



# Challenges for the international organization of the automotive sector

This policy brief reviews the discussion of the Roundtable on the challenges for the international organization of the automotive sector held as part of the Globalization's Chair annual conference on July 1<sup>st</sup> at the Tangram Centre in Marseille. The debate brought together a distinct group of experts from both research and industry to discuss the massive transitions the auto sector is currently undergoing, and what implications it has particularly on European production and policy making.

## Introduction

Rising geopolitical tensions, supply chain disruptions, global economic slowdown, and escalating climate change threats are fundamentally reshaping the global economic landscape.

The automotive industry, a cornerstone of innovation, employment, and economic value creation, faces three interconnected transformational challenges. First is the emergence of new market players, particularly the rise of novel brands and China's remarkable ascent as a leading global automotive

exporter. Second is the accelerating transition from internal combustion engine (ICE) vehicles to zero-emission vehicles (ZEVs), driven by the 2015 Paris Agreement and subsequent environmental regulations. Third is the surge in global protectionist policies and intensifying international competition for industrial advantage, which has further complicated manufacturing processes in an already fragmented global marketplace.

As central players in a vast industrial ecosystem

encompassing diverse suppliers and downstream sectors, automotive manufacturers must navigate these challenges simultaneously. The Globalization Chair's Roundtable on automotive industry transformation, held on July 1<sup>st</sup> as part of its annual conference, convened distinguished academics, industry experts, and practitioners to examine these challenges. Their discussions revealed the deep complexity and interconnectedness of factors that will critically shape the industry's future."

## Challenge 1: The Rise of China

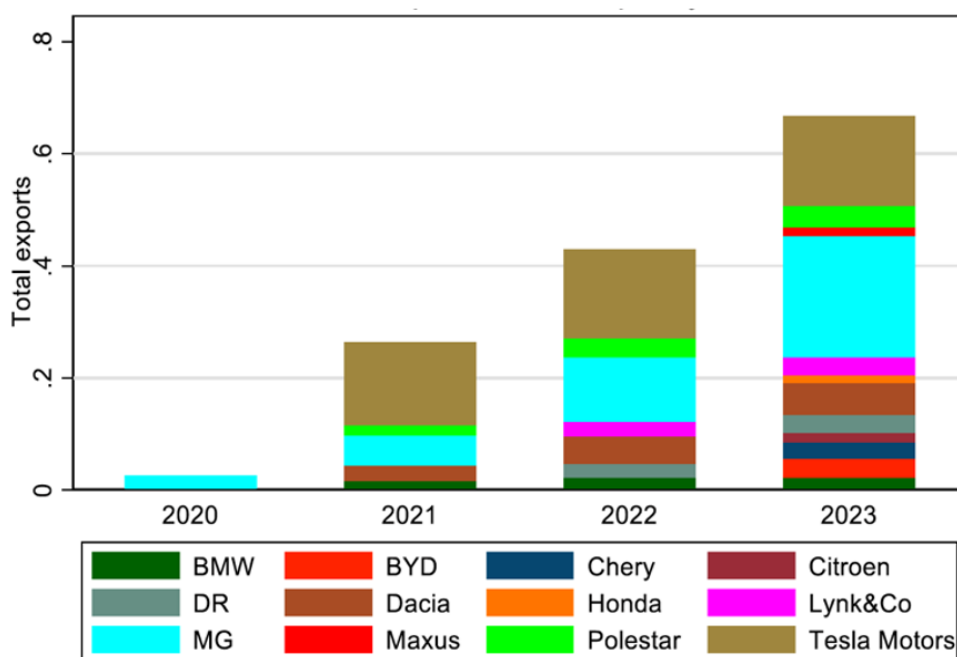
Professor Thierry Mayer of Sciences Po highlighted China's remarkable emergence as the world's leading automotive exporter—a transformation that accelerated during the COVID-19 pandemic. In 2023, China exported nearly 5 million vehicles, claiming the top position globally. This ascendancy stems from both China's dominance in electric vehicle (EV) production and its expanding internal combustion engine (ICE) vehicle sales in

emerging markets. A striking pattern emerges in China's export strategy: while 90% of its European exports are EVs, the country primarily ships ICE vehicles to markets such as Mexico, Chile, Saudi Arabia, and Russia. Although Chinese brands drive this export surge, foreign manufacturers like Tesla and BMW continue to contribute significantly to China's export volume (Figure 1). The industry has also witnessed an unprecedented

influx of new competitors in major markets. Between 2020 and 2022, Chinese electric brands—including Lynk&Co, BYD, and Polestar—accounted for approximately 80% of new market entrants (Mayer et al., 2024). This surge presents an additional challenge for Western automakers already grappling with the demanding transition toward fleet electrification."

Figure 1.

Chinese exports to Europe by brand in million units. Only brands with more than 15k sales in Europe.



