# China's New Energy Vehicle Subsidy Policies and Impact on Manufacturers

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**Abstract.** Remarkable progress has been achieved in China's eco-friendly automotive industry, establishing itself as a dominant force in the global automotive landscape. This expansion has been significantly propelled by a series of government subsidy policies implemented over the years. This report aims to provide a comprehensive analysis of China's NEV subsidy policies specifically between 2020 and 2025, and to examine the multifaceted impact of these policies on both domestic and international NEV manufacturers operating within the country. The analysis will delve into the specifics of the subsidies offered during this period, the strategic objectives behind their implementation, the adjustments and changes that occurred, and the resultant effects on the growth, profitability, and innovation of NEV manufacturers. Understanding these policy dynamics is crucial for stakeholders, particularly in light of evolving global competition and increasing trade tensions. From a macro perspective, the practice and adjustment of NEV subsidy policy in China provides an important policy sample for the development of global new energy automobile industry.

**Keywords:** NEV, Subsidy Policy, Innovation.

## 1 Introduction

Developing new energy vehicles is conducive to alleviating environmental pressure, promoting sustainable development and advancing China's carbon neutrality and carbon peak goals. In addition, people's environmental awareness has increased, and their preference for new energy vehicles has increased [1]. Therefore, driven by the public and the government, the demand side and the supply side, China's new energy vehicle market has great potential, and its market share continues to increase [2]. According to the data of the China Association of Automobile Manufacturers, China's new energy vehicle sales in 2024 was 12.866 million units. This is the first time that China has achieved annual sales of more than 10 million units, and it has ranked first in the world for the 10th consecutive year.

This study analyzes how state-sponsored electric vehicle incentives impact various BYD and Tesla, explores how subsidy policies shape the strategic choices of companies and evaluate their long-term impact on the NEV sector in China and global emission reduction targets. However, with the maturity of the market and the intensification of


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international competition, the need for policy adjustment is becoming increasingly urgent. This study aims to provide empirical evidence for policymakers to optimize subsidy mechanisms and provide strategic references for enterprises to avoid investment risks. In addition, the study also echoes China's carbon neutrality objectives and their alignment with worldwide sustainability efforts, exploring how to coordinate market expansion and environmental benefits through policy tools to promote the transformation of industries to high-quality and low carbon.

Recent studies have explored the impacts of China's subsidy program for new energy vehicles from various academic perspectives. In terms of policy effectiveness, some scholars found through a three-dimensional panel study that subsidies significantly increased the penetration rate of domestic electric vehicles, but the inhibitory effect on imported models was also significant [3]. Other scholars further pointed out that policy design needs to take into account both short-term incentives and long-term sustainability, such as gradually shifting to charging facility support or R&D subsidies [4]. According to academic research, integrating demand- and supply-side strategies is crucial, since neither policy alone can effectively balance economic market goals with ecological protection requirements.[5].

At the enterprise level, some research analysis of Tesla shows that Chinese policies have created a unique growth environment for Tesla through institutional innovation, resource tilt and market cultivation [6]. However, policy design always serves the goal of domestic industrial upgrading - both using Tesla's "catfish effect" to activate local enterprise innovation and increasing the autonomy of production networks with localization policies. Some scholars proposed through consumer surplus that subsidy allocation needs to balance the interests of manufacturers and consumers, and differentiated subsidies can stimulate technological upgrading [7]. International experience also provides reference for China. Increasing manufacturer subsidies is more conducive to reducing carbon emissions than consumer subsidies. This conclusion provides new ideas for the continuous optimization of China's policies [8]

Although existing research has made important progress, most of the literature focuses on macro policy effects or single enterprise cases, lacking a systematic comparison of the heterogeneous responses of domestic and foreign enterprises. This study attempts to fill this gap, combining quantitative analysis with typical cases to reveal the driving mechanism of policies on different corporate strategies.

## 2 Overview of China's NEV Subsidy Policies

### 2.1 Content of the Policies

China's policy framework for subsidizing new energy vehicles between 2020 and 2025 witnessed a dynamic evolution, characterized by extensions, reductions, and a gradual shift towards non-direct financial incentives.

