The EV Revolution

A call to action for Europe's automotive industry

S&P Global
Mobility

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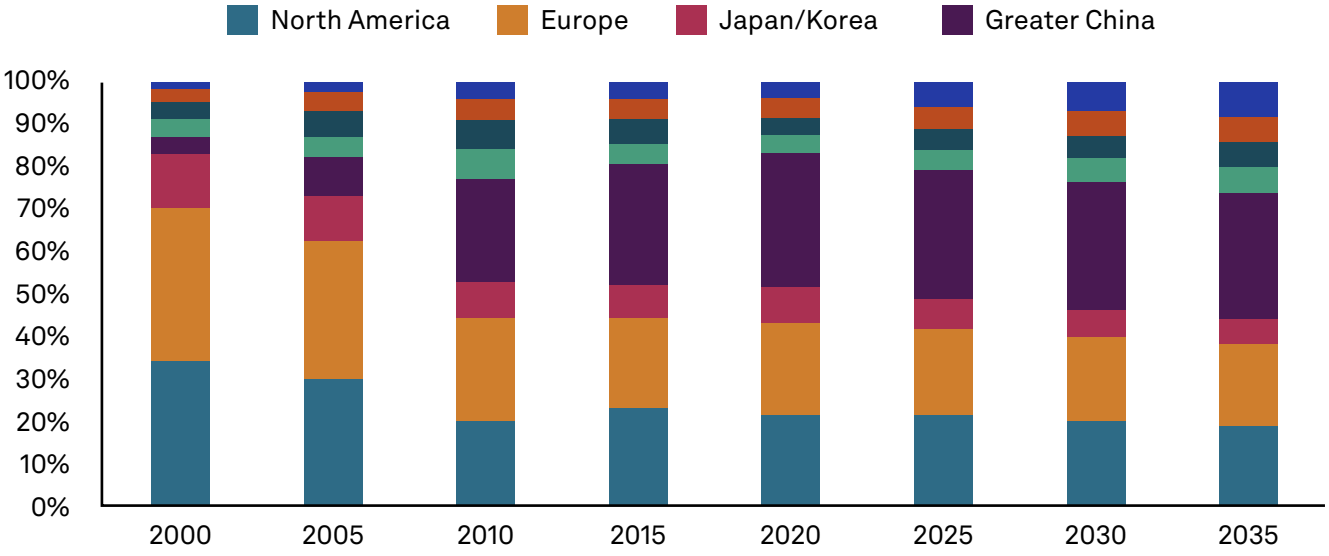
The European Union and the UK remain significant players in the global automotive market, with combined sales figures demonstrating their considerable leverage. In recent years, the EU and UK automotive market has consistently ranked among the largest in the world, trailing only behind China and the United States. In 2025, S&P Global Mobility forecasts that EU and the UK will account for 20.5% of global vehicle sales, showcasing its importance as a key market.

Global light-vehicle sales, share by region

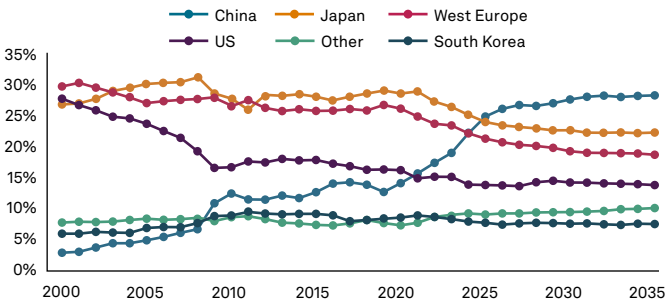


As of May 1, 2025.
Source: S&P Global Mobility

However, this position is weakening on the global stage and far removed from the eminent position enjoyed 25 years ago. While the EU and UK market has traditionally enjoyed robust sales figures, competition from China, with its rapidly growing electric vehicle sector, and the US, bolstered by substantial government incentives and a strong domestic manufacturing base, has intensified. Japan and South Korea also present formidable competition, with established automotive giants and advanced technology driving innovation.

Europe's positioning is weakening not only in terms of volume but also in its diminishing influence. Until recently, its brands set the pace. They were technology leaders equally protected as they were driven by regulations that enabled them to sell their wares in Cologne, Chicago and Chongqing. Now, that position is on the slide as shown by sales by brand origin falling below the 25% share that West Europe brands had managed to maintain even as the weight of global sales shifted ever eastward.

