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Abstract

In 2023, China surpassed Japan to become the [world's largest automobile exporter](#). As a dominant player in the new energy vehicle (NEV) sector, Chinese manufacturers accounted for approximately 68.2% of global EV production and sales. A significant portion of the nearly 3.2 million new electric cars registered in Europe were imports from Chinese manufacturers. This substantial increase in exports has solidified China's position as the leading exporter of automobiles. However, despite the rapid growth of the Chinese automotive industry, it faces challenges such as overcapacity and limited penetration in international markets.

Keywords: China's automotive industry, electric vehicles, evolution, overcapacity, subsidies.

Introduction

As of 2023, Chinese electric vehicle (EV) manufacturers have significantly bolstered their presence in the global market, accounting for [approximately 68.2% of the global EV market](#) by the year's end, up from 57.4% earlier in the year of 2023. This surge in market share is attributed to robust production capabilities and competitive pricing strategies, which have enabled Chinese manufacturers to surpass their European and other international counterparts. In 2023, Chinese automakers produced more than half of all electric cars sold worldwide, a testament to China's aggressive advancements in the EV sector, bolstered by substantial government incentives and a well-established supply chain for critical battery components. In the European market, Chinese EVs have made notable inroads, with nearly 3.2 million new electric cars registered in 2023, a substantial portion of which were imports from Chinese manufacturers. This trend is expected to continue as European subsidies and incentives fluctuate. The rapid global and European expansion of Chinese EVs underscores China's leading role in the transition to electric mobility, driven by strategic investments and supportive policies.

To better understand the roots of this success, it is important to look back at the early stages of the Chinese automotive industry and its evolution.

The founding phase (1950-1978)

During this period, the Chinese automotive industry was under a highly centralized planned economy system. Due to its weak economic foundation, it concentrated its efforts on key projects and formed an automobile industry system consisting mainly of the so-called First and Second Automobile Plant, with numerous small component factories as suppliers. However, due to the constraints of the planned economy system, the production and sales of automobiles were completely controlled by the state. Because of the lack of vitality of market competition, the lack of motivation for technological innovation and various other reasons, the automotive industry developed relatively slowly.

The period from 1950 to 1978 was the initial phase of the Chinese automotive industry. In order to develop the automotive industry and build its own automobile plants, the Chinese Ministry of Heavy Industry hired former Soviet experts to carry out design work in 1950. In 1953, construction began on the first automobile factory in Changchun, which was completed and put into operation three years later and marked the beginning of the development of the Chinese automobile industry. In 1958, 16,000 automobiles were produced in China, with the main model being trucks, which accounted for 98.97 percent of production. After 1958, Chinese enterprises were decentralized nationwide and a large number of automobile production and assembly plants were established in various regions, forming the first wave of development in the history of China's automobile industry. In this wave, China has built a relatively complete truck production system, which has greatly enriched the types of Chinese automobile products. Subsequently, China successively built the Second Automobile Factory, Sichuan Automobile Factory, Shaanxi Automobile Factory and a large number of supporting factories. By 1976, the number of Chinese automobile manufacturers had increased to 66. In 1978, the number of automobiles produced in China reached 150,000 units, forming an automobile system dominated by trucks and SUVs.

The testing phase (1979-1992)

During this period, the model of the unified planned economy was gradually transformed and the role of the market in the distribution of resources began to strengthen. The gradual opening of the market also revived competition. The rapid growth of domestic demand for automobiles in China led to an improvement in the layout of the automobile industry and an increase in the import volume of automobiles. At the same time, the introduction of foreign technology and management experience into China has injected new vitality and vigor into the development of China's automobile industry.

Since 1978, the development of the Chinese automotive industry has entered a phase of testing. In the early 1980s, the automotive industry was mainly dominated by medium-sized trucks with a relatively simple product structure. Characteristic of this phase was the lack of heavy and light trucks and almost no cars. With the advancement of reforms and economic development, people's living standards had improved and the demand for domestic cars had increased rapidly. The existing products could no longer meet the demand, both in terms of quantity and variety.

