



Mao Zedong's Legacy on the Development Trajectory of the Chinese Electric Vehicle Sector

Antonio Carlos Diegues¹;
Kaidong Feng²;
Yin Li³;

Abstract: The trajectory of China's EV industry is emerging as a paradigmatic case in the international literature on industrial policy and economic development. By engaging with the interpretations about this trajectory, the intended contribution of this paper is to show that the success of China's EV industry cannot be fully understood without analyzing the trajectory of productive and engineering capability building along a local and national automotive value chain that preceded EVs. This trajectory, in turn, is intrinsically linked to China's Maoist industrialization strategy. Rather than a structural rupture, the rise of China's EV sector reflects institutional continuity within a long-term governance and development framework, aligned with subsequent industrial policy reconfigurations aimed at challenging the prevailing techno-productive paradigm within a highly oligopolized industry. Against this backdrop, the early expansion of local EV producers can be understood as an updated expression of the Maoist strategy of "conquering the cities from the countryside" as it emphasized regional self-sufficiency dispersed industrial assets across provinces that enabled territorially embedded production systems that continue to underpin local experimentation and subnational competition in the EV sector within a fragmented hierarchical structure. Through deliberate market segmentation, domestic firms initially focused on lower value-added segments and peripheral markets neglected by multinational producers. Subsequently, a canonical infant-industry strategy and robust policy support fostered a trajectory of productive and technological upgrading; consequently, Chinese firms' global EV market share surged from 12.5% in 2011 to 67% in 2024.

JEL CODE: O21; L62; P30

Key-Words: Chinese EV industry; Maoist strategy of development; Industrial Policy; Political Economy; National Development.

Áreas ENEI: 6.1 Políticas Industriais e Comerciais, 1.1 Dinâmicas industriais setoriais e dos sistemas de produção

Resumo: A trajetória da indústria chinesa de veículos elétricos (EVs) vem se consolidando como um caso paradigmático na literatura internacional sobre política industrial e desenvolvimento econômico. Ao dialogar com as interpretações existentes sobre essa trajetória, a contribuição pretendida por este artigo é demonstrar que o sucesso da indústria chinesa de EVs não pode ser plenamente compreendido sem a análise do processo de construção de capacidades produtivas e de engenharia ao longo de uma cadeia automotiva local e nacional que antecede a emergência dos EVs. Essa trajetória, por sua vez, está intrinsecamente vinculada à estratégia de industrialização maoísta da China. Em vez de representar uma ruptura estrutural, a ascensão do setor chinês de EVs reflete uma continuidade institucional inserida em um arcabouço de governança e desenvolvimento de longo prazo, posteriormente reconfigurado por políticas industriais voltadas a desafiar o paradigma tecno-produtivo dominante em uma indústria globalmente altamente oligopolizada. Nesse contexto, a expansão inicial dos produtores locais de EVs pode ser compreendida como uma expressão atualizada da estratégia maoísta de "conquistar as cidades a partir do campo", na medida em que enfatizou a autossuficiência regional e a dispersão de ativos industriais entre as províncias, viabilizando sistemas produtivos territorialmente enraizados que continuam a sustentar a experimentação local

¹ Director of the Center for Industrial Economics and Technology, Associate Professor at Institute of Economics, University of Campinas (Unicamp), Brazil, diegues@unicamp.br

² Associate Professor at the School of Marxism, Tsinghua University, Beijing, China, fengkaidong@mail.tsinghua.edu.cn

³ Associate Professor at School of International Relations and Public Affairs, Fudan University, Shanghai, China, yinli@fudan.edu.cn

e a competição subnacional no setor de EVs, sob uma estrutura hierárquica fragmentada. Por meio de uma segmentação deliberada de mercado, as firmas domésticas concentraram-se inicialmente em segmentos de menor valor agregado e em mercados periféricos negligenciados por produtores multinacionais. Posteriormente, uma estratégia canônica de indústria nascente, combinada a um robusto apoio de políticas públicas, fomentou uma trajetória de upgrading produtivo e tecnológico; como consequência, a participação das empresas chinesas no mercado global de EVs aumentou de 12,5% em 2011 para 67% em 2024.

Palavras Chaves: Indústria Chinesa de EVs; Estratégia de desenvolvimento Maoísta; Política Industrial; Economia Política; Desenvolvimento Nacional

Mao Zedong's Legacy on the Development Trajectory of the Chinese Electric Vehicle Sector

1. Introduction

Conventional Western interpretations of the recent success of China's Electric Vehicle (EV) industry suggest that it derives from: (i) high public subsidies and market distortions, (ii) spillovers of technological capabilities from the electronics sector, and (iii) a window of opportunity created by technological paradigm shifts in the automotive industry (Howell, Lee, and Heal, 2014; Wan et al., 2015; Wang et al., 2017)

Building on the dialogue with this literature this paper aims to highlight the limitations of these mainstream interpretations. Although the factors mentioned previously have influenced China's EV leadership, they are not the main elements explaining this phenomenon, as their relevance emerges only in the final stage of a long-term process of building productive and technological capabilities in the domestic automotive industry — a process that dates to the Maoist period. Hence, it is necessary to qualify the factors cited by mainstream Western interpretations.

Subsidies were part of a broader process of industrial policy oriented toward building innovative capabilities. They were selective, temporary, and performance-based, as in any emerging high-tech industry in Western countries or even as in EV sector (De Podestá, Pauls, and ten Brink, 2023; Allcott et al., 2024; Kohn et al., 2022).

Spillovers from the electronics sector are partial and not necessarily central to building competitive asymmetries in the automotive industry. Although they had positive effects on battery industry, semi-autonomous navigation systems and on the management of EV electrical systems, the knowledge bases (Lundvall, 1992) required to build competitive asymmetries in the automotive sector are very different from those in the electronics industry.

Technological paradigm shifts should not be understood as external factors that created opportunities for Chinese newcomers (Altenburg et al. 2022). The causality runs in the opposite direction: it was the productive and technological success of China's EV industry — supported by industrial and innovation policies — that shaped the transformations in the technological paradigm.

Building on these qualifications, the intended **contribution of this paper** is to show that the success of China's EV industry cannot be fully understood without analyzing the trajectory of productive and engineering capability building along a local and national automotive value chain that preceded EVs. This process, in turn, originated in Mao Zedong's strategy to promote national industrialization, dispersed across a wide set of provinces and led predominantly by state-owned enterprises.

This strategy was structured around three pillars that resonate with the Third Front strategy (Naughton, 1988; Bian, 2005; Heilmann, 2018) and contributed to building the material foundations for the subsequent productive and technological development of the automotive industry. The first pillar was the promotion of heavy industrialization, particularly through the development of productive capabilities in the machinery and equipment, electrical, metallurgy, and metal-mechanical industries. The second pillar is grounded in the principle of *zili gengsheng* (self-reliance), which ties the strategy of industrialization to the expansion of productive capacity through a gradual process of building endogenous and autonomous technological capabilities. Finally, the third pillar relates to Mao's emphasis on regional self-sufficiency, which dispersed industrial assets across provinces. This legacy underpins today's local experimentation and subnational competition based on a fragmented hierarchy structure (Heilmann, 2018), which are central to the rapid scaling of EV clusters.

Although originally motivated by geopolitical and security concerns, this industrialization process generated enduring productive capabilities that survived the reform era. Consequently, subsequent waves of reform and industrial policy did not replace this inherited structure but rather reconfigured its governance, incentives, and sectoral orientation.

As a result of this strategy, a process of dual competition emerged — both among CCP leaders through the *cadre system* and among provincial SOEs themselves (Li, 2022) — which strengthened productive learning processes within the nascent Chinese automotive industry.

Beyond productive capabilities, the Maoist legacy of dual competition played a key role in shaping a large

pool of nationally owned firms. While many of these firms initially operated below the international technological frontier, the presence of a broad domestically controlled corporate base – more directly responsive to industrial policy instruments – within the automotive sector remains a rare configuration internationally, especially in middle-income countries.