Global light-vehicle sales by brands' country/region of origin



As of May 1, 2025.
Source: S&P Global Mobility
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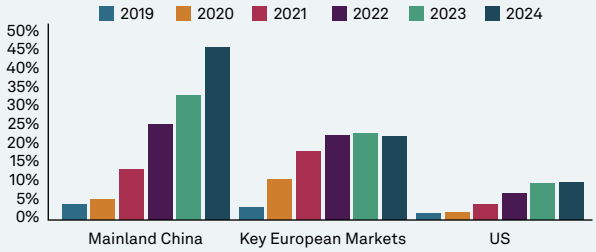
As the global automotive landscape shifts toward electrification and sustainability, the EU and UK must adapt to maintain its relevance. While still a key market with appreciable leverage, the need for strategic investments in innovation, local production and regulatory frameworks is critical to counteract the encroaching influence of competitors. To reclaim and strengthen its position, Europe must embrace collaboration and innovation, ensuring it remains a vital player in the evolving automotive industry.

Exhibit 1: Electrification market

In terms of electrification, it is hard to see beyond the past five years as being an era of lost opportunity for the European and US markets. While both markets have procrastinated, pivoted and prevaricated in terms of legislative approaches and strategy, mainland China has kept its eye on the prize. Mainland China's laser like focus on new-energy vehicles (NEVs) stems from the government's guiding 14th five-year plan, which was first posited in 2020 and that is in place for 2021–2025. In it, NEVs are designated as strategic emerging industries and enjoyed both demand- and supply-side support from official government policy. In contrast, policy support in Europe and the US has been patchy and less joined up (except for Norway) and subject to political impulses and vacillations.

The results of such differences in approach are amplified in the chart below. All three markets began on an even keel in 2019 in terms of PHEV and BEV penetration. Ever since, mainland China's demand has picked up momentum and soared ahead in the region. In contrast, Europe's demand has stalled and in the US demand growth has been relatively meager.

BEV and PHEV share of total new light vehicle registrations



As of March 2025.
BEV = battery-electric vehicle; PHEV = plug-in hybrid electric vehicle.
Key European markets are Denmark, France, Germany, Italy, the Netherlands, Norway, Spain and the UK.
Source: S&P Global Mobility.
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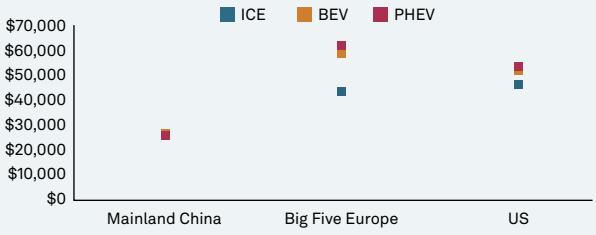
Such focus in mainland China has brought a situation where PHEVs and BEVs largely achieved price parity with internal combustion engine (ICE) vehicles by the fourth quarter of 2024, as shown in the chart below.

Average price of C- and D-segment vehicles among the 20 top-selling LVs in Q4 2024 in key global markets



As of February, 2025.
Sales are measured by new vehicle registrations. Big 5 Europe markets are France, Germany Italy, Spain and UK. ICE vehicles include mild hybrids.
Source: S&P Global Mobility.
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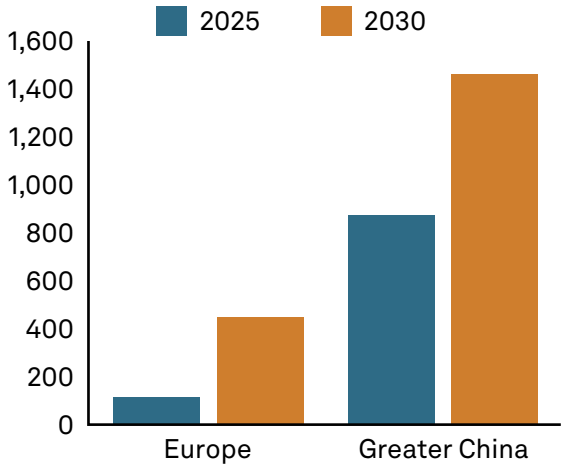
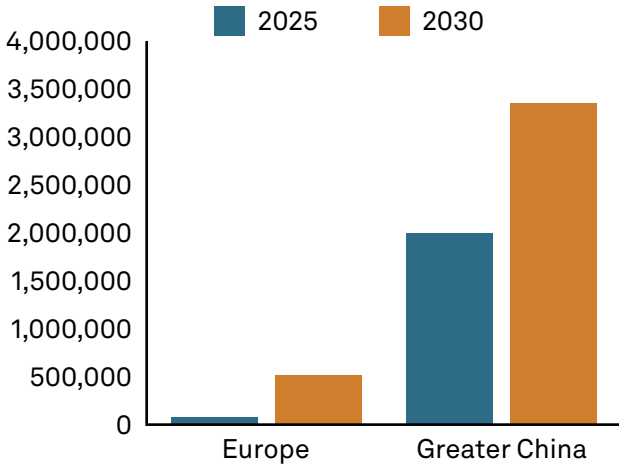
A call to action