From 2018 to 2020 the total government spending on NEV subsidies roughly tripled compared to the preceding years. In 2020 specifically, the electric car manufacturer BYD received approximately EUR 220 million in direct subsidies. Building on the

framework established in 2020, the subsidy reduction continued in 2021. Regular NEVs experienced a further 20% decrease in subsidies compared to 2020 levels, while NEVs used in public transport saw a smaller reduction of 10%. The government also maintained its efforts to curb excessive and unauthorized investment in NEV production to mitigate the risk of overcapacity in the sector. And in the final year of the extended subsidy program, 2022 witnessed a further 30% reduction in purchase subsidies compared to the 2021 levels. Standard subsidies for NEVs used in public transport and similar sectors also experienced reductions. Despite the overall reduction in subsidies across the sector, BYD, a leading NEV manufacturer, saw a significant increase in direct subsidies, reaching EUR 2.1 billion in 2022. With the cessation of central direct purchase subsidies, 2023 marked a transitional period for China's NEV policy, with a greater emphasis on other supportive measures. To further stimulate demand in the absence of direct national subsidies, several cities introduced or continued to offer replacement subsidies to consumers who traded in their conventional fuel vehicles for new NEVs. Additionally, a revision to the "dual credit" policy in 2023 resulted in an average reduction of approximately 40% in the number of credits that automakers could earn for producing standard models of new energy passenger vehicles. To further encourage auto consumption, particularly of NEVs, the government renewed and doubled the subsidies for trading in old vehicles for new ones. Individual consumers could receive a subsidy of RMB 20,000 for purchasing a new energy passenger vehicle after scrapping an old car, and RMB 15,000 for buying a fuel vehicle with an engine displacement of 2.0 L or less. The central government allocated Yuan 6.44 billion ($889 million) to support this trade-in scheme. The policies in 2024 also continued to emphasize the importance of promoting the development of charging infrastructure and battery swapping networks to support the growing NEV fleet. Fig.1. shows the top ten new energy vehicles sold in China in 2024. Tesla's Model Y has the highest sales, but BYD-branded vehicles account for four-fifths of the top ten sales. Sales momentum is very strong.

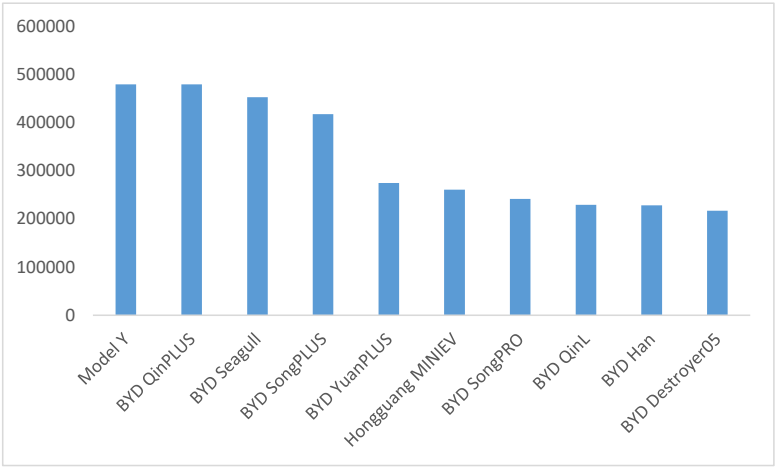


**Fig. 1.** Top ten new energy vehicles sold in China in 2024.

**Data source: Yiche APP**

The government not only provides production subsidies for automobile manufacturing but also promotes the construction of new energy vehicle infrastructure, while continuously promoting research and development subsidies [9]. The strategic evolution of China's NEV subsidy policies from direct financial support towards a combination of tax exemptions, trade-in incentives, and regulatory mechanisms like the dual-credit policy indicates a deliberate effort to foster a more sustainable and market-driven growth trajectory for the industry. The increasing focus on technical standards and safety reflects a commitment to enhancing the quality and reliability of NEVs. The introduction and extension of trade-in subsidies in the post-direct-subsidy era demonstrate a continued government commitment to stimulating demand and accelerating the replacement of older vehicles with cleaner alternatives. Fig.2. shows that the Chinese government's electric vehicle industry subsidies are mainly divided into three categories: consumers, infrastructure and enterprises.

