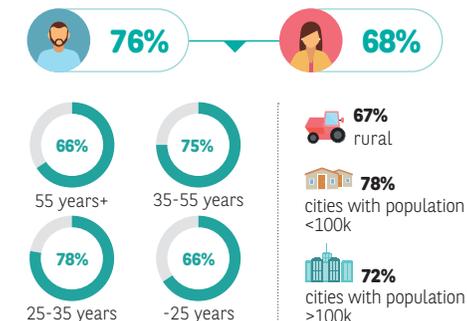
## 2017 MARKET SHARES



## MOTORIST PROFILE



## TYPICAL PROFILE OF THE FUTURE EV BUYER\*



\* share of those who responded in each group intending to buy an EV within 5 years

## INTENTIONS TO PURCHASE AN EV...

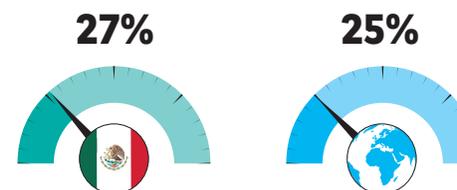


## WHAT THE MEXICANS SAY ABOUT EVS

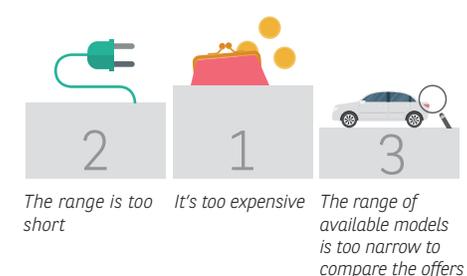


## EV MARKET SHARE IN 2030

according to those who responded



## REASONS FOR NOT BUYING AN EV



## OVERVIEW

Mexico is more optimistic about the future of the EV, as is Brazil.

The Mexicans' intention to purchase within 5 years is the highest, but this figure is low for the 12-month period.

This country has the largest proportion of those who responded who find EVs to be too expensive, while they are the most willing to make an extra effort to buy one rather than a fuel-powered vehicle.

# NORWAY

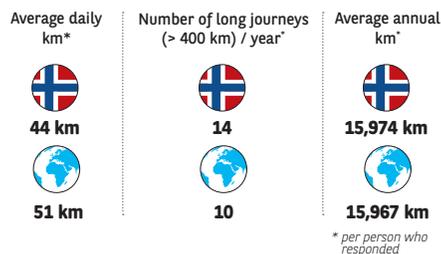
## VEHICLE FLEET



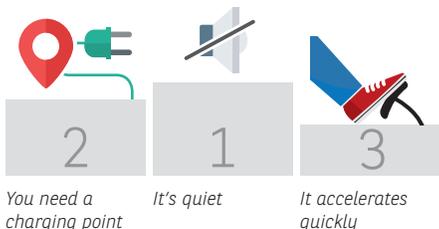
## 2017 MARKET SHARES



## MOTORIST PROFILE



## WHAT THE NORWEGIANS SAY ABOUT EVS

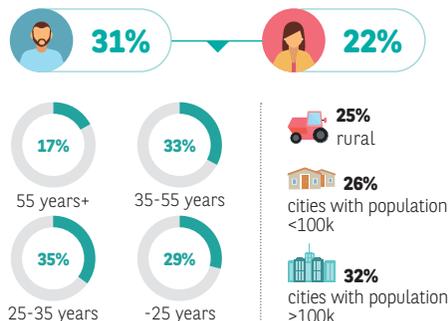


## EV MARKET SHARE IN 2030

according to those who responded



## TYPICAL PROFILE OF THE FUTURE EV BUYER\*

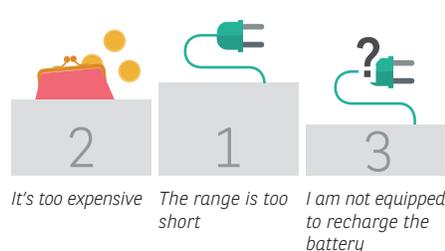


\* share of those who responded in each group intending to buy an EV within 5 years

## INTENTIONS TO PURCHASE AN EV...



## REASONS FOR NOT BUYING AN EV



## OVERVIEW

It is in Norway that the electric vehicle is the most established and widely accepted.

Yet many Norwegians interviewed say they do not believe in its future and the proportion of «purchase intentions» is decreasing for the next 5 years.

They believe that they are well informed and the demand for more subsidies is low. This is the country where we find the highest proportion of people who claim that EVs are cheaper (purchase + running costs) than fuel-powered vehicles.