In order to adapt to the changing market demand and solve the conflicts between supply and demand, the automotive industry had adjusted its product structure in time. On the one hand, the Chinese government promoted the establishment and development of local light and heavy vehicle enterprises, and focused investment on the construction of automobile production bases such as Shanghai Volkswagen, FAW Volkswagen, Dongfeng Shenlong and Tianjin Xiali, the formation of various types of production bases such as FAW, FAW, Beijing, Shanghai and Shenyang, the expansion of automobile product structure and the improvement of production layout.

In 1992, automobile production in China surpassed 1 million units for the [first time](#), reaching 1.06 million units, with the production of cars increasing from over 2600 units in 1978 to 160,000 units. However, in order to meet the demand in the Chinese car market, China introduced car imports. Before the implementation of China's reform and opening-up policy in 1978, the number of imported cars in China was relatively low and unstable. In the late 1980s, the import volume of cars increased significantly. In 1992, China's car import volume reached 210,000 units, with car imports accounting for about 50 percent of the total at 110,000 units. However, at that time, the development of the automobile industry still faced challenges such as supply shortages, weak technology, and insufficient productivity. In order to solve this problem, the Chinese automobile industry began to implement a "market for technology" strategy, and a large number of foreign enterprises were introduced into China in the form of joint ventures or direct investment, such as FAW Volkswagen, founded by FAW and Volkswagen in 1991, and Dongfeng Motor and Citroen in France, founded by Dongfeng Motor in 1992. Through the introduction of technology, the Chinese automobile industry experienced rapid development.

The comprehensive development phase (1993-2000)

In this phase, China built "three large and three small" car production plants. The government no longer imposed planned economy restrictions on the production and circulation of automobiles, gradually promoted the vitality of the market and further relaxed restrictions on foreign investment. During this period, a large amount of private and foreign investment flowed into the automobile industry, and the Chinese automobile industry developed comprehensively.

In 1992, the Chinese government began a new wave of market-oriented reforms and transformed China from a planned economy into a socialist market economy. The demand structure of the automobile market also changed fundamentally, shifting from a single state-financed car purchase to a diversified car purchase structure. The Chinese car industry was facing a new situation and an important turning point. In this context, the Chinese State Council issued the "[Policy for the Automobile Industry](#)" in July 1994, which summarized the experience of the past 40 years and proposed the development guidelines and key measures for the future of the Chinese automobile industry. The proposal of this policy also marked a new development phase for China's automotive industry. However, China tightened macroeconomic regulation in 1993, so the Chinese automotive industry remained in a slow state of limbo in the following years. It was not until 1998, when China adopted an active tax policies and other measures to

boost domestic demand, that the automotive market began to experience a structural upturn. In 2000, both automobile production and sales in China exceeded the 2 million marks.

