

January 2025

Av. 23 de Maio
Aeroporto
Pça. João Mendes
Liberdade

European E-mobility at a Crossroads

Forecasting electric car sales in Europe in 2025

Contents

1. About this report
2. The EU's journey to electromobility
3. Forecasting EU electric car sales in 2025
4. The impact of the CO₂ Regulation
5. Summary and recommendations
6. Methodology

Cover image: Photo by [Victor Sánchez Berruezo](#) on [Unsplash](#)



About this report

This report is the result of a collaboration between New AutoMotive and E-Mobility Europe. The purpose of the report is to present the findings of scenario analysis undertaken by New AutoMotive looking at the potential future direction of passenger car EV sales in Europe in 2025.

The analysis looks at the key role played by a key EU regulation¹ and presents two potential future pathways for Europe. Under current EU law, the regulation sets out targets for average emissions from new passenger car sales in the EU. Every five years, the target adjusts to promote the sale of more clean cars, putting the EU on a pathway to end sales of petrol and diesel cars by 2035.

We present two scenarios, the ‘baseline’ scenario and the ‘adjusted’ scenario. In the baseline scenario, we show how European electric car sales would continue with no tightening of the targets. This scenario is based on historical trends and the target as it applied in 2024. In the adjusted scenario, we show how upwards pressure on electric car sales from the regulation will boost sales of EVs. This allows us to quantify the impacts for European, in reduced emissions and reduced fuel costs.

Further detail can be found in the detailed methodology section at the end of this report.



E-Mobility Europe is the new name for AVERE, the European industry association for the electric vehicle ecosystem. Its membership brings together all national Electric Vehicle associations, as well as 70+ companies from across the ecosystem – electric vehicles, infrastructure, supply chain, fleet owners, and technology.

E-Mobility Europe’s mission is to deliver an EU policy framework that encourages Europe’s successful transition to electric vehicles by 2035, in a way that benefits both the region’s people and its industries.



New AutoMotive is a UK-based think tank that uses data to help accelerate the clean energy transition in the area of road transport - one of the largest sources of greenhouse gases and air pollution.

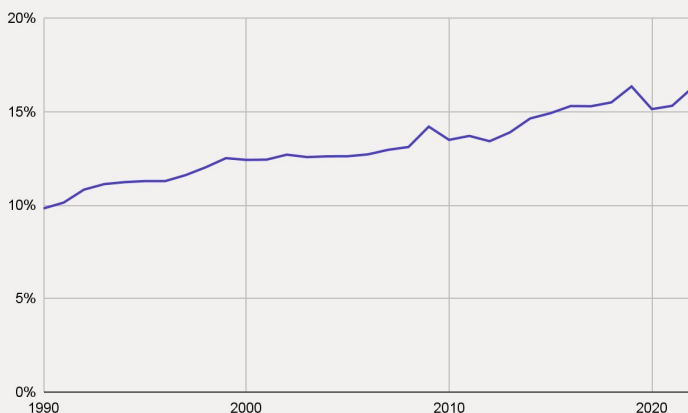
We use data to tell persuasive stories, informing the public and influencing policy development. We help explain the benefits of the biggest revolution in personal transport in modern times.

¹ [Regulation \(EU\) 2019/631](#), which sets targets for carmakers to reduce the average emissions of the new cars they sell in the European Union.

The EU's journey towards electric mobility

Passenger cars are a major source of Europe's greenhouse gas emissions. While other sectors of the European economy have reduced their contributions to climate change in the last decade, emissions from passenger cars are flatlining, becoming responsible for more and more of the EU's emissions overall.

EU passenger car CO₂ emissions as a share of total EU carbon emissions



Passenger cars were responsible for 16% of the EU's carbon emissions in 2022, up from 13% in 2010. Total emissions have remained relatively flat, recovering from a temporary drop since the pandemic.

To reduce emissions in line with long-term EU decarbonisation goals, policymakers have legislated at EU level, and national governments have also introduced policies.

EU Policy

The EU's Regulation 2019/631¹, promotes the sale of cleaner cars to European motorists. In time, as

¹ [Regulation \(EU\) 2019/631](#)

² [CO₂ emission performance standards for cars and vans, DG Clima, European Commission](#)

older cars are scrapped and replaced by new cars, this regulation should gradually reduce the stock of polluting vehicles on Europe's roads.