# POLAND

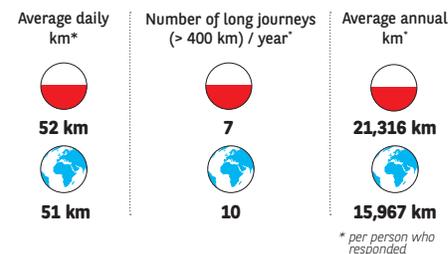
## VEHICLE FLEET



## 2017 MARKET SHARES



## MOTORIST PROFILE



## WHAT THE POLISH SAY ABOUT EVS

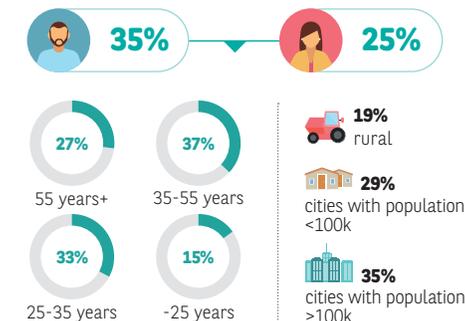


## EV MARKET SHARE IN 2030

according to those who responded



## TYPICAL PROFILE OF THE FUTURE EV BUYER\*



\* share of those who responded in each group intending to buy an EV within 5 years

## INTENTIONS TO PURCHASE AN EV...



## REASONS FOR NOT BUYING AN EV



## OVERVIEW

Poland has the highest proportion of those who responded, who claim that they understand how an EV works.

The Poles have the highest confidence about the future of the EV in Europe. It is also among the highest in the world. They are among the most likely to spend more on buying an EV than a fuel-powered vehicle.

However, the forecasts in terms of market share are still low, with a very low intention to purchase within 5 years.

# PORTUGAL

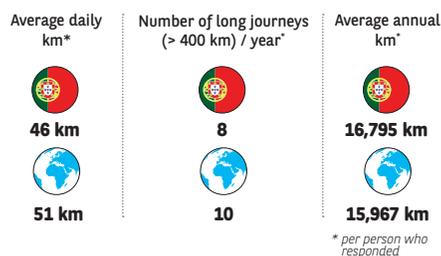
## VEHICLE FLEET



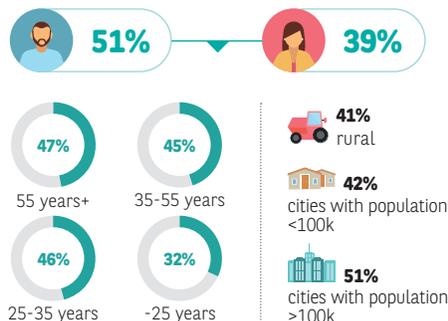
## 2017 MARKET SHARES



## MOTORIST PROFILE



## TYPICAL PROFILE OF THE FUTURE EV BUYER\*



\* share of those who responded in each group intending to buy an EV within 5 years

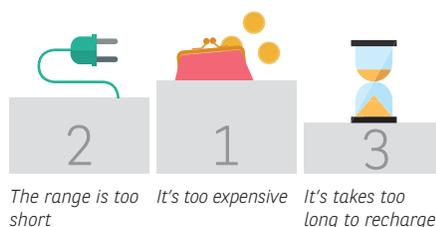
## INTENTIONS TO PURCHASE AN EV...



## WHAT THE PORTUGUESE SAY ABOUT EVS



## REASONS FOR NOT BUYING AN EV



## EV MARKET SHARE IN 2030

according to those who responded



## OVERVIEW

Portugal is the West European country that believes most in the future of the EV. The Portuguese are many in seeing its ecological potential and capacity to solve the pollution problems of dense urban areas. But those who responded find it too expensive to buy. They are, as a result, among the most numerous in the world to ask for more public subsidies.

# SOUTH AFRICA

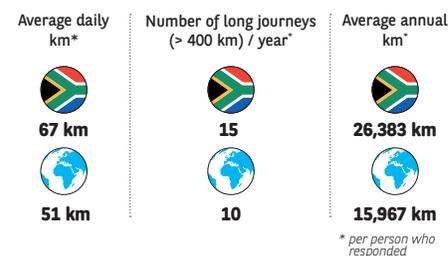
## VEHICLE FLEET



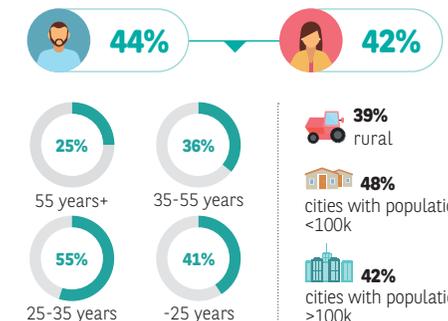
## 2017 MARKET SHARES



## MOTORIST PROFILE



## TYPICAL PROFILE OF THE FUTURE EV BUYER\*

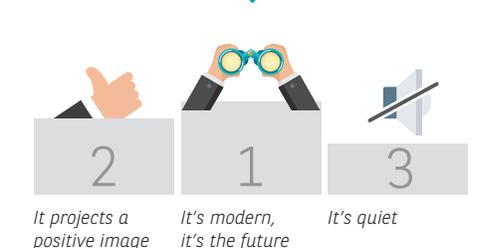


\* share of those who responded in each group intending to buy an EV within 5 years

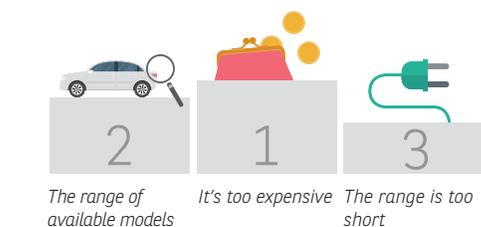
## INTENTIONS TO PURCHASE AN EV...