Cumulative Retail Sales of Automotive Category in China, 1997-2000

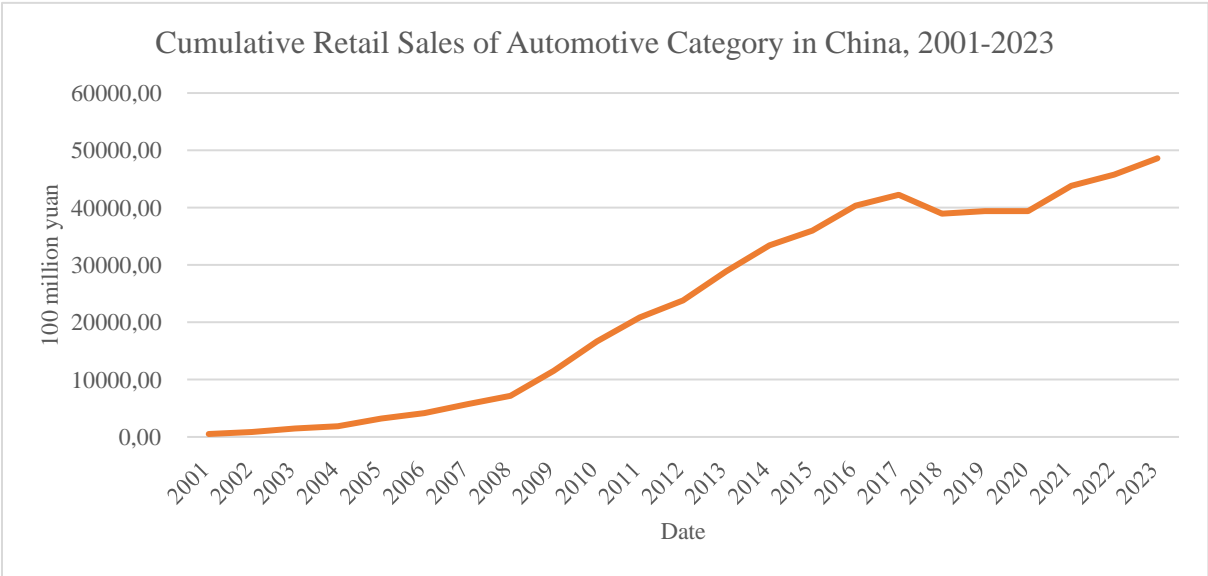
Year	Billion yuan
1997	26.43
1998	24.73
2000	43.66

Source: own compilation based on data from the National Bureau of Statistics of China

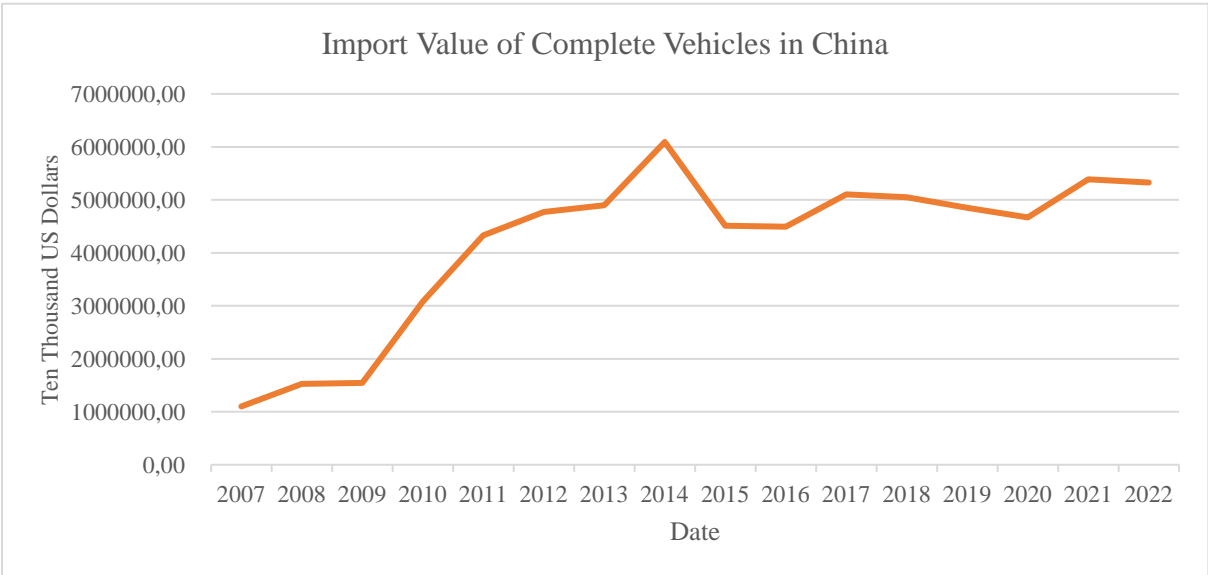
The phase of internationalization (2001-today)

After China's accession to the World Trade Organization in 2001, the Chinese automotive industry experienced an unprecedented development trend. Under the influence of globalization, the Chinese automobile industry has established close ties with the international automobile industry. Chinese automobile companies have entered into intensive strategic cooperation with international automobile companies, such as the acquisition of Volvo of Sweden by Geely Group and the participation of BAIC and SAIC in world-renowned automobile companies. Under the influence of China's national policies, China's independent brands have also undergone significant development.