Additionally, the paper also aims to contribute to the literature by emphasizing that the early success of local firms in the initial phase of the EV industry reflects a Maoist strategy of “conquering the cities from the countryside,” whereby market segmentation enabled gradual capability accumulation, as suggested by Li (2022). In this strategy, local firms operated in lower value-added segments (e.g., Wuling), meeting local demand in regions and market niches unserved by multinationals. Later, after the market’s initial consolidation, external competition — following the construction of Tesla’s Gigafactory — in what Li (2022) calls an innovation system “open to competition”, spurred productive and technological upgrading of the domestic value chain.

In this sense, this article seeks to complement conventional interpretations of the roots of the emergence of China’s EV sector by emphasizing that it does not represent a structural rupture with the previously prevailing productive paradigm of the Chinese automotive industry. Rather than reflecting merely a political and institutional reorientation following the exhaustion of the Trade Market for Technology (TMFT) strategy (Lu and Feng, 2005; Feng and Liu, 2019; Feng, 2020), the development of this sector can be interpreted as a technological and political rearticulation built upon a historically constituted industrial foundation. By way of illustration of this process, from the 2010s onward a large number of startups emerged in China’s EV sector. In their early stages of development – as NIO, Xpeng, Li Auto, Xiaomi Auto etc –, these firms relied on the manufacturing structures of traditional state-owned enterprises focused on internal combustion engines, as well as on their local supplier networks—both of which have Maoist origins—to make EV production feasible. Subsequently, provincial SOEs—most notably Chery, JAC, SAIC, and GAC—in line with a Maoist logic of dual competition, progressively reoriented their strategies and leveraged their established manufacturing capabilities to transition successfully into EV production.

In short, this perspective highlights the importance of path dependence and cumulative capability-building in explaining China’s leadership in green technologies, while cautioning against interpretations that attribute such outcomes either to the construction of spurious competitive asymmetries based on the extensive use of subsidies, or to the straightforward spillover of productive capabilities from the electronics sector to the automotive industry in order to exploit an externally created window of opportunity driven by technological transformations in the sector.

To this end, the article is organized into three sections, in addition to this introduction. Section 2 presents an analysis of the relationship between industrial and technological policies during the transition from the TMFT paradigm to the Indigenous Innovation framework, and their connection to the development of the EV sector. Section 3 develops the core argument of the article by showing that the effectiveness of these policies is only made possible through the exploitation of a dense domestic productive base and engineering capabilities whose foundations trace back to the development strategy forged during the Maoist period. The concluding remarks then follow.

Section 2. The Role of Industrial and Innovation Policy in Building China’s Technological Leadership in the EV Sector

2.1 Industrial Policy, Techno-Paradigm- shift and the China Dream

When examining the Chinese recent industrial policy initiatives, the first element deserving emphasis is the extent to which these initiatives are embedded within a broader, more complex, and mutually dependent architecture of development policies oriented toward a clearly defined long-term objective: to pave the path for China Great National Rejuvenation Strategy. This strategy aims to materialize a “moderately prosperous society” and to reposition Chinese civilization at the center of the international economic and political system by 2049, the centenary of the Communist Revolution. In this sense, the scale, ambition, and temporal horizon of these objectives constitute defining features that confer a distinctive character on Chinese industrial policy—features that explicitly evoke the historical reconstruction of the *Middle Kingdom*, or *Zhōngguó* (中国), not coincidentally the official name of China in Mandarin.

It is from the magnitude and breadth of these objectives that, around the mid-2000s, Chinese policy makers began reassessing the limits of the prevailing development strategy, one centered on technological learning and catching-up primarily through the formation of joint ventures between domestic firms and multinational corporations (Fu, 2008; Naughton, 2021). This *trade market for technology (TMFT)* approach, although instrumental in fostering productive learning, integrating China into global value chains, and ultimately transforming the country into the “Factory of the World,” was increasingly perceived by the Communist Party technocracy as insufficient (Lu & Feng, 2005). The National Rejuvenation Strategy required a faster and more

intense accumulation of *indigenous* productive, technological, and innovative capabilities—well beyond what could be achieved through the technology transfer mechanisms embedded in joint-venture arrangements (Heilmann, 2008; Heilmann & Shi, 2013; Feng, 2019; Li & Lazonick, 2022). Thus, according to Feng, Li and Lazonick (2022),

“By structuring China’s governance, employment, and investment institutions to support innovation and repress financialization, the nation can prosper on the basis of innovative enterprise with an equitable distribution of the gains from innovation, realizing President Xi Jinping’s vision of “common prosperity” for all Chinese people”.

Within this context, the set of industrial and innovation policies introduced after the mid-2000s sought initially to confront a dual challenge facing the Chinese economy. The first challenge was the middle-income trap, to be mitigated through the continuous incorporation of technology and innovative learning in sectors characteristic of the Second and Third Industrial Revolutions (Lee, 2021). This trajectory would sustain a virtuous cycle of development by combining productivity growth, the emergence of domestic brands and technologies, increases in value added, and rising average wages.

The second challenge stemmed from the need to respond to deliberate strategies adopted by Germany, Japan, and the United States to push the technological frontier and construct what has become known as the digital and green techno-economic paradigm (Diegues & Roselino, 2023). These strategies aimed to reorganize the determinants of international competitiveness beyond those characteristics of the previous paradigm, thereby reinforcing the technological and innovative leadership of these countries. By encouraging a cluster of new industries and promoting the pervasive diffusion of general-purpose technologies into traditional sectors, the emergent digital and green techno-economic paradigm was likely to erode—even if only partially—the competitive asymmetries that had favored China. These asymmetries had been shaped largely by determinants typical of the preceding techno-economic paradigm: large-scale production, depreciated exchange rates, relatively low input and labor costs, fiscal incentives, and the socialization of investment through its concentration in large national champions (Cheng, 2020; Burlamarqui, 2020).

In response to this dual challenge, *Made in China 2025* (MIC) — launched in 2015 — stands out within the broader plans of industrial policies formulated during the 2010s. Broadly speaking, the initiative constitutes a direct extension of the *Medium- and Long-Term Plan for Science and Technology Development* (MLP, 2006–2020) and the establishment of *Strategic Emerging Industries* (SEIs)⁴ in 2010. These earlier plans—fundamentally oriented toward innovative learning—set explicit goals: increasing R&D expenditure to 2.5% of GDP by 2020; reducing dependence on foreign technologies to 30% in the same year; and promoting *indigenous innovation*. To achieve these goals, a highly detailed set of priority and strategic sectors and technologies was defined as the central focus of subsequent industrial policies.

It is precisely considering this coordinated effort to foster Chinese technological and innovative capabilities in industries expected to play a pivotal role in the emergent techno-economic paradigm that this paper aims to analyze the industrial policies targeting the electric-vehicle sector.

The strategic character of this sector for reorienting the Chinese economy toward a paradigm grounded in *indigenous innovation* stems from at least two elements. First, its trajectory of advancement entails the development of a broad set of technologies associated with new energy systems, which constitute strategic assets for national sovereignty. In addition, within a paradigm in which creative destruction is increasingly intertwined with the green transition, the entire ecosystem surrounding the EV sector — including batteries, charging infrastructures, high-complexity transmission networks, and high-power electrical equipment — becomes central. The pursuit of market and technological leadership in these domains thus operates as a crucial vector for China’s repositioning within the international system as a major power in the emergent digital and green techno-economic paradigm.

2.2. EVs Industrial and Innovation Policy

Interpretations in the international political economy literature and policy debate have commonly attributed the success of China’s EV sector to a set of policies that are seen as fundamentally distorting international trade and circumventing World Trade Organization (WTO) rules agreed upon by China following its accession in 2001. From this perspective, the rise of Chinese firms to leading positions in global markets would be primarily grounded in spuriously constructed competitive asymmetries, driven by a wide range of public subsidies—including trade protection, export subsidies, access to credit at below-market rates, local content requirements, highly subsidized access to land and other key inputs such as energy, as well as relatively lax environmental and labor regulation.

