

# A Study of Tesla's Non-market environment and Strategies in China's New Energy Vehicles industry

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### Abstract:

Tesla is an American Electric vehicle (EV) company that was set up in 2003. Tesla went to China to build a factory in 2012 and began delivering EVs to Chinese consumers in 2014. Since Tesla came into the Chinese market, it has always been dedicated to providing high-quality and high-performance cars. Tesla's main models include Model S, Model X, Model 3, and Model Y. These models become industry leaders in design, performance, and safety. This study focuses on analyzing the market and non-market environments and treatments of Tesla in the Chinese new energy vehicles industry. It presents some facts about the competitive context of Tesla against other Chinese domestic companies. However, with the development of Tesla and the rise of NEV industries, Tesla also encounters several problems and challenges in non-market aspects. This article provides some suggestions and analyses to help Tesla avoid potential challenges and achieve better development in the Chinese market. It also provides a reference for the development of the entire NEV industry.

**Keywords:** Tesla; Market competition; Non-market analysis; New electric vehicles

## 1. Introduction

As one of the world's largest automotive markets, China's new energy vehicle (NEV) production and sales volume rank first in the world for nine consecutive years until 2024. The sales volume has made great breakthroughs, in 2023, China exported 1.203 million new energy vehicles, an increase of 77.6% over the previous year. In 2024, the latest data indicates that the sales volume has first reached 30 million. Export destinations include more than 180

countries in Europe, Asia, Oceania, America, Africa and other regions. Advanced technology is the most essential factor that promotes the rapid development of NEV. China NEV industries have breakthroughs in charging, driving, or battery technology. Additionally, China has formed a completely new energy vehicle industry system. For instance, the supply systems of electronics and software, and the production of batteries and chargers are very mature.

Tesla company is a global leader in the electric vehicles industry. "Accelerating the transformation of the

world to sustainable energy” was the vision of Tesla when it was founded, and it has been its goal during its development[1]. Tesla in China focuses on mass production and innovation. It has the world-leading technology for constructing vehicles. In 2019, Tesla built a Gigafactory that can boost the production of electric vehicles to attain the rising demand. According to the latest data in July 2024, Tesla is the third largest car manufacturer in the Chinese NEV market, accounting for 5.3% of the market share.

As a case analysis, it primarily represents several aspects. Firstly, it shows the basic facts such as Tesla’s current market environment that involves the overview of the whole NEV industry in China, and the position and competitiveness in China’s NEV industry. Secondly, this study discusses the market and non-market environment compared to some strong competitors in China. What’s more, this part of the study also presents several regulations that are imposed by the Chinese government. Therefore, the study makes a deeper analysis of the reasons and facts behind the non-market conditions in terms of economics, politics, and social factors. Lastly, the study has a future outlook of the Tesla company and provides a few advice about what solutions should Tesla conducted to achieve better development in the future.

## 2. Analysis of the Basic Fact.

### 2.1 . Overview of the Development of New Energy Vehicles Industry

New energy vehicles, as the most significant alternative to traditional fuel vehicles, have achieved rapid development and extensive attention in the global context in recent years. The primary categories involve Battery Electric Vehicles (BEV), Plug-in Hybrid Electric Vehicles (PHEV), and Fuel Cell Electric Vehicles (FCEV). With the comprehensive technological advance and the promotion of numerous policies, the new energy vehicles greatly improved market share, technological innovation, and industrial production. The application of medium and advanced autonomous driving technology leads the world. The latest data released by the China Association of Manufacturers shows that until June 2024, China’s annual new energy vehicle production and sales volume have reached 30 million, and the market share has reached 30.2%. Specifically, the domestic production and sales of NEV increased by 30.1% and 32%, respectively [2]. Moreover, some industry insiders also speculate that the market share of NEVs will rise further and expand the scale of production and marketing.

The rapid growth of the NEV industry has benefited from several factors. Firstly, owing to economic development

and technological advances, the automotive industry in China has experienced sharp growth over the past few decades. By 2020, the annual automobile production and sales volume had reached 25.22 million and 25.31 million, respectively [3]. China has the largest sales volume for nine consecutive years. However, the large-scale production and expansion have brought environmental issues and air pollution. Governments from many countries have raised their concerns about this issue as the depletion of resources and economic dangers exist. Hence, the Chinese government has initiated a set of policies, such as the Thousands of Vehicles, Tens of Cities (TVTC) program to accelerate NEV commercialization and to reduce the costs of the environment. Technological innovation plays a crucial role in pushing the development of NEV. More than half of the world’s new energy vehicles are running in China. Overall electrification technology is at the global leading level. New technologies such as new charging, efficient driving, and high-voltage charging have made huge breakthroughs in many areas. The Battery market in China has a huge revolution that can provide an impetus for the sustainable development of the NEV industry. The market demand has also risen a lot. The improvement in lithium-ion batteries has become the mainstream of the market because of their high security, cost advantage, and high charging rates[4]. Additionally, some battery enterprises are ceaselessly developing new technology to improve battery energy density and extend cycle lives and battery durability. China’s new energy vehicle market has a huge scale and growth potential. The competition between domestic EV industries is fair and intense. The continuous upgrading of automotive electrification and intelligent technologies and the improvement of product competitiveness have provided a good market environment. In 2023, China’s new energy vehicle production and sales will reach 9.587 million and 9.495 million, up 35.8% and 37.9% respectively. The sales volume of new energy vehicles produced in my country accounted for more than 60% of the global sales volume; about 8.3 million new energy vehicles were sold in China, accounting for more than 85% of the total sales volume.