To regain relevance, Europe must adopt a multifaceted approach that emphasizes innovation, collaboration and strategic investment. The recent launch of the European Commission's Strategic Dialogue[1] is a crucial step in this direction, focusing on the sector's pressing challenges. The €1.8 billion allocated to secure a competitive supply chain for battery raw materials is vital for bolstering local production capabilities and reducing dependency on external sources if the region is ever to close the gap which has opened between mainland China and EU and UK in this respect. The battery raw material initiative, alongside the Communication on Decarbonising Corporate Fleets, underscores the urgent need for a transition to zero-emission vehicles, especially in urban environments where transportation significantly contributes to greenhouse gas emissions.

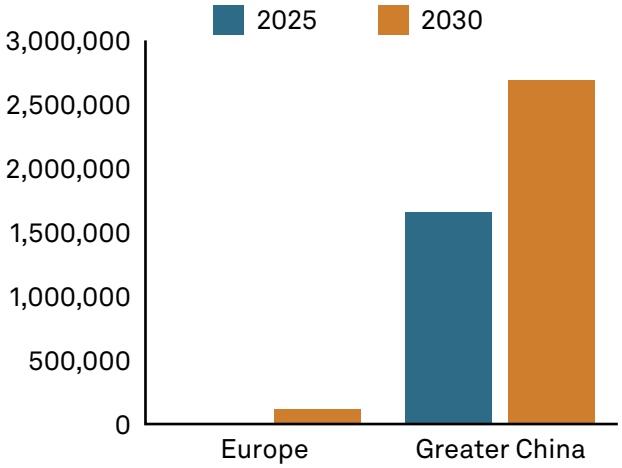
Battery cell production capacity (GWh)



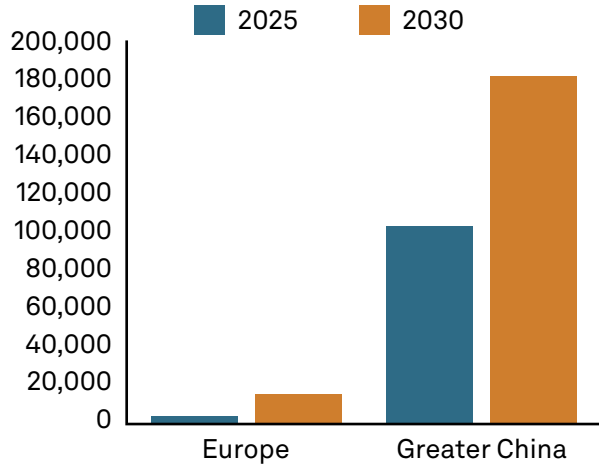
Battery cell cathode demand (tonnes)



Battery cell pCAM demand (tonnes)



Lithium demand (tonnes)



As of May 1, 2025.
Source: S&P Global Mobility

[1] President Ursula von der Leyen launches Strategic Dialogue on the Future of the Automotive Industry and announces Action Plan
https://ec.europa.eu/commission/presscorner/detail/en/ip_25_378

Cities play a pivotal role in this transition, with local authorities influencing regulations and infrastructure to support cleaner fleets. Successful examples, such as Amsterdam and Hamburg, Germany's ambitious zero-emission taxi initiatives, demonstrate how effective collaboration and innovative policies can drive the shift toward sustainable urban mobility. By focusing on local solutions and fostering partnerships, Europe can enhance air quality and public health while positioning itself as a leader in the green automotive revolution.

Setbacks, such as Northvolt's recent struggles, should not overshadow the broader potential of the EU auto industry. While challenges exist, they also present opportunities for growth and transformation. By harnessing the collective strength of its automotive sector and embracing a proactive stance, Europe can navigate the complexities of the global market and geopolitical landscape.