Accordingly, these interpretations have argued that the leadership achieved by Chinese firms in the EV

⁴ In the MLP, 68 priority sectors, 27 frontier fields, and 18 areas of basic research are identified.

sector would be inherently unsustainable in the long run, given the presumed need for continuously increasing levels of state support to sustain their global expansion (Howell, Lee, and Heal, 2014; Wan et al., 2015). A particularly illustrative example of this line of reasoning can be found in a discussion paper published in 2014 by the Center at Harvard's John F. Kennedy School of Government. In this work, the authors advance a series of critiques of China's EV development strategy and conclude that *"mass EV deployment in China likely requires substantial policy adjustment. In particular, it will be necessary to permit foreign EV technologies relatively free market entry. In turn, this requires greater foreign IP protection"* (Wang et al., 2017).

However, interpretations drawing on neo-Schumpeterian (Feng, 2020; Lazonick and Li, 2023) and developmentalist approaches (Yang, 2023) suggest that the construction of this leadership can be traced back to a set of industrial and technological policies put in place at least since the mid-2000s.

According to Feng (2020), in the early 2000s a growing consensus emerged within Chinese academia and the Ministry of Science and Technology (MOST) that the industrial policy guideline prevailing at the time—known as Trading Market for Technology (TMFT)—had delivered highly limited results when assessed against China's long-term objective of national rejuvenation in the international arena. This policy was based on the establishment of joint ventures (JVs) between local firms (predominantly state-owned) and multinational corporations as a condition for the latter to gain access to the Chinese consumer market. Although TMFT constituted a cross-sectoral industrial policy, early assessments of its limitations crystallized around a research report sponsored by MOST and coordinated by the research team led by Lu Feng at Peking University.

Entitled *"The Policy Choice to Develop Our State's Automobile Industry with Indigenous Intellectual Property Rights"* (2003), the report was grounded in extensive field research (Lu and Feng, 2005). Its main conclusion was that, while the TMFT strategy had been successful in increasing the degree of production localization in the automotive sector, it had produced rather limited outcomes with respect to its second objective: fostering the absorption of foreign technologies and the associated processes of innovative learning and endogenous technological development.

According to Lu and Feng (2005) and Feng (2020), there were several reasons for these outcomes, among which three stand out: (i) the set of barriers imposed by multinational corporations that restricted access to product development activities and the transfer of core technologies; (ii) the limited absorptive capacity of domestic state-owned enterprises (Lazonick and Li, 2023); and (iii) the growing accommodation of these firms, since, once the objectives of production localization had been achieved and internationally established vehicle designs were supplied to the domestic market, joint ventures became highly profitable. As a result, state-owned firms were able to operate with low technological and productive risk, while simultaneously meeting the targets for growth, investment, and employment set out in the prevailing Five-Year Plans.

Moreover, by fulfilling these targets, the performance evaluation of the bureaucratic and technocratic cadres within firms—as well as of the cities and provinces in which they were embedded—remained fully aligned with the promotion and advancement criteria of the cadre evaluation system (Feng, 2020).

The presentation of this report in 2004 by Lu Feng to senior officials at the Ministry of Science and Technology (MOST)—including Wan Gang, who would later serve as Minister from 2007 to 2018, and the then Minister Xu Guanhua—marked a turning point in reflections on Chinese industrial and technological policy (Feng, 2020; Lazonick and Li, 2023). From that moment onward, through the Minister's engagement with the Politburo and key regional leaders, a coalition gradually coalesced around the need to advance toward an Indigenous Innovation Strategy. The first major institutional outcome of this inflection was the Medium- and Long-Term Plan for the Development of Science and Technology (MLP, 2006–2020).

The MLP symbolizes the recognition of the exhaustion and limitations of the TMFT strategy that had prevailed in previous decades and represents a turning point in the pursuit of building autonomous technological and innovative capabilities (Feng, 2020; Feng and Li, 2019; Lazonick and Li, 2023; Chen, 2019). Since the catalyst for this shift stemmed from the interpretation of these limitations through the analysis of joint ventures in the automotive industry, the search for endogenous innovation in this sector became one of the most illustrative cases—alongside the telecommunications industry—of the vectors that would later be formalized in the Innovation-Driven Development Strategy (2015).

In addition to the automotive industry's economic, political, and even symbolic relevance within the techno-economic paradigm of the Second Industrial Revolution, Wan Gang's tenure as Minister of Science and Technology between 2007 and 2018 further amplified the strategic role attributed to the sector within the Politburo. This was largely due to Wan's close personal and professional ties to the industry: he earned a PhD in Automotive Engineering in Germany and spent nearly five years working in R&D at Audi, with particular emphasis on powertrain systems, energy efficiency technologies, and engines.

Within this context, earlier MOST initiatives aimed at financing R&D projects related to automotive technologies expanded exponentially (Figure 1). During the 1990s, amid growing concerns over China's dependence on imported oil, the first projects focused on the development of electric vehicles (EVs) emerged.

From 2001 onward, under the framework of the National High-Tech Research and Development Program (863 Program), fuel cell technologies, non-plug-in hybrid electric vehicles (HEVs), and pure electric vehicles (PEVs) were explicitly prioritized under the Tenth Five-Year Plan.

Subsequently, following the MLP, these cumulative and sequential efforts were elevated to an even higher level. The interpretation advanced by the MOST, the NDRC (National Development and Reform Commission), and the MIIT (Ministry of Industry and Information Technology) increasingly converged on the view that the transition to electric vehicles (EVs) could represent a techno-productive paradigm shift, thereby opening windows of opportunity for new entrants (Perez and Soete, 1988). Given the technological dominance and intellectual property control exercised by Japanese firms—most notably Toyota—in non-plug-in hybrid technologies, policymakers came to understand that the technological strategy most likely to create such windows of opportunity would be one centered on the development of plug-in technologies, namely plug-in hybrid electric vehicles (PHEVs) and pure electric vehicles (PEVs) (Feng and Li, 2019; De Podestá, Pauls, and ten Brink, 2023; Whitfield and Wuttke, 2024; 2025).

Figure 1: China: EV Strategy and Institutional Configuration

Dimension	China
(A) Inherited structure of the automotive sector	A sector initially dependent on joint ventures under the <i>Transfer Market for Technology</i> (TMFT) logic; a high degree of production localization, but weak endogenous technological learning until the mid-2000s.
(B) Integration of EV policies into the national strategy	EVs positioned as a central instrument of the <i>Indigenous Innovation Strategy</i> and of the reorientation of Chinese industrial policy following the exhaustion of TMFT; strong alignment between technological policy (MOST), industrial policy (MIIT), and macroeconomic coordination (NDRC).
(C1) Core objectives	Reduce dependence on imported oil; improve urban environmental quality; exploit a technological window of opportunity opened by the hesitation of global incumbents; build autonomous technological capabilities and industrial leadership.
(C2) Demand-side instruments	<i>Ten Cities, Thousand Vehicles</i> program (2009), initially focused on public fleets; direct subsidies for NEV purchases (up to USD 9,000 per vehicle); local incentives (green license plates, exemption from license plate auctions); total benefits exceeding USD 25,000 in major cities.
(C3) Production and CAPEX instruments	Fiscal and financial incentives for NEV and battery production; massive support for R&D through MOST programs (863 Plan, MLP); public credit across the value chain; coordination with local governments; classification of NEVs as a <i>strategic emerging industry</i> (2010).
(C4) Environmental regulation	Environmental and urban regulation subordinated to industrial policy objectives (restrictions on ICE motorcycles, selective licensing, electric taxis); environmental goals explicitly aligned with the construction of scale and productive capabilities.
(C5) Local content / external restrictions	Implicit local content through the design of subsidies, public procurement, and financing; protection of the domestic market in the initial phase; indirect encouragement of technological internalization without formal, explicit local content rules.
(C6) Dominant technological strategy	Priority to plug-in technologies (PEVs and PHEVs); emphasis on LFP batteries as a mature and scalable technology; strong focus on process engineering, cost reduction, and economies of scale; innovations such as <i>cell-to-pack</i> architectures.
(D) Limitations and contradictions	Gradual reduction of subsidies after 2016; increased technological conditionality; intensification of trade conflicts; growing international scrutiny regarding subsidies and the sustainability of Chinese leadership.