The regulation has successfully shifted the European car market towards cleaner cars. The average emissions rating of a new car in Europe fell 27% between 2019 and 2022.² This is largely due to rising sales of zero emission electric cars.

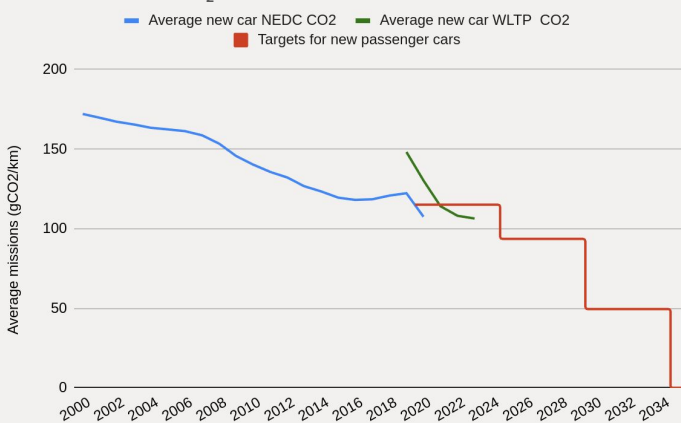
The regulation works by setting targets for carmakers in the form of an average emissions rating figure for the new cars they sell. Each carmaker's new car is given an emissions rating in gCO₂/km. For each calendar year, the average rating for all of a carmaker's new cars is taken, and compared to a target as specified by the regulation. Carmakers who reduce their average emissions ratings beyond what the target requires may agree to share some of their over-compliance with firms who have not sold enough clean vehicles in order to comply.

Firms that agree to do this form 'pools', in which manufacturers with higher emissions rely on their pool partner's lower emission vehicle sales to achieve an overall average reduction in the emissions ratings of their car sales. This pooling is usually accompanied by a financial arrangement between the two companies, thus creating a financial benefit for the company that has successfully sold more clean cars.

Firms that are unable to reduce their emissions in line with the target must pay an emissions premium. The existence of the premium helps stimulate the forming of pools, thus creating the financial incentive for firms to sell more clean vehicles.

The regulation sets annual targets which tighten every five years. Manufacturers reached compliance with the most recent target in 2021, following a change to the method by which emissions are measured which entered into force in 2020.

EU passenger car CO₂ emissions as a share of total EU carbon emissions



Manufacturers have been in over-compliance with the EU regulation in 2022 and 2023, and are likely to have over-complied again in 2024, given the level of battery and electric and hybrid vehicle sales. The target is set to tighten again in 2025, and the impact of this tightening will be a key focus of this analysis.

Member state policies

Member state policies to encourage the sale of electric vehicles have been key to achieving this progress. Incentives and tax breaks have helped spur the growth in electric car sales across Europe.

Different EU member states have introduced a variety of different policies to help promote electric vehicle sales. Germany, for example, exempts electric cars from ownership taxation for ten years. A grant scheme which gave purchasers of electric cars a €6,750 grant towards the cost of an electric car was withdrawn in December 2023.

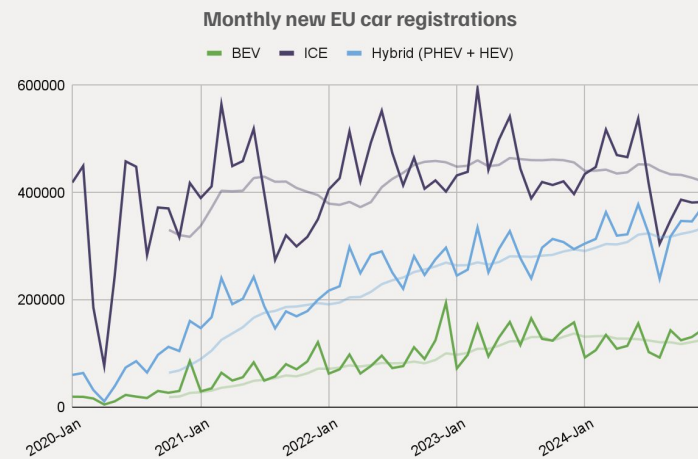
The French government plans to spend €1bn on electric vehicle subsidies in 2025, including on an eco-bonus scheme which provides €4,000 towards the cost of an electric car (with a sticker price of less than €47,000). A social leasing scheme was launched in 2024 (but suspended due to lack of funding with plans to relaunch in the second half of 2025). This scheme helps promote access to electric vehicles for those on low incomes, who may otherwise be stuck in more expensive polluting vehicles.

