AND
Small Profitable

WHY AFFORDABLE ELECTRIC CARS IN 2025 ARE FEASIBLE

TRANSPORT & ENVIRONMENT

Transport & Environment

Published: September 2023

Author: Anna Krajinska
Expert group: Julia Poliscanova, Lucien Mathieu, Griffin Carpenter

Editeur responsable: William Todts, Executive Director

To cite this report
Transport & Environment (2023). Small and profitable: why affordable electric cars in 2025 are feasible

Further information

Anna Krajinska
Manager, Vehicle Emissions and Air Quality
Transport & Environment
anna.krajinska@transportenvironment.org
www.transportenvironment.org | @transenv | fb: Transport & Environment

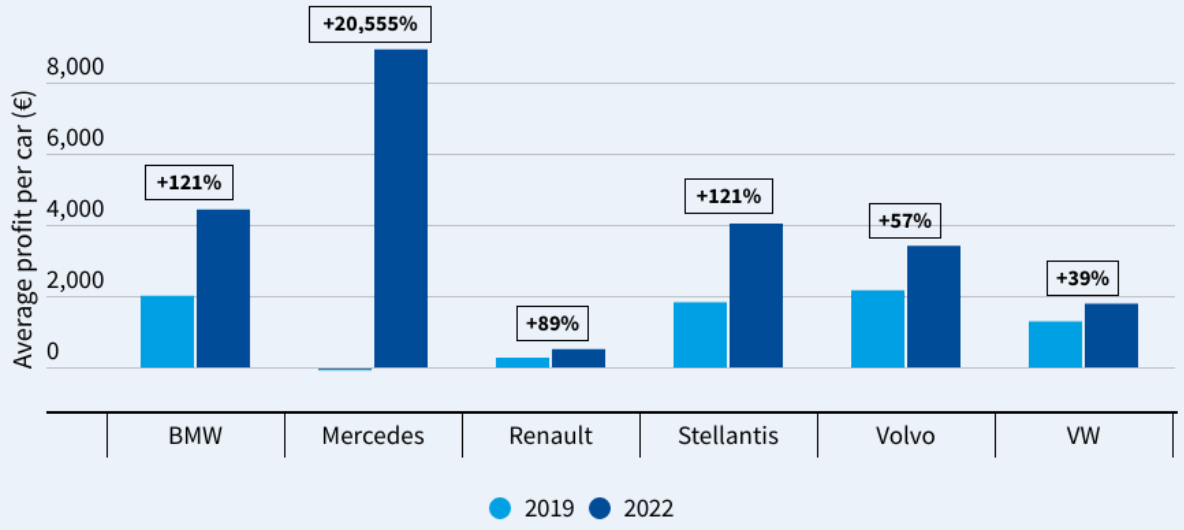
Executive Summary

As Europe transitions to electric cars at scale and speed to match its climate ambitions, they need to become accessible to a wide pool of commercial and private drivers that need cars in their daily work and life. Many in the industry are talking about a €25k battery electric car (BEV), before subsidies, as the gold standard for mass affordability. But car prices are determined by many factors, including their size and market segment, the costs of components and materials, as well as the corporate mark-ups and profit margins. In this paper T&E looks at the EU car market in the last few years, car prices and automaker product strategies to answer the following question: is a €25k made-in-Europe BEV possible by 2025?

Higher profits per car despite the supply chain crunch

Anyone trying to purchase a car recently knows that car prices shot up following the Covid-19 pandemic. What is less known is that so have automakers' profits. For the six carmakers analysed by T&E (BMW, Mercedes, Renault, Stellantis, Volvo Cars and Volkswagen) the revenue, or the gross income, per new car has increased significantly: between 33% and 52% between 2019-2022, or around 3-4 times more than inflation in the same period. This means car prices in Europe have grown 17%-34% on top of inflation.

More importantly, the amount of net profit per car - minus the higher costs of raw materials and labour - also increased from between -€40 to €1,920 in 2019, to €510 to €8,940 in 2022 in real, or inflation-adjusted values. This increase in profits accounts for up to 94% of all revenue generated over the same period. This means carmakers' race for profits, rather than supply chain problems, are at the heart of making cars more expensive.

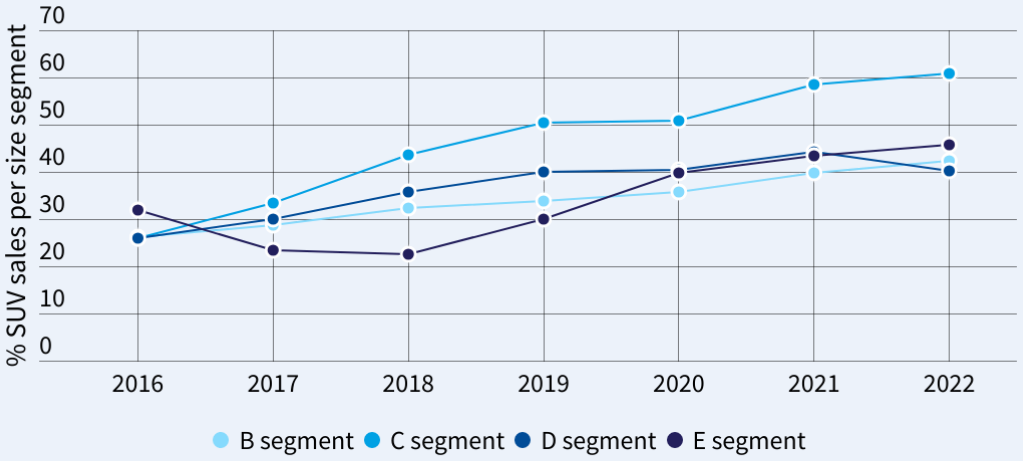


Source: T&E analysis of carmakers' financial reports.
Notes: Inflation-adjusted to 2022 real values.

More SUVs, fewer small cars

Another clearly visible change on Europe's roads is that cars have become bigger. The evidence corroborates this: the sales of SUVs of the six carmakers made up just 9% of new cars in 2010. By 2022, this has ballooned to 47% (and 53% for all car sales) and continues to grow today. The sales are increasing across all brands and all powertrains, electric models included.

This is not a premium segment phenomenon. In fact, the SUV share has grown fastest in the middle (C) segment, which traditionally included medium-sized hatchbacks and sedans such as the VW Golf and Peugeot 308. This segment has the highest share of SUV sales (61%) today, representing over half of all SUV sales in the EU. The smaller (B) segment, which includes cars such as the Peugeot 208 and the Opel Corsa, accounts for the second largest share, at 30%.



Sales of six carmakers (BMW, Mercedes-Benz, Renault, Stellantis, Volvo Cars and Volkswagen)
Scope: Passenger car registration in the EU27, excluding segment M (passenger vans/mini-vans)
Source: T&E analysis of EEA annual car registration data (2016-2021) and Dataforce (2022)

Figure: Share of SUV sales per size segment between 2016 and 2022.

At the same time, small affordable car models that have defined Europe for decades are being discontinued. These include the Fiat Punto, Peugeot 108, Citroen C1 and, more recently, Ford Fiesta.

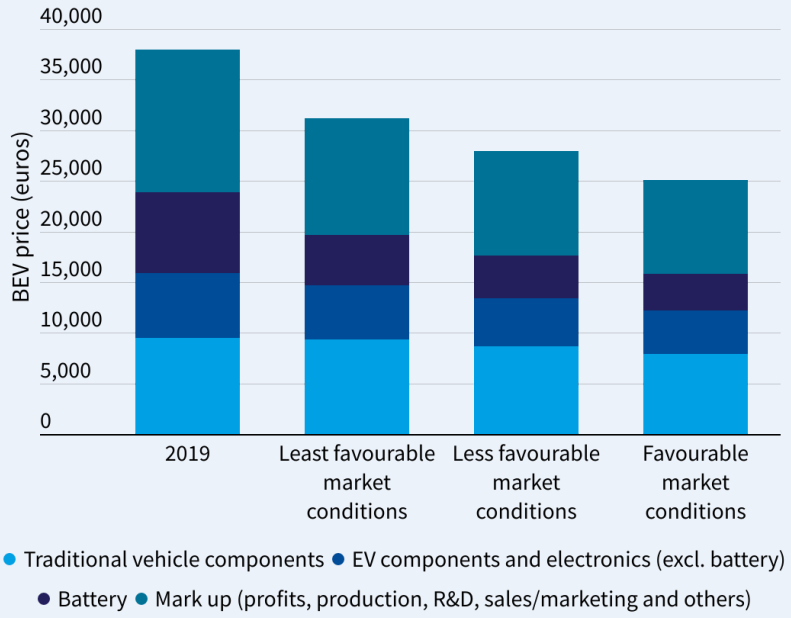
In public, automakers often blame the EU emission rules and changing consumer preferences. But on closer inspection it appears that their purposeful strategy to maximise profit per car is at play. While data on the exact profit margins of different car types is not available, carmakers have stated themselves at various investor days that SUVs are more profitable than non-SUVs (and so are mark-ups for dealers). T&E's analysis of the equivalent SUV and non-SUV models for the six EU carmakers shows a price premium of 8-30%.

Economics of small BEV

Survey after survey shows cost to be a key barrier to a faster BEV adoption. T&E has commissioned YouGov in France, Germany, Italy, Spain, Poland and the UK to find out whether an offer of a €25k BEV would make a difference. If the survey results were replicated in the car market, the advent of affordable small BEVs would bring the sales share of fully electric cars to 35%. The increase due to the

availability of small BEVs would result in an additional 1 million electric cars being sold annually, replacing combustion equivalents.

But as automakers' drive for profits results in cars getting bigger and more expensive, the question is if an affordable entry-level battery electric model of around €25k is feasible by 2025. T&E has modelled three scenarios, building on the Syndex analysis commissioned for this purpose. The "favourable market conditions" scenario shows that a small segment (B) BEV produced in Europe in 2025 can be priced at €25k with a reasonable 4% profit margin. It would have a 40 kWh LFP battery and deliver a range of 250-300 km.



Source: T&E modelling based on analysis and assumptions from Syndex.

As electric vehicle manufacturing is picking up pace and a new supply of critical metals is coming online, such a scenario looks most likely. Just in the last few months Tesla, VW, Ford and others have either cut or hinted at cutting electric car prices. In addition, carmakers can reduce battery capacity (providing the charging network is ramping up), downsize vehicles themselves or revert to resource-light chemistries such as sodium-ion to leverage further reductions.

But while an affordable small BEV is feasible from the technology and market perspective, given the recent automotive dynamics it is not a guarantee that such models will be available on the European market at the speed and volume needed to accelerate access to electric mobility. And speed and volume are paramount to compete with Chinese rivals which are already offering cheap small electric cars in Europe. This means a joined-up strategy with measures at European (EV efficiency rules), national (vehicles taxes and subsidies that penalise weight) and local (weight-based parking charges) levels is needed to ensure European automakers prioritise the production of smaller cars away from resource heavy, expensive SUVs.

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1. Introduction

Since the entry into force of the 2020/21 EU car CO_2 standards, EU sales of battery electric vehicles (BEVs) have grown six times from just 1.9%[1] of sales in 2019 to 12.1% in 2022[2] with the number of BEV models available on the market growing rapidly. New CO_2 standards agreed in 2023, which require a 55% reduction in CO_2 emissions in 2030 and a 100% reduction in 2035, represent a historic turning point away from the internal combustion engine (ICE) towards zero-emission mobility as only zero-emission light-duty vehicles (ZEV) will be allowed to be sold after 2035.

T&E's analysis of the new CO_2 standards (Fig. 1) forecasts that they will drive the share of new BEV sales to reach 23% in 2025 and 58% in 2030, increasing to 100% in 2035. The standards are the main tool to deliver mass-market BEVs in Europe that are affordable and accessible to all European's by requiring carmakers to invest in BEVs, ramp up production and crucially, to compete with other carmakers in this segment.

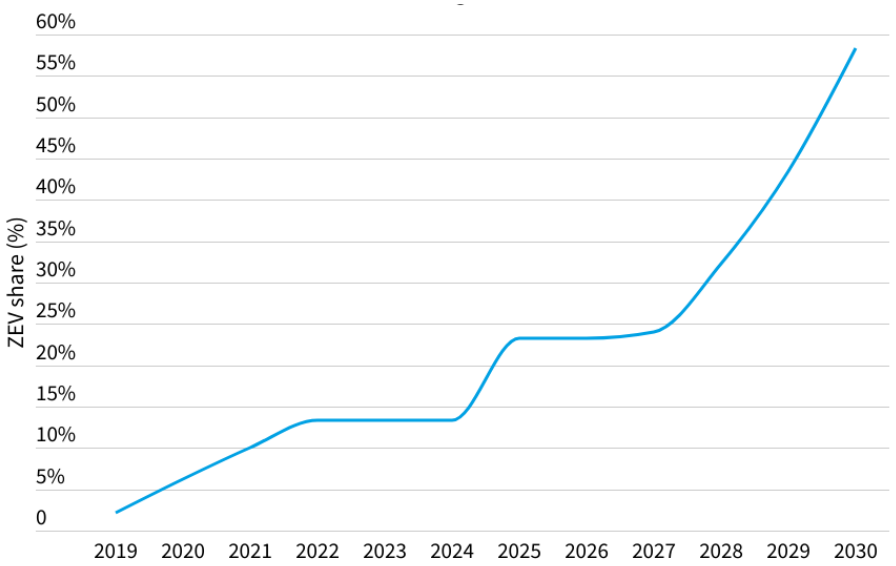


Figure 1. Expected share of ZEV sales in the EU based on the 2023 car CO_2 standards.