In 2009, more than 10 million automobiles were produced in China, [ranking first](#) in the world. In 2013, automobile production and sales in China exceeded 20 million units, with 22.12 million and 29.18 million units respectively. In 2020, automobile production in China reached 25 million units, an increase of 977.29 percent compared to 2001. The import and export volume of Chinese automobiles has also developed rapidly. In 2020, the import volume of Chinese automobiles was 930,000 units and the export volume was 990,000 units. In 2021 and 2022, Chinese automobile exports climbed steadily to 2 million and 3 million units respectively. In 2023, China overtook Japan to become the world's largest automobile exporter. Exports reached 5.221 million units; an increase of 57.4 percent compared to the previous year.



Source: own compilation based on data from the National Bureau of Statistics of China



Source: own compilation based on data from the China Automobile Industry Yearbook



Source: own compilation based on data from the China Automobile Industry Yearbook

The development of China's electric vehicle industry

China is vigorously promoting the green and low-carbon transformation and upgrading of the automobile industry, and the export of new energy vehicles gave the industry a new impetus in 2023, [every third car exported by China was an electric car](#). In the whole year, 1.773 million vehicles were exported, an increase of 67.1 percent, contributing to the global green and low-carbon transformation.

The birth of China's electric vehicle industry (2000-2008)

Although China has a long history of research and investment in electric vehicle (EV) technology, beginning as early as the 1960s and continuing through the 1990s, as well as the ["863" program](#) and other major initiatives during the 10th and 11th Five-Year Plan periods, it is still a work in progress. Despite these efforts and significant investment of nearly 2 billion yuan, the mastery of core electric vehicle technologies by Chinese automakers is still an ongoing process. The complexity of electric vehicle technology, especially in areas such as battery technology, electric motors, and electronic control systems, requires not only advanced research and development but also robust supply chains.

Chinese manufacturers are struggling to establish a fully localized and reliable supply chain for

EV components. This is crucial because the strength of the supply chain has a significant impact on production capacity, cost efficiency and the quality of the final product. The core technologies for electric cars, especially related to high-performance batteries and energy management systems, are areas where Chinese companies are trying to gain independence and competitive advantages. The issuance of the "Management Measures for Market Access of Pure Electric Vehicle Products" by the National Development and Reform Commission in 2007 was a strategic move to set thresholds and technical standards for mass production, but achieving a self-sufficient supply chain and mastering the technology is a gradual and complicated process that requires continuous research and development as well as strategic partnerships within the industry.

Exploration period of China's electric vehicle industry (2009-2013)

China's strategic focus on electric vehicles (EVs) demonstrates its commitment to transforming and modernizing its automotive industry to promote sustainability and technological innovation. China's approach is structured and multi-phased and includes policies that drive technological progress and market expansion. The division into two development phases — focusing on "three vertical and three horizontal areas, whole vehicles first", followed by "three vertical and three horizontal areas, with the energy system technology platform as the core" — emphasizes a comprehensive strategy to lay a solid foundation in vehicle manufacturing and then advance into critical technology areas such as energy systems.

The "[Automobile Industry Adjustment and Revitalization Plan](#)" released by China in March 2009 had a significant impact on the new energy vehicle industry. This plan not only set ambitious targets, but also placed pure electric and hybrid vehicles firmly at the center of Chinese industrial policy. The target of producing 500,000 hybrid and electric vehicles by 2012, with the market share of pure electric vehicles at a remarkable 5, shows that the government was aiming for a transition to a more sustainable automotive sector.