## WHAT THE SOUTH AFRICANS SAY ABOUT EVS

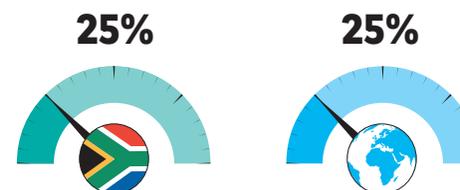


## REASONS FOR NOT BUYING AN EV



## EV MARKET SHARE IN 2030

according to those who responded



## OVERVIEW

South Africa has a vision of the future of the EV that is more optimistic than the global average and a 2030 market share that is the same as the world average. It is in this country that those who responded report the greatest lack of information on EVs. Many of them mention that there are no public subsidies for EVs, whereas the perception of this type of vehicle is very positive.

# SPAIN

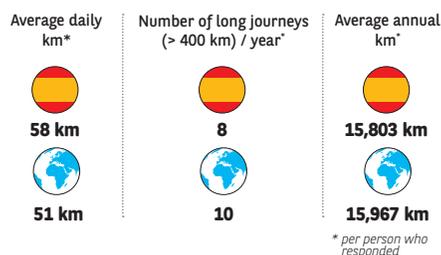
## VEHICLE FLEET



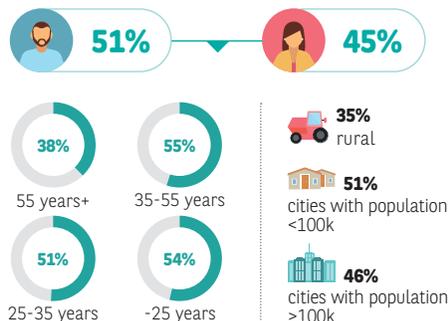
## 2017 MARKET SHARES



## MOTORIST PROFILE



## TYPICAL PROFILE OF THE FUTURE EV BUYER\*



\* share of those who responded in each group intending to buy an EV within 5 years

## INTENTIONS TO PURCHASE AN EV...



## WHAT THE SPANISH SAY ABOUT EVS



## REASONS FOR NOT BUYING AN EV



## WHAT THE TURKS SAY ABOUT EVS

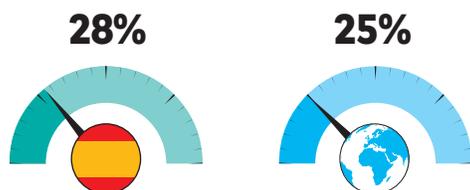


## REASONS FOR NOT BUYING AN EV



## EV MARKET SHARE IN 2030

according to those who responded



## OVERVIEW

In Spain, the car is perceived as an unparalleled source of freedom, to the point where it is double that of the rest of the world. The Spanish, who were interviewed, are disappointed with a lack of information on EVs, much more so than other European countries. They have a high level of confidence in their future, even though they have the highest proportion of people in the world who say they prefer hybrid vehicles.

# TURKEY

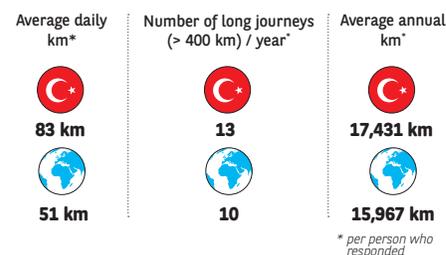
## VEHICLE FLEET



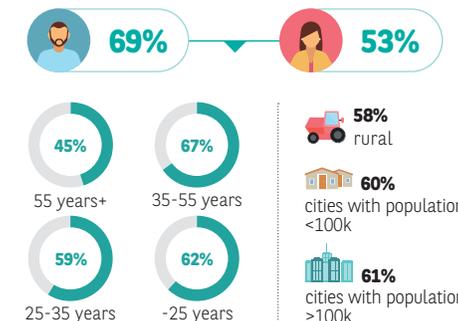
## 2017 MARKET SHARES



## MOTORIST PROFILE



## TYPICAL PROFILE OF THE FUTURE EV BUYER\*



\* share of those who responded in each group intending to buy an EV within 5 years

## INTENTIONS TO PURCHASE AN EV...



## EV MARKET SHARE IN 2030

according to those who responded



## OVERVIEW

In Turkey, the «pro-EV» people who responded strongly believe in the future of the EV. Their purchase intentions within 1 year and 5 years are very high compared to the world average. They report the highest demand for more public subsidies to promote EVs and their perception of EVs as an «eco-friendly» product is among the highest.