Source: T&A analysis

Notes: Passenger car sales in the EEA

Thanks to these investments, including dedicated BEV manufacturing platforms (e.g. the Volkswagen MEB platforms) and improvements in battery technology, BEVs have in recent years become more affordable and more practical with greater electric ranges. However, they have still to reach purchase price parity with internal combustion engine (ICE) cars, despite being cheaper to run[3] and - for a large share of use cases - to own[4]. The latest analysis by Bloomberg[5] shows that even with the small increase of

[1] T&E monitoring based on ACEA's data, https://www.transportenvironment.org/discover/co2-targets-propel-european-ev-sales/)

[2] ACEA (2023, 02, 01) Fuel types of new cars.

[3] T&E (2022) Electric cars are still cheaper to run than petrol and diesel.

[4] T&E (2021) Why electric cars are already the cheapest option for business drivers.

[5] BNEF. (2023). Electric vehicle outlook 2023

7% in average lithium battery pack prices witnessed in 2022 due to inflation and rising raw material prices, BEVs are likely to reach price parity with ICE cars in Europe as soon as 2025 for SUVs and large cars, and 2026 for small and medium cars. The price of a medium BEV is expected to fall to below €30,000 euro in 2026[6] and BEV prices are expected to continue to decrease below those of comparable ICE cars throughout the late 2020's thanks to falling battery prices (which are the biggest single cost component of BEVs). Between 2023 and 2030 the cost of batteries is expected to decrease by 41%[7].

Despite the expected fall in the cost of BEVs in the 2020's, which will make them cheaper for consumers to buy as well as run compared to ICE cars, opponents of the EV transition argue that emobility will be unaffordable for normal people. If one looks at the current car market, it is true that the prices of cars are increasing, while the BEV market in particular is mostly dominated by expensive, large and premium models. So the question on everyone's mind is when will the majority of drivers see affordable electric models fit to their use and budgets.

To understand what is holding back more affordable BEV models, one needs to look at the wider dynamics in the European cars market in the last few years. To do this, this briefing analyses publicly available carmaker financial data, car price histories and registration data of BMW, Mercedes, Renault, Stellantis, Volvo and Volkswagen (VW) to understand what is happening in the car market currently.

Chapter 2 looks at revenue and profits per new car sold and how this compares with inflation. Chapter 3 then looks at the sales developments across Europe in terms of car size and segment. It is accompanied by T&E analysis of price premium between SUV and non SUV models to understand what is behind the current push to sell ever bigger and more expensive SUVs, while small affordable cars are disappearing from sale. With support from Syndex, commissioned by T&E, chapter 4 models the the cost of small BEV produced in Europe in 2025 in a number of scenarios, as well as presenting a consumer survey on the desirability of small affordable cars. Finally, chapter 5 brings the analysis together and finishes with policy recommendations for EU, national and local decision-makers on how affordable BEV supply can be accelerated.

2. Carmakers' revenue and profit per car in 2019-2022

T&E has analysed Europe's biggest carmaker's - BMW, Mercedes, Renault, Stellantis, Volvo[8] and VW[9] - financial data, looking specifically into the amount of money that the six carmakers have generated per car over the last seven years, comparing their revenue and profits against the inflation.

2.1 Carmakers' revenue growth has outpaced inflation

This section analyses the change in revenue per car since 2016. This metric represents the average gross income that each carmaker earns from selling each new car. Where carmaker financial reporting allows,

[6] Pre-tax, BNEF (2023) Electric vehicle outlook 2023.
[7] BNEF (2022) Lithium ion battery price survey.
[8] Volvo data has been converted to euro based on the average EUR-SEK exchange rate in each year as reported on www.exchangerates.org.uk
[9] Based on group registrations

this is based specifically on passenger car sales data. Where carmakers' financial reports do not report data specifically for cars, combined car and van data sales data is used[10].

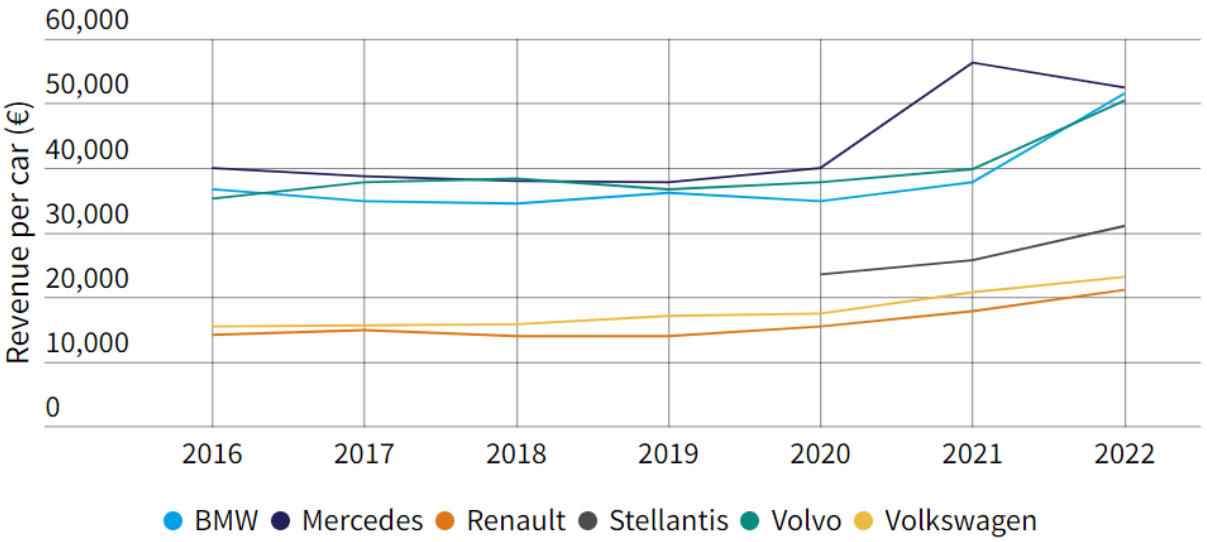


Figure 2. Nominal revenue per car between 2016 and 2022
Source: T&E analysis of carmakers' financial reports

The analysis shows that the revenue per car has increased for all six carmakers significantly since 2016 - by between 31% to 50%[11] - as shown in figure 2. In 2016, the revenue per car ranged from between €14,100 to €39,900. In 2022, this increased to between €21,100 to €52,500.

For the majority of carmakers the increase in revenue only started since 2019: between 2016 and 2019 revenue only increased for Volvo (43%) and VW (10%), while for the other carmakers it largely stayed constant or decreased slightly. Between 2019 and 2022 revenue per car increased as follows:

- BMW: €15,400 (+43%)
- Mercedes: €14,600 (+39%)
- Renault: €7,200 (+52%)
- Stellantis[12]: €7,700 (+33%)
- Volvo: €13,800 (+37%)
- VW: €6,200 (+36%)

While there was an increase in inflation during this period owing to the Covid-19 pandemic and the invasion of Ukraine, the increased revenue per car outpaced inflation significantly. The cumulative

[10] BMW, and VW data is specifically for the cars segment of the business, Mercedes data includes cars and vans as only since 2020 has the reporting for cars and vans been split.Renault also includes both cars and vans. Volvo relates to all revenue as no split available in report.
[11] Stellantis is excluded from this analysis as accounts for Stellantis are only available since 2020.
[12] Stellantis numbers are based on the 2020 to 2022 as 2020 is the first year for which a financial report for Stellantis is available.

inflation in the EU between 2019 and 2022 was 13% - which is 3-4 times less than the increase in revenue for most carmakers (36 - 52%).

When adjusted for inflation[13] (increase in revenue in real terms based on 2022 prices), revenue per car for the six carmakers outpaced inflation during this period and increased in real terms by between €3,924 and €10,614, or 20% - 34%, with Renault recording the largest percentage increase in revenue and VW the smallest.

2.2 Carmakers' profits have outpaced inflation

As revenue of the six carmakers has increased so have the profits - or revenue minus all expenses (therefore including inflation on e.g. raw materials or labour costs) - made on each vehicle for the majority of carmakers.

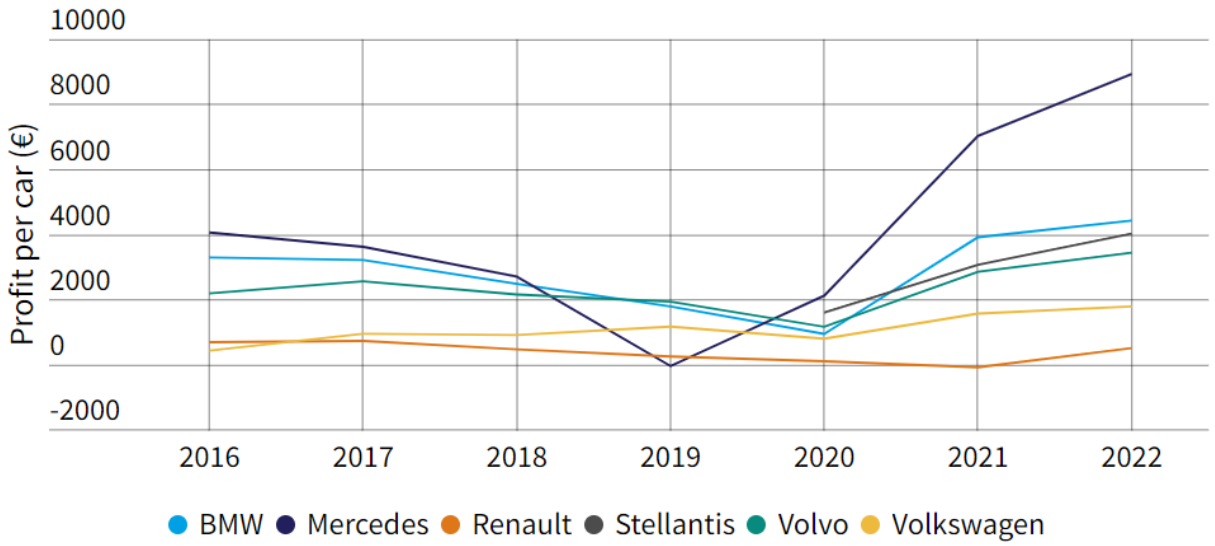


Figure 3. Nominal profit per car between 2016 and 2022.
Soure: T&E analysis of carmakers' financial reports

Between 2016 and 2019 profits per car decreased for all six carmakers. However, the trend has reversed since. First for Mercedes already from 2020, and for all six carmakers since 2021. The amount of profit per car increased from between -€40 to €1,920 in 2019 to €510 to €8,940 in 2022 per car (figure 3)[14]. The increase outpaced inflation, resulting in carmakers making an additional €210 - €7,940 profit per car in 2022 compared to 2019, even with inflation taken into account (i.e. based on 2022 prices).

[13] Based on Eurostat Harmonised Indices of Consumer Prices dataset extracted in April 2023.
[14] Mercedes' profit per car was particularly low in 2019. 2018 profit per car was €2,100.

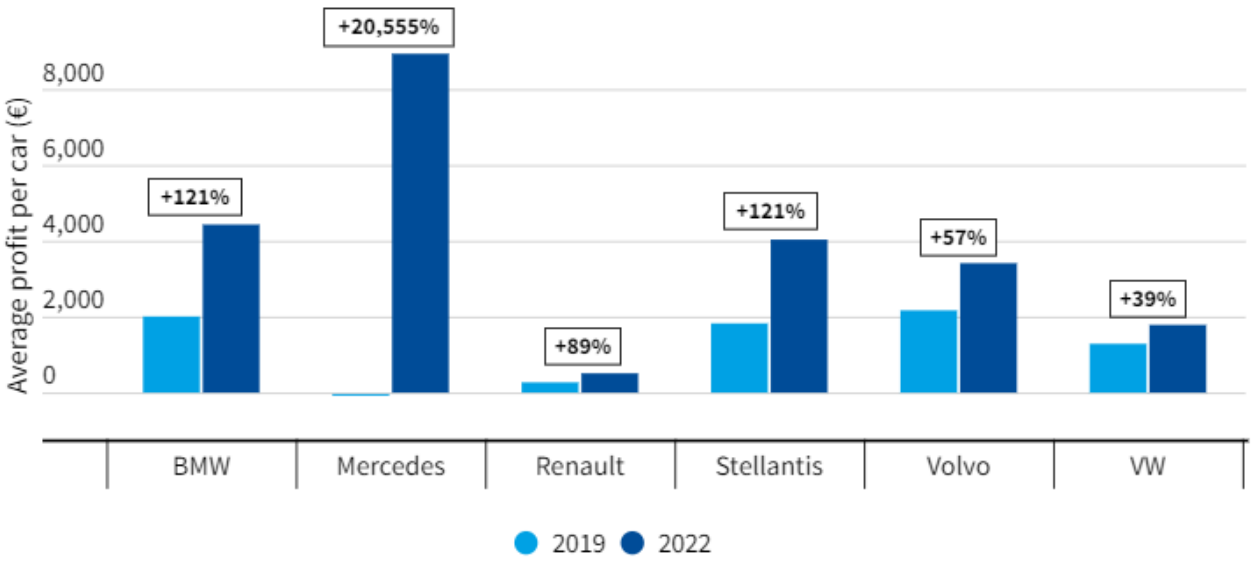


Figure 4. Profit per car in 2019 and 2022 (real 2022 values).
Source: T&E analysis of carmakers' financial reports
Note: Stellantis numbers are based on the 2020 to 2022 as 2020 is the first year for which a financial report for Stellantis is available.