At the end of 2010, the Chinese State Council emphasized the national importance of electric

vehicles by declaring the pure electric vehicle industry one of the seven strategic growth industries. The subsequent "Development Plan for Energy Conservation and the Electric Vehicle Industry" issued in July 2012 reaffirmed this direction and explicitly stated that all-electric driving was the key strategic focus for the development and transformation of the sector.

These initiatives and policies illustrate a coherent strategy aimed at fostering an innovation ecosystem that includes joint research and development, standardized testing, and the integration of component manufacturing with full vehicle assembly. This systemic approach has not only enabled technological breakthroughs but has also fostered the emergence of a structured industry capable of supporting both national needs and global competition in the electric vehicle market.

Growth period of China's pure electric vehicle industry (2013-2017)

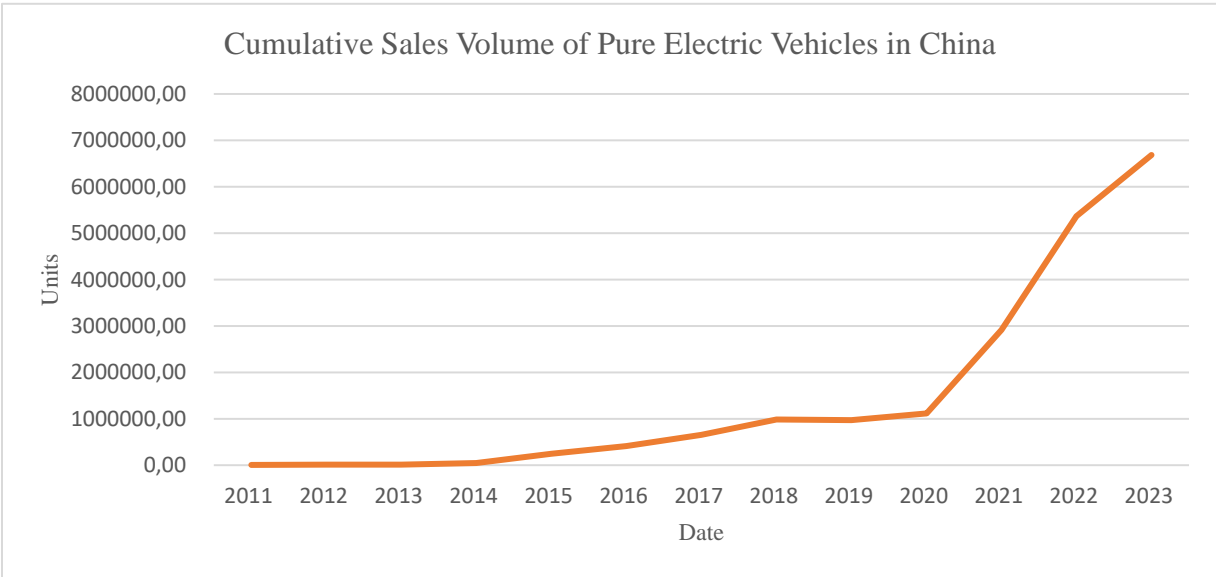
As China faced significant environmental problems, particularly the heavy haze that struck the country in the winter of 2013, the role of pure electric vehicles (EVs) became increasingly important not only in promoting technological innovation and national industry, but also in combating air pollution. This third role highlighted by the government demonstrates the multi-dimensional benefits that pure electric vehicles offer beyond economic or technological advantages.

The rapid integration of all-electric vehicles into local government clean air plans demonstrates a strong policy alignment with environmental health objectives. This broad support led to a massive expansion of electric vehicle promotion and adoption across the country, growing from 88 pilot cities to over 300, and an explosive increase in annual sales from 18,000 units in 2013 to 330,000 units in 2015. This growth has not only made China the largest market for pure electric vehicles in the world, but also illustrated the effective mobilization of government policy in response to environmental crises and market opportunities.

