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What the Global Electric Vehicle Market Signals for US Automakers and Policymakers

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- Electric vehicles (EVs) continue to gain market share worldwide, despite policy reversals in the US.
- Battery electric vehicles (BEVs) account for most EV sales globally. Plug-in hybrid electric vehicles (PHEVs) have seen significant increases recently, especially in China, shifting from a defensive tool for legacy automakers to a technology that can strengthen China's global influence.
- While long-range PHEVs and extended-range EVs can play a transitional role in US automaking, securing resilient industrial leadership will ultimately depend on advancing BEVs and reducing risks of overdependence in battery value chains.

The global automotive industry is undergoing a historic transformation. Electric vehicles (EVs)—including battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs)—are rapidly gaining market share worldwide. China has experienced the deepest transformation, followed by Europe—despite considerable heterogeneity within it—and by the US.

BEVs account for most EV sales globally, but PHEVs have experienced particularly dynamic growth in recent years.[1] Once viewed as a transitional technology favored by legacy automakers, PHEVs have now become central to China's domestic EV market growth and to its industrial strategy. Chinese automakers embraced PHEVs and extended-range electric vehicles (EREVs) as a way to

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complement BEVs to expand their global reach, effectively leveraging the advantages offered by a deeply rooted and competitive battery supply chain.

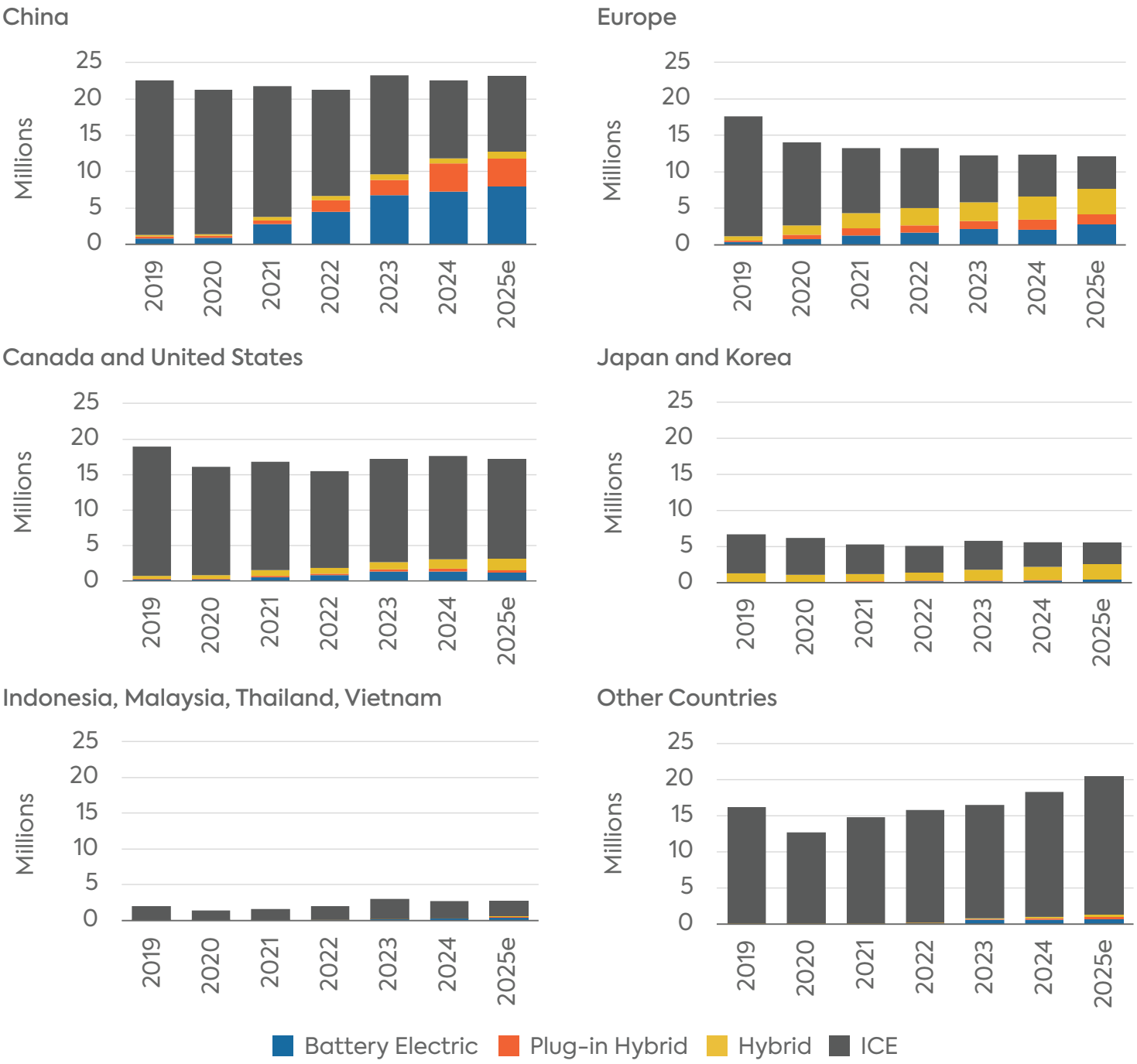
The overall global shift to EVs raises a critical question for US automakers and policymakers: Should EVs be defended, ignored, or strategically supported, and if so, which ones?