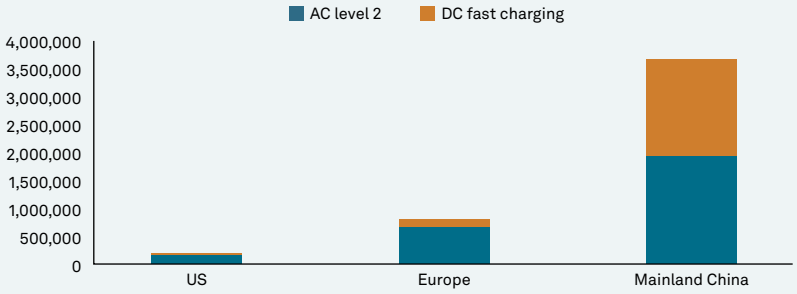
The call to arms for the European automotive sector is clear: innovate, collaborate and invest strategically to reclaim market share and relevance. By focusing on sustainability, enhancing local production and leveraging urban initiatives, Europe can not only revive its automotive industry but also lead the charge toward a cleaner, more sustainable future.

Exhibit 2: Charging infrastructure development

Charging infrastructure development is one of the holy trinities for sustainable EV market development, the other two being range and cost. The three can be applied to both the supply- and demand-side of the equation. Consumers desire range for the convenience, just as much as original equipment manufacturers need it for fewer design compromises. With cost, OEMs have their eye on margins and the need to market profitable small EVs, while consumers simply look at the affordability. On the charging side, OEMs look to develop vehicles that are capable of receiving more power and infrastructure that can deliver more power, with consumers looking to a higher density of charging infrastructure and shorter charging stops.

Again, mainland China has opened up an appreciable gap in the area of charging infrastructure development between the competing markets of Europe and North America. First, in sheer volume of public/semipublic EV charging stations, mainland China is far ahead of Europe and the US — as one might expect given their relative areas and population sizes. However, their lead is also shown in the share of DC fast chargers in the total.

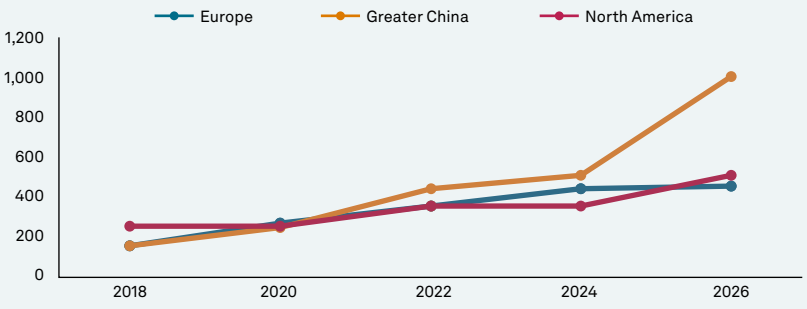
Estimated cumulative public/semipublic EV charging station deployments at the end of 2024



As of December 2024.
Data is an estimate. Data excludes automaker-specific charging stations
Source: S&P Global Mobility.

Presently, the lead mainland China enjoys only looks set to accelerate. Over the past two years, intense competition has emerged between mainland Chinese battery manufacturers to develop faster and faster charging capabilities, and also the infrastructure to support technological developments, such as BYD's 10C Super-e platform or CATL's Shenxing plus 12C platforms. Consequently, DC charging power in mainland China, which was 40% lower than North America in 2018, is expected to become double that of North America by 2026.

Receivable peak DC charging power of leading EVs by market (kW)



As of March 2025.
Peak DC charging capacity of the car (not to be confused with EVSE fast-charging capabilities); OEM provenance considered for the regions.
Source: S&P Global Mobility.

How Europe can reclaim its automotive edge

Europe's economic landscape, once the cradle of industrialization, now grapples with the fallout of de-industrialization and globalization, contributing to sluggish GDP growth rates. The culprit? For some it is institutional sclerosis, or "Eurosclerosis," which encapsulates the bureaucratic red tape and inefficiencies stifling innovation and adaptability (ironically the very elements that served to protect and drive automotive innovation). As global competitors, particularly from Asia, sprint ahead with agile business models, Europe's automotive sector is left with analysis paralysis and the time-honored approach to developing vehicles and their accompanying systems and components.

