



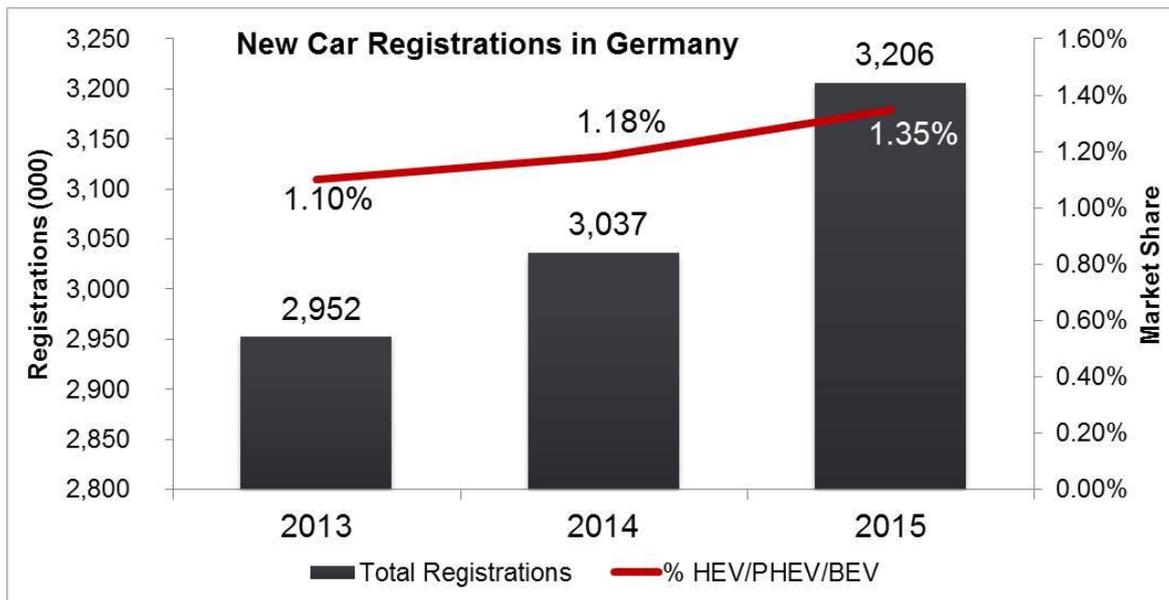
**FOCUS ON GERMANY:
ELECTRIC, HYBRID &
PLUG-IN HYBRID VEHICLES
FY2015 MARKET OVERVIEW**

Analysis completed: March 2016

INTRODUCTION

The electrification of the global vehicle fleet is a distant but long-held ambition for large sections of the motoring community. Hybrid and Electric vehicles continue to have low market shares for a number of reasons, including high upfront costs, real and perceived range limitations, and a lack of consumer education. Despite these factors, in global terms there continues to be progress, which suggests a relatively positive outlook for the future.

The growth of the Electric Vehicle (EV) and Hybrid car markets in Europe is a direct result of the concerted effort by providers to develop alternative powertrains. Nevertheless, when considering Germany specifically, the market share of electrified cars, which includes HEVs (Hybrid Electric Vehicles), PHEVs (Plug-In Hybrid Electric Vehicles) and BEVs (Battery Electric Vehicles), is still less than 1.5% of all new registered cars.



Source: JATO Dynamics Limited



Factors such as consumer behavior and the need to save energy and fuel, together with government incentives, will help to drive the growth of production in the German market in future, as well as other European markets.

Several studies regarding the green mobility suggest that there is not enough knowledge of alternative powertrains in the motoring community. This has resulted in low levels of awareness and interest in alternative powertrains. In fact, less than 10% of new car buyers would consider electric or hybrid vehicles, despite a growing range of alternative options.

This Market Insight Report gives an overview of the different types of electric and hybrid technologies available to German consumers, and highlights the biggest markets for its sub-segments.

DEFINITIONS

Hybrid Electric Vehicle (HEV)

A vehicle that combines a conventional internal combustion engine (ICE) propulsion system with an electric propulsion system, in order to achieve improvements in fuel economy.

Plug-In Hybrid Electric Vehicle (PHEV)

A Hybrid electric vehicle with a high-capacity rechargeable battery that is capable of using electricity as its primary propulsion source. The internal combustion engine typically assists in recharging the battery or serves as a back-up when the battery is depleted.

Battery Electric Vehicle (BEV)

A pure electric vehicle propelled by an electric motor, which is powered by energy stored in an on-board battery.