Because of the scale and pervasiveness of this technological transition, accelerating the shift to EVs would strengthen the resilience of the US auto sector. Instead of policies that focus solely on incremental improvements to internal combustion engine vehicles (ICEVs), those that support PHEVs, which retain an internal combustion engine, can play a transitional role to fully battery-powered cars. However, securing resilient industrial leadership will ultimately depend on advancing BEVs and reducing the risks of overdependence on concentrated battery value chains.

BEVs, PHEVs, and Diverging Global Paths

In many regions of the world, the car market has developed in markedly new directions in recent years (see Figure 1). In 2024 plug-in vehicles—both BEVs and PHEVs—accounted for roughly one in five new cars sold worldwide.[2] Estimates for 2025 point toward increasing market share and a total of roughly 20 million electric cars sold.[3] Yet beneath this aggregate figure lies striking regional differences in both technology choice and adoption speed.

Figure 1: Global light duty vehicle units sold by powertrain in select countries/regions, 2019–2025



Note: "e" indicates that the value is an estimate based on partial-year data and is therefore forward-looking.

Source: Estimate based on International Energy Agency, EV Volumes, BloombergNEF, Global Fuel Economy Initiative, European Environment Agency, European Automobile Manufacturers Association, European Alternative Fuels Observatory, Allianz, New AutoMotive, S&P Global, ING, PwC and Strategy&, JATO Dynamics and Japanese Automotive Manufacturers Association.[4]

China

China has experienced the deepest transformation. In 2024 it represented about 60 percent of global EV sales, with BEVs making up the bulk of EV deliveries but PHEVs growing rapidly (see Figure 1). BYD, an automobile manufacturing company headquartered in China, led in total EV sales globally and outsold Tesla on BEVs alone in late 2024.[5] China's grip on battery manufacturing—from raw material processing to cell production[6]—enables low costs and high volumes across both BEVs and PHEVs.

Europe

Europe is the second key pole of electrification globally in terms of sales and domestic manufacturing, though with marked heterogeneity among countries and with remaining reliance on China in its battery value chain.[7] Nordic countries such as Norway, Sweden, and Denmark are at the forefront of the electrification of the car fleet in the EU, with EVs, and in particular BEVs, already having high market shares.[8] In contrast, several countries in southern and eastern Europe—including Cyprus, Greece, Italy, and much of central and eastern Europe—lag behind, constrained by lower incomes, higher sensitivity to vehicle purchase prices, and, in the case of Italy, high electricity prices.[9] Within the EU's regulatory framework, PHEVs have played a transitional role between ICEVs and BEVs. However, as regulatory signals and tax incentives evolve and charging expands, consumer demand is favoring BEVs.