In real terms, the increase in profits in 2022 compared to 2019 for the carmakers is the following (in 2022 prices):

- BMW: €2,400 (+121%)
- Mercedes: €8,980 (+20,555%)
- Renault: €240 (+89%)
- Stellantis[15]: €2,210 (+121%)
- Volvo: €1,250 (+57%)
- Volkswagen: €500 (+39%)

Comparing the increase in revenue per car (section 2.1) to the above increase in profit per car between 2019 and 2022 shows that the increase in profit accounted for between 5% and 94% of the increase in revenue per car during this period.

This section shows that the amount of real (minus the inflation rate) revenue and profit that carmakers are making per new car sold has increased for all carmakers. This means that the increasing car prices cannot be explained by inflation alone, and are a result of additional dynamics in the cars market. Section 3 looks at those.

[15] Stellantis numbers are based on the 2020 to 2022 as 2020 is the first year for which a financial report for Stellantis is available.

3. What cars carmakers are selling across Europe

3.1 Small car models are being replaced by SUVs

Looking at the carmakers' product plans, it appears they are reducing the number of small (often affordable) conventional models on the market.

The amount of small to medium size car models - represented by segments A, B and C excluding SUVs - has reduced in recent years. Most notably, the number of small A size models available from the six carmakers have almost halved since 2016: from 11 models down to 6[16]. Lost models include the Fiat Punto, whose production was stopped in 2018, the Peugeot 108 in 2021, and the Citroen C1 in 2022. In addition, the iconic medium sized models including Ford Fiesta are being discontinued in carmaker product strategies.

At the same time the offer of small and compact BEV models is increasing from Chinese manufacturers, eager to enter the EU market. Models such as BYD's Dolphin and Seagull, MG Motor's Wulling Mini (likely FreZe Nikrob in Europe), and Great Wall's Funky Cat, Ora and Leapmotor T03 are already offered or slated to enter some European markets in the coming months and years.

In recent years European carmakers have made the shift towards selling a larger share of sport utility vehicles (SUVs), a car trend that has been brought over from the United States. SUVs are a relatively new phenomenon in Europe and are on average 250 kg (15%) heavier than their non-SUV counterparts[17]. Their sales made up just 9% of new sales of the six carmakers in 2010. Yet, as the data by the European Environmental Agency (EEA) shows, their share increased rapidly to 24% of sales in 2016. Since 2016, the share of SUV sales has almost doubled to 47% in 2022[18] for the six carmakers (53% for all car sales).

For the six carmakers analysed in this report, the share of sales of different vehicle sizes categories (A being the smallest, E being the biggest) has not changed significantly since 2016[19]. However, the share of SUVs in each segment has increased significantly.

As shown in figure 5, the share of SUV sales has grown in all size segments apart from A, which covers only the very smallest cars such as the VW Up! and the Fiat 500. The SUV share has grown fastest in the C segment, which traditionally mainly included medium-sized hatchbacks and sedans such as the VW Golf, Peugeot 308 and the VW Passat, increasing from 26 % of cars sold in this segment in 2016 to 61% in 2022. The C segment now has the highest share of SUV sales, and sales in this segment account for 53% of total

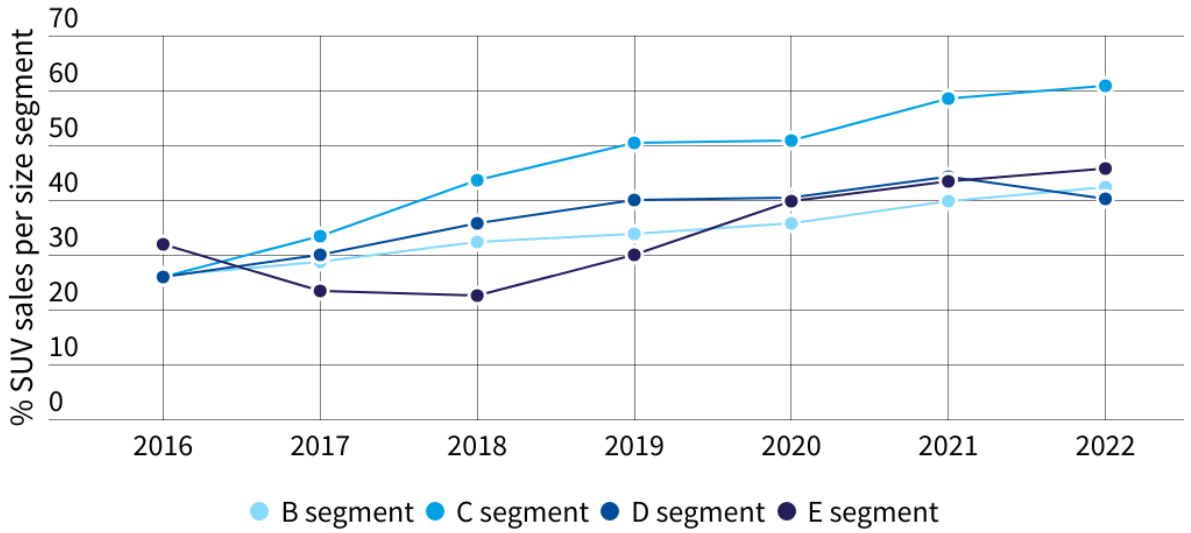
[16] Based on an analysis of LMC Automotive (GlobalData) market data of mass market ICE models (those with sales of more than 100 units)

[17] Based on data from the six carmakers analysed in this report.

[18] 2022 sales data from Dataforce

[19] T&E classified vehicles from the EEA dataset into size segments based on multiple data sources including Dataforce, GlobalData as well as other sources of automotive industrial data. While some data providers differentiate luxury cars into segment F, these cars are merged with segment E in the T&E classification. Some providers also use the separate J segment to classify SUV's. T&E's classification splits SUV by size and distributes them in each segment. With this classification, SUVs and non-SUVs in a similar segment can be compared (e.g. B-SUV and B-non-SUV). Commercial vehicles are excluded as this classification only applies to EEA's passenger car data.

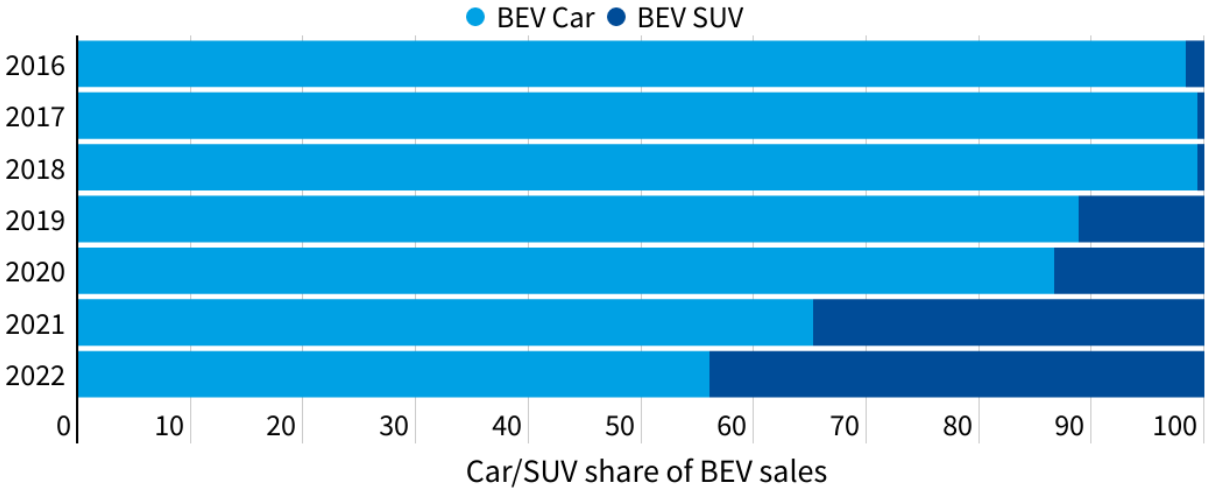
EU SUV sales. The B segment, which includes cars such as the Peugeot 208 and the Opel Corsa, accounts for the second largest share at 30%. The D segment (e.g. BMW 4 series and Volvo S60) accounts for 11% and the E segment (e.g. BMW 6-series, Mercedes E-class) for 6%.



Sales of six carmakers (BMW, Mercedes-Benz, Renault, Stellantis, Volvo Cars and Volkswagen)
Scope: Passenger car registration in the EU27, excluding segment M (passenger vans/mini-vans)
Source: T&E analysis of EEA annual car registration data (2016-2021) and Dataforce (2022)

Figure 5. Share of SUV sales per size segment between 2016 and 2022.

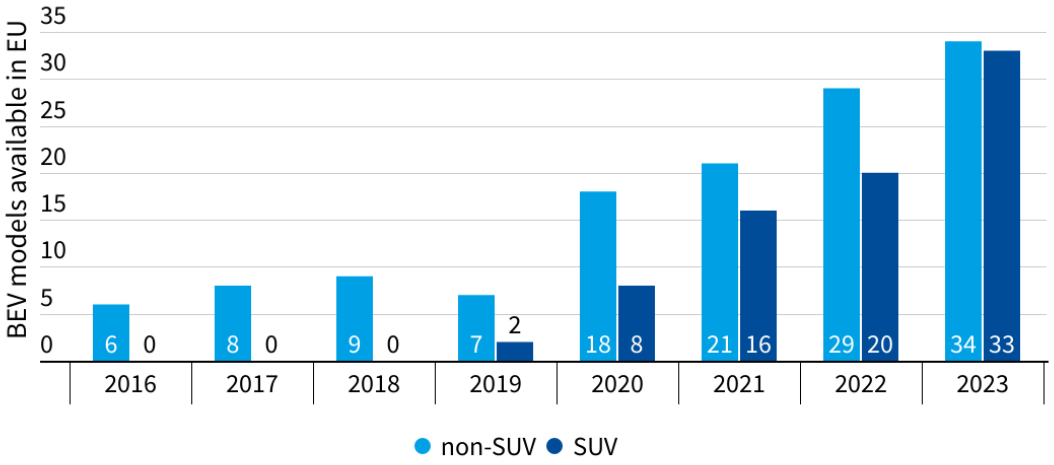
Similar trend is seen with battery electric vehicles (BEVs). As the sales of BEV grow, so does the share of BEV sales which are SUVs. For the six carmakers analysed, SUVs accounted for just 2% of EU BEV sales in 2016. By 2022 this had increased to 44% for the six carmakers (51% for all BEV sales).



Sales of six carmakers (BMW, Mercedes, Renault, Stellantis, Volvo Cars and Volkswagen)
Scope: Passenger car registration in the EU27, excluding segment M (passenger vans/mini-vans)
Source: T&E analysis of EEA annual car registration data (2016-2021) and Dataforce (2022)

Figure 6. SUV and non-SUV EU BEV sales share.

The sales increase has followed the rise in the availability of SUV BEV models. An analysis of GlobalData market data of mass market BEV models[20] shows that prior to 2019 *all* of the BEV models available on the market were non-SUV cars. In 2019 the first two BEV SUV models appeared on the market: the Audi Q8 e-tron and the Mercedes EQC. Since 2019 the number of SUV models has increased quickly, quadrupling in 2020 and doubling again in 2021. The number of BEV SUV models has continued to increase, reaching 33 models in 2023, almost on par with the number of non-SUV models available.



Models of six carmakers (BMW, Mercedes-Benz, Renault, Stellantis, Volvo Cars and Volkswagen)
Source: T&E analysis of GlobalData's Global Hybrid & Electric Vehicle Forecast (Quarter 2, 2022)

Figure 7. SUV and non-SUV BEV model availability

[20] Includes models with sales of more than 1000 per year.