Source: authors

Accordingly, the late 2000s can be understood as the take-off point of Chinese industrial and technological

policies aimed at fleet electrification. The motivations underlying these policies closely resemble what the literature would later describe as mission-oriented policies (Mazzucato, 2018), insofar as they combined broad and pervasive objectives with significant social, technological, and geopolitical impacts, namely:

- (i) reducing dependence on imported oil, given the vulnerability of supply to international geopolitical tensions and the economy's chronic relative scarcity of energy resources—particularly in the context of sustained economic growth averaging around 10% per year between 1978 and 2008;
- (ii) reducing greenhouse gas emissions and improving air quality, especially in major metropolitan areas;
- (iii) constructing a technological window of opportunity (Perez and Soete, 1988; Lee and Malerba, 2017) by capitalizing on the hesitation of incumbent international firms (Whitfield and Wuttke, 2025) to shift away from the internal combustion engine paradigm toward electric drivetrains—a transition characterized by technological discontinuities that erode the accumulated advantages of traditional industry leaders (Perez, 1988; Feng and Li, 2019).

Against this backdrop, in 2009 the pilot program “Ten Cities, a Thousand Vehicles” was launched and subsequently expanded to an additional 12 cities between 2010 and 2011, with the objective of fostering the early adoption of EVs. The program's instruments were primarily oriented toward subsidizing the incorporation of EVs into public fleets, while state-owned electricity distribution companies were simultaneously encouraged to invest in charging infrastructure.

In 2010, the New Energy Vehicle (NEV) sector—including electric and fuel cell vehicles—was formally designated a “strategic emerging industry,” thereby granting it elevated status and preferential treatment within public policy. This was followed in 2012 by the New Energy Automotive Industry Development Plan (2012–2020), which set ambitious targets, including the commercialization of 500,000 NEVs by 2015 and the construction of 400,000 charging stations. To achieve these goals, a broad array of policy instruments was mobilized, including: (a) tax incentives and financial support for NEV and battery production, as well as for R&D activities; (b) the prohibition of internal combustion motorcycles in numerous large metropolitan areas; (c) the increasing prioritization of NEVs in public fleet procurement; (d) the growing issuance of new licenses for municipal taxi companies exclusively for NEVs; and (e) substantial federal purchase subsidies for consumers, which could reach up to USD 9,000 per vehicle.

In addition, municipalities were encouraged to implement “green license plate” programs, which exempted NEVs from licensing fees, facilitated access to public parking, and granted preferential circulation rights in certain urban areas. As highlighted by Altenburg, Feng, and Shen (2017), in large cities such as Shanghai, purchasing an NEV allowed consumers to bypass the municipal license plate auction system, where the permit to register a new internal combustion vehicle often approached USD 20,000. In this context, the combined benefits associated with NEV acquisition in Shanghai could amount to approximately USD 27,600 (Wan et al., 2015). According to Feng and Li (2019), the combined value of federal and provincial subsidies typically reached around 50% of the purchase price of an NEV.

From a retrospective perspective, it can be argued that this set of policies played a crucial role in mitigating technological uncertainty and in enabling the achievement of productive scale in a nascent industry. In parallel, it is important to note that R&D support and the mobilization of public credit across the entire value chain advanced in a manner broadly consistent with the sector's exponential growth trajectory.

Following this initial phase of scale formation, from 2016 onward, a series of adjustments in industrial policy can be observed. A gradual phase-out schedule for subsidies was established, extending through 2022, and subsidies became increasingly conditional on improvements in battery energy efficiency. Thus, after providing an initial demand- and scale-oriented impulse, policies were progressively reoriented toward explicitly linking production incentives to technological upgrading.

In parallel, the New Energy Vehicle Industry Development Plan (2021–2035) introduced a production quota system for NEVs. Under this framework, 8% of vehicles produced in 2018 were required to be NEVs, with this share set to increase gradually, reaching approximately 60% of new vehicle production by 2030.

The quota system was operationalized through a dual credit mechanism, whereby manufacturers failing to meet their targets could purchase credits from firms exceeding the mandated quota. This policy not only encouraged traditional automakers to accelerate electrification, but also became an important revenue source for pure-play NEV manufacturers. In 2020, the estimated value of a single credit was around RMB 3,000 (USD 440). That year, the high-end NEV startup NIO received approximately 200,000 credits, generating revenues of roughly RMB 600 million (USD 88 million). Market estimates suggest that up to 20% of the operating profits of some NEV manufacturers derived from credit trading rather than vehicle sales. According to Shou and Li (2024), both BYD and Tesla generated over USD 1 billion per year through this credit trading system.

Finally, alongside this extensive – and continuously evolving – set of policies, it is important to emphasize

that both the domestic expansion and the international leadership of China's EV sector have been strongly underpinned by the development of dynamic technological capabilities in the lithium battery segment (Gong and Hansen, 2023; Wuttke and Whitfield, 2025).

Whereas other Asian competitors, such as LG Chem and Panasonic, initially concentrated on nickel–cobalt–manganese (or aluminum) battery chemistries, Chinese firms prioritized lithium iron phosphate (LFP) batteries. By combining greater technological maturity with increasing returns to scale, this trajectory resulted in a lower cost structure relative to markets dominated by premium vehicles, where nickel-based batteries predominate. During the consolidation of this technology, Chinese firms were also shielded from international competition by the battery whitelist policy in effect between 2015 and 2019, which created an implicit regulatory barrier that effectively excluded established Japanese and Korean battery manufacturers from accessing NEV subsidies in China (Wuttke and Whitfield, 2025; Gong and Hansen, 2023).

In this sense, these firms adopted a strategy characteristic of many Chinese companies undergoing simultaneous productive, financial, and technological consolidation, namely market segmentation. Their positioning was shaped by the structural conditions of the Chinese market – large scale and middle-income demand – allowing them to focus on technologies better suited to local needs while targeting market niches in which incumbent international firms showed limited interest (Li, 2022).

Following this phase of consolidation, however, both BYD and CATL were responsible for introducing process innovations in lithium iron phosphate battery production that renewed global interest in these technologies – including their subsequent adoption in Tesla models (Shen, Feng, and Zhang, 2016; Lazonick and Li, 2023). Central to this shift was a substantial increase in battery energy density – by approximately 65% between 2020 and 2025 – driven by innovations such as the transition from cell-to-module to cell-to-pack architectures, pioneered by BYD and CATL.

Section 3. The Maoist Legacy in the Long-Term Formation of the Material Foundations of China's Automotive Industry

While industrial and innovation policies have played a decisive role in shaping China's global leadership in the EV sector, their effectiveness cannot be assessed in isolation from the domestic productive structure upon which they operated. This section argues that the rise of the EV industry was conditioned by the prior existence of a dense productive and engineering base within the Chinese automotive value chain, whose formation long predated the emergence of EVs themselves.

This productive structure was not the outcome of recent policy experimentation, but rather the result of a historically constituted trajectory of industrialization initiated during the Maoist period. Under Mao Zedong, national industrialization was pursued through a territorially dispersed strategy, predominantly led by state-owned enterprises, which created the material and organizational conditions for later processes of technological upgrading in the automotive sector.