US

The United States presents a different picture. EVs accounted for 10 percent of its car sales in 2024. BEVs are clearly ahead of PHEVs in terms of new car registrations, representing about 80 percent of total electric car sales that year.[10] This aligns with the outsize role of Tesla in shaping consumer preferences, brand perception, and charging infrastructure.[11]

While some legacy automakers continue to offer PHEVs, US demand for PHEVs versus ICEVs is structurally constrained by relatively low gasoline prices, resulting in limited space for cost savings from PHEVs. The US capital market also tends to place a significantly higher premium (in terms of market capitalization per unit of vehicle sold) on companies that focus on BEVs rather than PHEVs (and other combustion-based technologies).

Other Markets

The Korean car market has seen EVs rise to early 15 percent in 2024 and 2025, with 2025 developments pointing toward an increased focus on BEVs and a stagnation of PHEV sales.[12]

Japan has a technology mix in its domestic market that remained strongly centered on ICEVs and hybrids,[13] in line with the focus of its main automakers and concerns about limitations in access to battery material supplies. It recorded limited EV market demand compared with other major developed economies.

From Southeast Asia to parts of Latin America and Africa, there has been a rapid acceleration in EV adoption.[14] Much of this expansion is directly or indirectly linked to Chinese investment, both in vehicles (via exports or local assembly) and infrastructure (including charging and battery plants). In markets such as Brazil, Indonesia, Thailand, and parts of Africa, Chinese EVs are gaining market share, while Western automakers are subject to a competitive disadvantage because they focus more on premium segments (which are less affordable) and have lower EV sales volumes overall compared with Chinese competitors.[15] In other cases, such as Vietnam, the growth in EV market shares was paired with the rise of domestic EV manufacturers. However, they still rely, at least in part, on Chinese battery suppliers.[16]

In short, while EV sales are increasing globally, the global EV map remains uneven. China is leading in sales of both BEVs and PHEVs, whereas Europe has a high share of BEV purchases within its electric car market, especially in the North, with a patchier picture elsewhere. The US is BEV-heavy but has a relatively narrow overall EV share. Korea tracks EU developments, with some lag, while Japan maintains a focus on hybrids. Emerging markets are entering the race largely on the back of Chinese industrial and financial support.

Three Drivers of the Transition

The EV transition is not only about technology but also about economics, geopolitics, and climate commitments.

Industrial and Economic Competitiveness

For China, EVs are part of a broader attempt to dominate a future-defining industry.[17] For Europe, they are a necessity to preserve automotive leadership while meeting climate obligations.[18] For the US, they represent a challenge to the legacy automotive manufacturing and oil sectors—long central to its industrial base—while at the same time offering a pathway to offset risks of net industrial capacity losses, which becomes essential if the US market also shifts toward electrification. Investments in batteries and related supply chains are not just about cars; they are also about commanding value-added industries of the future and industrial production that matters for national security and defense.

Energy and Resource Security

For net oil importers, EVs are a strategic hedge against oil dependence. China, the EU, India, and many African, Latin American, and Southeast Asian countries rely heavily on imported crude and refined products. Reducing oil dependence through electrification—as well as the associated energy efficiency improvements of EVs, which consume about one quarter of the final energy needed by a comparable combustion car[19]—is therefore an economic and security imperative for countries in these circumstances.

Building a competitive battery value chain also offers resource security if it can leverage—as in the case of oil supplies—a reliable network of global partners. And contrary to oil, battery materials will become increasingly available in economies using BEVs once the vehicles reach the end of their useful life through recycling.

Climate Policies

EV adoption is also propelled by emissions regulations, climate targets, and clean air priorities—such as China's "new energy vehicle" mandates and the EU's CO_2 emission standards—as EVs have lower life-cycle emissions than alternative technologies.[20] The US corporate average fuel economy (CAFE) standard, state-level "zero emission vehicle" (ZEV) standards developed in California and other states, and other instruments supporting EV demand and infrastructure development were also driven by climate policy goals, though these are now the object of major revisions by the Trump administration.