## UNITED KINGDOM

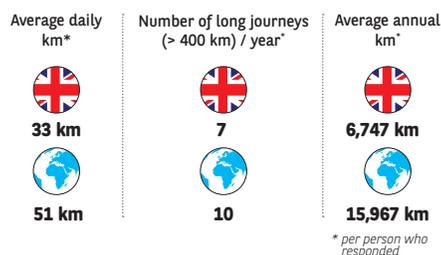
### VEHICLE FLEET



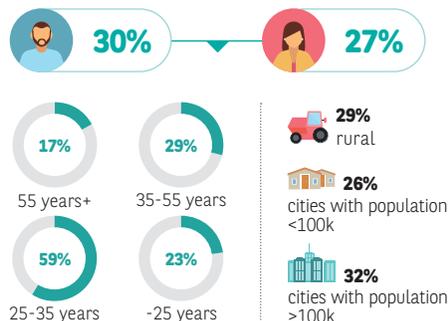
### 2017 MARKET SHARES



### MOTORIST PROFILE



### TYPICAL PROFILE OF THE FUTURE EV BUYER\*

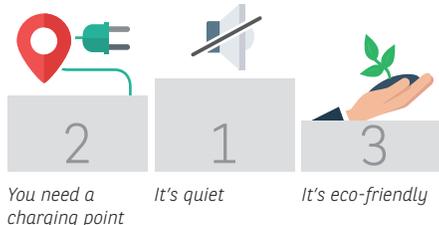


\* share of those who responded in each group intending to buy an EV within 5 years

### INTENTIONS TO PURCHASE AN EV...



### WHAT THE BRITISH SAY ABOUT EVS

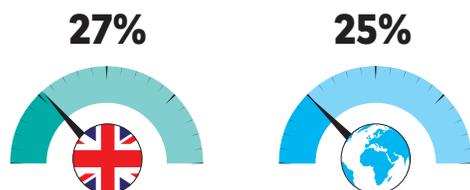


### REASONS FOR NOT BUYING AN EV



### EV MARKET SHARE IN 2030

according to those who responded



### OVERVIEW

In the United Kingdom, annual and daily mileages are the lowest of the countries covered by the study. The British are the least confident in the future of the EV. Yet, paradoxically, they attribute a 2030 market share to it that is bigger than the world average. Finally, they have the lowest proportion of those who expect more public subsidies for EVs.

## UNITED STATES

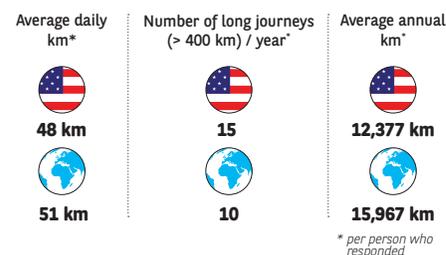
### VEHICLE FLEET



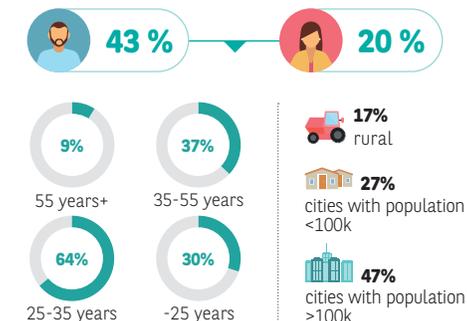
### 2017 MARKET SHARES



### MOTORIST PROFILE



### TYPICAL PROFILE OF THE FUTURE EV BUYER\*



\* share of those who responded in each group intending to buy an EV within 5 years

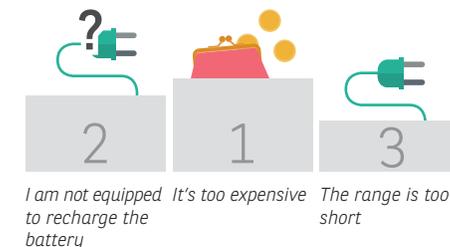
### INTENTIONS TO PURCHASE AN EV...



### WHAT THE AMERICANS SAY ABOUT EVS

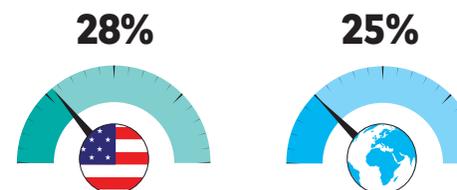


### REASONS FOR NOT BUYING AN EV



### EV MARKET SHARE IN 2030

according to those who responded



### OVERVIEW

It is in the United States that those who responded are the most pessimistic about the future of the EV. They still give it a high 2030 market share compared to the rest of the world. They have one of the lowest percentages of people demanding more subsidies. They are among the least convinced of the ecological benefit of EVs, and their intentions to purchase within 12 months and 5 years are well below the world average.