Focusing specifically on small to medium sized BEVs in the A to C size segment, the number of SUVs in the B and C categories has rapidly increased since 2019 (mirroring the overall car market trend), while the number of small A segment BEVs has fallen.

The number of small A segment BEVs (which are all non-SUVs) grew from 3 models in 2016 to a high of 7 in 2020, decreasing to just 4 in 2023. At the same time, in the B segment the number of SUV models has grown from zero in 2019 to 8 in 2023, equal to the number of non-SUV models available. A similar increase has occurred in the C segment with zero SUV models available in 2019 to 10 in 2023, surpassing the availability of non-SUV cars (8) in the segment.

The non-SUV battery electric cars in segments A, B and C are exactly the small and medium affordable models that are currently lacking on the market and are necessary to improve access to electro-mobility for all drivers across the European market. But it appears carmakers are not prioritising their production and, in many cases, even decreasing their availability compared to 2016/17. Next section looks at the possible explanations for why carmakers prioritise SUVs in all powertrains.

3.2 SUVs are more profitable than non-SUV cars

Rather than caused by a sudden shift in consumer demand, the shift towards selling more SUVs and less hatchback and saloon models is part of carmakers strategy to increase their revenue and profits as, generally, SUVs are more expensive than non-SUV models. JATO reported that in 2020 the average price of an SUV was 59% higher than a non-SUV in the European market[21].

Data on the exact profit margins of various car models is a closely guarded secret, but carmakers have stated that SUVs are more profitable for them than non-SUV cars[22], while margins for dealers are also highest for SUV models creating a strong incentive to push SUV sales[23].

To dig deeper into the matter, T&E has analysed the price difference between equivalent SUV and non-SUV versions of B and C sized cars to exemplify the difference in prices, connected to profits, in the absence of reliable data on car margins[24]. These two segments have historically offered smaller and medium sized affordable models aimed at the mass market, but are today the segments with the largest share of SUV sales for the six carmakers analysed here. For the comparison, where a carmaker may have multiple car brands as part of the group the flagship brand is used, e.g. Peugeot in the case of Stellantis. The cheapest available SUV and non-SUV models are compared in each segment for each carmaker and are based on the starting price for each model. This comparison is done on ICE models only where more data on pricing is available.

[21] JATO (2021, 10, 19) OEMs are selling more SUVs but are they selling more vehicles?
[22] New York Times (2021, 05, 21) Rise of SUVs: Leaving cars in their dust, with no signs of slowing.
[23] Dealer Auction. (2022, 07, 14) Saloons and hatchbacks are replaced with premium SUVs, while retailers work to meet EV demands.
[24] Based on car prices in Germany in May 2023 obtained from each carmaker's German website.

BMW

The smallest non-SUV models from the BMW brand are 1 Series hatchback and 2 Series coupe in the C size segment, vs the X1 and X2 SUVs (although the Mini brand owned by the BMW group offers the B sized mini-cooper). There is a significant price difference between BMW's non-SUV and SUV models. The cheapest non-SUV, the 1 series hatchback, starts at €30,600 euro, while the cheapest SUV on offer (X2) is €7,150 (or 23%) more expensive. The price difference between the more expensive series 2 and the more expensive X1 SUV in this segment is also substantial at 17%.

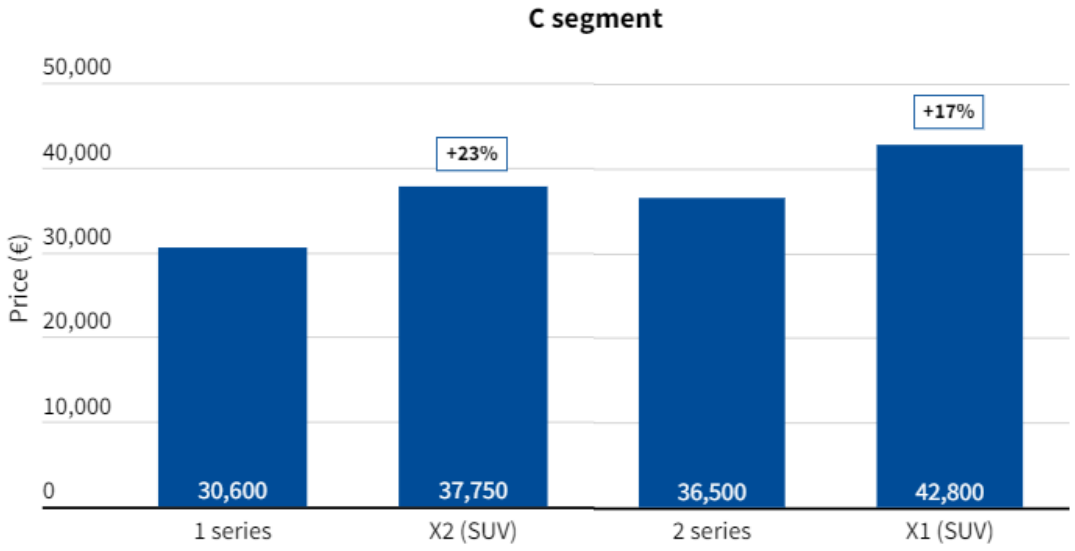


Figure 8. Starting price of BMW B and C size segment SUV and non-SUV models.

Renault

In the B segment the Renault brand offers the non-SUV Clio as well as the SUV Captur. Renault only has one non-SUV model, the Megane, compared to four SUV models: the Kadjar, Arkana, Koleos and Austral. The cheapest SUV and non-SUV models are shown in figure 9. The B segment SUV is 30% (€5,450) more expensive than the Clio hatchback. In the C segment the gap is smaller but still stands at 9% (€2,500).

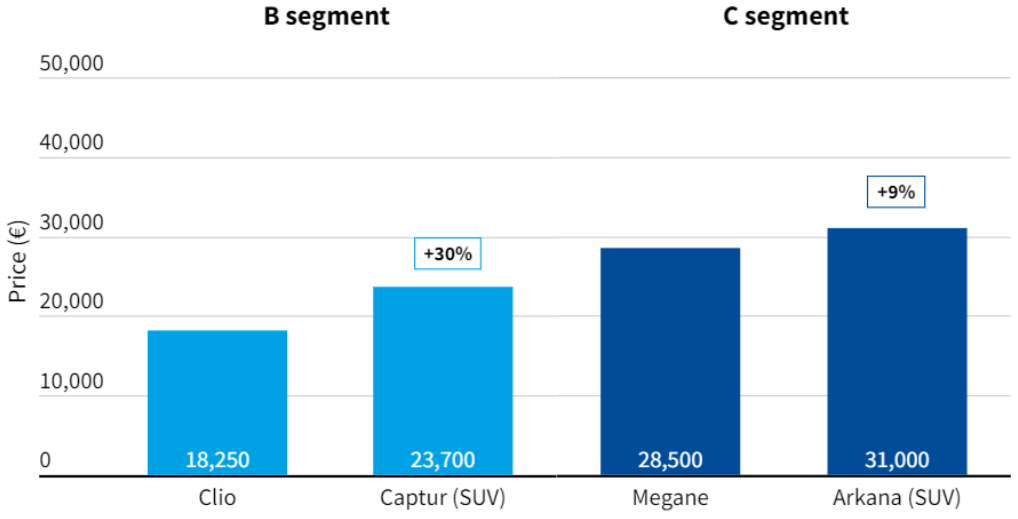


Figure 9. Starting price of Renault B and C size segment SUV and non-SUV models.

Mercedes

The Mercedes brand has a number of SUV and non-SUV models within the C size segment. Non-SUV cars include the A class, B Class and C class, CLA Class and SUVs the GLA class and GLB class models. Two electric SUVs are also available, the EQA and EQB. The cheapest SUV and non-SUV models available: the A class, B class, GLA class and GLB class are shown below in figure 10. The cheapest GLA SUV is 21% (€5,790) more expensive than the A class hatchback.

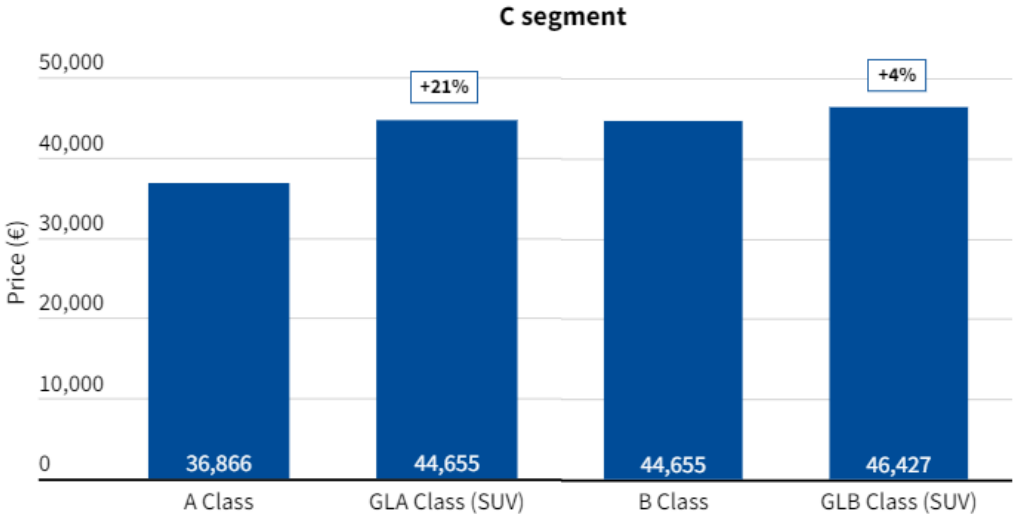


Figure 10. Starting price of Mercedes C size segment SUV and non-SUV models.

Stellantis

The B segment of Stellantis' Peugeot brand offers the 208 hatchback and the 2008 SUV, while the C segment offers the 308 hatchback and 3008. The B sized 2008 SUV is 18% (€4,050) more expensive than the 208 hatchback, and the C sized 3008 SUV is 20% (€5,780) more expensive than the 308 hatchback.

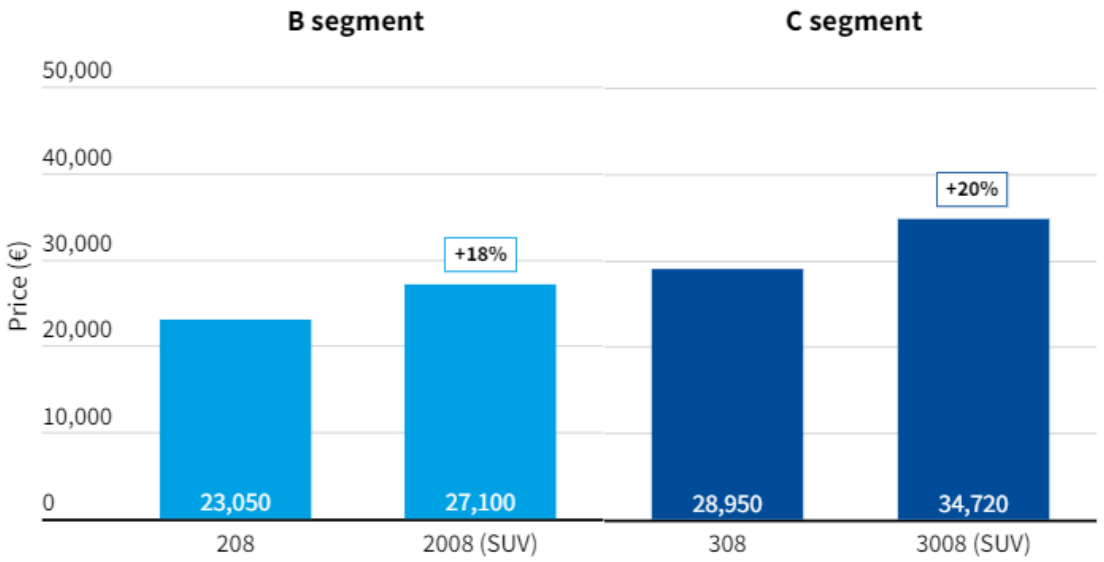


Figure 11. Starting price of Peugeot (Stellantis) B and C size segment SUV and non-SUV models.

Volvo

Volvo no longer produces a non-SUV car in the B or C segment having stopped production of the V40 hatchback in 2019. This has left the XC40 SUV and the C40 all electric SUV as the only models offered by Volvo in the C segment. The base model of the XC40 starts at €38,700. Buyers wanting a non-SUV vehicle from Volvo would have to trade up to a bigger D category sized car and spend an additional €6,900 (18%) on the V60 estate. At present Volvo does not produce a non-SUV BEV.

VW

The flagship VW brand of the VW group offers the Polo hatchback and the T-Cross SUV in the B size segment. In the C size segment the Golf hatchback and T-Rock and Tiguan SUVs are available with the T-Rock being the cheaper option. In the B segment the T-Cross SUV is 8% more expensive than the Polo, while VW's Tiguan is 6% more expensive than the Golf.