China's electric vehicle industry is moving towards maturity. The period after 2018

In 2021, sales of new energy vehicles rose to 3.31 million units, an impressive 183 percent year-on-year increase, with 82.5 percent of these sales being pure electric vehicles. [This growth trajectory continued into 2023](#), with production and sales reaching almost 9.6 million and 9.5 million units respectively, showing not only significant growth rates but also an increasing market share, which stood at 31.6 percent in 2023.

Global integration and improvement of competitiveness: The strategic change is also reflected in the increasing integration of Chinese EV manufacturers into global markets. A landmark event was the listing of NIO on the New York Stock Exchange in 2018, the first for a Chinese EV manufacturer, which not only provided an influx of capital but also marked an important milestone that increased the visibility and credibility of Chinese EV brands internationally.



Source: own compilation based on data from the China Automobile Industry Association

Subsidies for new energy vehicles (NEVs) and problems

The central government of China had provided a total of RMB66.2 billion of financial subsidies for NEVs by the end of 2018. According to the disclosure by the Ministry of Finance, the central government of China had provided a total of RMB33.435 billion of financial subsidies for NEVs by the end of 2015, followed by 12.333, 6.641 and 13.778 respectively in 2016, 2017 and 2018. The accumulative financial subsidies from the central government reported RMB 66.187 billion by the end of 2018. According to the data disclosed by the Ministry of Public Security on 2.61 million NEVs in use by the end of 2018, the subsidies per vehicle shall be RMB25,400.00.

Financial Subsidies for NEVs In China

Year	Financial Subsidies (RMB billion)
2015	33.435
2016	12.333
2017	6.641
2018	13.778
Total	66.2

Source: own compilation based on data from the Ministry of Finance of China

In August 2016, the Ministry of Finance officially released the investigation results on fraudulent subsidies for NEVs, with five typical NEV enterprises defrauding subsidies up to RMB1 billion. The main reasons of the "fraudulent subsidies" incident were firstly, unreasonable subsidy policies were used by those speculators. For example, too many subsidies for new energy buses made those subsidy-oriented enterprises start to covet the production¹ and manufacturing of new energy buses. The second was local protectionism from local governments. Due to the

¹ Covet the production means that these subsidy-oriented enterprises were eager or had a strong desire to engage in the production and manufacturing of new energy buses. This eagerness was primarily driven by the availability of substantial government subsidies, which made the production of new energy buses financially attractive.

declining trend of subsidy policies for NEVs, early plate licensing and sales of vehicles were beneficial to the increase of local taxes. Thirdly, these enterprises lacked the quality of integrity and law-abiding. The national subsidy policies aimed to enhance the technology innovation abilities of NEV enterprises and promote the sustainable development of NEVs. However, these enterprises saw them as a once-in-a-lifetime opportunity to make money, sparing no effort and doing everything they could to maximize profits.

Subsidies for NEVs have been continuously declining since 2015, and China's national subsidies have gradually taken into account factors such as battery life, energy consumption and energy density, so technologically advanced new energy passenger vehicles could obtain more subsidies. Starting from January 1, 2023, China's national financial subsidy for NEVs, which had lasted for 13 years, was officially withdrawn. For NEV enterprises and consumers, it suggests an increase in the purchase cost of NEVs. The government's support policies have been changed and used mainly guiding the technological progress of NEVs, which requires NEV enterprises to focus on technological innovation and patent R&D to adapt to the market competition environment of the post-subsidy era. However, leading new energy manufacturers like BYD have responded to the change by directly raising price, etc.