# APPENDICES



## New passenger car market, NPC

	2016	2017	2018*	2017-2018 variation	2019*	2018-2019 variation
France	2,015,177	2,110,748	2,200,000	4.2%	2,100,000	-4.5%
Italy	1,824,968	1,970,497	1,980,000	0.5%	2,000,000	1.0%
Spain	1,147,007	1,234,931	1,335,000	8.1%	1,370,000	2.6%
Portugal	207,345	222,134	235,000	5.8%	235,000	0.0%
Belgium-Luxembourg	590,080	599,333	610,000	1.8%	600,000	-1.6%
United Kingdom	2,692,786	2,540,617	2,400,000	-5.5%	2,300,000	-4.2%
Germany	3,351,607	3,441,261	3,550,000	3.2%	3,500,000	-1.4%
Netherlands	382,825	414,538	450,000	8.6%	420,000	-6.7%
Poland	416,123	484,190	530,000	9.5%	500,000	-5.7%
Czech Republic	259,693	271,595	270,000	-0.6%	260,000	-3.7%
Slovakia	88,165	95,976	100,000	4.2%	100,000	0.0%
Hungary	96,552	116,265	135,000	16.1%	120,000	-11.1%
<b>Total of 13 countries</b>	<b>13,072,328</b>	<b>13,502,085</b>	<b>13,795,000</b>	<b>2.2%</b>	<b>13,505,000</b>	<b>-2.1%</b>
Europe 27 + EFTA <sup>(1)</sup>	15,160,239	15,606,865	16,000,000	2.5%	15,600,000	-2.5%
Japan	4,146,459	3,850,000	3,734,500	-3.0%	3,750,000	0.4%
United States	17,550,394	17,230,436	17,200,000	-0.2%	16,800,000	-2.3%
China	24,376,902	24,950,000	26,300,000	5.4%	27,000,000	2.7%
Brazil	1,676,722	1,840,000	2,080,000	13.0%	2,300,000	10.6%
Turkey	756,938	735,000	700,000	-4.8%	700,000	0.0%

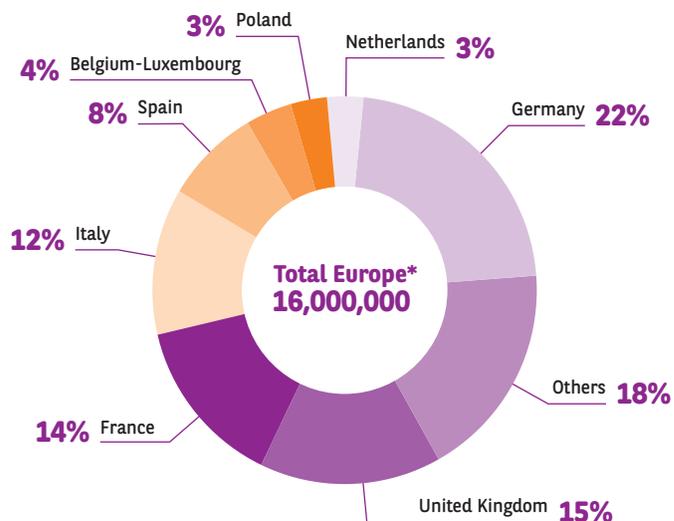
\*Estimates and forecasts from L'Observatoire Cetelem de l'Automobile  
(1) Europe 27 (excl. Malta) + Norway, Switzerland and Iceland  
Sources: OICA, ACEA, L'Observatoire Cetelem de l'Automobile

## New light vehicles market, NLV

	2016	2017	2018*	2017-2018 variation	2019*	2018-2019 variation
World	91,134,151	93,254,000	97,000,000	4.0%	99,000,000	2.1%

\*Estimates and forecasts from L'Observatoire Cetelem de l'Automobile  
Source: L'Observatoire Cetelem de l'Automobile

**New passenger car registrations in Europe\* in 2017**



\*Europe 27 (excl. Malta) + Norway, Switzerland and Iceland  
Sources: ACEA, L'Observatoire Cetelem de l'Automobile

**Household purchase rate in 8 countries**

The calculation is strictly based on car registrations for private use only

	Total NPC registrations in 2018*	Private individuals' share	Company car share	Private passenger car registrations	Number of households	Household purchase rate
France	2,200,000	0.49	0.51	1,078,000	29,314,400	3.7%
Italy	1,980,000	0.57	0.43	1,128,600	25,864,700	4.4%
Spain	1,335,000	0.47	0.53	622,408	18,512,500	3.4%
Portugal	235,000	0.46	0.54	108,100	4,102,700	2.6%
Germany	3,550,000	0.35	0.65	1,242,500	40,722,600	3.1%
United Kingdom	2,400,000	0.45	0.55	1,072,800	28,822,300	3.7%
Belgium-Luxembourg	610,000	0.46	0.54	280,600	5,004,100	5.6%
<b>Total</b>	<b>12,310,000</b>	<b>0.45</b>	<b>0.55</b>	<b>5,533,008</b>	<b>152,343,300</b>	<b>3.6%</b>