Source: Mayer et al., 2024

## Challenge 2: Transition from Thermal to Electric Vehicles

The 2015 Paris Agreement catalyzed a global transition from internal combustion

engine (ICE) vehicles to electric vehicles (EVs) through increasingly stringent

environmental regulations. The European Union has mandated a complete ban

on CO<sub>2</sub>-emitting vehicles by 2035, while the United States targets 50% combined sales of battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs) by 2030, with states like California pursuing even more aggressive goals. China has adopted a regional approach, targeting 100% electrified vehicles (50% BEVs, 50% PHEVs) in densely populated areas by 2035, with less ambitious targets for other regions. Additionally, corporate average fuel economy (CAFE) standards, implemented for example by the U.S. and EU, require a progressive reduction in CO<sub>2</sub> emissions from new cars and vans over the coming years. Meeting these targets necessitates that battery EVs

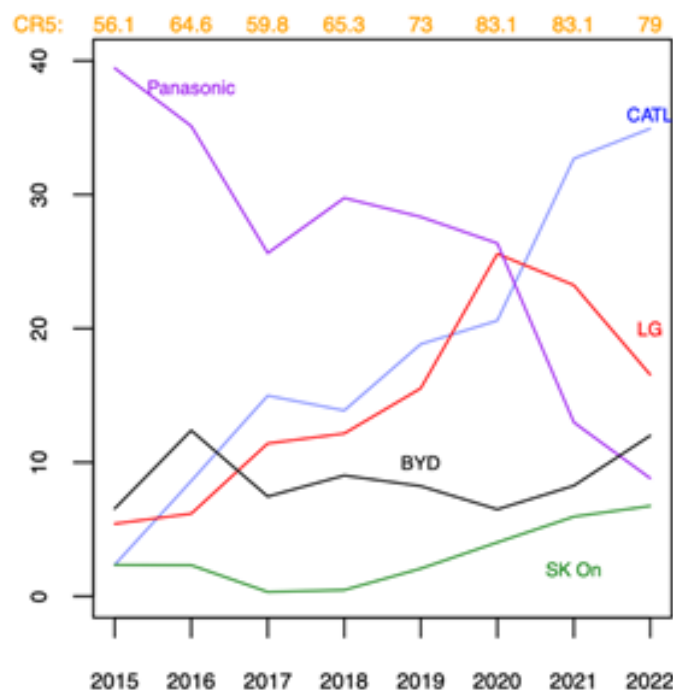
comprise approximately 65% of total new car sales in the EU by 2030—a dramatic increase from the current 15% market share in Europe (IMF, 2024).

Christophe Chabert, Director of Strategy, Planning & Development Europe at Renault, emphasized the profound challenges European manufacturers face in this rapid transition to electric mobility. The automotive sector, which currently represents over 8.2% of total EU employment and 7% of EU GDP, has evolved through decades of incremental advancement. However, the shift to electric mobility represents an unprecedented disruption, promising more technological progress in the

next decade than the previous three combined.

This accelerated transformation demands a complete reimagining of product portfolios and competitive strategies amid global instability. The transition is fundamentally restructuring supply chains, particularly in vehicles, batteries, software, and circular economy services. Battery production presents unique challenges, characterized by high geographic and corporate concentration. As of 2022, five companies controlled 80% of the market: China's CATL and BYD, Korea's LG and SK On, and Japan's Panasonic (*Figure 2*).

Figure 2.  
Global share of GWh produced (%).



Source: Head et al., 2024

China's dominance in the electric vehicle (EV) sector is intrinsically linked to its control over the battery supply chain, particularly in the refining of critical materials like nickel, lithium, and cobalt. According to the International Energy Agency (IEA), China processes approximately 35% of global nickel, 50-70% of lithium and cobalt, and nearly 90% of rare earth elements. This influence extends beyond its borders through strategic Chinese investments in overseas resources, with significant

stakes in mining operations across Australia, Chile, the Democratic Republic of Congo (DRC), and Indonesia (IEA 2021). As global EV adoption accelerates, Western nations face mounting challenges in reducing their dependence on Chinese battery technology and raw materials. This presents a critical dilemma: how to rapidly scale domestic battery production to support the green transition while maintaining strategic supply chain independence. Maxime Morand, Head of Strategy

and Partnerships at Verkor, a French EV battery manufacturer, outlined the complexities of establishing competitive battery production in Europe. Chinese manufacturers, operating with significant overcapacity, maintain a 30-40% cost advantage over Western competitors. Morand emphasized that this challenge is further complicated by the increasingly pivotal role of government policies in shaping market dynamics and competitive landscapes.

### Challenge 3: Geopolitical tensions and protectionism

The automotive industry's strategic importance and the global push for decarbonization have amplified government intervention, particularly through protectionist measures. On the demand side, EV adoption incentives subtly favor domestic production: Germany offers larger subsidies for heavy vehicles, the U.S. prioritizes light trucks, France focuses on affordable vehicles, and China emphasizes long-range vehicles with strong export potential. The U.S. Inflation Reduction Act's local content requirements represent an even more explicit form of protectionism, potentially violating World Trade Organization (WTO) frameworks. As Professor Jo van Biesebroeck from KU Leuven emphasizes, these interventions can produce

unintended consequences by distorting both producer and consumer incentives. For instance, supporting heavier, resource-intensive vehicles may impede rapid decarbonization, especially in countries lacking critical battery minerals. China's involvement in the EV sector stands unparalleled. Its "new energy vehicle" strategy, initiated in the 1960s, has involved comprehensive investments across the entire EV lifecycle—from raw material extraction to battery recycling—totaling €110-160 billion by 2022 (Midler and Alochet, 2023). Both Renault and Verkor advocate for similar comprehensive policies in Western markets to ensure competitive balance. Recent Western policies primarily aim to counter Chinese market pressure.