This strategy rested on three mutually reinforcing pillars, closely aligned with the logic of the Third Front strategy (Naughton, 1988; Bian, 2005; Heilmann, 2018):

- (1) The prioritization of heavy industry fostered the accumulation of productive capabilities in machinery and equipment, electrical industries, metallurgy, and metal-mechanical sectors—capabilities that later proved essential for automotive manufacturing.
- (2) Industrialization guided by the principle of *zili gengsheng* (self-reliance) explicitly connected capacity expansion to the gradual construction of endogenous and autonomous technological capabilities, mainly in engineering.
- (3) The emphasis on regional self-sufficiency dispersed industrial assets across provinces, giving rise to territorially embedded production systems that continue to underpin local experimentation and subnational competition in the EV sector within a fragmented hierarchical structure.

As an outgrowth of these pillars, China's development strategy—both during the Maoist period and in the post-reform era under Deng—has been organized around a logic of dual competition—both among CCP leaders through the cadre evaluation system and among provincial SOEs themselves (Li, 2022). This competitive dynamic strengthened productive learning processes and also indirectly contributed to the diffusion of these capabilities across different regions of the Chinese territory. Thus, as Heilmann (2018) argues, China's reform trajectory did not entail a wholesale break with Mao-era governance; rather, it involved the selective modification and redeployment of existing practices in support of economic development.

Although originally driven by geopolitical and security considerations, this Maoist industrialization trajectory generated productive capabilities that proved remarkably resilient to institutional change. Rather than being dismantled during the reform era, these structures were selectively reconfigured through new governance

arrangements, incentive mechanisms, and sectoral priorities (Heilmann, 2018).

Against this backdrop, the early expansion of local EV producers can be understood as an updated expression of the Maoist strategy of “conquering the cities from the countryside.” Through deliberate market segmentation, domestic firms initially focused on lower value-added segments and peripheral markets neglected by multinational producers. Only after the consolidation of these niches did intensified external competition within an innovation system “open to competition” (Li, 2022) – trigger a new phase of productive and technological upgrading along the domestic automotive value chain.

It is precisely from this framework that this section seeks to analyze, in greater detail, the foundations—beyond industrial policy and dominant interpretations in the Western literature—of the successful trajectory of selected Chinese EV firms.

At the outset, it is important to note that even prior to the shift in the industrial policy paradigm toward *Indigenous Innovation* in 2005, Feng (2020) shows that the degree of production localization in China’s automotive value chain in many cases approached 90%, as illustrated by the Volkswagen Santana—the best-selling model in the Chinese market from the late 1980s through the late 1990s. In other words, although technological leadership and platform development by domestic firms did not constitute the dominant strategy until the mid-2010s, a significant set of productive and engineering capabilities was already present within state-owned enterprises – most notably FAW and SAIC.

In parallel, even before the consolidation of China’s leadership in EVs, a substantial increase in the sector’s relative importance at the international level can be observed. As shown in Figure 2, China overtook France in 2003, Germany in 2006, the United States in 2008, and Japan in 2009, becoming the world’s leading automobile producer at least a decade before the consolidation of EVs.

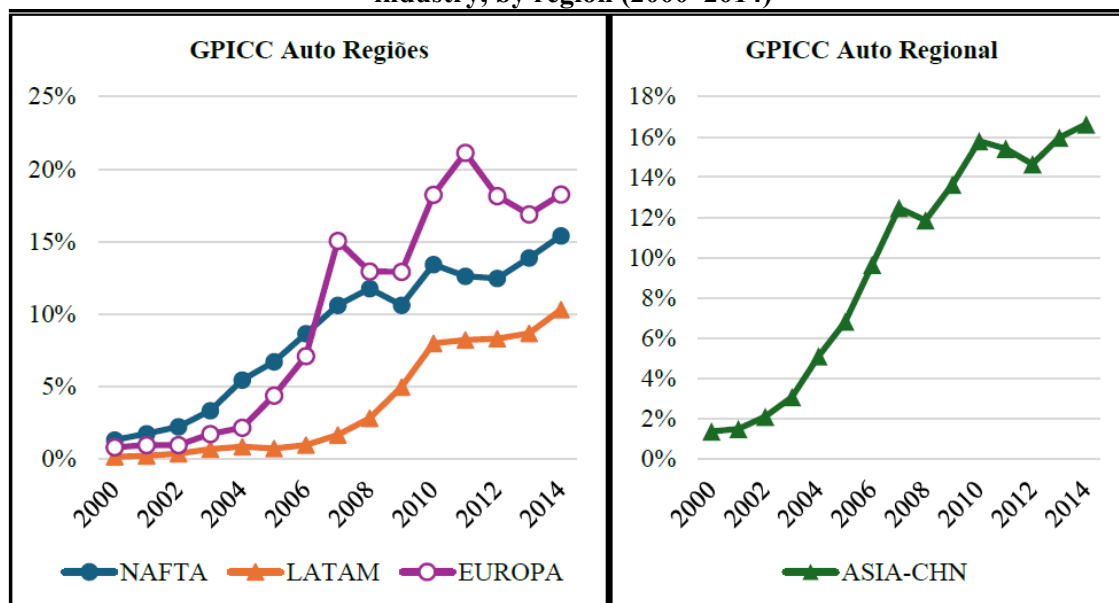
Figure 2: Evolution of vehicle production and share in the global market, 2001–2024

Year	Chinese Production (units.)	Global Market Share				
		China	USA	Japan	Germany	France
2001	2.334.438	4,15%		17,36%	10,10%	6,45%
2002	3.251.238	5,51%	20,82%	17,39%	9,26%	6,26%
2003	4.443.686	7,33%	19,93%	16,95%	9,07%	6,00%
2004	5.070.536	7,86%	18,55%	16,30%	8,64%	5,68%
2005	5.708.421	8,59%	17,97%	16,24%	8,66%	5,34%
2006	7.188.708	10,38%	16,27%	16,59%	8,41%	4,58%
2007	8.882.456	12,12%	14,71%	15,83%	8,48%	4,12%
2008	9.345.101	13,25%	12,35%	16,40%	8,55%	3,64%
2009	13.790.994	22,33%	9,23%	12,85%	8,43%	3,31%
2010	18.264.761	23,54%	9,97%	12,41%	7,61%	2,87%
2011	18.418.876	23,06%	10,83%	10,51%	7,69%	2,81%
2012	19.271.808	22,88%	12,26%	11,80%	6,71%	2,34%
2013	22.116.825	25,32%	12,66%	11,02%	6,55%	2,00%
2014	23.722.890	26,42%	12,99%	10,88%	6,58%	2,03%
2015	24.503.326	26,99%	13,33%	10,22%	6,64%	2,17%
2016	28.118.794	29,58%	12,82%	9,68%	6,04%	2,19%
2017	29.015.434	29,82%	11,46%	10,01%	5,80%	2,29%
2018	27.809.196	29,06%	11,82%	10,17%	5,35%	2,37%
2019	25.724.411	28,03%	11,85%	10,55%	5,08%	2,37%
2020	25.225.242	32,46%	11,35%	10,38%	4,81%	1,69%
2021	26.082.222	32,54%	11,43%	9,85%	4,12%	1,68%
2022	27.020.615	31,78%	11,84%	9,22%	4,32%	1,63%
2023	30.160.966	32,24%	11,35%	9,62%	4,40%	1,61%
2024	31.281.592	34,00%	11,00%	9,40%	4,20%	1,55%

Source: OICA.

With respect to the automotive value chain as a whole, this relevance can also be observed. As shown in Figure 3, there is an exponential increase in the share of Chinese exports in the total volume of manufactured inputs demanded by the global automotive industry. Between 2000 and 2014—the latter taken as a turning point for the analysis of the domestic automotive industry, given the implementation in the following year of the Made in China 2015–2025 strategy—this coefficient rose from approximately 1.4% to 16.7% in Asia, from 1.3% to 15.4% in NAFTA, and from 0.8% to 18.3% in Europe.

Figura 3- Evolution of China's share in total imported manufactured components of the automotive industry, by region (2000–2014)



Source: Authors, based on WIOD data

Thus, even though Chinese automotive OEMs did not yet occupy a prominent position in international markets prior to the consolidation of EV-oriented incentive policies – around the mid-2010s – their participation in global automotive value chains had already become increasingly significant. This pattern, in turn, reflects the long-term formation of a heavy industrial base and the accumulation of capabilities in metal-mechanical and engineering-intensive sectors.