\*Estimates and forecasts from L'Observatoire Cetelem de l'Automobile  
Sources: ACEA, French National Statistics Offices, Manufacturers' Federations

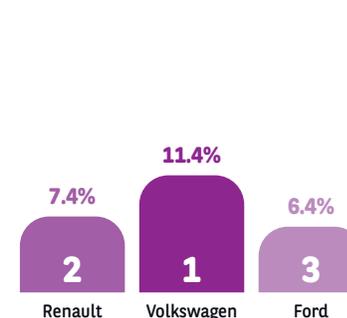
**Main brands in Europe**

	2018 market share (6-months)	2017 market share (6-months)	2017-2018 variation		2018 market share (6-months)	2017 market share (6-months)	2017-2018 variation
VOLKSWAGEN	11.4%	10.7%	+9.4%	SEAT	2.9%	2.5%	+19.4%
RENAULT	7.4%	7.5%	+0.47%	VOLVO CAR CORP.	1.9%	1.8%	+6.8%
FORD	6.4%	6.9%	-4.1%	MINI	1.3%	1.3%	+2.9%
PEUGEOT	6.3%	6.0%	+8.9%	JEEP	1.0%	0.6%	+68.1%
OPEL/VAUXHALL	5.8%	0.0%		HONDA	0.9%	0.9%	+2.8%
MERCEDES	5.2%	5.4%	-1.9%	LAND ROVER	0.8%	1.0%	-14.8%
AUDI	5.0%	5.2%	-1.6%	SMART	0.6%	0.6%	-0.4%
FIAT	5.0%	5.6%	-9.0%	ALFA ROMEO	0.6%	0.5%	+8.1%
BMW	4.9%	5.1%	-1.1%	PORSCHE	0.5%	0.5%	+9.3%
SKODA	4.6%	4.3%	+9.0%	JAGUAR	0.5%	0.5%	+2.9%
TOYOTA	4.5%	4.3%	+6.4%	LANCIA/CHRYSLER	0.3%	0.5%	-27.4%
CITROEN	3.9%	3.9%	+3.6%	DS	0.3%	0.3%	+6.1%
HYUNDAI	3.4%	3.2%	+7.8%	LEXUS	0.3%	0.3%	+10.3%
DACIA	3.3%	3.0%	+16.2%	LADA	0.0%	0.0%	+10.8%
NISSAN	3.3%	3.8%	-10.5%	GM	0.0%	6.1%	-99.7%
KIA	3.1%	3.0%	+5.3%	ALPINE	0.0%	0.0%	

Source: ACEA

**The TOP 3 brands in Europe in 2018**

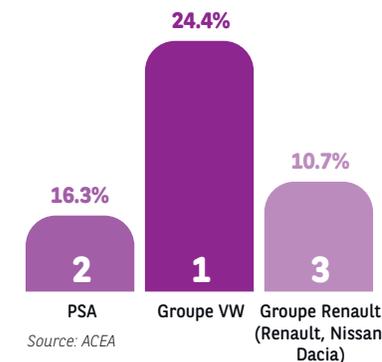
Market share over first six months of 2018



Source: ACEA

**The TOP 3 groups in Europe in 2018**

Market share over first six months of 2018



Source: ACEA

**The new vehicle market in France**

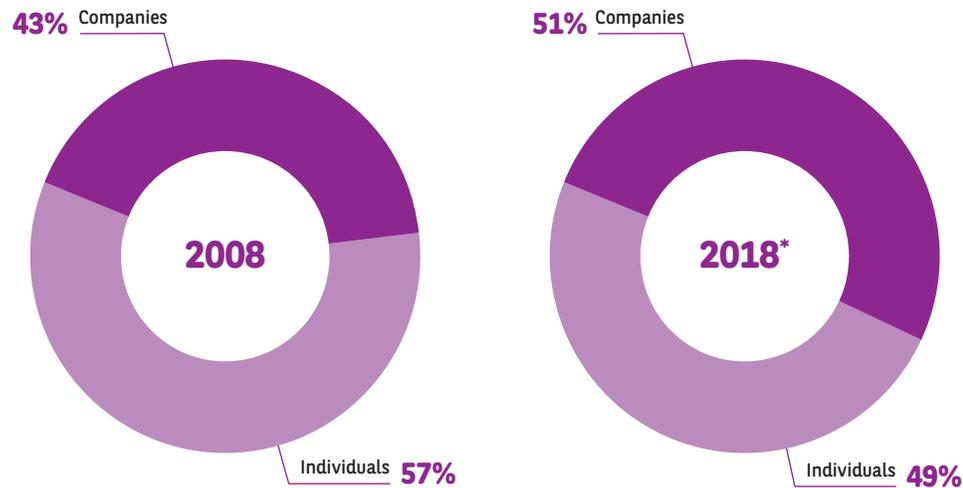
In number of registrations

	2013	2014	2015	2016	2017	2018*
NPC New passenger car	1,790,456	1,795,885	1,917,226	2,015,177	2,110,748	<b>2,200,000</b>
LCV Light commercial vehicle	367,334	372,074	379,424	397,085	438,645	<b>461,000</b>