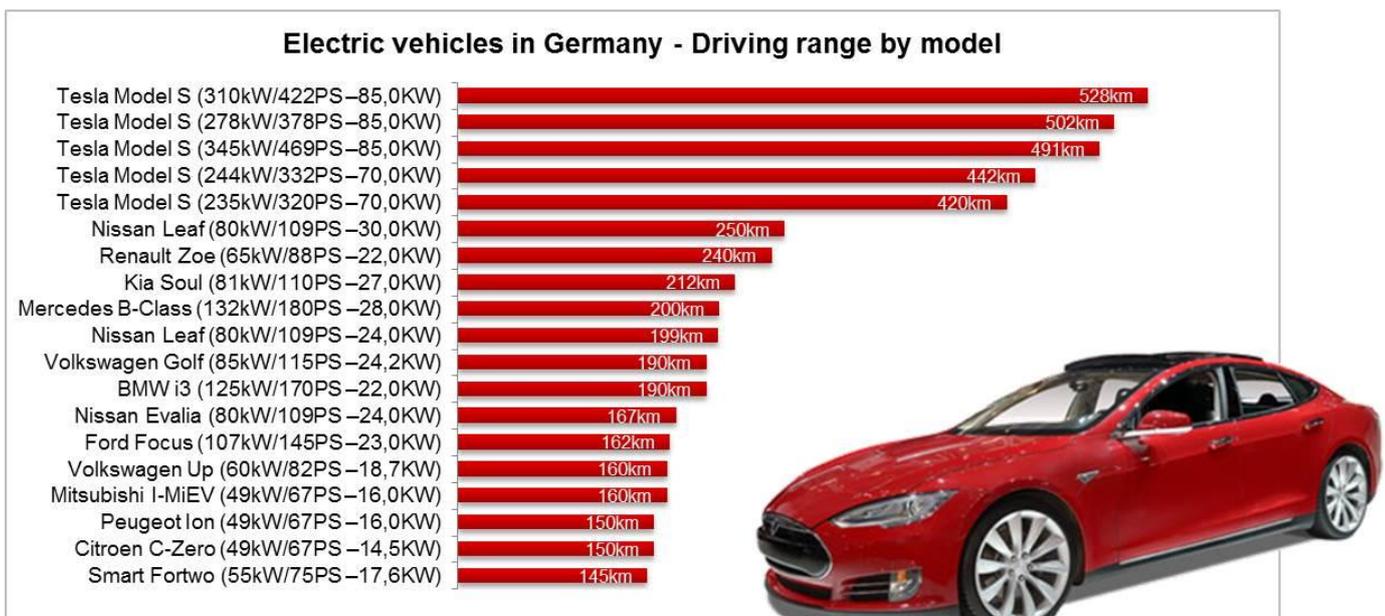
OVERVIEW

Out of these categories, the BEV and PHEV volumes showed strong growth rates of more than 70% (worldwide), while HEV decreased by 2% in 2015

In Germany there are a number of negative preconceptions for Electric Vehicles, such as:

- High purchase costs
- Low cruising range
- Few public charging stations
- Charging time

In contrast, EV drivers do not generally confirm those statements. They generally value driving pleasure, innovative technology and the positive environmental impact. Recent technological improvements, and specifically, investment in battery life technologies, has improved EVs' driving ranges substantially. As shown in the graph below, there are now several cars that achieve driving ranges of 200km or more:



Source: JATO Dynamics Limited

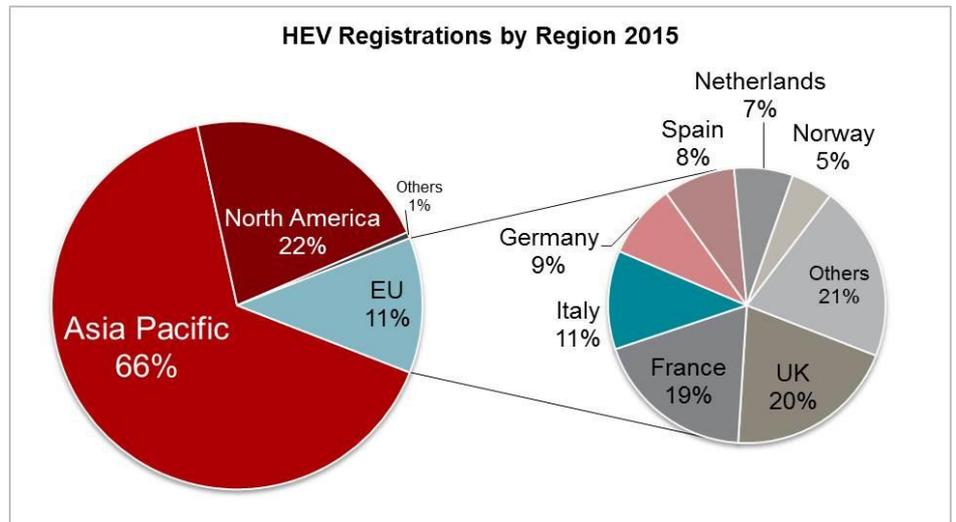


GERMAN MARKET ANALYSIS: HYBRID ELECTRIC VEHICLES (HEV)

GERMANY STILL BEHIND THE UK, FRANCE AND ITALY

Japan and USA were the two largest HEV markets in 2015, with almost 1.1 million registered HEV vehicles in Japan, followed by 400,000 in the USA. Germany had close to 20,000 HEV registrations in 2015, placing eighth worldwide, and fourth in Europe.

In 2015 the market share for HEV vehicles decreased to 0.6% from 0.7% in 2014, due to increasing numbers of pure BEV and Plug-In Hybrid cars.



Source: JATO Dynamics Limited



TOYOTA: PIONEER AND LEADER IN HYBRID TECHNOLOGY

The Japanese manufacturer Toyota, the pioneer of hybrid vehicles for the last 15 years with the production of the Prius, dominates the German market, with a number of models currently available (Yaris, Auris, Prius). Along with Lexus, it has a market share of 85% in Germany, though this number is gradually decreasing, with other manufacturers turning their attention to this growing market.



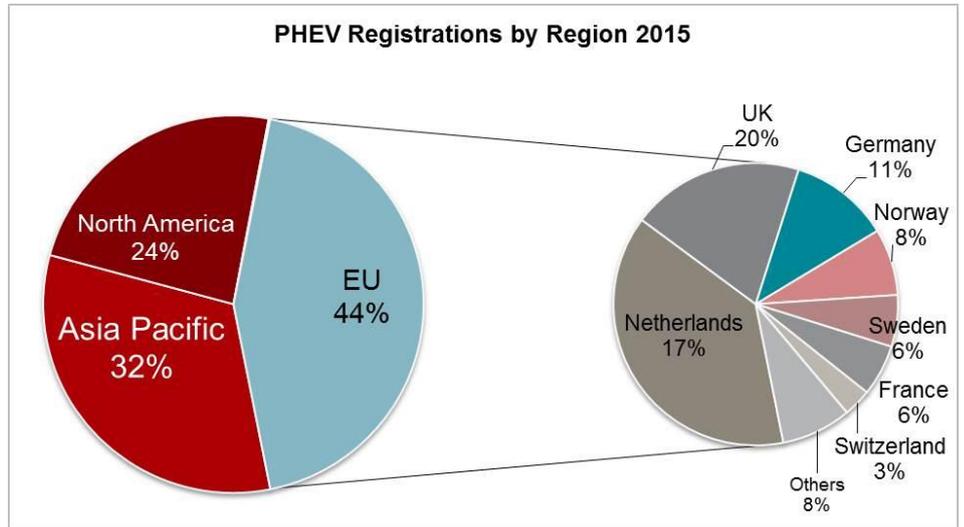
Source: JATO Dynamics Limited



GERMAN MARKET ANALYSIS: PLUG-IN HYBRID VEHICLES (PHEV)

GERMANY: A LONG WAY TO GO

China and the USA are currently the two largest PHEV markets, with both markets recording more than 50,000 PHEV registrations in 2015. The Netherlands had an exceptional number of PHEV registrations given the size of the market – 37,000 – with all other countries registering less than 20,000 registrations. Germany, with more than 11,000 PHEV registrations, placed sixth in the global registrations rankings, and third place in Europe.