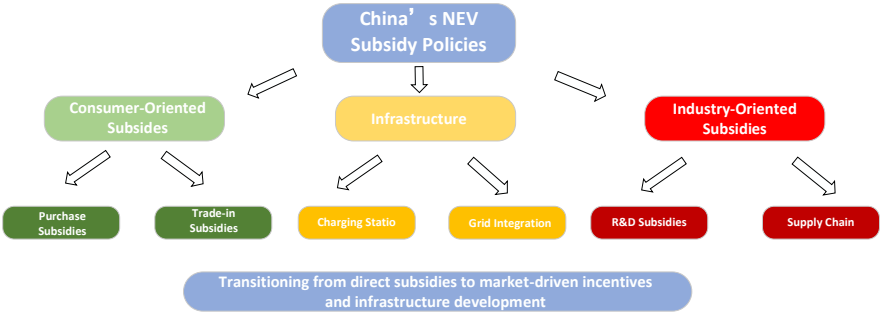


**Fig. 2.** Structural Transition of China's NEV Subsidy Policies: From Direct Subsidies to Market-Driven Incentives.

## 2.2 Objectives of the Subsidy Policies

China's extensive NEV subsidy program was driven by a multifaceted set of objectives, reflecting the nation's strategic priorities in technological advancement, economic development, environmental protection, and energy security. A major focus was to propel China into a leading position in innovation worldwide. By providing substantial financial incentives, the government sought to position China at the forefront of the rapidly evolving EV sector. A further priority was to enhance China's energy self-sufficiency and decrease its dependence on foreign oil imports, which was seen as a crucial step in diversifying the nation's energy mix and enhancing its energy security. Addressing the pressing issue of local air quality concerns and broader environmental governance was also a significant driver behind the NEV subsidy policies. The government recognized the potential of electric vehicles to reduce urban air pollution caused by traditional internal combustion engine vehicles, thereby improving public health and environmental conditions [10].

Beyond these overarching goals, the subsidy program aimed to promote the widespread adoption of NEVs, thereby stimulating market growth and enabling manufacturers to achieve economies of scale. By lowering the initial purchase cost for consumers, subsidies effectively increased demand, encouraging greater production volumes and further cost reductions over time. The government also had a clear objective of achieving significant technological advancements in critical NEV-related areas, including battery technology, electric drivetrains, and charging infrastructure. The increasingly stringent technical criteria for subsidy eligibility over the years served as a mechanism to push manufacturers towards innovation and the development of higher-performing vehicles. The focus on supporting research and development in fuel cell vehicles through pilot programs further underscored the commitment to technological diversification.

Enhancing the industrial competitiveness of Chinese automakers in the global market was another crucial objective. Government support was strategically directed to foster the growth of domestic NEV companies, enabling them to gain market share both domestically and internationally. Meanwhile NEVs were recognized as a more environmentally friendly alternative to conventional vehicles, and the subsidies were intended to accelerate their adoption as part of a broader strategy for sustainable development and reducing reliance on fossil fuels.

## 3 Case Studies of Key NEV Manufacturers

The impact of China's NEV subsidy policies can be further illuminated by examining the experiences of specific key manufacturers within the sector.

### 3.1 BYD's Decision-Making Characteristics

BYD has strategically positioned itself as a comprehensive player in the NEV market, offering a diverse portfolio of vehicles. This broad product strategy allows BYD to cater to a wide range of consumer preferences and price sensitivities within the Chinese market. Notably, PHEVs constitute a significant portion of BYD's overall sales volume, providing a transitional option for consumers who may not yet be ready to fully embrace pure electric mobility. The company's model lineup spans from affordable, high-volume economy vehicles to more premium offerings, demonstrating its ability to compete across different market segments. A key characteristic of BYD's product positioning is its strong focus on the domestic Chinese market, where over 90% of its total vehicle sales are generated. This deep concentration on the local market aligns with the significant governmental support and incentives available to domestic NEV manufacturers.

BYD's localization strategy is deeply embedded within China. The company benefits from a robust local supply chain and has cultivated strong relationships with domestic component suppliers, aligning with government policies that favor local sourcing. Furthermore, BYD has achieved a high degree of vertical integration within its operations, encompassing areas such as battery production, which provides it with greater control

over costs and supply. The majority of BYD's manufacturing footprint is located within China, with multiple industrial parks strategically situated across the country. While BYD has been gradually expanding its presence into overseas markets since 2021, its principal strategic direction and most significant investments are still firmly centered on the domestic Chinese market. This strong localization has enabled BYD to leverage the supportive policy environment.

### 3.2 Tesla's Decision-Making Characteristics

In China, Tesla's product strategy mirrors its worldwide positioning, with battery electric vehicles (BEVs) at its core and a strong emphasis on cutting-edge technology, high performance, and forward-thinking innovation to solidify its brand leadership. The company's primary models offered in the Chinese market have been the Model 3 and the Model Y, both of which have garnered significant attention and sales. Unlike BYD's diversified powertrain approach, Tesla's exclusive focus on BEVs caters to a specific segment of the market that prioritizes fully electric mobility. While China represents a crucial market for Tesla and contributes significantly to its global sales volume, the company maintains a broader global market presence and does not rely solely on China for its overall success. Tesla's brand image in China is that of a premium international technology company, which has both advantages and disadvantages in a market increasingly dominated by domestic brands.