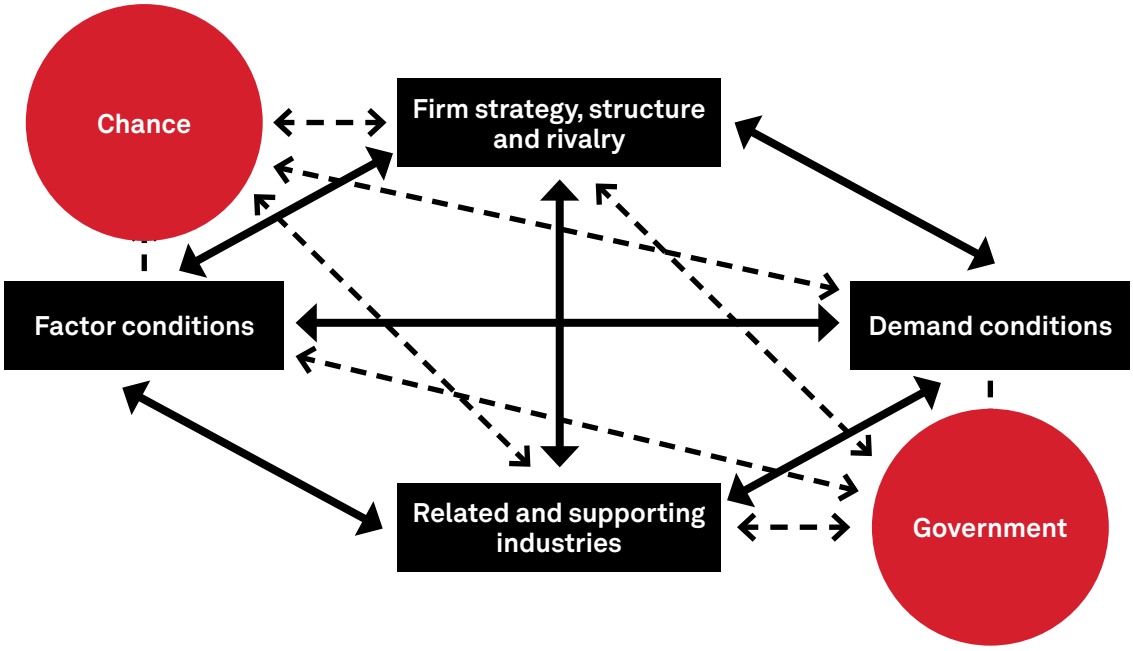
But here's the twist: The trend of de-globalization could be Europe's golden ticket to reclaim its automotive glory. As nations pivot toward localizing supply chains and prioritizing domestic production, European manufacturers have a unique opportunity to invest in local capabilities and reduce reliance on external suppliers. This shift not only enhances resilience against global disruptions — like those seen during the COVID-19 pandemic — but also aligns with the growing consumer demand for sustainable, locally produced vehicles.

A continuing commitment from Europe towards stringent environmental regulations and EV technology can serve as a powerful differentiator in this evolving market. By embracing innovation and sustainability, European automakers can attract eco-conscious consumers, strengthen non-tariff barriers to competition and put European automotive technology and heritage at the forefront in global markets.

Using Porter's Diamond framework

To reclaim its automotive edge, Europe must capitalize on de-globalization by focusing on local production and supply chains while addressing challenges like an aging workforce. Michael Porter's Diamond framework for comparing the competitive position of nations by industry provides a starting point for developing policy. In it, Porter's Diamond acknowledges that the traditional economic factors of production — land, capital, labor and entrepreneur — fall short in explaining the relative strengths of competing nations and more specialized factors need consideration. Additionally, Porter saw that government (read in this case as the EC) had a crucial role in forming competitive advantage.