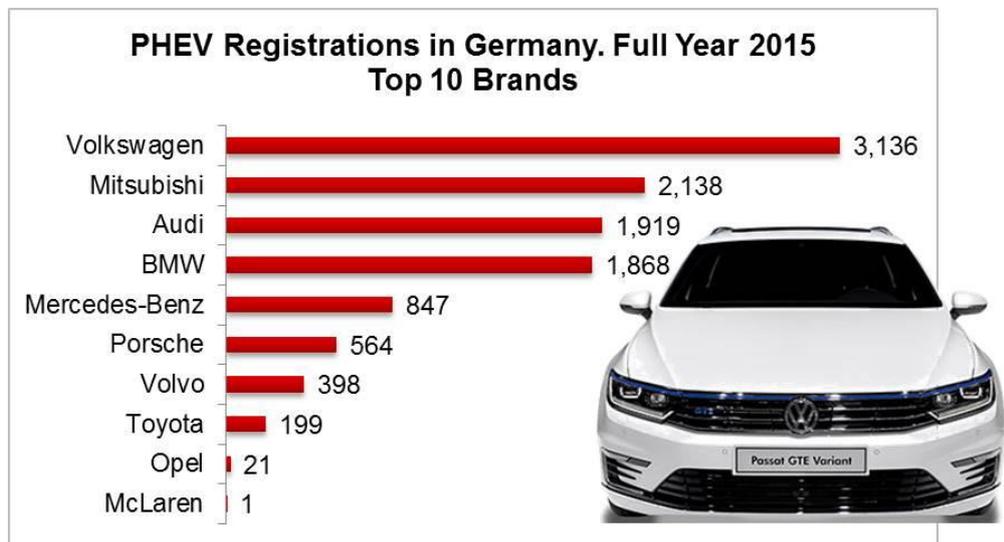
Source: JATO Dynamics Limited



VOLKSWAGEN GROUP: LEADING THE PLUG-IN HYBRID MARKET

In a fast-growing market, Volkswagen has achieved a leading position thanks to two different Plug-In models, the Golf and Passat, despite Mitsubishi's grip on the leadership of the model ranking with the Outlander.

Although sales are increasing, Germany remains behind the leading markets – not just China and USA but also the Netherlands and the UK in Europe, with consumers in these markets more open to alternative vehicles.



Source: JATO Dynamics Limited

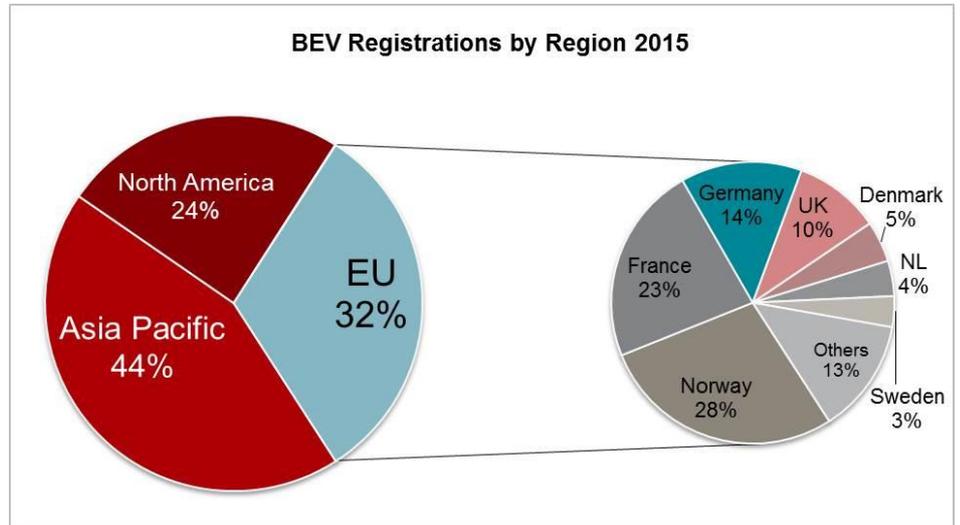


GERMAN MARKET ANALYSIS: BATTERY ELECTRIC VEHICLES (BEV)

GERMANY – THE DEVELOPING BEV MARKET

China and the USA are currently the two largest BEV markets, followed by Norway and France. Germany, with 13,000 BEV registrations, is positioned fifth worldwide.

In 2015 the market share of BEV in Germany increased from 0.3% in 2014 to 0.4%. Kia (Soul), Renault (Zoe, Twizy, Kangoo, Fluence) and Volkswagen (Golf, Up) are leading the German BEV market.