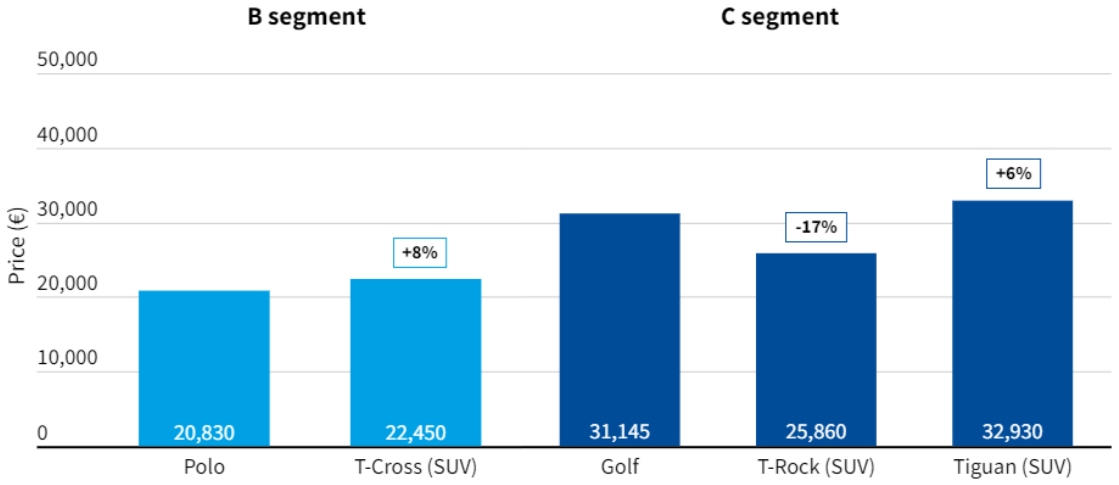


Figure 12. Starting price of VW B and C size segment SUV and non-SUV models.

Overall the B and C size segment SUVs carry a price premium of 8% to 30% compared to non-SUV models (with the exception of VW's C segment). With the exception of VW's SUV models analysed and Renault's segment C SUV, all record a double-digit price premium, close or over 20% in the case of BMW, Renault's segment B SUV, Mercedes, Stellantis and Volvo. This significant premium cannot be explained by a larger size alone: despite being heavier, their manufacturing costs within the same platforms and carmaker supply chains would not increase that significantly.

Carmakers themselves often highlight the better profitability of SUV models to their investors. This analysis corroborates the ability to charge more for SUVs, leading to superior profit margins. T&E believes this to be at the heart of SUV attractiveness across Europe, i.e. this is a deliberate product strategy by the automaker industry in pursuit of profit, rather than a consumer driven phenomenon alone. Carmakers often use their marketing power to make them more attractive as T&E has previously shown[25]. Given the change in product portfolios (away from smaller models) and drive for higher profits (enabled by SUVisation), the question is whether an affordable small BEV model produced in Europe is feasible. The next section looks into that.

4. Can small electric cars be profitable?

4.1 Feasibility of a €25k BEV model in 2025

In the sections above, T&E shows how per car prices have ballooned beyond inflation, coupled with increasing vehicle size, to deliver higher profits. This trend is particularly worrying when it comes to transition to electric vehicles. These are already expensive as they are still a new technology on its way to full commercialisation. But automakers' push to sell larger SUV models and increase per car margins risks undermining the availability of more affordable BEV models.

So is an affordable electric car, priced at around €25k and with reasonable range, still feasible? And can it be produced in Europe to reasonable industry profit margins? T&E has looked into the expected prices of electric car technology by 2025 to answer this question.

For this purpose, T&E has first commissioned Syndex, to model the expected price of the Peugeot e208 (52 kWh battery), as one example in order to derive the indirect costs and mark-ups expected from this segment in the industry. Following this, T&E has used its in-house expertise and external sources (see Annex 6.1) to model a few scenarios of how the price of an average small electric car can develop by 2025.

In its modelling, T&E developed three scenarios:

- "Favourable market conditions"
- "Less favourable market conditions"
- "Least favourable market conditions"

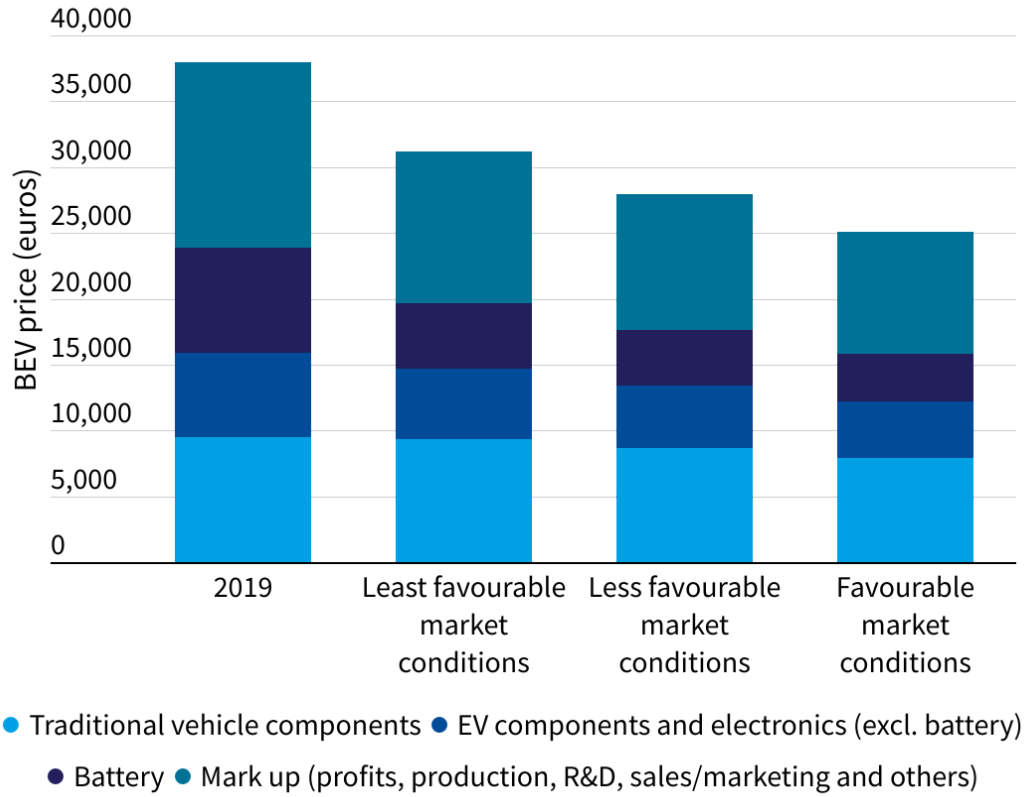
[25] T&E (2017) https://www.transportenvironment.org/discover/slow-electric-car-uptake-due-lack-choice-availability-and-marketing-spend-report/Slow electric car uptake due to lack of choice availability and marketing spend.

Given the technology developments (both battery and vehicle efficiency), as well as to fit the consumer expectations for an affordable entry-level segment B BEV model, T&E has assumed the lithium-iron-phosphate (LFP) battery capacity of 40 kWh, which translates into a range of 250-300 km. While many electric car models are using nickel or cobalt rich NMC chemistries, the share of these less expensive LFP chemistries has grown rapidly in the last years and represents around 40% of BEV sold globally.

Based on Syndex's assumptions, T&E has then developed different trajectories for battery, raw materials and other direct cost reductions, while keeping the broad industry expectations around production learning curves, indirect costs and mark-ups (e.g. profit margins) based on Syndex. E.g. the mark-up of +59% is used across the different technologies (both BEV and ICE) and price scenarios in this comparison of segment B vehicles. Outside of non-vehicle component costs (e.g. indirect costs and marketing), this means that a small entry-level BEV model in 2025 could be sold with the a profit margin of 4%[26], which is reasonable for that segment.

The results are shown in figure 13 below. Under the "favourable market conditions" scenario, an entry-level BEV produced in Europe in 2025, can reach a price of €25k (before taxes or subsidies) while maintaining similar margins to what is expected on an equivalent small ICE in that segment. This BEV would deliver a range of 250-300 km, more than enough for the vast majority of drivers (or those going for smaller affordable segments). The "less favourable market conditions" scenario puts the price of the small BEV closer to €28k, while the "least favourable" market assumptions would result in a price tag of €31k.

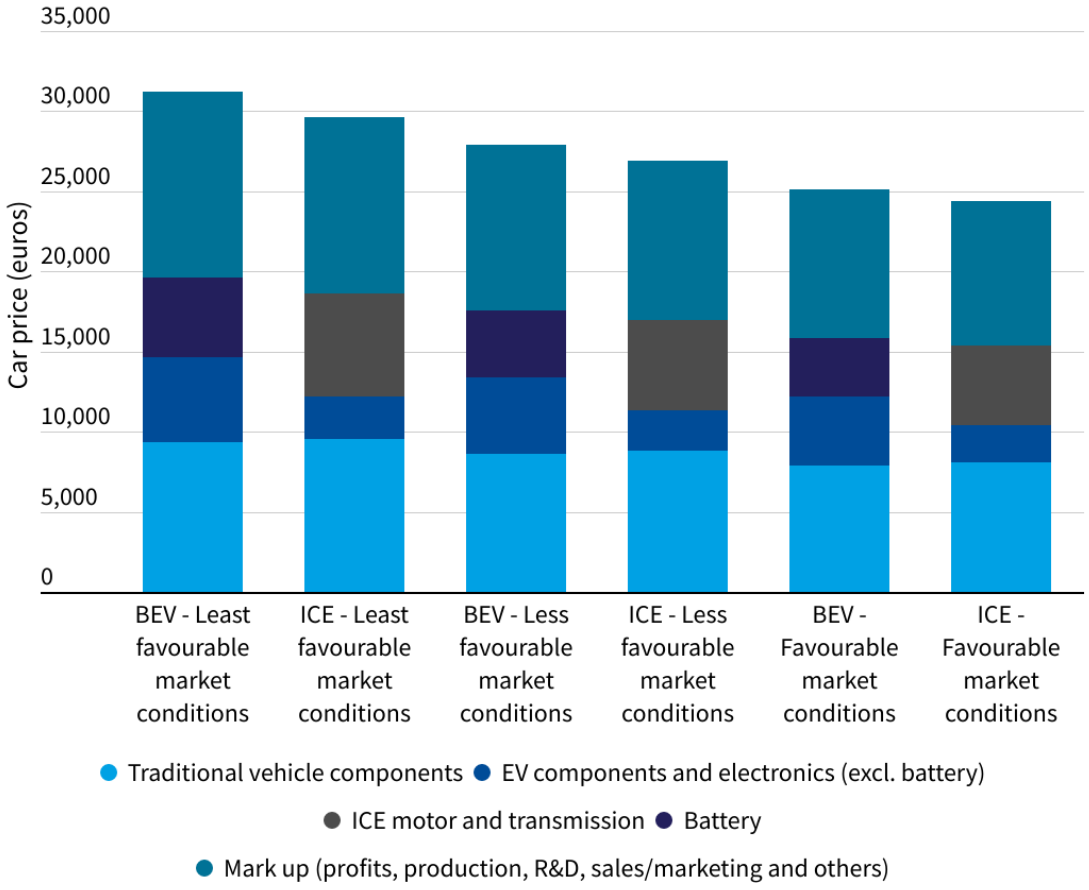
[26] As detailed in BNEF (2023) Electric vehicle outlook 2023.



Source: T&E modelling based on analysis and assumptions from Syndex.
Note: The vehicle is a segment-B, entry-level BEV. The battery is 40 kWh allowing for a range of 250-300 km. The following assumptions differ in the 3 scenarios and are based on Syndex's modelling: production productivity gains, battery prices, euro-dollar exchange rate, and raw material and semiconductor prices.

Figure 13: Small BEV prices in 2025 under the three scenarios

For comparison, the prices of the equivalent ICE versions lie between €24,000 ("favourable market conditions" scenario), and €29,000 ("least favourable market conditions") before taxes or subsidies, meaning a difference of less than €2,000 with the BEV equivalent (see Figure 14 for price comparison of small ICEs in 2025 in the Annex).



Source: T&E modelling based on analysis and assumptions from Syndex.
Note: The vehicle is a segment-B, entry-level BEV. The battery is 40 kWh allowing for a range of 250-300 km. The following assumptions differ in the 3 scenarios and are based on Syndex's modelling: production productivity gains, battery prices, euro-dollar exchange rate, and raw material and semiconductor prices.

Figure 14: Small BEV versus ICE prices in 2025 under the 3 scenarios

The €25k price point in T&E's analysis is achieved under the "favourable market conditions" scenario, which means that all of the assumptions are simultaneously on the favourable side. The assumptions considered include the following:

- productivity gains,
- battery prices (see section below),
- euro-dollar exchange rate, and
- raw material and semiconductor prices.