Beyond these productive capabilities, the Maoist legacy of fostering dual competition also constituted a central element in the formation of a broad base of firms with national ownership structures. Although many of these firms were inefficient and far from the international technological frontier, the existence of a large pool of domestically owned firms – and therefore more directly exposed to industrial policy instruments – within the automotive sector is a configuration observed in only a very limited number of countries.

It is from the combination of this structural legacy inherited from the Maoist period and the effects of the industrial policies discussed in the previous section that this article seeks to understand the roots of China's leadership in the EV sector.

Thus, based on Figure 4, it is possible to identify three patterns of firms whose engagement in the EV sector is intrinsically associated with the unfolding of the Maoist development strategy discussed previously.

Figure 4: Inherited productive structures, state linkages, and pathways into EV production in China

Company / Startup	State-Owned Partner / Entity	Form of Cooperation	Purpose / Function	Notes
NIO	JAC Motors (Anhui / Hefei – provincial SOE)	Contract manufacturing in JAC’s F1 and F2 plants; later direct equity investment by Hefei municipality	Obtain production license and manufacturing capacity prior to owning a plant	Hefei municipal government later became a shareholder and strategic co-investor
XPeng	Haima Automobile (Hainan – provincial SOE)	Use of Haima’s factory and MIIT production qualification for the G3	Circumvent licensing barriers and accelerate time-to-market	XPeng obtained its own production license only at a later stage
Li Auto	Lifan Motors (Chongqing – local SOE)	Leasing and subsequent acquisition of Lifan’s Changzhou plant; inheritance of production qualification	Enable legal manufacturing of the Li ONE and gain MIIT certification	Crucial early-stage regulatory and production learning
Xiaomi Auto	BAIC Group (Beijing – municipal SOE)	Use of BAIC’s plant and production license to start SU7 manufacturing	Accelerate industrial start-up and secure political backing	Strong and explicit support from Beijing Municipality
Wuling–SAIC–GM	SAIC Motor (central SOE) + Wuling Motors (Guangxi – state-controlled)	Joint-venture structure (SAIC–GM–Wuling) with localized EV design and production	Mass production of affordable EVs (e.g. Hongguang Mini EV)	Became the key driver of low-cost EV diffusion in China
Leapmotor	Jinhua Municipal Industrial Fund; later cooperation with FAW Group	Initial state capital for factory setup; later joint technological and industrial projects	Scale production and gain national legitimacy	Illustrates evolution from local-state support to integration into the national SOE ecosystem
Chery	Anhui Provincial Government (provincial SOE)	Internal SOE restructuring; creation of EV subsidiaries (e.g. Chery New Energy)	Direct transition from ICE to EVs using existing plants, suppliers, and engineering base	Canonical case of provincial SOE leveraging Mao-era industrialization and dual competition
Geely	Privately owned; strong local government support (Zhejiang)	Vertical integration; platform strategy (SEA); acquisition-led capability accumulation	Transition from auto parts → motorcycles → ICE automobiles → EVs	Illustrates long-term cumulative capability building rooted in manufacturing before EVs
Haval / Great Wall Motors	Private firm with strong local government support (Hebei)	Internal diversification within GWM; reuse of ICE platforms, plants, and supplier base	Gradual transition from ICE SUVs to HEVs and EVs	Private-sector analogue of Maoist legacy: regional embeddedness, scale, and engineering depth
GAC Aion	Guangzhou Automobile Group (GAC – large SOE)	Creation of a dedicated new-energy subsidiary within the SOE	Internal organizational transition toward EV specialization	Not a startup; central to understanding SOE-led EV transition dynamics
SERES	Chongqing municipal SOEs; industrial parks; Huawei partnership	Early reliance on local SOE manufacturing capacity; later strategic alliance with Huawei (AITO)	Accelerate EV production, branding, and technological upgrading	Illustrates SOE-anchored startup evolving through public–private recombination

Source: author’s elaboration

The first pattern includes new entrants to the automotive sector, such as NIO, XPeng, Li Auto, Leapmotor, Jidu Auto, SERES, among others. These firms primarily benefited from a strong manufacturing base already established locally in the automotive sector. This is because, almost invariably, they initiated their operations through productive cooperation agreements with state-owned enterprises (SOEs) already established in the market.

By way of illustration, NIO entered into a contract manufacturing agreement in JAC’s F1 and F2 plants

and later received direct equity investment from the Hefei municipal government. Li Auto initially leased, and subsequently acquired, Lifan's Changzhou plant. XPeng relied on Haima's factory and MIIT production qualification for the production of the G3 model. Xiaomi Auto made use of BAIC's plant and production license to initiate the manufacturing of the SU7. SERES, in turn, originates from the Sokon/DFSK group, which had already operated in automotive assembly, metal-mechanical industries, powertrain engineering, and local supplier networks in Chongqing. For this reason, even prior to its partnership with Huawei, Seres emerged as a firm deeply embedded in the municipal SOEs and industrial park system of Chongqing.

These agreements were instrumental in mitigating initial uncertainties, enabling firms to benefit from minimum efficient scale without the need for large upfront capital investments, and fostering consulting arrangements and productive partnerships aimed at developing manufacturing capabilities among new entrants in a sector in which they previously lacked accumulated knowledge stocks. Moreover, in some cases, such partnerships facilitated faster access to production licenses than would have been possible under a strategy based on the prior in-house construction of manufacturing capacity.

It is also worth emphasizing that, beyond partnerships with SOEs, these firms benefited from the stock of technological capabilities accumulated in China's information technology sector. Indeed, many of them formed strategic alliances with major technology conglomerates, such as Alibaba (Xpeng), Tencent (Nio and Li Auto), Huawei (Seres / Aito, Luxeed / Chery, Stelato / BAIC, Maextro / JAC), Baidu (via Jidu), and Xiaomi itself. However, although these firms were affiliated with technology conglomerates in their early stages of development, they relied on the manufacturing structures of traditional state-owned enterprises focused on internal combustion engines, as well as on their local supplier networks – both of which have Maoist origins – to make EV production feasible. Thus, despite the innovative dynamism of many of these firms, the material foundations of their manufacturing activities can be traced back to the existence of a dense pre-existing industrial base.

The second pattern of firms comprises previously established SOEs. Although, strictly speaking, all characteristics associated with the Maoist legacy are present within this group, their relative weight varies across sub-groups.

For firms such as Wuling, the central elements appear to have been a high tolerance for experimentation enabled by hierarchical fragmentation, combined with the strategy of “conquering the cities from the countryside.” Through the interaction of these elements, the company was responsible for the development of the Hongguang Mini EV, the first microcar to achieve large-scale success in the Chinese market. With sales of 554,000 units in 2021, the model surpassed the Tesla Model Y and became the best-selling EV in China. From its launch in 2020 through 2025, cumulative sales have exceeded 2 million units. Given its extremely low cost, its very limited equipment set, and the use of mature battery technologies, the vehicle was positioned in a market segment with low attractiveness for both major domestic and international players (De Podestá, Pauls, and ten Brink, 2023).

However, it was precisely the success of the Hongguang Mini EV that revealed the scalability of mass EV production targeted at lower - and lower-middle-income consumers. In this sense, the Hongguang Mini simultaneously met the demands of consumers in inland cities and materialized the first major success trajectory that would later underpin the broader transformation of the technological paradigm in the automotive sector.

A strategy with a certain degree of similarity can also be observed in the case of Chery. Drawing on what Feng (2020) refers to as the reemergence of engineering-led companies, Chery was among the most active firms participating in R&D projects aimed at EV development supported by the Ministry of Science and Technology (MOST) as early as the early 2000s. Subsequently, with the consolidation of the industrial policy paradigm oriented toward indigenous innovation from 2005 onward, the firm further strengthened its R&D and engineering activities, notably through the recruitment of experienced engineers, many of whom were drawn primarily from FAW.