Importantly, the strength of these three drivers varies: Concerns about energy security and industrial goals tend to reinforce each other in China and the EU, resulting in policies that have supported the EV transition. In the EU, additional synergies came from a strong determination to act on climate. In the US, abundant domestic oil has blunted the energy security case, and while climate was a clear driver of prior policy action on EVs, the current administration does not support policies addressing climate change.[21] Despite such headwinds, industrial competitiveness and the promotion of innovation have long been a focus of US policy, and recent trade policy decisions seem to suggest that interest remains in supporting domestically produced EVs and achieving greater diversification of battery supply chains.[22] However, this interest comes with a reduced pace and scale for the EV transition, and hence also with delays in emission reductions.

PHEVs: From Defensive Play to China-Centered Growth

The role of PHEVs has evolved markedly over the past decade. In a first phase, they were mainly part of a defensive strategy by legacy original equipment manufacturers (OEMs) In a second phase, growing pressures from BEVs and increasing evidence about the limits of PHEVs to promote energy diversification and reduce greenhouse gas (GHG) emissions challenged the effectiveness of this initial strategy. A third, more recent phase is a Chinese offensive strategy to leverage its competitive advantage in batteries and gain global market share.

Initially, PHEVs were developed largely by incumbent automakers as a hedge against BEVs. Legacy manufacturers, heavily invested in ICEV platforms, saw PHEVs as a way to meet regulatory targets without committing to the cost and risk of full battery electrification. In Europe, policy incentives also encouraged this strategy.

PHEVs lost traction and policy support, however, as BEV sales grew (fueled by Tesla and Chinese pure-play EV makers) and critiques pointed to low energy diversification and climate benefits of PHEVs, which run much less than initially expected in all-electric mode. These critiques were backed by strong evidence[23] and confirmed by official data collection,[24] which led to policy revisions in the EU[25] and the US.[26]

Since 2022, however, PHEVs have experienced a resurgence, especially in China. Unlike the earlier defensive stance by legacy OEMs in Europe, China's recent PHEV surge reflects a more offensive strategy. With world-leading battery production, Chinese OEMs such as BYD have launched PHEVs with large batteries and long electric ranges—including in the form of EREVs—ensuring more frequent all-electric operation. Domestic demand soared because of total cost of ownership advantages compared with ICEV, partial eligibility for preferential licensing in Chinese cities,[27] improvements in battery technologies needed in PHEVs,[28] and the introduction of new models with larger batteries and fast-charging capabilities.[29] Lower upfront prices for PHEVs compared with BEVs in a few market segments[30] may also have played a role. Consumer interest in the flexibility that PHEVs offer compared with BEVs may also have supported demand growth, especially where there is limited cost-effective charging infrastructure.[31] Importantly, exports of PHEVs and EREVs can also provide an avenue to bypass tariffs or countervailing duties, as those tend to focus on BEVs.

By now the fulcrum of PHEV market development has shifted decisively to China. What was once a transitional technology favored by legacy Western OEMs is now being redefined by Chinese firms as a competitive instrument, integrated with global trade strategy and industrial policy.

The Outlook for Electric Vehicles: The US and Beyond

In the US, the structural outlook for PHEVs is limited, while the outlook for BEVs is also weaker than it was before recent policy reversals. Factors that influence market developments include the following:

- **Reduced compliance value.** Policy frameworks (e.g., CAFE standards, ZEV programs) still allow BEVs, EREVs, and PHEVs to generate compliance value, but recent policy reversals are weakening this effect.
- **Low gasoline prices.** By global standards, US fuel prices are low. This reduces the operating-cost savings of driving on electricity, weakening the economic rationale for EVs. However, heterogeneity in fuel prices, state-level regulations, and fiscal incentives can still sustain demand for BEVs and PHEVs in sizable portions of the US. They could also sustain demand for EREVs, but model availability is still limited.
- **Weak domestic battery base.** Compared with China, US battery manufacturing lags in scale and cost competitiveness, limiting the ability of US OEMs to offer low-cost, long-range EVs. Tariffs applicable to long-standing US trade partners exacerbate these challenges.
- **Battery supply chain challenges.** Limited access to battery materials and cells and slower scale-up of domestic battery manufacturing capacity—due to a contraction of the BEV market versus expectations and the negative impacts of tariffs following the recent policy shifts—may delay cost reductions and lower the volumes of domestically manufactured EV batteries. Such a development could result in an increased value proposition for PHEVs and EREVs compared with BEVs, reversing the historically limited demand for PHEVs in the US electric car market.
- **Battery cost declines.** Continued reductions in EV battery costs in other markets may still help tilt the market toward BEVs rather than PHEVs or EREVs. Once purchase prices converge, BEVs' lower operating costs and better performance make them the predominant choice. The PHEV value proposition—cheaper up front if more expensive over time—erodes in these conditions, especially for legacy configurations.
- **Charging infrastructure developments.** Consumers without reliable charging infrastructure may also prefer PHEVs or EREVs, even in an environment where BEVs become more competitive pricewise.

China

In China, structural drivers behind increased electrification remain strong, despite challenges emerging from increased competition and significant overcapacity. BEVs are therefore bound to continue to account for millions of units sold, as they have in the recent past. PHEV and EREV shares may continue to expand over the next 5 to 10 years, thanks to the same drivers that favored their recent increase, both in terms of domestic demand and utility in circumventing trade barriers when supply is geared toward exports (if the focus of trade barriers on BEVs does not change). The new generation of Chinese PHEVs—including EREVs equipped with larger batteries—is also particularly well suited to meeting requirements regarding all-electric driving shares, which are now also being tightened domestically.[32]

Europe

BEVs are bound to see continued market share increases in Europe. This is driven by policy, particularly the regulation requiring zero carbon dioxide emissions by 2035. It is also driven by economics, including EV technology cost reductions, high oil import dependency, high fuel taxation, the introduction of carbon pricing, and the use of differentiated taxation based on the environmental performance of vehicles, which favors BEVs.

PHEVs have faced declining incentives, especially for models with low all-electric range, because of tightened regulatory requirements.[33] They are also subject to equity-related challenges, as they have solely been deployed in premium segments, steering incentives meant to support demand creation for EVs toward wealthier people.[34]

Future policy action will remain focused on road transport electrification, as indicated by the announced proposals regarding corporate fleets,[35] even if revisions to existing regulations are also being considered. Recent announcements regarding smaller, more affordable EVs will help diversify the offer of BEVs and are not likely to favor PHEVs, given their focus on larger and heavier cars.[36] However, revising the 2035 emission reduction requirements toward greater technological neutrality[37] could offer opportunities for a greater share of PHEVs in the European EV market than in the current policy framework.

Other Markets

In emerging markets, Chinese EVs are likely going to continue to be cheaper than those from other suppliers, especially for BEVs.[38] PHEVs may see growing demand where charging infrastructure is limited and where policy requirements for larger battery capacities and higher all-electric driving

shares are not yet adopted (while Chinese EREVs can gain interest in cases where this tightening is already in place).

The outlook for Korea points toward an overall EV market share increase that remains less dynamic than in the EU, but with a strengthened focus on BEVs.[39] Japan is expected to continue facing challenges in stimulating domestic EV demand.[40] However, the export-oriented nature of Korean and Japanese automotive industries and the risks of market share losses in Asia are likely to strengthen the case for greater diversification of their power train offerings toward EVs.

Overall, and especially as batteries get cheaper and charging more widespread, BEVs are more likely to capture the bulk of the EV market growth. However, PHEVs can gain relevance as a strategy for navigating trade-related barriers and in markets that still have limited charging infrastructure. Versions with larger battery capacities are likely to gain more ground as batteries keep improving, costs decline, and policies require growing all-electric ranges.