\*Estimates and forecasts from L'Observatoire Cetelem de l'Automobile  
Source: C-Ways according to SIV

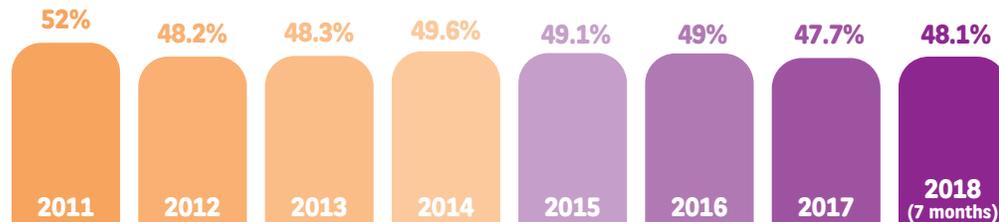
**Structure of the new passenger car market in France**

In %



\*Estimates and forecasts from L'Observatoire Cetelem de l'Automobile  
Source: CCFA

**NPC market share of French brands\* in France**



\*Citroën, Peugeot, Renault, DS  
Source: CCFA

**Used vehicle market structure in France**

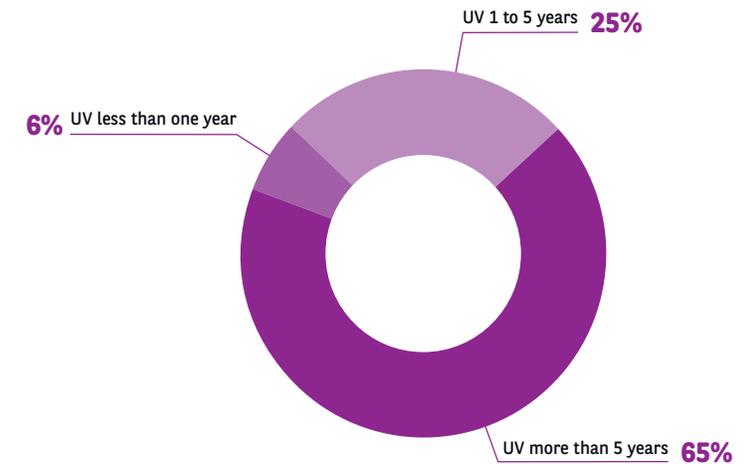
In number of registrations

	First 6 months of 2018	2017-2018 variation	2018 estimate*
UV** less than one year	271,462	3.5%	536,000
UV** 1 to 5 years	723,438	5.4%	1,420,000
UV** more than 5 years	1,870,943	-4.7%	3,634,000
<b>Total UV**</b>	<b>2,865,843</b>	<b>-1.5%</b>	<b>5,590,000</b>

\*Estimates and forecasts from L'Observatoire Cetelem de l'Automobile  
\*\*Used vehicles  
Source: CCFA

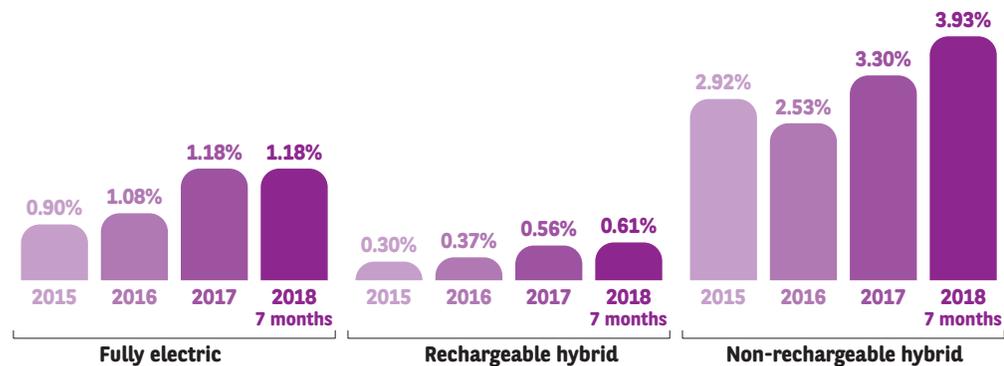
**Structure of the used vehicle market in France in 2018\***

In %



\*Estimates and forecasts from L'Observatoire Cetelem de l'Automobile  
Source: CCFA