Thus, by combining a high tolerance for experimentation with strong support from the Anhui provincial government, the firm initially focused on the development of low-cost vehicles tailored to the realities of consumers outside China's main urban centers. Gradually, following a strategy of “conquering the cities from the countryside,” Chery became China's leading vehicle exporter, with 1,344,000 units exported in 2025, and the country's third-largest manufacturer EV (903,847, units in 2025) , including exports and local sales, ranking behind only BYD and Geely.

Other players, such as SAIC and GAC, as consolidated internal combustion engine (ICE) manufacturers, respond to electrification policies primarily through the Maoist logic of hierarchical fragmentation. This is because they react to central planning guidelines according to their regional specificities and accumulated productive capabilities. Thus, in line with the also Maoist logic of dual competition, they have progressively reoriented their strategies and leveraged their established manufacturing capabilities to transition successfully into EV production (Figure 5). A clear illustration of this process is the creation of sub-brands exclusively oriented toward EVs by several of these firms, such as Aion by GAC and Deepal and Avatr by Changan.

Figure 5: EVs brands recently created by SOEs auto OEM in China

SOE Group	EV / NEV Brand	Year (approx.)	Segment / Positioning	Strategic Rationale
Dongfeng Motor	Voyah (岚图)	2020	Premium NEV (BEV/PHEV)	Escape ICE JV lock-in; platform autonomy
	Nammi (纳米)	2023	Low-cost urban EV	Mass market; experimentation
	Aeolus NEV	2018–	Mainstream	Gradual electrification of legacy brands
FAW Group	Hongqi NEV	2019–	Premium / national brand	Sovereignty, high-end repositioning
	Bestune NEV	2018–	Mainstream	Incremental transition from ICE
GAC Group	AION (埃安)	2017	Pure-play EV (large scale)	Spin-off to accelerate EV scaling
	Hyptec / Hyper (昊铂)	2023	Premium EV	Move up the value chain
BAIC Group	BAIC BJEV	2010	Early-stage EV platform	First dedicated EV SOE
	Arcfox (极狐)	2017	Premium / tech-oriented	EV from scratch
	Stelato (享界)	2024	Premium smart EV	Huawei-centric software integration
SAIC Motor	IM Motors (智己)	2020	Premium EV	Platform recombination (Alibaba, etc.)
	Rising Auto / Feifan (飞凡)	2021	Upper-mid EV	Brand separation from ICE
	Wuling EV line*	2020–	Ultra-low-cost EV	Mass adoption via JV (SAIC-GM-Wuling)
Changan Automobile	Deepal / Shenlan (深蓝)	2022	Mid-range NEV	Dedicated EV architecture
	Avatr (阿维塔)	2021	Premium / high-tech	Alliance with CATL + Huawei
	Qiyuan (启源)	2023	Mainstream EV	Electrification of core lineup

Source: authors.

Additionally, as shown in Figure 6, among the ten OEMs with the highest EV sales in the Chinese domestic market, approximately 28% of total sales originated from SOEs (such as Changan and Chery) or from joint ventures between SOEs and other firms (including SAIC-GM-Wuling and Huawei's partnerships with Chery, BAIC, and JAC).

Figure 6: Top 10 OEMs by New Energy Vehicle Sales in China, 2025

1	BYD	3,484.525
2	Geely	1,564.562
3	Changan	789.141
4	SAIC-GM-Wuling	772.147
5	Tesla	625.698
6	HIMA (Huawei)	588.549
7	Chery	531.413
8	Leapmotor	529.503
9	Seres Group	422.920
10	Xiaomi Auto	411.837

Source: CCPA

Although traditional firms such as SAIC and Changan continue to exhibit strong lock-in effects associated with their previous ICE-oriented strategies – largely shaped by highly successful joint ventures – it is nevertheless possible to observe a rising relative share of EVs in their total sales (to around 40% in 2025 in both firms).

In the third pattern, Geely and GWM stand out and benefit primarily from the third pillar of the Maoist development strategy discussed earlier. Although they are private firms, both consolidated their positions through extensive local supplier networks. Indirectly, they have also been propelled by provincial governments operating under a logic of dual competition. Geely, benefiting from strong local government support in Zhejiang, illustrates long-term cumulative capability building rooted in manufacturing activities prior to the advent of EVs. GWM, in turn – also stimulated by provincial-level support – expanded through internal diversification, based on the reuse of ICE platforms, production plants, and existing supplier bases.

The exception is BYD, which benefits to a lesser extent from the pillars of the Maoist development strategy. This is because the firm is highly vertically integrated and only became substantially supported by national public policies after its consolidation in Shenzhen and after having already demonstrated significant technological success.

5. Concluding remarks

The recent trajectory of China's EV industry is increasingly emerging as a paradigmatic case in the international literature on industrial policy and economic development. The reasons for this are manifold. Perhaps the most salient feature is the intensity and speed of this trajectory, combined with the fact that it has unfolded within a sector that is highly oligopolized at the global level, displaying a market structure that is considerably more stable than those observed in other industries in which rapid Chinese catching-up has also taken place—such as information and communication technologies. Within little more than a decade, the share of Chinese firms in global EV supply increased from approximately 12.5% in 2011 to around 67% in 2024.

Conventional interpretations of the roots of this transformation, however, have consistently questioned its medium-term sustainability. These accounts tend to attribute the expansion of the sector to a set of practices that allegedly distort relative prices, primarily through the deployment of large-scale public subsidies. From this perspective, China's competitive performance would be based on spuriously constructed advantages, in tension with WTO principles and with what would be portrayed as a “natural” and sustainable trajectory of technological and market maturation of the sector.

Alternative interpretations emphasize different explanatory mechanisms, attributing China's success either to technological spillovers from the electronics sector—with particular emphasis on lithium-ion battery value chains—or to an externally generated window of opportunity resulting from the hesitation of incumbent automotive firms, which remained locked into the internal combustion engine paradigm.

By engaging with the international literature, this article has sought to highlight the limitations of these prevailing interpretations. It argues that the successful trajectory of China's EV industry should be understood against the backdrop of a long-term process, driven by a robust set of industrial policy initiatives aimed at building technological and innovative capabilities within the electrification paradigm. Since the early 1990s—and especially following the consolidation of the Indigenous Innovation Strategy from the mid-2000s onward—these initiatives paved the way for Chinese firms not merely to benefit passively from a potential window of opportunity in the automotive sector, but to become among the main agents actively constructing that window through a direct challenge to the previously dominant technological paradigm.

Beyond underscoring the central role of industrial policies, this article contributes to the literature by arguing that their effectiveness is strongly conditioned by the pre-existing national productive structure. Accordingly, it maintains that the success of China's EV industry cannot be fully understood without analyzing the trajectory of productive and engineering capability building along a local and national automotive value chain that preceded the emergence of EVs. This trajectory, in turn, is intrinsically linked to China's Maoist industrialization strategy. In other words, the roots of the emergence of China's EV sector do not represent a structural rupture with the previously prevailing productive paradigm of the Chinese automotive industry. Rather than reflecting merely a political, institutional, and technological reorientation, the development of this sector can be interpreted as a technological and political rearticulation built upon a historically constituted industrial foundation dating back to the Maoist period.

To illustrate this interpretation, the article establishes explicit connections between three core pillars of the Maoist development strategy and the recent evolution of industrial policies and firm-level strategies in China's EV sector. It shows that: (i) the prioritization of heavy industry fostered the accumulation of productive capabilities in machinery and equipment, electrical industries, metallurgy, and metal-mechanical sectors—capabilities that later proved essential for automotive manufacturing; (ii) industrialization guided by the principle of *zili gengsheng* (self-reliance) explicitly linked capacity expansion to the gradual construction of endogenous

and autonomous technological capabilities, particularly in engineering; and (iii) the emphasis on regional self-sufficiency dispersed industrial assets across provinces, giving rise to territorially embedded production systems that continue to underpin local experimentation and subnational competition in the EV sector within a fragmented hierarchical structure.