Italy, too, operates a subsidy scheme which provides €4,500 towards the cost of a new EV, with the opportunity to secure a scrappage bonus of €3,000. This scheme becomes less generous for individuals with an income above €30,000. These schemes have been less popular than in France and Germany, with only €250m budgeted for BEVs for the years 2022, 2023 and 2024.

However, while these policies have been successful, they have often been a victim of their success. Strong electric car sales growth has caused incentives and grants to become more expensive to maintain, and as governments grapple with post-pandemic debt levels and rising interest rates, this has caused finance ministries in Europe to revisit and in some cases reduce or withdraw their support for electrification, leaving the car industry to shoulder more of the cost.

EU electric car sales to date

European battery electric car sales grew strongly between 2020 and 2023, with sales growth slowing somewhat in 2024.



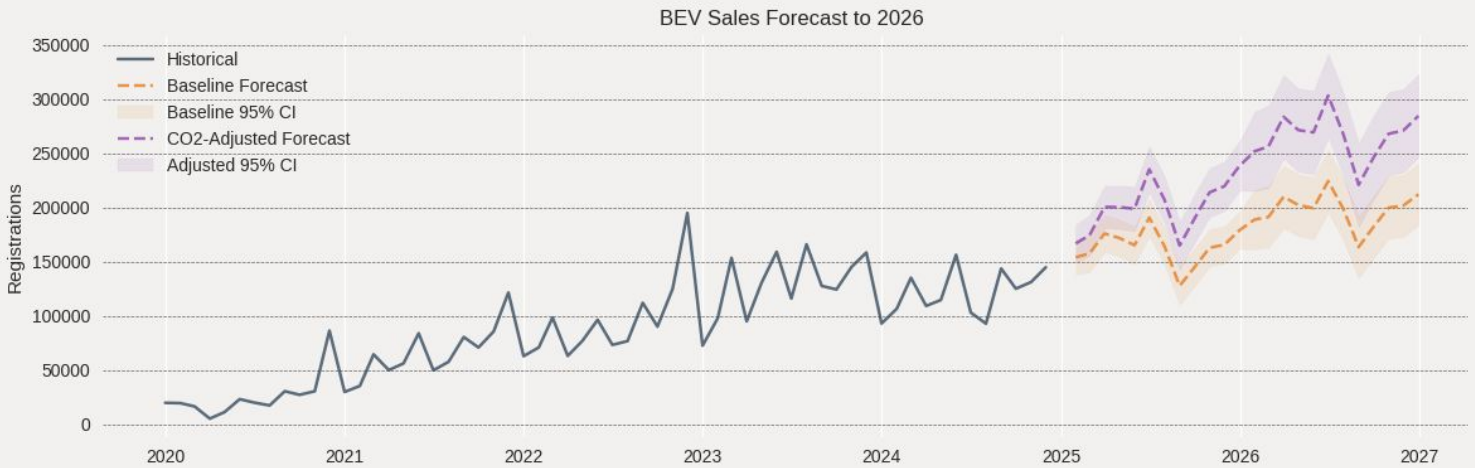
The growth in EV sales has been driven by two key factors: first, there are improvements in technology, such as better range and battery efficiency, reductions in cost as battery manufacturing scales up. These all have helped drive monthly EU electric car registrations to an average of 120,000 units per month. Further improvements are expected to feed through into model offerings, with an estimated seven new electric car models becoming available in 2025 with a sticker price of less than €25,000. These underlying technological trends will continue to drive electric car sales growth in the EU as battery prices continue to fall¹ and production capacity continues to scale up.

The second factor supporting EV sales growth has been public policy, which comprises the EU's regulatory targets and member state policies. This has been an unreliable support for electric car sales

in 2024, with the abrupt removal of German government subsidies at the end of 2023 causing a decline in electric car sales in the EU's largest market. Despite the removal of many member state grants and support for EVs, there are a number of fiscal incentives and exemptions that remain in place. We therefore take the view that, assuming policy stasis as of 2024 with no additional regulatory tightening of the EU's CO₂ targets, there would continue to be growth in electric car registrations. This will be explored further in the next section, where we present our forecast.