Despite being a foreign entity, Tesla has undertaken substantial localization efforts in China. Notably, it established the first wholly foreign-owned car manufacturing enterprise in the country with its Gigafactory in Shanghai. This facility has achieved a localization rate exceeding 95% for its industrial chain, indicating a strong reliance on local suppliers for components and materials. A significant proportion of the vehicles produced at the Shanghai Gigafactory are sold within China, while the remainder are exported to other international markets. This localization strategy has been instrumental in allowing Tesla to reduce production costs, improve delivery times for Chinese consumers, and gain better access to the local market. However, as a foreign brand, Tesla's level of access to and benefit from certain government policies and subsidies may differ compared to domestic manufacturers like BYD.

### 3.3 Comparative Analysis of Policy Effects

The growth trend of electric vehicle sales in China from 2020 to 2024 demonstrates the significant impact of the government's NEV policy. The figures below illustrate the increase in sales volume during this period. The consistent upward trajectory clearly indicates the effectiveness of the various subsidy mechanisms and supportive policies in driving consumer adoption of electric vehicles.

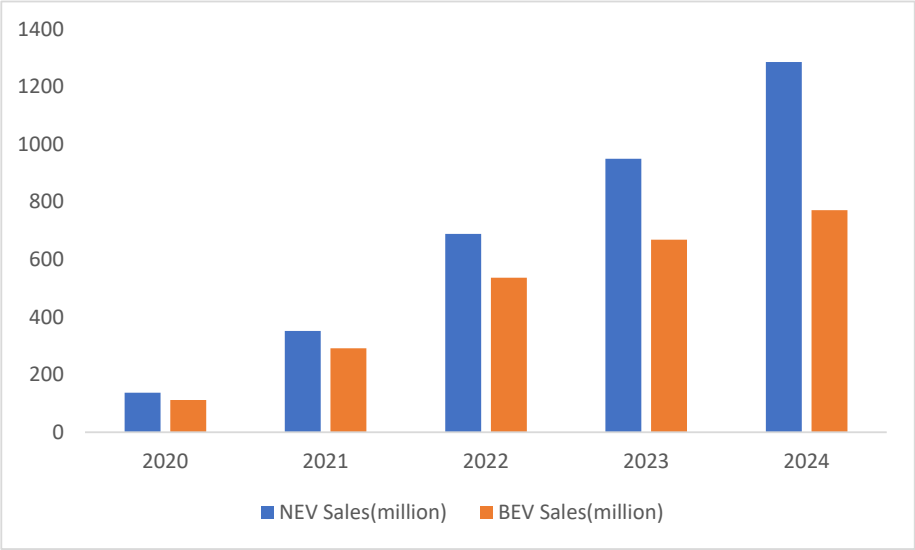


**Fig.3.** Comparison of sales of new energy vehicles and pure electric vehicles in China from 2020 to 2024.

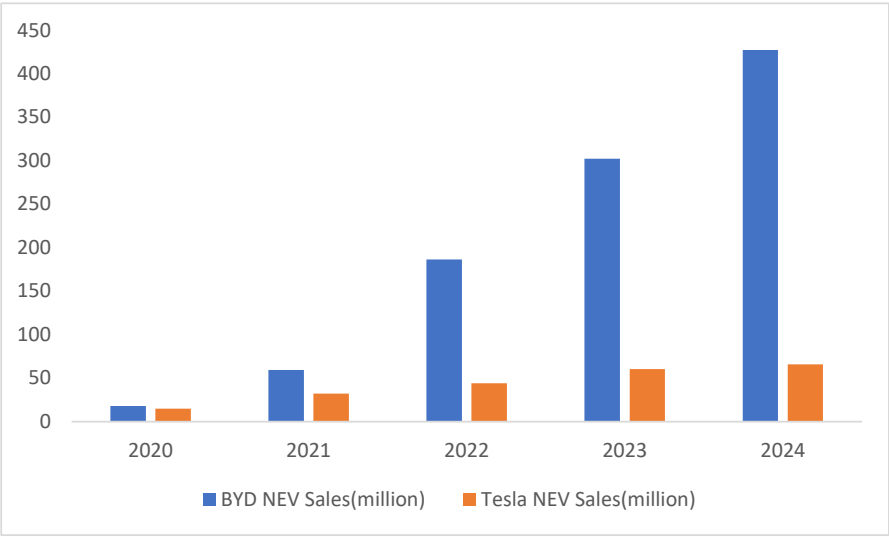


**Fig.4.** Comparison of the sales changes for BYD and Tesla in the Chinese NEV market between 2020 and 2024.

This chart highlights a key trend that BYD's sales have shown a consistent increase over this period, culminating in a dominant position for a long time. In contrast, the sales volumes of Tesla and BYD were not very different in 2020, but the gap widened rapidly in the following years. This divergence in sales trends suggests that BYD has