Porter's diamond: A framework for assessing a nation's competitiveness

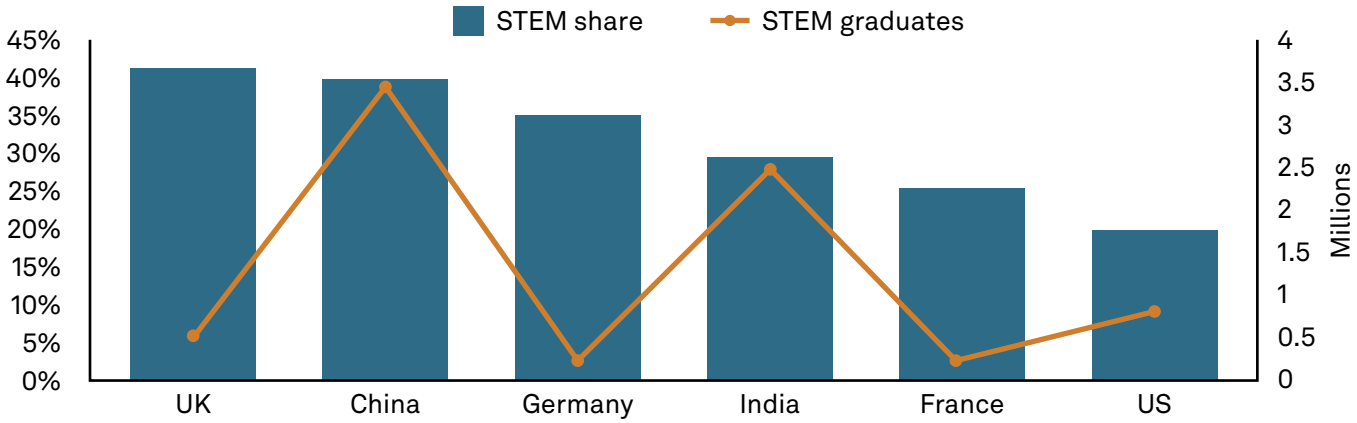


Source: Michael Porter's Competitive Advantage of Nations

Factor conditions:

The reference here is the need to create specialized labor, capital and infrastructure conditions. Here, Europe has a highly skilled labor force and robust educational programs in automotive engineering that can be levered. But it faces challenges with an aging workforce and a critical need for younger talent. In contrast, China benefits from a vast labor pool rapidly acquiring specialized skills, supported by significant government investment in STEM education aligned with the EV sector's demands. Both regions require workers skilled in advanced manufacturing and software engineering; however, Europe must focus on attracting and training younger talent, while China can leverage its existing workforce and training initiatives to sustain its competitive edge in the EV market.

Elevated participation in STEM by European countries does not bridge the quantity gap



As of May 6, 2025.
Source: Center for Security and Emerging Technology; S&P Global Mobility.

Supporting industries:

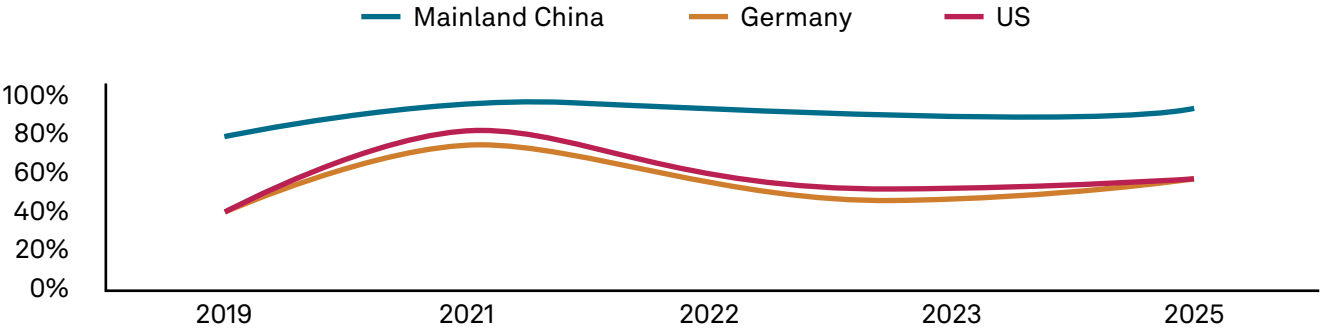
Europe and China are pursuing distinct strategies to develop supporting industries like semiconductors, software, and battery technology. While Europe excels in semiconductors and automotive software, it struggles to scale battery production essential for electric vehicle adoption. To foster innovation, Europe must enhance collaboration between tech firms and automakers, leveraging proximity and clustering akin to Silicon Valley.

Strides in this direction are already being made by Europe, with the 2016 launch of the European Cluster Collaboration Platform. The program is indicative of the EU's recognition of the competitive challenges it faces. As of 2023, there were some 603 clusters operating in Europe with automotive accounting for 15% of the total. Indeed, the Platform reports that "Data for the Mobility-Transport-Automotive ecosystems shows that regions with clusters in … are better equipped for the transition challenges of this ecosystem."[2]

Demand conditions:

Europe has introduced various incentives, such as tax breaks and subsidies, to promote EV adoption, but their effectiveness is inconsistent due to differing local policies and fiscal capabilities. While the European Commission has established stringent push conditions, such as the 95g CO2 target for passenger cars that took effect in 2021, the proposed target is for 0 grams of CO2 for new cars by 2035, effectively requiring all new cars sold in the EU to be zero-emission vehicles.