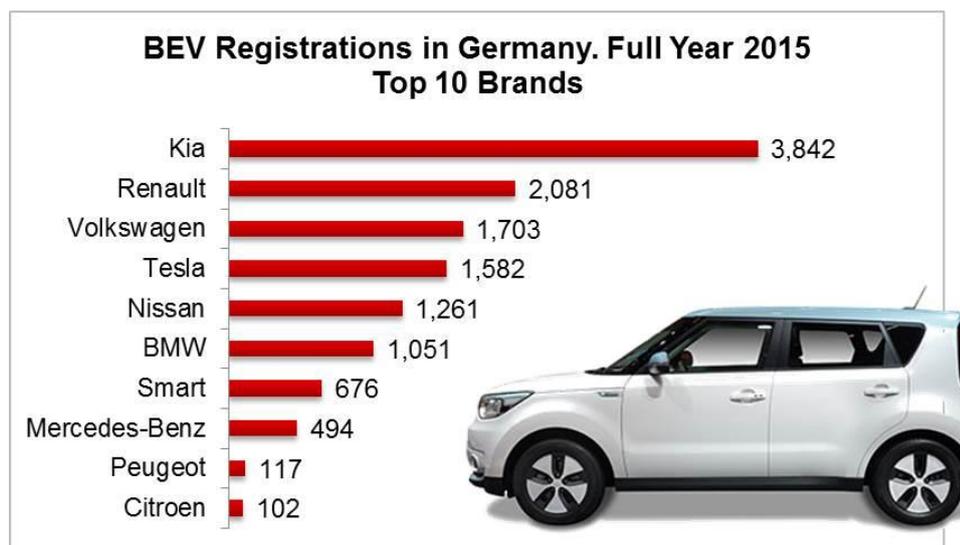
Source: JATO Dynamics Limited



China's strong position as the market leader will make any German effort to eventually lead the market difficult, though the established strength of Germany's domestic industry means there is no reason the gap cannot be narrowed.

KIA, THE BEST-SELLING BEV BRAND IN GERMANY

There is an ongoing discussion regarding incentives and subsidies being used to spur sales of electric vehicles in Germany. The combination of the energy revolution and a kind of mobility revolution presents a big opportunity for Germany to be one of the leading countries for BEVs in the future.



Source: JATO Dynamics Limited



CONCLUSION

Electric vehicles are fairly new products that are helping to reduce vehicle fuel consumption and CO2 emissions. However, they come with a host of extra purchasing costs compared to cars with traditional petrol and diesel engines. Overall, these types of vehicles are contributing to improved efficiency and are providing economic benefits to customers, society, carmakers, and lawmakers throughout their life cycles. Despite fast-rising sales and far-reaching global interest, vehicles with alternative drive trains still struggle to win over car buyers, particularly in Germany. Consumers are aware of low emission and environmentally friendly technologies, but still display a lack of interest in such products. Significant effort is being already made in several countries to resolve this trust issue, with the introduction of reward and incentive schemes. Car manufacturers are working on extended driving ranges, shorter charging times, trying to reduce costs of battery maintenance and production to reduce selling prices.

There continues to be a political discussion in Germany regarding financial incentives. The industry needs government support to boost sales and executives will meet with Angela Merkel, the German Chancellor, in April 2016 to discuss the matter. Though the industry will lobby the Government for cash rebates of up to €5,000 for owners of electric and hybrid vehicles, tax incentives are emerging as a likely compromise. A combination of the two may yet be the most likely outcome. The industry sees incentives as a potential game changer due to the size of the German market, which accounts for nearly a quarter of all auto sales across Europe.

Automobile experts point to France, where last year the government started offering a €10,000 rebate to drivers trading in diesel-powered cars older than 14 years. Norway provides several benefits for owners of green vehicles, and therefore serves as an excellent example to Germany and other countries of how best to promote cleaner vehicles. There is no value-added tax on purchases, and no 'one-time fee', a charge imposed on regular cars. There is also free charging, free parking and an exemption from congestion charges. Finally, electric car owners in Norway are allowed to drive in bus lanes to avoid traffic. In the US, buyers can claim a federal tax credit of as much as \$7,500.

The fundamental issue facing the industry is how best to transparently inform consumers of the available alternatives and to convince them that alternative power options are the way forward. Hydrogen technologies are in the latter stages of final development (e.g. Mercedes B-Class Fuel Cell, Toyota Mirai, Hyundai ix35 and others) and are seen by many as key to the debate. However, alongside this, the public and private sectors will have to keep exploring other ways too, such as solar energy or biofuels, in our search for truly sustainable transport. Besides this, manufacturers and other institutions should try to make the market of alternative powered cars as transparent as possible to reduce the prejudices evident in consumer attitudes.

According to our forecasting partner LMC Automotive, the future looks bright for electric vehicles. Sales are expected to hit record levels from next year, driven by massive growth in China and Europe through to 2025. The global market is expected to reach sales in excess of 700,000 units next year thanks to strong growth in China, Europe and the USA.



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