Summary

Since the 1930s, the Chinese automotive industry has a development history of almost 94 years. Since the implementation of China's reform and opening-up policy in 1978, the automobile industry has been growing and developing at an astonishing rate. In 1984, the total annual output of automobiles in China was 316,000 units, and in 2017, the total annual output reached 29.0154 million units, an increase of 93 times in 34 years. Among them, the output of passenger cars increased from 6,000 units in 1984 to 24.2091 million units in 2017, an increase of nearly 4000 times. In 2023, the cumulative production and sales of automobiles in China will reach 30.161 million and 30.094 million, with annual growth of 11.6% and 12% respectively. This is the first time in history that the production and sales of automobiles in China have exceeded 30

million units, and it has also led China's total volume of automobile production and sales to rank first in the world for 15 consecutive years. China has become a real-world power in the automobile industry.

According to the [statistics of CCID Research Institute](#), an emerging industry promoted by China, the total production capacity of new energy vehicles in China reached 26.65 million units in 2020, but the cumulative sales of new energy vehicles in 2020 was only 1.367 million units, and the capacity utilization rate was only 5.1%. In addition, Internet companies with great confidence in the future, such as Baidu, Dajiang, Xiaomi, Didi and other technology companies, are gradually entering the new energy vehicle industry, which will further increase the rapid and disorderly expansion of new energy vehicles and further aggravate the overcapacity of China's automobile industry.

There are two main reasons for the overcapacity in the automotive industry: in terms of market structure, the concentration of the Chinese automotive industry is still relatively low compared to developed countries internationally, resulting in a larger number of small and medium-sized enterprises with smaller market shares in the market. Local governments often erect high barriers to entry to protect small and medium-sized enterprises in the region, hindering the entry of other companies into the market. Due to the strong plant specificity of the automotive industry and local government restrictions, loss-making companies face high exit barriers, leading to overcapacity. The government's financial subsidies also interfere with market mechanisms and exacerbate overcapacity in the industry.

China's pure electric vehicle industry has leading international advantages in terms of market size, industry chain integrity and the ability to guarantee public infrastructure. At the same time, there are also problems, such as insufficient market share, low market openness and internationalization ability, lack of competitiveness of Chinese independent brands, and dependence on imports for some core components and raw materials.

From the perspective of trade-related indicators of international competitiveness, China's pure

electric vehicles have relatively weak international competitiveness. In terms of influencing factors, the Chinese government has played an important role in guiding and promoting the development of the pure electric vehicle industry through a series of policies. In addition, China's technological innovation capability in the field of pure electric vehicle batteries is leading internationally, while the technological capabilities in the fields of electronic control and motors still need to be improved.

The subsidies plan² led to a significant increase in sales of electric vehicles, promoted the development and production of the domestic market in China, and greatly benefited domestic electric vehicle enterprises. After having scale and technological advantages, China's vehicle enterprises have become more and more popular in the international market with a surge in exports. Some Western vehicle enterprises are even using their factories in China to export electric vehicles to other countries. With the end of the subsidies, it is expected that China's automotive industry will become more self-sufficient and competitive, especially in the context of suppressed economic growth in China. NEVs will gradually evolve from policy-driven to market-driven.

² Subsidies plan refers to since 2009, China has implemented a series of electric vehicle (EV) subsidy programs aimed at promoting the adoption and technological advancement of new energy vehicles (NEVs), including pure electric vehicles, plug-in hybrid vehicles, and fuel cell vehicles. Initially, the government provided direct financial subsidies to private consumers and public transportation operators for purchasing NEVs, with the amount determined by factors such as battery capacity and driving range. As the market matured, the subsidy standards were raised, favoring high-performance and long-range models while gradually reducing support for less efficient vehicles.

By 2020, the subsidy policy shifted towards a "dual credit" system, requiring automakers to produce a certain proportion of NEVs or else purchase credits or pay fines. By the end of 2022, the government planned to phase out direct purchase subsidies entirely. However, it continues to support the NEV industry through tax incentives (such as purchase tax exemptions), infrastructure development for charging stations, and the promotion of NEVs in public transportation and logistics sectors. In summary, China's EV subsidy programs have evolved from direct financial support to market-based mechanisms and policy incentives to adapt to market and technological developments.