Consumers open to purchasing a BEV that have never owned a BEV or hybrid vehicle



As of May 2025.

[2] European Cluster Panorama Report 2024
https://www.clustercollaboration.eu/sites/default/files/document-store/Cluster_Panorama2024.pdf

However, the pull factors remain uneven, as purchasing incentives are largely left to individual nations. This fragmentation results in disparities in consumer access to subsidies, leading to uneven uptake across the continent. To foster widespread EV adoption and meet climate goals, Europe needs a coordinated strategy that aligns incentives across member states.

New S&P Global Mobility research identifying automaker EV technology pain points clearly highlights all electric range, charging time and cost as three critical development focus areas. Consumers want the ability to travel comparable distances to gasoline-powered vehicles on a single charge, they need faster recharging in the public domain, and they demand mainstream vehicles at more affordable price points. Benchmarking global technology advancements, delivering cost competitive EVs and differentiating in an increasingly crowded market will be critical to European automaker success.

Norway's demand-side measures to foster EV growth

Policy	Domain	Type	Status
Ownership tax benefits	Vehicle	Exemption	Active
Key details			
Value-added tax (VAT) exemption for BEVs below 500,000 kroner (€44,000) price. Only the amount exceeding the price cap is taxed with the VAT at 25%. BEVs and PHEVs are granted a reduction and only pay a scrapping fee, of €249. Annual road tax of 455 kroner (€48) is levied for both fully electric vehicles and plug-in hybrids.			

Policy	Domain	Type	Status
Operational benefits	Vehicle	Incentive	Active
Key details			
Maximum 70% of the total amount on toll roads is levied on BEVs. This was previously 50% between 2018 and 2022. BEVs get access to bus lanes. New rules allow local authorities to limit the access to only include EVs that carry one or more passengers. BEVs pay lower rate of €264 per year in road traffic insurance tax. Previously EVs were exempt from paying road traffic insurance tax. Charging right is given to people living in apartment buildings.			

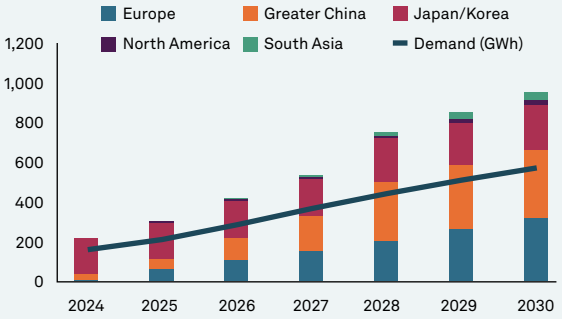
Policy	Domain	Type	Status
Charging legislation	Infrastructure	Incentive	Active
Key details			
For parking lots and parking areas of new buildings, a minimum amount of 6% has to be allocated to electric cars. The city of Oslo expanded the budget for charger deployment. The 2018 budget allocated to housing associations for installing chargers doubled to 20 million kroner (€2.1 million).			

Data compiled: April, 2024
Source: S&P Global Mobility

Exhibit 3: Batteries

As was seen in Exhibit 1, there has been a recent stalling in EV demand in Europe and North America. This has led to a situation where infrastructure build (or in other words, battery-cell capacity) has begun to run ahead of demand. In situations of excess supply, producers tend to suffer while consumers benefit. Here, it is not quite proving to be the case. Stalling demand has led to some scaling back of supply plans in Europe, but principally among suppliers of European origin, whereas suppliers of mainland China origin have tended to press ahead with plans. This has cemented mainland China's place in the region — it will progress from supplying 38% of the gigawatt-hours required in 2024 to 51% by 2030. Of course, an increasingly dominant market position makes it more difficult for battery suppliers domiciled elsewhere to justify investment when a market is already saturated.

Battery production capacity in Europe per supplier origin vs. EV demand (GWh)



As of May 16, 2025.
Source: S&P Global Mobility.