Policy Recommendations for the US

The current US administration rolled back or paused major federal targets, programs, incentives, and infrastructure deployment investments aimed at accelerating EV adoption.[41] It rescinded the waiver that allowed California and other states to set EV-related requirements[42] and proposed to remove the foundation of what allows the Environmental Protection Agency (EPA) to regulate GHG emission standards for vehicles.[43] This pullback places a greater focus on protecting traditional internal combustion manufacturing than on leading new technology developments, even as interest remains for diversifying EV battery supply chains. These policy decisions are exacerbated by tariffs applied to US allies, making the competitive challenge from China and other global automakers that are not subject to the same policy reversal (despite the risk of some degree of rollback induced by US policy shifts, especially in Europe) more acute for the US.

Recognizing the scale of the global transformation that is profoundly reshaping the automotive industry—driven by economics and energy/resource security in addition to environmental considerations—is a key prerequisite to improve the competitiveness of US OEMs in this shifting landscape. Doing so is crucial to leverage existing capacity in the automotive sector and support investments in new industrial assets. To do so, US policymakers could enact policies that accomplish the following:

- **Preserve and strengthen regulatory requirements on EVs**, including the EPA's ability to regulate GHG emission standards for vehicles, maintain CAFE standards, and allow California and other states to set EV-related requirements. These policies drive investment and innovation that are critical in this phase of global competition for the creation of new industrial capacity.

- **Reinstate EV purchase incentives while also integrating equity-related considerations**, such as focusing the incentives toward low-income households and businesses and using vehicle price caps for the applicability of the incentives. If budgetary implications are a concern, incentives could integrate provisions that enable them to be budget neutral, evolving from the exclusive use of credits toward a combination of incentives for EVs and fees for ICEVs. Specific conditions for the applicability of incentives can also support the diversification of EV battery supply chains; for example, they could use emission intensity thresholds for the manufacturing of batteries equipping EVs.
- **Use public procurement toward EVs** when beneficial to the government and industry. Instruct federal institutions—including the Office of Federal Procurement Policy, the General Services Administration, and any other relevant federal departments and agencies—to support an anticipated industry shift toward EVs. Public procurement mechanisms can also integrate the use of specific conditions regarding the attributes of batteries equipping EVs, setting minimum thresholds to support the diversification of EV battery supply chains. They can also coordinate with policies of the DOE's Office of Energy Dominance Financing (formerly the Loan Programs Office) to include specific provisions supporting innovation on mineral extraction and processing technologies (such as direct lithium extraction) to support the diversification of battery supply chains).[44]
- **Support the deployment of EV charging infrastructure, stimulating private investments.** Re-staff and revitalize the Joint Office of Energy and Transportation (JOET). Focus its public spending on cases that are economically more challenging but strategically relevant to secure affordable access to EV chargers across the US to make the EV transition coherent and not just inevitable. Leverage public service contracts tied to affordability conditions regarding charging prices. Allocate specific support to the installation and maintenance of EV chargers in underserved communities. If budgetary implications are a concern, leverage a moderate carbon price on emission-intensive fuels used in road transport to address it.
- **Stimulate investments in cell manufacturing, recycling, and critical minerals processing** in the US and in friendly or allied nations. This is crucial not only for cost parity but also for energy security and industrial resilience. Long-term, predictable regulations need to enable more clarity for demand prospects. Other instruments that can support domestic production include financing structures that reduce investment risks; targeted government interventions such as direct subsidies, grants, or tax credits; and friendshoring.[45] China's EV offensive is possible because of its strength across the battery supply chain; further US delays in domestic production will be detrimental to the US and its allies. If the cost of policies aimed to support investments in new industrial capacity concerns is seen as a key challenge, carbon pricing can help raise revenues to mitigate their impacts.

- **Phase out incentives and public procurement support for PHEVs with limited all-electric range.** Without clear sunset clauses, policy decisions could amplify asset-stranding risks and slow the realignment of industrial capabilities toward automotive technologies that will continue to define global competitiveness in the coming decades. Policies that continue to favor PHEVs rather than BEVs risk exacerbating the greater EV competitive disadvantage for the US automotive industry.

About the Author

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