The Inflation Reduction Act's tax credits will increasingly depend on localizing the entire EV value chain, including raw materials. In August 2024, the U.S. imposed a 100% tariff on Chinese vehicles under Section 301. While the EU maintains a 10% Most Favored Nation (MFN) tariff, it announced additional countervailing duties of up to 36.6% on Chinese EVs starting November 2024, with negotiated lower rates for specific manufacturers like Tesla, BYD, Geely, and Dongfeng.

However, given the dominance of China in the upstream sectors of EVs, such protectionism might backfire. These protectionist measures risk retaliation from China, which could raise tariffs above its current 15% MFN level or restrict exports of batteries and

critical minerals. Moreover, EU trade remedies may prove ineffective against Chinese brands establishing local production facilities to serve the European market. Thierry Mayer notes that despite the technological transition, EV production patterns mirror

those of traditional internal combustion engine (ICE) vehicles. Both types remain high value-added products with significant shipping costs, resulting in localized production: over 80% of sales originate within the same region as assembly (*Figure 3*).

*Figure 3.*  
Origins of vehicles sold by region (in %) for all (left) and EV sales (right)

	Home	Intracont	Extracont	Zone		Home	Intracont	Extracont	Zone
Germany	31	53	16	Europe	Germany	35	38	26	Europe
France	19	63	18	Europe	France	22	51	27	Europe
Italy	17	67	16	Europe	Italy	9	67	25	Europe
China	97	1	2	Asia	China	100	0	0	Asia
Japan	93	0	7	Asia	Japan	68	10	22	Asia
South Korea	82	2	17	Asia	South Korea	70	12	19	Asia
Canada	10	66	24	America	Canada	0	75	25	America
Mexico	32	12	55	America	Mexico	1	7	92	America
USA	58	21	21	America	USA	75	5	20	America
World	66	18	16		World	85	7	7	

Source: Mayer et al., 2024

*Figure 4.*  
Distance between supply chain stage

Link	Year	Distance in km median    mean	
Battery Electric Vehicle			
Pack to Assembly	2015	299	819
	2022	215	641
Module to Pack	2015	1	994
	2022	1	830
Cell to Module	2015	13	1782
	2022	1	477
Internal Combustion Engine Vehicle			
Engine to Assembly	2018	133	1034
Transmission to Assembly	2018	681	2184

Source : Mayer et al., 2024

This localization pattern extends to major components: internal combustion engines are typically sourced approximately 130km from vehicle assembly plants, while battery packs have a median sourcing distance of 215km (*Figure 4*). As market demand grows, foreign direct investment (FDI) becomes a

natural expansion strategy for international manufacturers. The historical market entry of Korean and Japanese firms into U.S. and European markets during the 1960s–1980s may foreshadow the evolution of Chinese brands in international markets. Past experience suggests that increased local competition can yield significant benefits: preserving employment, facilitating technological spillovers, expanding consumer choice, and lowering prices—all factors that could accelerate the green transition. However, as Jo van Biesebroeck notes, protectionist policies risk slowing this transition and distracting manufacturers from fundamental competitive challenges. This observation

aligns with recent International Monetary Fund (IMF) analyses suggesting that protectionist measures would increase overall transition costs. Using a multi-region, micro-founded, dynamic general equilibrium model of the global economy, the IMF projects that EU transition to EVs with increased Chinese market penetration (15% growth in market share over 5 years) would have modest short-term impacts—approximately 0.25% decline in real GDP, varying across member states—with negligible long-term effects. However, implementing import tariffs on Chinese EVs could substantially increase these costs, though the impact might be moderated by increased FDI (IMF 2024).



## Conclusion

Overall discussions highlighted that the automotive industry faces a complex transformation driven by intersecting challenges: geopolitical tensions, environmental imperatives, and shifting global market dynamics. China's emergence as a major exporter, the worldwide transition from internal combustion to electric vehicles, and increasing protectionist tendencies amid geopolitical tensions are reshaping the industry landscape. Manufacturers must demonstrate unprecedented agility and foster robust supply chain collaborations, particularly as battery technology and raw materials become critical competitive factors. For Europe and the United States, success in the evolving EV market while achieving decarbonization goals hinges on two key factors: reducing dependence on concentrated supply chains and developing robust local production capabilities. While protectionist policies may offer short-term advantages to domestic industries, they risk impeding the global transition to sustainable mobility.

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★ Sophia Praetorius is a fourth-year PhD candidate in Economics at the Globalization Chair at the Paris School of Economics and Sciences Po Paris.