Allied with this leading position in battery-cell production in Europe, mainland Chinese companies enjoy an enormous advantage in terms of raw material sourcing for the batteries. While 57% of the battery cells for European battery demand in 2024 were natively sourced, it was a different story for key raw materials. S&P Global Mobility research indicates that just 7% of cathode active materials (CAM) were sourced from Europe. Japan and Korea proved the major source for Europe's CAM requirements in 2024 supply at just over 52%. For the battery's precursor materials, Europe's position is more precarious, with just 3% emanating locally. Here, mainland China leads the way with a near 79% share of the market.

Firm strategy:

Europe's established automotive giants focus on brand reputation and long-term strategies, often resulting in slower decision-making and less agility in adapting to market changes. In contrast, China's new-energy vehicle sector thrives in a dynamic environment where numerous emerging firms foster collaboration and share best-in-class technologies, encouraging rapid innovation and advancements in EV development. To compete effectively, Europe must adopt more agile practices and enhance collaboration within its automotive sector, while China continues to leverage its dynamic landscape to drive growth and innovation in the electrification race.

Government support for vehicle electrification differs markedly between Europe, the US and China, significantly influencing the competitive landscape of the electric vehicle industry. Europe offers various incentives, such as subsidies and tax breaks, but support is inconsistent across member states, leading to disparities in market uptake and investment in battery production. In contrast, the US has enacted the Inflation Reduction Act and the CHIPS Act, providing substantial tax incentives for EV buyers and manufacturers while enhancing domestic semiconductor production. China employs a coordinated approach through its five-year plans, aggressively supporting the new-energy vehicle sector with substantial subsidies and investments, resulting in rapid market growth. To remain competitive, Europe must accelerate its battery technology efforts and foster collaboration between tech firms and automakers to adapt to the evolving global electrification landscape.

Reclaiming the road

The European automotive sector is at a critical crossroads, grappling with a shrinking global presence and fierce competition from players like China and the US. While the EU and UK still hold significant market shares, their influence is slipping.

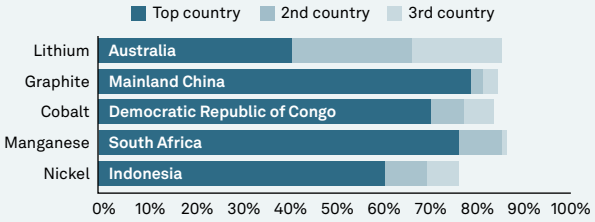
Now is the time for European manufacturers to capitalize on de-globalization. Investing in domestic capabilities and reducing reliance on external suppliers is essential to meet the rising demand for eco-friendly vehicles. Streamlining regulations and promoting collaboration among industry players are crucial steps to break down barriers and boost competitiveness.

Successful initiatives in cities like Amsterdam and Hamburg, which are pushing for zero-emission vehicles, demonstrate that local solutions can drive meaningful change. By seizing these opportunities and tackling challenges head-on, Europe can revitalize its automotive industry and push for a cleaner, more sustainable future.

Exhibit 4: Raw materials

As referenced in Exhibit 3, Europe is at a considerable disadvantage when it comes to local raw material availability as it pertains to the battery value chain. If we look at the key raw materials, they are highly concentrated within a few countries as shown below, while the refining capacity for the major raw materials is largely located in mainland China.

Key raw material extraction market share by country, 2025

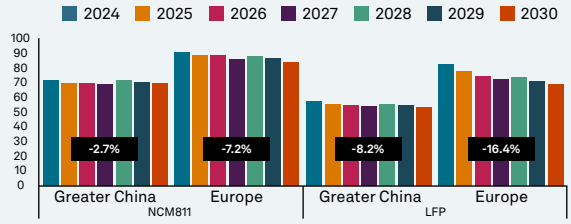


As of April 2025
Source: S&P Global Mobility.

Local raw material availability has a substantial influence on battery-cell costs, and by association, where manufacturing capital is invested. Further, constraints in battery raw material supply chains that were apparent in the early 2020s have now eased, which — together with stalling demand — has brought raw material prices down. Nevertheless, geopolitical tensions and shifts could upset the market equilibrium at any point.

Given this, incentives to shift to more local sourcing are in play while tariffs will also have an increasing role in determining price competitiveness between Greater China and Europe. With this background, S&P Global Mobility expects battery price differentials to narrow, most markedly with lithium iron phosphate (LFP) chemistries.

Battery price difference between Greater China and Europe ($/kWh)



As of July 2024
Source: S&P Global Mobility.

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