¹ See, for example, ['Electric vehicle battery prices are expected to fall almost 50% by 2026'](#), Goldman Sachs, October 2024

Forecasting EU electric car sales in 2025



The aim of this analysis is to quantify the impact of the EU’s CO₂ Regulation. The regulation is one of many factors driving the uptake of electric vehicles in Europe, alongside member state policies and technological improvements. Our analysis attempts to demonstrate the importance of the regulation for unlocking the benefits of electromobility for Europeans.

To that end, we project two scenarios: a baseline scenario, without the tightened regulatory target for 2025 and an adjusted scenario, which includes the tightened target.

The baseline scenario

In constructing our baseline scenario, we assume policy stasis as of December 2024. We assume that there are no further withdrawals of member state incentives and other pro-EV policies. We also assume that the EU’s regulatory targets do not tighten in 2025 as they are set to do. The scenario takes into account improvements in technology, and assumes that they will continue on current trends.

The adjusted scenario

The adjusted scenario includes all the elements of the baseline scenario, but with an added consideration of the tightened target in the EU’s CO₂ Regulation, which provides upwards pressure on BEV sales.

The results of our analysis suggest that the EU’s CO₂ Regulation has a clear impact on the new car market. It will result in electric car registrations being around 20% higher than would otherwise be the case in 2025. This is likely because the CO₂ Regulation’s system of incentives will drive further marketing and discounting of electric models. This has been seen in the UK where an ambitious ZEV mandate led to discounts on home chargers and improved finance offerings for electric cars.

Forecast Annual EU BEV Registrations

Year	Baseline	Adjusted
2024	1,455,959 (actual)	1,455,959 (actual)
2025	1,950,000	2,400,000
2026	2,370,000	3,190,000

The impact of the CO₂ Regulation

The results of our forecast show that electric car registrations would be likely to rise across the EU in the baseline scenario, with the CO₂ Regulation providing an upwards push on sales of the vehicles. The outcome suggests that the CO₂ Regulation plays a significant role in boosting electric car sales in the EU. In this section we quantify that impact.

Impacts for Europeans

To quantify the impact of each additional electric car, we must make some assumptions about each vehicle's usage. These will naturally vary from person to person and country to country. We assume the following:

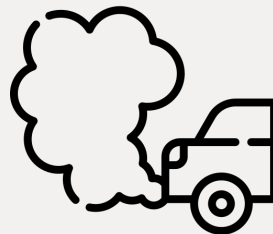
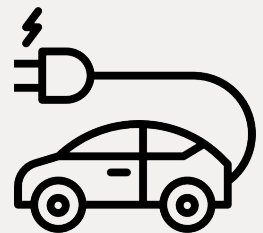
- 12,000 km/year for an average driver.
- ICE vehicle efficiency of 5.6 L/100 km.
- ICE tailpipe emissions of 129 gCO₂/km.
- EV efficiency of 15 kWh/100 km.
- Grid carbon intensity in 2025 of 200 g CO₂/kWh for a 2025 average, though this varies very significantly from country to country.
- Fuel price of €1.70 per liter, though this varies over time and from country to country.
- Electricity price of €0.25 per kWh for home charging, though this also varies over time and geography.

With these assumptions, each EV will save 1.2 tonnes of CO₂ in 2025, which is a result of substituting 1,800 kWh of electricity consumption for 672 litres of fuel consumption. This equates to a cost saving per vehicle of €602 per year per vehicle.

We can calculate the impact of the CO₂ Regulation by calculating the additional EVs that will be registered as a result of the target tightening in 2025. The results are summarised below.

+450,000

more EVs will be available for EU citizens in 2025, taking total EV sales to **2.4m in 2025**



530,000

tonnes of CO₂ will be saved from being emitted into the atmosphere - equivalent to 1.3 times the emissions of Poland¹

€270m

Fuel cost savings for Europeans, taking the total fuel cost savings from all new EVs in 2025 to **€1.4bn**, directly benefiting European motorists



¹ Polish emissions for 2022, as reported by '[Poland: Climate Action Progress Report](#)', DG Clima, 2023

Broader impacts of the Regulation

As well as bringing direct benefits to Europeans, the CO₂ Regulation plays an important role in providing clarity about the future direction of travel. With targets set out to 2035, carmakers are provided much-needed regulatory certainty about the rules governing their market over future product cycles. This will help attract investment in EU-based battery and electric vehicle manufacturing, since there are guaranteed to be customers in the form of OEMs seeking to bolster their electric vehicle production lines.