Given the world economy is gradually recovering from the energy crisis and inflation, supply chains are normalising and EV production will benefit from important economies of scale and learning effects. The EV production is increasing globally, stimulated by the US, Chinese and (smaller) European subsidies, putting a downward pressure on prices. Just in the last few months Tesla, Ford and others have either cut or hinted at cutting electric car prices. At the same time, raw material prices including lithium, cobalt and copper are seeing a downward trend (see below). All this points to the fact that the cost reductions based

on the more optimistic assumptions, as well as production efficiency and learning effects, can be achieved by 2025.

However, in the situation where there are unforeseen complications or price increases in the next few years, it would put the BEV (and ICE) price point closer to the middle scenario. This is because geopolitical risks, de-localisation of supply chains or spikes in raw material prices affect all technologies. E.g. If nickel prices are up, the costs of steel found in all vehicle powertrains will also increase. Conventional cars also use a number of rare earths, for instance in their emission exhaust systems, so the dependency on China impacts many automotive technologies.

In addition, T&E findings corroborate announcements from the main European carmakers. Both VW and Peugeot have already announced that they will deliver cheaper BEVs to compete in the small segment with Chinese carmakers. Citroen (Stellantis) is expected to launch the e-C3 in 2024, a similar size car to the Peugeot 208[27], with a starting price tag of €25,000 while offering 300 km of range. The model is planned to be produced in Europe[28].

The VW ID.2, a segment B model slated for launch in 2025, is also expected to cost €25,000. It is expected that the model will come with the choice of two battery sizes, 38 kWh and 56 kWh, with the larger battery pack being able to deliver up to 450 km or range[29]. It will likely be the smaller battery which will be priced at €25,000. In the light of the Syndex and T&E analysis, it is clear that under the right market conditions, these vehicles can be produced with the same margins as for other vehicle segments while being competitively priced on the market.

Battery & raw material costs

T&E analysis shows that to reach the €25k price point, battery prices need to reduce down to 100 $/kWh in 2025, while the battery capacity needs to be around 40 kWh.

Although battery prices have stagnated or even increased in the past year, it should be noted that the prices are expected to drop again as raw materials (e.g. lithium and nickel) prices have greatly reduced from their 2022 peak. According to Benchmark Minerals Intelligence[30], battery material prices such as lithium, nickel, cobalt and graphite declined between 20% and 40% in the first half of 2023. This is largely due to the new supply coming online, with many projects in lithium and nickel in particular expected by 2025 in Asia, Australia, Africa and South America. At the same time, a slower than expected recovery in China - by far the largest market for batteries and raw materials - is putting a downward pressure on raw material prices as Chinese inventories are fuller than expected, e.g. cathodes.

[27] What Car? (2023, 06,15) 2024 Citroen e-C3 previewed.
[28] Bloomberg (2023, 12, 06) Stellnatis to unveil €25,000 EV in fight for mass-market buyers.
[29] Auto Express. (2023, 03, 16) New Volkswagen ID.2 all concept previews future affordable electric car.
[30] BMI, 2023, https://source.benchmarkminerals.com/article/why-battery-material-prices-slumped-under-pressure-in-the-first-half-of-2023

In the next few years at least two factors will continue this downward trend. First, the new supply will continue to come online, including a few lithium projects in Europe, which will mitigate some of the upward pressure on the raw material and battery prices. Second, new resource-light battery chemistries like sodium-ion (Na-ion) are expected to be much cheaper and could bring the price further down, making the assumption of 100$/kWh in 2025 more likely. Unlike oil, battery chemistries are prone to substitution effects, which can help ease the cost pressure (notably in the case of cobalt and nickel most imminently).

In the event that the price of cheap batteries does not reach 100 $/kWh in 2025, carmakers can still further reduce the capacity of the battery. For example, under the scenario where batteries are priced at 110 $/kWh in 2025 (or around 100 €/kWh), an entry-level small BEV could still be offered at €25k with a 35 kWh battery instead of 40 kWh (equivalent to a range of 240-260 km[31]).

Vehicle efficiency is key to affordability, as it impacts how much range one can get out of their battery. Currently small BEVs, like the Peugeot e208, have efficiencies of around 0.15 - 0.16 kWh/km. With a good EV design that favours efficiency and downsizing of a vehicle, it is expected that an efficiency of 0.13-0.14 kWh/km could be achieved - and should be the ambition - for a small entry-level BEV[32]. With such efficiencies, the 40 kWh BEV would be at 270-290 km range[33], while the 35 kWh BEV would need to achieve around 0.13 kWh/km to have a range of at least 250 km.

Such efficiencies can be achieved with options such as:

- aerodynamic improvement (reducing the aerodynamic drag coefficient by improving the shape of the car body),
- reducing the size of the car (especially reducing the frontal area),
- reducing weight (using more lightweight materials, and overall less materials),
- system and powertrain efficiency (less powerful and more efficient power electronics and e-motor, rightly designed electric motor size), and
- using heat pumps and efficient recuperation braking.

Given the average daily distance travelled by cars in Europe and that there is a growing network of public chargers, a 250 km range BEV with fast charging capabilities[34] would be adequate for the needs of most drivers. The EU has just agreed the Alternative Fuels Infrastructure Regulation that will require all national roads and motorways across the Union to be fitted with public chargers by 2025 in line with the number of electric cars on the road by that time.

But in the absence of regulations to improve the efficiency of EVs, there is currently little incentive for manufacturers to make entry-level EVs more efficient than today. However, either via a regulatory

[31] Assuming 0.13-0.14 kWh/km and a 5% gap between usable and total battery capacity
[32] The Citroen e-C3 has been announced with a battery of 29.2 kWh and a range of 320 km, which converts into an efficiency of less than 10 kWh/100km. Stellantis has announced its platforms will unable less than 0.12kWh/km
[33] We account for a 5% battery capacity difference between total battery capacity and usable battery capacity.
[34] Ideally 150 kW to be able to fully charging in 20 minutes

pressure (as indicated by recital 19 in the 2023 agreement on the EU cars CO_2 regulation) or in order to compete with cheaper Chinese models on the EU market, carmakers might have to improve BEV efficiency significantly.

4.2 Are European car buyers interested in buying small BEVs?

The previous section has highlighted that it is possible to have small affordable BEVs priced at 25k€ with a 250-300 km range while safeguarding carmakers' profits.

To understand if there is demand for these small BEVs, T&E has commissioned an online survey to YouGov. The survey asked more than 3,000 Europeans that intend to buy a new car in the next 12 months about their car purchase preferences. The respondents were from 6 different European countries (UK, Spain, Italy, Poland, France, Germany) representing different age groups.

The car buyers were asked if they were more likely to buy an electric or combustion car as their next purchase based on today's car market. Then the respondents were asked the same question but had the additional option of choosing a small (segment B) BEV at €25k with 250-300 km range.

The results show that under current market conditions, 25% of respondents are considering buying an electric car as their next purchase within 12 months (69% prefer combustion cars, while 7% "don't know"). Once offered the option of a small affordable BEV, the survey shows that there is a larger interest in buying EVs. Of those who had intended to buy a combustion engine, 13% said they would go electric if a €25k/£21k/ PLN 110k small BEV model was on the market. Of the "don't knows", 21% said they would switch to electric when given the option of the small, cheap model.

If these intentions were replicated in the car market, 35% of respondents would buy an EV if they had the option of a small BEV. Taking an estimate of 10 million annual car sales in the EU, this means an additional 1 million electric cars sold annually replacing petrol and diesel sales. In total, 22% of all the car buyers in Europe would be interested in a small affordable BEV, shown in dark blue in Figure 15 below.

Moreover, almost half (48%) of the initial EV buyers would opt for the small affordable EV instead of a larger and bigger one if they had the choice.

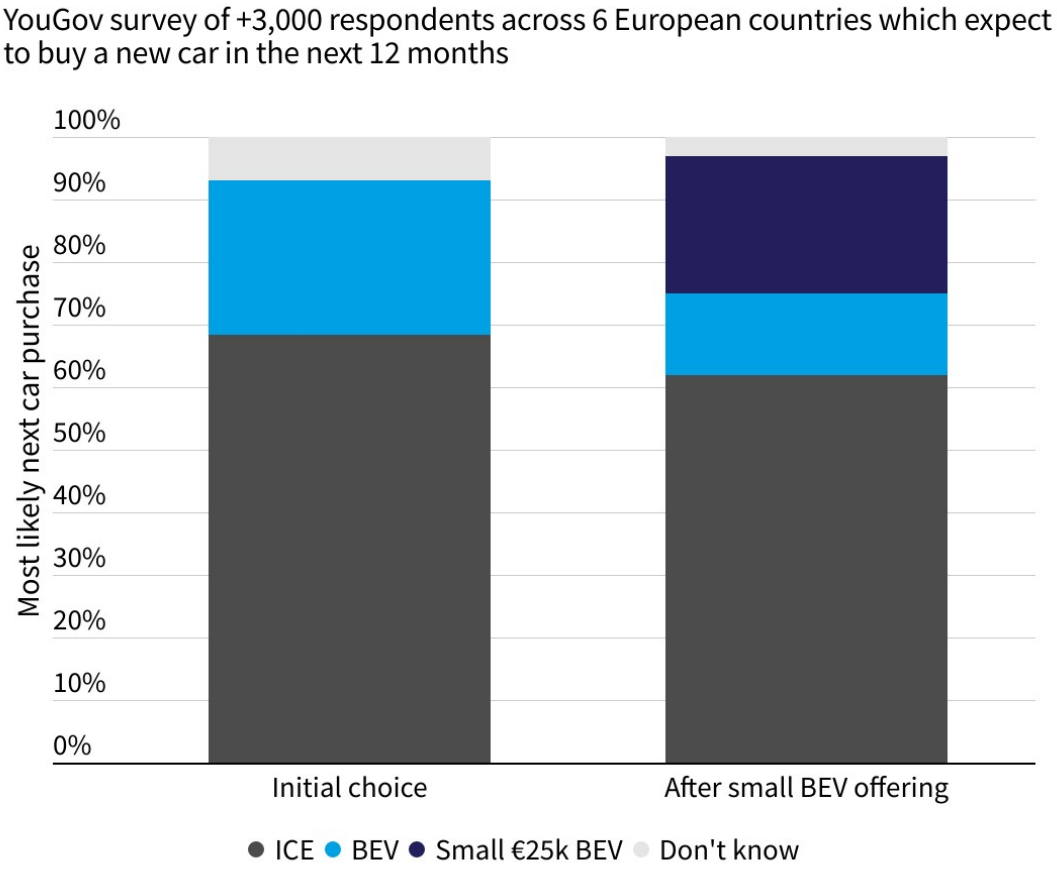


Figure 15: Results for the YouGov survey of new car buyers

According to the survey, the main barrier for the switch is related to the lack of (or a perceived lack of) adequate EV range capabilities and charging network coverage (65% of respondents). Moreover, for 38% of the respondents, a vehicle priced at €25k/£21k/ PLN 110k is still too expensive, and 37% of the respondents simply do not want a small car or need a bigger one.

5. Conclusion and policy recommendations

Over the last few years the amount of revenue and profit that carmakers make from selling their cars has increased substantially for the majority of European carmakers. Profit per car has increased by as much as €3,500 in real terms (i.e. taking inflation into account), since 2016. Carmakers have achieved this

through a strategic shift in their corporate strategy by shifting customers away from small and medium sized cars towards more expensive SUV models, especially in the small/medium B and C segment. The share of SUVs sold by BMW, Mercedes, Renault, Stellantis, Volvo and VW has increased from 24% in 2016 to 47% in 2022. The C size segment, which was traditionally composed of hatchback and sedan models, now has the highest share of SUV sales of any size segment, with SUVs now accounting for 61% of sales.

The most affordable small sized models in the A size segment have paid the price, with the number of models in this segment offered by the six carmakers halving since 2016. At the same time the number of SUV models has rapidly increased, particularly in the B and C size segments with the number of SUV models on offer in these segments now on par with non-SUV cars.

These SUVs carry a price premium compared to their non-SUV counterparts of between 8-30%. At the same time carmakers have also increased prices well above the inflation levels, at least in part to increase the profits earned for each car sold. As prices rise, consumer affordability is negatively impacted.

European carmakers appear to be following the same strategy when it comes to BEVs with the availability of e-SUV models growing rapidly from just 2 in 2019 to 33 in 2023, on par with non-SUV cars and some traditional ICE non-SUV models such as the Renault Megane morphing into BEV crossovers.

The shift of European manufacturers towards selling larger and mostly more expensive SUVs is problematic for three main reasons: environmental, social and industrial, which will not be solved merely by the shift away from ICE to BEVs.

Environmental:
Today SUVs have 9% higher average CO_2 emissions compared to non-SUV models[35], although in the D segment this is as high as 20% due to their larger weight and worse aerodynamics. They also require more resources (e.g. steel, aluminium and plastics) to produce.