been particularly adept at leveraging the government's subsidy policies and its diversified product portfolio to capture a larger segment of the rapidly expanding NEV market. Tesla, despite its strong brand recognition and technological prowess, faces intensifying competition in a market where localized offerings and strong government backing appear to provide a significant advantage.

# 4 Discussion

## 4.1 Policy Effectiveness

The incentive policies for NEVs in China have effectively delivered on several strategic priorities. The exponential growth in NEV sales clearly indicates the policy's success in stimulating market growth. The various forms of subsidies, including purchase tax exemptions and trade-in programs, have greatly shaped consumer purchasing decisions by reducing the upfront cost of NEVs and incentivizing the replacement of older vehicles. Furthermore, the policy has fostered technological innovation, as manufacturers are incentivized to develop more efficient and longer-range vehicles to qualify for subsidies and NEV credits.

The comparative success of BYD and Tesla highlights the differential impact of the policy. BYD, with its comprehensive product portfolio encompassing both BEVs and PHEVs, and its strong focus on the domestic market, has been particularly effective in capitalizing on the policy incentives. Its increasing market share demonstrates its ability to align its offerings with consumer preferences and policy priorities. Tesla, while also benefiting from the policy, faces increasing competition from domestic players. Its premium BEV-centric strategy, while successful in a specific market segment, may not have the same broad appeal as BYD's diversified approach in a market where affordability and a wider range of options are key drivers. Manufacturers must adjust to the changing policy landscape, marked by the phasing out of direct purchase incentives and the rise of alternative support measures.

## 4.2 Corporate Risks

Both BYD and Tesla face various corporate risks within the dynamic Chinese NEV market. The evolving subsidy policy itself presents a risk, as changes in government regulations, such as the eventual expiration or modification of tax exemptions and trade-in programs, could impact consumer demand and manufacturer profitability. Increasing market competition from a growing number of domestic and international players also poses a significant challenge for both companies. The rapid pace of technological advancements in battery technology, autonomous driving, and other areas necessitates continuous investment in R&D to maintain a competitive edge. Shifts in consumer preferences, such as a growing demand for intelligent and connected vehicles, also require manufacturers to adapt their product offerings.

International trade tensions and the imposition of tariffs by major markets like the US and EU create additional risks, particularly for manufacturers with global export

ambitions. Tesla, with its production facility in China serving both the domestic and export markets, is particularly vulnerable to these trade dynamics. Supply chain management also presents ongoing challenges, especially concerning the sourcing of critical battery materials and components. For BYD, while its strong domestic focus provides some insulation from international trade risks, it still needs to navigate the intensely competitive local market and ensure its technological advancements keep pace with global trends.

## 5 Conclusion

This report has analyzed the implications of China's financial incentives on the investment decisions of BYD and Tesla, which influences both consumer behavior and manufacturer strategies. BYD, with its diversified product portfolio and strong domestic focus, has effectively leveraged these policies to achieve a dominant market share. Tesla, while a significant player, faces increasing competition and the challenges of navigating international trade dynamics.

For policymakers, optimizing future subsidy mechanisms should focus on ensuring sustainable market growth and encouraging continuous technological innovation. This could involve a gradual transition away from direct financial incentives towards policies that support infrastructure development and standardization. Enterprises like BYD and Tesla need to remain agile and adaptive to the evolving policy landscape. Continued investment in R&D, diversification of product offerings to cater to evolving consumer preferences, and strategic management of supply chains will be crucial for maintaining competitiveness and mitigating risks in the dynamic Chinese NEV market.

This analysis is primarily based on publicly available information and research snippets provided. A thorough analysis of BYD and Tesla's distinct investment approaches and corporate strategies would necessitate proprietary internal data or discussions with company leadership, resources unavailable for this particular study. Furthermore, the rapidly evolving nature of the NEV market and policy environment means that the analysis presented here reflects the situation up to a specific point in time and is subject to future changes.

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