But beyond the automotive industry, the regulation plays an important role in supporting the new energy infrastructure that is required to enable more EU citizens to go electric. In places where there is little access to home charging, motorists are reliant on public charging infrastructure.

However, the rollout of this charging infrastructure is subject to a 'chicken and egg' problem, whereby there are not enough chargepoint customers to provide a return on the investment in the new infrastructure, nor are there enough chargepoints for more people to become EV charging customers.

To solve this problem, charge point installers and operators, and their investors, require as much certainty about the future direction of the car market as possible. Supplier regulations such as the EU's CO₂ Regulation, which set out targets for future dates, allow businesses and investors to install new sockets in the knowledge that although there may be few customers for their products initially, the market will grow and there will be demand for public EV charging in the near future.

Achievability

The CO₂ Regulation's targets were amended in 2023 to implement the EU's ambition to end sales of petrol and diesel cars by 2035, which is required to meet the broader goal of EU climate neutrality.

As we have seen from our discussion of the Regulation, it contains a system of financial incentives and rewards to help secure compliance. However, it places the burden of compliance on the automotive industry. Additional help with compliance is available from member states' fiscal incentives, but there is undoubtedly a question as to whether the automotive industry requires further support from the EU or member states to achieve the 2025 targets in a sustainable manner.

In September 2024, an automotive industry trade body, ACEA, stated that their members required further help from policymakers to meet the targets.¹ The European Commission subsequently launched a strategic dialogue on the future of the automotive industry, and in January 2025, German Chancellor Scholz announced that the European Commission had 'taken up' a proposal for an EU-wide EV subsidy scheme.²

As we saw above, more electric cars in the hands of Europeans brings more benefits in terms of cost savings and reduced fuel consumption, as well as helping mitigate against climate risk. An EU-wide support scheme for motorists to switch to an electric vehicle would be a very welcome addition to the EU's arsenal of pro-electric car policies, helping make the CO₂ Regulation's targets a reality and making the benefits of going electric more broadly available.

¹ ['European auto industry calls for urgent action as demand for EVs declines'](#), ACEA, September 2024

² ['Scholz Says EU Is Preparing Bloc-Wide Incentive Plan for EVs'](#), Bloomberg, 21st January 2025.

Summary and recommendations

Key findings

- The EU's CO₂ Regulation is key to unlocking the benefits of electromobility for Europeans as well as securing vital reductions in carbon emissions, delivering an additional 450,000 electric cars to European motorists in 2025
- The targets are achievable and pragmatic, with only a 20% increase in EV sales required over and above the baseline trend in order to meet the targets
- The CO₂ Regulation will boost the fuel cost savings for Europeans by €250m, enabling hundreds of thousands more motorists to access the benefits of an electric car
- The CO₂ Regulation provides certainty for investors in the energy infrastructure that is required to support more motorists to opt for an electric car, thereby supporting demand for electric cars and battery manufacturing investments
- Fiscal incentives, such as grants and tax breaks, often introduced at member state level, have been important to support the roll out of electric cars, but have become more expensive to maintain as the vehicles become more popular. The abrupt withdrawal of German government support for electric cars at the end of 2023 was largely responsible for the slow-down in electric car sales growth in 2024

Policy recommendations

- The European Commission should be **cautious about any changes to the CO₂ Regulation**. To prevent the benefits of the regulation from being undermined, any flexibility agreed during the Strategic Dialogue should:
 - **Ensure no fewer electric car registrations** in Europe than would be the case absent any changes
 - **Avoid requiring a full revision of the CO₂ Regulation**, which would add unpredictability
- The European Commission **should explore Chancellor Scholz' proposal for an EU-wide subsidy for electric vehicles**, leveraging unspent funds (e.g. the post-COVID recovery fund). It should evaluate how to direct its support at countries with less fiscal resources.
- Member States should be guided to **implement stable and fiscally-efficient incentive schemes for electric vehicles**, and measures to disincentivize internal combustion engine (e.g. corporate taxation) – covering both new and second-hand markets.
- The European Commission should **deliver corporate fleets legislation in 2024** that sets targets for electrifying fleets, accompanied by measures to support sustainable demand
- The European Commission should introduce **measures to simplify, standardize, and accelerate permitting for charging infrastructure**, while acting to address grid constraints

Methodology

This section explains how we forecast European passenger car sales by fuel type (such as electric and traditional cars) for 2025, considering both market trends and environmental regulations. Our approach combines advanced statistical modeling with adjustments based on CO2 emissions targets set by the European Union. This gives us two forecasts: one based on current market trends and another adjusted for the impact of EU regulations.