SUVs require more materials to produce making them more resource intensive, and have higher energy demand putting pressure on renewables, grids and charging infrastructure. T&E's recent study[36] shows that restricting the size of batteries (through e.g. smaller cars) has the biggest potential for reducing demand for battery raw materials. It can reduce project EU demand for the 4 key metals by 19-27% compared to today's forecast[37].

Social:
For a fair and equitable transition to electromobility, BEVs have to be accessible for the European drivers that need cars for their daily lives (=who do not have sufficient access to or are unable to use shared, public or active transport modes). If carmakers only, or primarily, focus on producing larger, more

[35] Includes only cars with an internal combustion engine. Based on 2021 EEA registration data.
[36] T&E, 2023,https://www.transportenvironment.org/discover/clean-and-lean-battery-metals-demand-from-electrifying-cars-vans-and-buses/
[37] T&E. (2023) Clean and Lean.

expensive SUV BEVs, a lack of small affordable models could make BEVs less affordable for those on middle and lower incomes.

Affordability will be particularly negatively impacted if carmakers fail to bring a sufficient number of small affordable non-SUV BEVs into the A to C segment to the market. Already today[38] SUV versions of BEVs are more expensive than comparable non-SUV BEVs following the trend of ICE cars. For example, the e-2008 SUV is €1,900 more expensive than the e-208 hatchback. Some BEV versions of small or medium sized petrol and diesel models are also morphing into crossover or SUV BEV versions of the model, with the Renault Megane E-Tech BEV being a recent example of the shift to crossover styling.

Industrial:
Despite the shift towards SUVs, small non-SUV cars remain popular with car buyers. The small Peugeot 208 hatchback was Europe's best selling car in 2022. The demand for small affordable electric models in emerging economies is even larger. If European carmakers fail to satisfy demand in the small and medium non-SUV segments for BEVs, then the door will be open for non-European carmakers to gain market share in this segment. In the longer term, this not only risks European sales of small cars going to non-European competitors but also sales in larger segments as European consumers gain trust and familiarity with new carmakers, leading to brand loyalty.

This is a particular risk to export dependent carmakers, or the volume brands like VW. For example, in 2022, around a quarter of the production of the three German OEMs was for export. As they lack a sufficient offer of smaller entry-level battery electric models, they will struggle to capture the growing car markets of the major emerging economies such as Brazil, Chile, Indonesia and South Africa, where Chinese brands are ramping their BEV sales fast.

Yet smaller cars can be sold profitably in Europe.

T&E's modelling, building on the Syndex analysis commissioned for this report, shows that, under the favourable market conditions scenario, an entry-level BEV can be produced in Europe in 2025 to be priced at €25k (before taxes or subsidies) while maintaining the same margins and profits as for equivalent ICEs in that segment. This BEV would have a 40 kWh LFP battery and deliver a range of 250-300 km. T&E findings corroborate announcements from the main European carmakers. Both VW and Stellantis have already announced that they will deliver cheaper BEVs to compete in the small segment with Chinese carmakers.

Given the world economy is gradually recovering from the energy crisis and inflation, supply chains are normalising and EV production will benefit from important economies of scale and learning effects. Just in the last few months Tesla, Ford and others have either cut or hinted at cutting electric car prices. As EV supply increases globally, stimulated by the US, Chinese and (smaller) European subsidies, many raw materials prices including lithium, cobalt and copper are seeing a downward trend (spurred largely by a weaker than expected recovery in China). All these points to the fact that the cost reductions based on

[38] Based on prices from carmakers' German websites in July 2023.

the more optimistic assumptions, as well as production efficiency and learning effects, can be achieved by 2025.

But while an affordable entry-level BEV is feasible from the technology and market perspective, it is not a guarantee that such models will be available on the European market at the speed and volume needed to accelerate access to electric mobility. A joint strategy at European, national and local levels is necessary to ensure European automakers prioritise the production of smaller cars away from resource heavy SUVs.

Policy recommendations

EU policies:

- New EU environmental standards for electric cars to lower the material and energy footprint of future EV models. Such regulation would stimulate the sales of small energy and material efficient electric cars while penalising SUV models. This could come either as a separate EU regulation, or as part of the 2026 car CO_2 review.

- In parallel, ambitious policy and financial support to roll out sufficient public charging networks is key to downsizing electric vehicle batteries. In this regard, the member states should without delay implement the new Alternative Fuels Infrastructure Regulation.

- Provide industrial support for the production of compact cars. E.g. funds from the new European Social Climate Fund can be used by governments to help make manufacturing of small affordable cars in Europe commercially attractive, provided they are destined for European drivers (not export). Similarly, any of the funds given to carmakers as part of national state aid (TCTF) or EU funding programmes to transition their factories should include a requirement to produce at least 20% of BEV models in segments A-C (non-SUV).

- Accelerated R&D and industrial production support - via Horizon, Batteries Europe and the new EU Sovereignty Fund - to develop and scale up production of new resource-light battery chemistries, such as LF(M)P, sodium-ion and others.

National policies:

- Where BEV purchase subsidies still exist, they should include strict social and environmental criteria to incentivise carmakers to focus production and product development towards smaller, efficient and more affordable models. This can include e.g. income or vehicle price caps, as well as criteria around efficiency or environmental footprint.

- Governments should add an additional weight and/or energy consumption component to vehicle acquisition taxes. This would ensure that even if electric, large SUV (and pick-up truck) models

have zero CO_2 emissions, they are taxed more than smaller A-C segment equivalents. Car taxation that incentivises larger and more expensive cars (e.g. corporate car allowances and benefit-in-kind taxation) should similarly be revised.

- Systemically add a requirement to manufacture small, efficient, electric cars in segments A-C as part of national industrial policy and many automotive transformation subsidy programmes, e.g. to retool factories to produce electric vehicles. E.g. schemes such as social leasing in France should - alongside the subsidy for drivers - include a requirement for at least a quarter of newly manufactured electric cars to be in segments A-C and under EUR 30,000.

Local policies:

- Local governments should take action at the local level to de-incentivise SUV use. This should include actions such as higher parking and road access charges to encourage drivers to choose smaller models, on top of zero emission zones.

6. Annex

6.1 Cost calculations

Based on the assumptions and modelling done by Syndex, T&E has carried out its own modelling of the production cost of a small BEV in 2025.

The study from Syndex is based on the price of the Peugeot e208, which T&E has adapted to consider a 40 kWh small BEV while keeping the same assumptions. Given the recent decrease in material costs, T&E has also modelled a slightly less pessimistic assumption regarding the increase in material prices (excluding the battery). Syndex's study is based on the work carried out by the firm AlixPartners for the French Automotive Platform (PFA) in 2021 and uses 2019 as a reference.

Table: Component cost assumptions for 2025 (EVs and ICEs)

Assumptions for 2025	Least favourable market conditions	Less favourable market conditions	Favourable market conditions	Comment
Annual productivity - vehicle components (EV)	2.0%	3.0%	4.0%	Mostly from traditional productivity gains
Annual productivity - electric equipment (EV)	4.0%	6.0%	7.0%	Mostly from economies of scale and learning effects
Annual productivity - vehicle components (ICE)	-1.0%	0%	1%	ICEs are impacted by the reduction in production volume
Annual productivity - powertrain (ICE)	-4.0%	-2%	0%	
Battery pack price ($/kWh)	125	110	100	See info box below
Exchange rate (USD to EUR)	1	0.95	0.9	Central value as of 26/02/2023
Battery pack price (€/kWh)	125	105	90	
Battery size (kWh)	40	40	40	Typical small car battery
Total battery price (€)	*5,000 €*	*4,180 €*	*3,600 €*	
Increase in material prices (BEV/ICE)[39]	10.0% / 12.0%	7.6% / 9.1%	5.0% / 6.0%	Applied to all material except electronics and battery
Increase in semiconductor prices (BEV/ICE)	3.0% / 3.6%	2.5% / 3.0%	2.0% / 2.4%	Applied to electronics

Infobox: Battery prices
The price of battery packs is set to fall with the growth in EV volumes and the associated

[39] The impact of the increase in material prices and semiconductors on BEV and ICE components differ as the respective share of the cost of these materials and semiconductors in the total vehicle price are different.

economies of scale, with the ramp-up of gigafactories, and the associated efficiency gains.
The historic prices have decreased sharply until 2021 (141 $/kWh) and increased to 152 $/kWh in 2022 according to BNEF. These are average prices and hide variations between the cheaper batteries (LFP prices were 135 $/kWh in 2022, -11% compared to the market average), while NMC batteries are typically more expensive (184 $/kWh in 2022).

Future variations will be heavily impacted by the trend in material prices. Although they have surged in the past years, the market is normalising and the price of nickel and lithium has been decreasing. Lithium prices are seemingly stabilising at half of their 2022 peak and nickel prices are roughly back to their 2021 prices.

To account for these uncertainties, Syndex has chosen pack prices ranging from $100 to $125/kWh and highlights that some companies (like Tesla or GM) have announced prices below the 100 $/kWh point.

Based on an analysis of BNEF near term forecast we expect that the average price for LFP batteries would be around 111 $/kWh in 2025 (11% lower than the overall battery market average). This is in line with the central scenario of Syndex and also suggests that there would be cheaper batteries available on the market (i.e. below the average) for the OEMs which have put in place a battery production or procuring strategy to ensure better price control and mitigate the market price volatility - which is the cast of most major carmakers. Finally, new chemistries like sodium-ion batteries are expected to be much cheaper and could bring the price further down thus making the 'favourable market condition' scenario of 100$/kWh in 2025 more likely.

The table below presents the results under the three scenarios for a BEV. The mark-up of +59% is used across the different technologies (both BEV and ICE) and across the years. This is based on the observation that the vehicle content cost is 63% of the total vehicle price.

Table: Breakdown of cost results for EVs

Results (€)	**2019**	**Least favourable market conditions**	**Less favourable market conditions**	**Favourable market conditions**
Traditional vehicle components	9,500 €	9,366 €	8,636 €	7,911 €
EV components and electronics (excl. battery)	6,400 €	5,286 €	4,779 €	4,305 €
Battery	8,000 €	5,000 €	4,180 €	3,600 €
Total content cost	23,900 €	19,651 €	17,595 €	15,816 €
Mark up (profits, production, R&D, sales/marketing and others)	14,037 €	11,541 €	10,334 €	9,289 €
Vehicle price	*37,937 €*	*31,192 €*	*27,929 €*	*25,105 €*

6.2 Survey results and methodology

All figures, unless otherwise stated, are from YouGov Plc. Total sample size was 3,031 adults. Fieldwork was undertaken between 3rd - 8th August 2023. The survey was carried out online. The figures for each country have been weighted and are representative of all adults (aged 18+) in that respective country.

Aggregated results, per country

	Total	UK	Spain	Italy	Poland	France	Germany
Before small BEV offering							
ICE	69%	70%	69%	65%	74%	71%	64%
BEV	25%	22%	25%	27%	20%	22%	31%
Don't know	7%	8%	6%	8%	6%	7%	5%
After small BEV offering							
ICE	62%	67%	60%	59%	66%	63%	59%
Small BEV	22%	16%	27%	27%	20%	25%	18%
Large BEV	13%	14%	10%	11%	11%	10%	21%
Don't know	3%	3%	3%	4%	3%	2%	3%
BEV (aggregated)	*35%*	*30%*	*37%*	*38%*	*31%*	*35%*	*39%*
Difference in BEV share before and after BEV offering							
Delta (p.p)	**10%**	**8%**	**13%**	**10%**	**11%**	**12%**	**8%**

Results per country and gender

YouGov

	Total	Country			
		UK	Spain	Italy	Poland
CTE_1. You previously told us that you expect to buy a new car in the next 12 months... Which ONE of the following types of new car would you be most likely to buy in the next 12 months (i.e. between now and July 2024)?					
Base: Country adults surveyed in the market for new car	3031	502	501	506	500
A combustion car (i.e. petrol, diesel or gas, including hybrids and plug-in hybrids)	69%	70%	69%	65%	74%
A fully electric car	25%	22%	25%	27%	20%
Don't know	7%	8%	6%	8%	6%
CTE_2. For the following questions by 'small electric car', we mean a segment B car such as the Peugeot 208, Renault Clio, Opel Corsa, Toyota Yaris, Volkswagen Polo, Ford Fiesta, etc. The current market price for a small electric car is around €35k/£30k/PLN 155k (with 250-300 km range). Please imagine both of the following options were available to you... If you had to choose, which ONE of the following would you be most likely to buy?					
Base: Country adults surveyed in the market for new car who would buy a combustion car next	2086	352	346	330	370
A small electric car priced at €25k/£21k/PLN 110k	13%	9%	16%	14%	13%
A combustion car (i.e. petrol, diesel or gas, including hybrids and plug-in hybrids)	84%	88%	81%	82%	85%
Don't know	3%	3%	2%	4%	2%
CTE_3. As a reminder, by 'small electric car', we mean a segment B car such as the Peugeot 208, Renault Clio, Opel Corsa, Toyota Yaris, Volkswagen Polo, Ford Fiesta, etc. You previously mentioned you would consider buying an electric car in the next 12 months. Please imagine both of the following options were available to you... If you had to choose, which ONE of the following would you be most likely to buy?					
Base: Country adults surveyed in the market for new car who would buy an electric vehicle	745	111	123	138	101
A bigger electric car priced at €40k/£34k/ PLN 179k	50%	63%	41%	38%	52%
A small electric car priced at €25k/£21k/ PLN 110k	48%	35%	58%	61%	46%
Don't know	2%	2%	1%	1%	2%
CTE_5. For the following questions by 'small electric car', we mean a segment B car such as the Peugeot 208, Renault Clio, Opel Corsa, Toyota Yaris, Volkswagen Polo, Ford Fiesta, etc. The current market price for a small electric car is around €35k/£30k/PLN 155k (with 250-300 km range). Please imagine both of the following options were available to you... If you had to choose, which ONE of the following would you be most likely to buy?					
Base: Country adults surveyed in the market for new car who don't know what car to buy next	200	*39*	*32*	*38*	*29*
A small electric car priced at €25k/£21k/ PLN 110k	21%	*23%*	*22%*	*13%*	*28%*
A combustion car (i.e. petrol, diesel or gas, including hybrids and plug-in hybrids)	34%	*33%*	*31%*	*34%*	*24%*
Still don't know	46%	*44%*	*47%*	*53%*	*48%*