The combination of these elements led to the emergence of a set of highly dynamic startups in the EV sector. In numerous cases, however, these firms initially benefited from the pre-existing productive structure—through cooperation agreements and even contract manufacturing arrangements with SOEs—before establishing and consolidating their own manufacturing capabilities.

With regard to traditional SOEs, the combination of high tolerance for experimentation and the strategy of “conquering the cities from the countryside” proved crucial both for enabling the first major episode of mass EV production—most notably through the development of the Hongguang Mini EV by SAIC-GM-Wuling—and for sustaining the trajectory of firms that undertook substantial efforts to build engineering capabilities but had not previously ranked among the country’s leading automakers, such as Chery. Moreover, the logic of dual competition across provinces and party leaderships—operating through the cadre evaluation system—together with hierarchical fragmentation guided by signaling mechanisms embedded in the Five-Year Plans, prompted other firms traditionally oriented toward the internal combustion engine paradigm—including SAIC, Dongfeng, FAW, Changan, and BAIC, among others—to reorient their strategies and leverage their established manufacturing capabilities to transition successfully into EV production.

Finally, it can be observed that even prominent private firms in the sector, such as Geely and GWM, benefited indirectly from this institutional, political and historical configuration—either through generous support from national and provincial policies or through their access to a broad and well-established base of local suppliers.

References

- ALLCOTT, Hunt et al. **The effects of “buy american”: Electric vehicles and the inflation reduction act.** National Bureau of Economic Research, 2024.
- ALTENBURG, Tilman; FENG, Kaidong; SHEN, Qunhong. Electric mobility and the quest for automobile industry upgrading in China. **Green Industrial Policy**, p. 185-198, 2017.
- ALTENBURG, Tilman; CORROCHER, Nicoletta; MALERBA, Franco. China's leapfrogging in electromobility. A story of green transformation driving catch-up and competitive advantage. **Technological Forecasting and Social Change**, v. 183, p. 121914, 2022.
- BIAN, Morris L. **The making of the state enterprise system in modern China: The dynamics of institutional change.** Harvard University Press, 2005.
- BURLAMAQUI, Leonardo. Schumpeter, the entrepreneurial state and China. 2020.
- DE PODESTÁ, Alexandre; PAULS, Robert; TEN BRINK, Tobias. Industrial policy and the creation of the electric vehicles market in China: demand structure, sectoral complementarities and policy coordination. **Cambridge Journal of Economics**, v. 47, n. 1, p. 45-66, 2023.
- DIEGUES, Antonio Carlos; ROSELINO, José Eduardo. Industrial policy, techno-nationalism and Industry 4.0: China-USA technology war. **Brazilian Journal of Political Economy**, v. 43, n. 1, p. 5-25, 2023.
- FENG, Kaidong; LI, Junran. Challenges in reshaping the sectoral innovation system of the Chinese automobile industry. In: **Innovation, economic development, and intellectual property in India and China: comparing six economic sectors.** Singapore: Springer Nature Singapore, 2019. p. 415-438.
- FENG, Kaidong; LI, Yin; LAZONICK, William. Transforming China’s industrial innovation in the new era. **China Review**, v. 22, n. 1, p. 1-10, 2022.
- FENG, Kaidong. **Innovation and industrial development in China: A Schumpeterian perspective on China’s economic transformation.** Routledge, 2020.
- FU, Xiaolan. Foreign direct investment, absorptive capacity and regional innovation capabilities: evidence from China. **Oxford development studies**, v. 36, n. 1, p. 89-110, 2008.
- GONG, Huiwen; HANSEN, Teis. The rise of China's new energy vehicle lithium-ion battery industry: The coevolution of battery technological innovation systems and policies. **Environmental Innovation and Societal Transitions**, v. 46, p. 100689, 2023.
- HEILMANN, Sebastian. Policy experimentation in China’s economic rise. **Studies in comparative international development**, v. 43, n. 1, p. 1-26, 2008.
- HEILMANN, Sebastian. **Red swan: how unorthodox policy-making facilitated China's rise.** The Chinese University of Hong Kong Press, 2018.
- HEILMANN, Sebastian; SHIH, Lea. The rise of industrial policy in China, 1978–2012. **Harvard-Yenching Institute Working Paper Series**, v. 17, n. 7, p. 1-24, 2013.
- HOWELL, Sabrina; LEE, Henry; HEAL, Adam. **Leapfrogging or Stalling Out? Electric Vehicles in China.**

Harvard University, John F. Kennedy School of Government, 2014.

KOHN, Eben et al. **Electric Vehicle Incentives in 15 Leading Electric Vehicle Markets**. Davis: Institute of Transportation Studies, University of California, 2022. Disponível em: <https://escholarship.org/uc/item/0tn2p4x6>.

LAZONICK, William; LI, Yin. From technology transfer to indigenous innovation in China. **Entreprises et histoire**, v. 112, n. 3, p. 18-33, 2023.

LEE, Keun. **China's technological leapfrogging and economic catch-up: A Schumpeterian perspective**. Oxford University Press, 2021.

LEE, Keun; MALERBA, Franco. Catch-up cycles and changes in industrial leadership: Windows of opportunity and responses of firms and countries in the evolution of sectoral systems. **Research Policy**, v. 46, n. 2, p. 338-351, 2017.

LI, Yin. **China's drive for the technology frontier: Indigenous innovation in the high-tech industry**. Routledge, 2022.

LU, Feng; FENG, Kaidong. The policy to develop the indigenous automobile industry (Fazhan Woguo Zizhu Zhishi Chanquan Qiche Gongye de Zhengce Xuanze). 2005.

MAZZUCATO, Mariana. Mission-oriented innovation policies: challenges and opportunities. **Industrial and corporate change**, v. 27, n. 5, p. 803-815, 2018.

NAUGHTON, Barry. The Third Front: defence industrialization in the Chinese interior. **The China Quarterly**, v. 115, p. 351-386, 1988.

NAUGHTON, Barry. **The rise of China's industrial policy, 1978 to 2020**. México: Universidad Nacional Autónoma de México, Facultad de Economía, 2021.

PEREZ, Carlota; SOETE, Luc. Catching up in technology: entry barriers and windows. **Technical change and economic theory**, p. 458-479, 1988.

SHEN, Qunhong; FENG, Kaidong; ZHANG, Xiaobin. Divergent technological strategies among leading electric vehicle firms in China: Multiplicity of institutional logics and responses of firms. **Science and Public Policy**, v. 43, n. 4, p. 492-504, 2016.

SHOU, Songtao; LI, Youhuan. Exploring the collaborative innovation operational model of government-industry-education synergy: a case study of BYD in China. **Asian journal of technology innovation**, v. 33, n. 2, p. 389-424, 2025.

WAN, Zheng; SPERLING, Daniel; WANG, Yunshi. China's electric car frustrations. **Transportation Research Part D: Transport and Environment**, v. 34, p. 116-121, 2015.

WANG, Yunshi et al. China's electric car surge. **Energy Policy**, v. 102, p. 486-490, 2017.

WHITFIELD, Lindsay; WUTTKE, Tobias. Incumbent Advantage, Barriers to Entry, and Latecomer Catch-up in the Global Automotive Industry. 2024.

WHITFIELD, Lindsay; WUTTKE, Tobias. Opportunities for Latecomer Technological Catch-up in the Era of Renewables Capitalism: Possible Pathways out of the Periphery. **Development and Change**, v. 56, n. 4-5, p. 783-812, 2025.

WUTTKE, Tobias; WHITFIELD, Lindsay. China's technological catch-up and leapfrogging in electric vehicles: A firm-level study of BYD and CATL. **Progress in Economic Geography**, p. 100054, 2025.

YANG, Zeyi. How did China come to dominate the world of electric cars?. **MIT Technology Review**, v. 1, p. 1, 2023.