To produce an accurate forecast, the model relies on two key datasets: monthly vehicle registration data and annual CO2 emissions data.

Monthly Registration Data

This dataset records how many vehicles were registered each month, categorized into four main fuel types:

- Battery Electric Vehicles (BEVs): Fully electric cars.
- Hybrid Electric Vehicles (HEVs): Cars combining electric and internal combustion power, including PHEVs and HEVs.
- Internal Combustion Engine (ICE): Traditional petrol and diesel vehicles.

The data spans from January 2020 to December 2024, providing a detailed view of market trends over time, and it comes from a range of national sources for each member state of the EU. The data is collected monthly by New AutoMotive as part of its Global Electric Vehicle Tracker data series¹.

Annual CO2 Emissions Ratings & Vehicle Performance Data

This data set tracks fleet-wide average CO2 emissions for vehicles sold in the EU, as well as advertised electric vehicle range. This is used to judge compliance with EU regulatory targets designed to reduce emissions, with specific goals for 2025. It also allows us to factor technological improvements in EV sales growth momentum. Data is sourced from the European Environment Agency (EEA) and covers 2020 to 2023.²

¹ [Global Electric Vehicle Tracker](#), New Automotive, accessed January 2025.

² [Monitoring of CO2 emissions from passenger cars](#), European Environment Agency, accessed January 2025.

Our model

Our model uses historical data to predict future sales trends. Here's an overview of how it works:

Step 1: Time Series Forecasting

We use an advanced statistical model (called SARIMAX) to identify patterns in the data. This model accounts for:

- Seasonal Trends: For example, more cars tend to be sold in certain months of the year.
- Long-term Trends: The gradual shift in market preference toward electric vehicles.
- External Factors: Things like regulatory pressures and changing consumer preferences.

Step 2: CO2 Pressure Adjustment

To see how EU regulations might affect future sales, we include a "CO2 Pressure Index." This measures how much pressure manufacturers face to meet emissions targets. It uses historical sales data and emissions performance to calculate the level of pressure applied to EU BEV sales. It considers:

- Time Pressure: As the 2025 deadline approaches, pressure increases.
- Target Pressure: How far manufacturers are from meeting emissions goals.
- The index also takes into account technical factors like a car's energy efficiency and weight.

Step 3: Production of outputs

We produce two scenarios:

- Baseline Forecast: A projection based only on historical trends.
- CO2-Adjusted Forecast: The baseline forecast is adjusted to reflect the impact of regulatory pressure.

Model Accuracy and Insights

To ensure reliability, our model's accuracy was evaluated using key performance indicators for each fuel type. These metrics include:

Root Mean Square Error (RMSE): Measures how much the predicted values differ from actual values, with lower values indicating better accuracy.

Mean Absolute Error (MAE): A simpler measure of average error, also smaller for better models.

Seasonal Strength: Indicates how strongly seasonal patterns (like monthly trends) affect the data.

Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC): Metrics that evaluate the model's quality relative to its complexity; lower values are better.

Results by Fuel Type

Battery Electric Vehicles (BEVs)

- RMSE: 0.274
- MAE: 0.210
- Seasonal Strength: 0.254
- AIC: -2.531 (excellent fit)
- BIC: 7.944

Hybrid Electric Vehicles (HEVs)

- RMSE: 0.302
- MAE: 0.211
- Seasonal Strength: 0.125
- AIC: -2.367
- BIC: 8.108

Internal Combustion Engine (ICE)

- RMSE: 1.208 (higher error due to market decline)
- MAE: 0.736
- Seasonal Strength: 0.582 (stronger seasonal trends)
- AIC: 29.090
- BIC: 42.281

Conclusion

The model's performance metrics can be summarised as below.

- **Battery Electric Vehicles (BEVs):** The model had high accuracy with small errors (measured by RMSE and MAE values).
- **Hybrid Electric Vehicles (HEVs):** Similarly accurate with minimal seasonal variation.
- **Internal Combustion Engine (ICE):** Larger errors due to more pronounced seasonal patterns and variability.

We therefore focus our analysis of the results on the figures for BEV car sales in Europe, and indicate a forecast range that includes uncertainty (95% confidence intervals). This allows for potential variations in factors like consumer behavior and economic conditions.