CTE_4. You previously said you would buy a combustion car rather than an electric one or that you don't know.Which, if any, of the following are your reasons for this? (Please select all that apply. If any of your answer(s) are not listed below, please type them in the 'Other' box)

Base: Country adults surveyed in the market for new car who would buy a combustion car next or don't know	1972	351	314	316	344
Price of €25k/£21k/ PLN 110k is too high	38%	31%	36%	46%	43%
I don't want a small car/ I need a bigger car	37%	37%	41%	27%	47%
The electric vehicle range capability or the charging network coverage are not sufficient	65%	75%	65%	59%	60%
Other	7%	16%	3%	6%	6%
Don't know	4%	3%	2%	4%	3%

YouGov

	Total			Gender	
		France	Germany	Male	Female

CTE_1. You previously told us that you expect to buy a new car in the next 12 months... Which ONE of the following types of new car would you be most likely to buy in the next 12 months (i.e. between now and July 2024)?

Base: Country adults surveyed in the market for new car	3031	501	521	1759	1272
A combustion car (i.e. petrol, diesel or gas, including hybrids and plug-in hybrids)	69%	71%	64%	70%	68%
A fully electric car	25%	22%	31%	25%	24%
Don't know	7%	7%	5%	5%	8%

CTE_2. For the following questions by 'small electric car', we mean a segment B car such as the Peugeot 208, Renault Clio, Opel Corsa, Toyota Yaris, Volkswagen Polo, Ford Fiesta, etc. The current market price for a small electric car is around €35k/£30k/PLN 155k (with 250-300 km range). Please imagine both of the following options were available to you... If you had to choose, which ONE of the following would you be most likely to buy?

Base: Country adults surveyed in the market for new car who would buy a combustion car next	2086	355	333	1224	862
A small electric car priced at €25k/£21k/PLN 110k	13%	15%	11%	12%	14%
A combustion car (i.e. petrol, diesel or gas, including hybrids and plug-in hybrids)	84%	83%	85%	86%	82%
Don't know	3%	2%	4%	2%	4%

CTE_3. As a reminder, by 'small electric car', we mean a segment B car such as the Peugeot 208, Renault Clio, Opel Corsa, Toyota Yaris, Volkswagen Polo, Ford Fiesta, etc. You previously mentioned you would consider buying an electric car in the next 12 months. Please imagine both of the following options were available to you... If you had to choose, which ONE of the following would you be most likely to buy?

Base: Country adults surveyed in the market for new car who would buy an electric vehicle	745	112	160	442	303
A bigger electric car priced at €40k/£34k/ PLN 179k	50%	39%	66%	54%	45%
A small electric car priced at €25k/£21k/ PLN 110k	48%	55%	33%	44%	53%
Don't know	2%	5%	2%	2%	2%

CTE_5. For the following questions by 'small electric car', we mean a segment B car such as the Peugeot 208, Renault Clio, Opel Corsa, Toyota Yaris, Volkswagen Polo, Ford Fiesta, etc. The current market price for a small electric car is around €35k/£30k/PLN 155k (with 250-300 km range). Please imagine both of the following options were available to you... If you had to choose, which ONE of the following would you be most likely to buy?

Base: Country adults surveyed in the market for new car who don't know what car to buy next	200	*34*	*28*	93	107
A small electric car priced at €25k/£21k/ PLN 110k	21%	*24%*	*18%*	20%	22%
A combustion car (i.e. petrol, diesel or gas, including hybrids and plug-in hybrids)	34%	*44%*	*32%*	42%	26%
Still don't know	46%	*32%*	*50%*	38%	52%

CTE_4. You previously said you would buy a combustion car rather than an electric one or that you don't know.Which, if any, of the following are your reasons for this? (Please select all that apply. If any of your answer(s) are not listed below, please type them in the 'Other' box)

Base: Country adults surveyed in the market for new car who would buy a combustion car next or don't know	1972	328	319	1148	824
Price of €25k/£21k/ PLN 110k is too high	38%	38%	31%	38%	38%
I don't want a small car/ I need a bigger car	37%	33%	35%	39%	34%
The electric vehicle range capability or the charging network coverage are not sufficient	65%	63%	69%	70%	58%
Other	7%	6%	8%	7%	7%
Don't know	4%	3%	6%	2%	5%

Results per age groups

YouGov

	Total	Age			
		18 - 24	25 - 34	35 - 44	45 - 54
CTE_1. You previously told us that you expect to buy a new car in the next 12 months... Which ONE of the following types of new car would you be most likely to buy in the next 12 months (i.e. between now and July 2024)?					
Base: Country adults surveyed in the market for new car	3031	99	492	683	605
A combustion car (i.e. petrol, diesel or gas, including hybrids and plug-in hybrids)	69%	69%	64%	64%	64%
A fully electric car	25%	29%	29%	29%	28%
Don't know	7%	2%	7%	7%	8%
CTE_2. For the following questions by 'small electric car', we mean a segment B car such as the Peugeot 208, Renault Clio, Opel Corsa, Toyota Yaris, Volkswagen Polo, Ford Fiesta, etc. The current market price for a small electric car is around €35k/£30k/PLN 155k (with 250-300 km range). Please imagine both of the following options were available to you... If you had to choose, which ONE of the following would you be most likely to buy?					
Base: Country adults surveyed in the market for new car who would buy a combustion car next	2086	68	317	440	389
A small electric car priced at €25k/£21k/PLN 110k	13%	18%	24%	14%	15%
A combustion car (i.e. petrol, diesel or gas, including hybrids and plug-in hybrids)	84%	81%	74%	84%	82%
Don't know	3%	1%	3%	2%	4%
CTE_3. As a reminder, by 'small electric car', we mean a segment B car such as the Peugeot 208, Renault Clio, Opel Corsa, Toyota Yaris, Volkswagen Polo, Ford Fiesta, etc. You previously mentioned you would consider buying an electric car in the next 12 months. Please imagine both of the following options were available to you... If you had to choose, which ONE of the following would you be most likely to buy?					
Base: Country adults surveyed in the market for new car who would buy an electric vehicle	745	*29*	141	195	169
A bigger electric car priced at €40k/£34k/ PLN 179k	50%	*52%*	55%	48%	53%
A small electric car priced at €25k/£21k/ PLN 110k	48%	*38%*	45%	51%	46%
Don't know	2%	*10%*	1%	1%	1%
CTE_5. For the following questions by 'small electric car', we mean a segment B car such as the Peugeot 208, Renault Clio, Opel Corsa, Toyota Yaris, Volkswagen Polo, Ford Fiesta, etc. The current market price for a small electric car is around €35k/£30k/PLN 155k (with 250-300 km range). Please imagine both of the following options were available to you... If you had to choose, which ONE of the following would you be most likely to buy?					
Base: Country adults surveyed in the market for new car who don't know what car to buy next	200	*2*	*34*	*48*	*47*
A small electric car priced at €25k/£21k/ PLN 110k	21%	*50%*	*15%*	*25%*	*28%*
A combustion car (i.e. petrol, diesel or gas, including hybrids and plug-in hybrids)	34%	*50%*	*24%*	*27%*	*38%*
Still don't know	46%	-	*62%*	*48%*	*34%*

CTE_4. You previously said you would buy a combustion car rather than an electric one or that you don't know.Which, if any, of the following are your reasons for this? (Please select all that apply. If any of your answer(s) are not listed below, please type them in the 'Other' box)

Base: Country adults surveyed in the market for new car who would buy a combustion car next or don't know	1972	57	271	414	366
Price of €25k/£21k/ PLN 110k is too high	38%	37%	36%	39%	40%
I don't want a small car/ I need a bigger car	37%	30%	39%	37%	39%
The electric vehicle range capability or the charging network coverage are not sufficient	65%	49%	55%	61%	64%
Other	7%	2%	3%	5%	7%
Don't know	4%	7%	6%	5%	3%

YouGov

	Total	55+
CTE_1. You previously told us that you expect to buy a new car in the next 12 months... Which ONE of the following types of new car would you be most likely to buy in the next 12 months (i.e. between now and July 2024)?		
Base: Country adults surveyed in the market for new car	3031	1152
A combustion car (i.e. petrol, diesel or gas, including hybrids and plug-in hybrids)	69%	76%
A fully electric car	25%	18%
Don't know	7%	6%
CTE_2. For the following questions by 'small electric car', we mean a segment B car such as the Peugeot 208, Renault Clio, Opel Corsa, Toyota Yaris, Volkswagen Polo, Ford Fiesta, etc. The current market price for a small electric car is around €35k/£30k/PLN 155k (with 250-300 km range). Please imagine both of the following options were available to you... If you had to choose, which ONE of the following would you be most likely to buy?		
Base: Country adults surveyed in the market for new car who would buy a combustion car next	2086	872
A small electric car priced at €25k/£21k/PLN 110k	13%	8%
A combustion car (i.e. petrol, diesel or gas, including hybrids and plug-in hybrids)	84%	89%
Don't know	3%	3%
CTE_3. As a reminder, by 'small electric car', we mean a segment B car such as the Peugeot 208, Renault Clio, Opel Corsa, Toyota Yaris, Volkswagen Polo, Ford Fiesta, etc. You previously mentioned you would consider buying an electric car in the next 12 months. Please imagine both of the following options were available to you... If you had to choose, which ONE of the following would you be most likely to buy?		
Base: Country adults surveyed in the market for new car who would buy an electric vehicle	745	211
A bigger electric car priced at €40k/£34k/ PLN 179k	50%	47%
A small electric car priced at €25k/£21k/ PLN 110k	48%	49%
Don't know	2%	4%
CTE_5. For the following questions by 'small electric car', we mean a segment B car such as the Peugeot 208, Renault Clio, Opel Corsa, Toyota Yaris, Volkswagen Polo, Ford Fiesta, etc. The current market price for a small electric car is around €35k/£30k/PLN 155k (with 250-300 km range). Please imagine both of the following options were available to you... If you had to choose, which ONE of the following would you be most likely to buy?		
Base: Country adults surveyed in the market for new car who don't know what car to buy next	200	69
A small electric car priced at €25k/£21k/ PLN 110k	21%	16%
A combustion car (i.e. petrol, diesel or gas, including hybrids and plug-in hybrids)	34%	39%
Still don't know	46%	45%

CTE_4. You previously said you would buy a combustion car rather than an electric one or that you don't know.Which, if any, of the following are your reasons for this? (Please select all that apply. If any of your answer(s) are not listed below, please type them in the 'Other' box)		
Base: Country adults surveyed in the market for new car who would buy a combustion car next or don't know	1972	864
Price of €25k/£21k/ PLN 110k is too high	38%	36%
I don't want a small car/ I need a bigger car	37%	35%
The electric vehicle range capability or the charging network coverage are not sufficient	65%	72%
Other	7%	11%
Don't know	4%	2%

Methodology

This survey has been conducted using an online interview administered to members of the YouGov Plc UK panel of 2.5 million+ individuals who have agreed to take part in surveys. Emails are sent to panellists selected at random from the base sample. The email invites them to take part in a survey and provides a generic survey link. Once a panel member clicks on the link they are sent to the survey that they are most required for, according to the sample definition and quotas. (The sample definition could be "GB adult population" or a subset such as "GB adult females''). Invitations to surveys don't expire and respondents can be sent to any available survey. The responding sample is weighted to the profile of the sample definition to provide a representative reporting sample. The profile is normally derived from census data or, if not available from the census, from industry accepted data.

YouGov plc makes every effort to provide representative information. All results are based on a sample and are therefore subject to statistical errors normally associated with sample-based information.