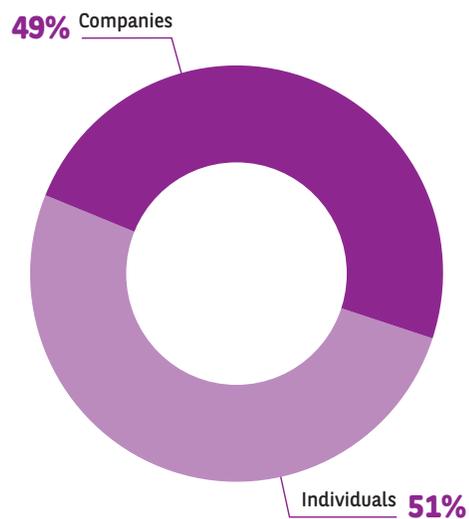
Change in electric market share in France



Source: C-Ways according to SIV

The structure of the market for new fully electric vehicles in France in 2017

In %



Source: C-Ways according to SIV

The TOP «electric» brands in France. NPC in 2018

Market share over first 7 months of 2018

	2018 market share (7 months)	2017 market share (7 months)	2017-2018 variation
Renault	54.17%	66.72%	-13.48%
Nissan	17.23%	10.73%	+71.22%
BMW	4.69%	3.00%	+66.37%
Peugeot	4.43%	3.78%	+24.78%
SMART	4.41%	1.52%	+209.57%
Tesla	4.20%	4.68%	-4.23%
Citroën	3.46%	2.84%	+30.00%
Kia	2.72%	3.36%	-13.92%
Hyundai	1.95%	1.41%	+47.20%
Volkswagen	1.94%	1.33%	+54.95%
Bolloré	0.64%	0.11%	+550%
Jaguar	0.15%	0%	0%
Autres	0.01%	0.06%	-77.78%
Mitsubishi	0%	0.45%	-100%
Mercedes Benz	0%	0.01%	-100%

Source: SIV

**Ranking of fully electric NPC models in France in 2018**

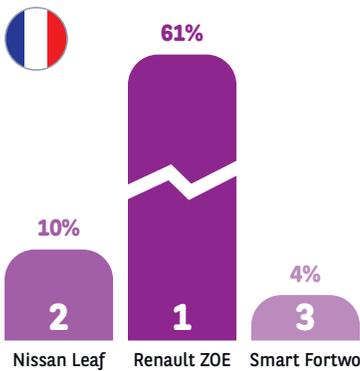
Market share over first 6 months of 2018

	2018 market share (6-months)	2017-2018 variation		2018 market share (6-months)	2017-2018 variation
Renault ZOE	55.68%	-13.4%	Volkswagen Golf	1.22%	+120.0%
Nissan Leaf	15.63%	+65.2%	Smart Forfour	0.91%	+403.8%
BMW i3	4.48%	+72.2%	Citroën e-mehari	0.80%	-29.0%
Smart Fortwo	3.33%	+374.3%	Volkswagen up!	0.70%	-4.7%
Peugeot Ion	2.84%	-21.2%	Citroën Berlingo	0.61%	-
Kia Soul	2.83%	-6.0%	Bolloré Bluecar	0.59%	+750.0%
Tesla Model S	2.77%	-4.3%	Nissan nv200	0.25%	-41.9%
Hyundai Ioniq	1.98%	+54.9%	Jaguar i-pace	0.15%	-
Citroën c-zero	1.95%	+53.8%	Mitsubishi i-miev	0.00%	-100.0%
Peugeot Partner	1.67%	-	Bolloré Bluesummer	0.00%	-100.0%
Tesla Model X	1.60%	+0.9%	Mercedes classe B	0.00%	-100.0%

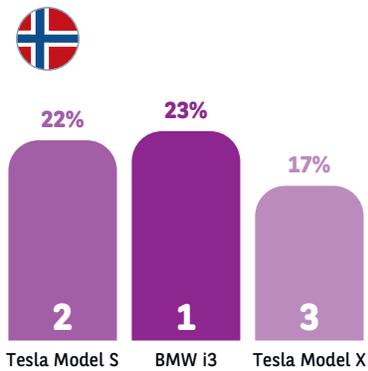
Source: SIV

**Comparison of the top EV models in France and Norway in 2017**

Market share



Source: SIV



Source: AutoActu.com

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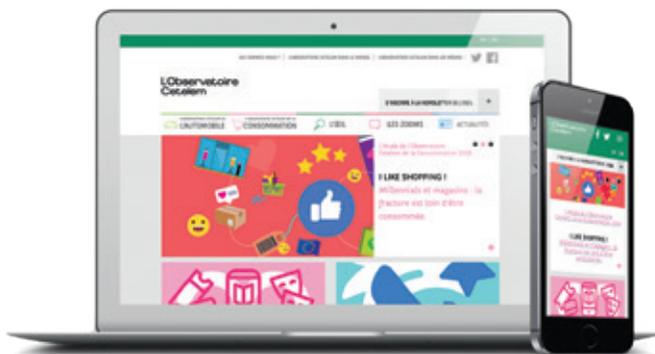
- *L'Œil, casting a light on the latest consumer developments.*  
A look at new ways of addressing the market and new consumer attitudes.
- *ZOOMS, a glimpse of today's lifestyles.*  
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