### 2.2 . Overview of Tesla’s development in China

Tesla, Inc., a company founded by Elon Musk and a group of engineers in 2003, has revolutionized the automotive and new energy vehicles industries with its commitment to sustainability and innovation. Tesla has grown into a global leader in electric vehicles (EVs) and renewable energy solutions. Tesla’s strategy in China centers on localization, innovation, and strong government relations. The Shanghai Gigafactory is a cornerstone of this strategy,

enabling Tesla to manufacture vehicles more effectively, therefore reducing costs. The Gigafactory factory allows Tesla to meet the rising demand for EVs in China and other regions in the global market while maintaining a competitive edge. Moreover, it can help Tesla to keep their competitiveness and lead the industry. A few years ago, Tesla was in a production capacity and capital flow crisis. On January 7, 2020, Tesla delivered its first domestically produced Model 3 in the Shanghai Gigafactory. Hence, the problem of production capacity can be alleviated and the sales volume of Tesla can increase a huge amount in the global market. The production volume has increased from 365 thousand to 509 thousand. In 2022, the production volume increased to 1.37 million. Additionally, Tesla's sales volume in January and February of 2022 in China were 59846 and 56515, respectively, among which 40500 and 33315 were exported, respectively. The delivery volume of the Chinese EV market in the first two months accounted for 37.5% of the global market share [5-7]. Therefore, it is obvious that the opening of the Gi-

gafactory was important for Tesla.

Tesla's vehicles have been more and more advanced in recent years. Most of the vehicles are equipped with highly developed cameras and sensors. Tesla has improved their data collection and processing methods. They used a shadow mode to obtain real driving data. During the driving process, the sensor continuously validates the decision algorithm, and once it finds that the decision is inconsistent with the driver's behavior, it triggers the data return, which greatly reduces the storage requirements of the computing center. In addition, Tesla launched the research and development of a new computing platform FSD (Full-Self Driving computer) in 2016. In this process, the hardware iteration of Tesla's autopilot technology is very important. Tesla's autopilot technology had many versions in the past few years. It required changes in front, side, and rear cameras, radar, lidar, and other sensors for different versions of Tesla. Hence, the means of data collection could be more effective and mature.

**Table 1 Tesla's Model Y sales volume in each quarter of 2023**

Time	Sales Volume	Percentage change
Q1 2023	94647	-35.3%
Q2 2023	109285	+15.5%
Q3 2023	116177	+6.31%
Q4 2023	136285	+17.3%

Table 1 shows the sales volume of Model Y, Tesla in 2023 experienced a steady increase. Every quarter's sales volume was higher than the last quarter. From Q4 2022 to Q1 2023, it has a fall in sales volume of 35.3%. However, in the next quarter, Tesla quickly adjusted from the low and reductive sales volume. Tesla then has increased their sales volume for each quarter in 2023. Eventually, the Model Y became the largest producer and seller in the Chinese EV market in 2023 [8].

In recent years, Tesla is still dominant in the global EV industry and holds the most market share. In the first quarter of 2023, the market share of Tesla in the world EV industry was 28%, followed by BYD, 15%. Tesla was way ahead of the rest of the NEV industries. However, Tesla's market share has fallen by 6%, from 28% to 22% in Q1 2024. Tesla regained its position as the best-selling BEV brand in Q1 2024. Tesla's Model Y, Model 3, and BYD's Yuan Plus (Atto 3) were the top-selling BEV models during the period. The Model Y was the best-selling BEV model of Tesla, accounting for more than 70% of its sales. Tesla also lost market share in the Chinese EV industry. China is the second-largest market for Tesla, and the larg-

est market in the global EV industry, accounting for more than 60% market share. To the disappointment of Chinese consumers and the more intense competition from domestic industries, the market share has shrunk from 10.5% in Q1 2023 to 6.7% in December. Tesla's sales in major EV markets, such as China and the U.S., are sluggish.

### 3. Tesla's Non-market Treatment in China

#### 3.1 Tesla's Market Competitions in the Chinese EV Market

In the Chinese EV market, Tesla faces significant competition from domestic EV manufacturers with a strong foothold. Companies like BYD, NIO, and XPeng are well-established and deeply understand local market dynamics and consumer behavior. These companies benefit from their ability to swiftly innovate and adapt to market changes, often supported by favorable government policies that promote domestic brands. Table 2 shows the sales volumes between Tesla and its main competitors

in 2023. Tesla’s Model Y ranked first among all other Chinese EV industries, that was 456394 units. Another primary model of Tesla, the Model 3, ranked at twelve only. The competition between NEV industries is intense (Table 2). The main competitors such as BYD and Li Auto’s models also have high sales volumes. Tesla’s two main models achieved high sales volume in the Chinese EV market in August 2024. The sales volume of Model Y was 45330 units, second only to BYD’s Hai Ou, which was 46830 units. The Model 3’s sales volume was 18126 units. The electric vehicle business of traditional Chinese

EV manufacturers is taking a different path from Tesla. They rely on the strong manufacturing and market foundation of traditional automobile manufacturing, graft the concept of electric vehicles, integrate intelligent technology, start from the low end, and use low-priced products to consolidate market share. Although their control systems and intelligent technologies cannot match Tesla’s, they still have a large space for survival in the low-end market which Tesla has no time to enter due to their differentiated advantages [9].

**Table 2. Electric Vehicle Sales Ranking in 2023 in the Chinese EV market**

Rank	Model	Sales Volume	Company
1	Model Y	456394	Tesla
2	Qin Plus	434213	BYD
3	Song Plus New Energy	390213	BYD
12	Model 3	147270	Tesla
15	Ideal L7	134089	Li Auto

### 3.2 Overview of Tesla’s Non-market Conditions in China

China is the largest country that produces electric vehicles and is still expanding its scale. China’s NEV industry started late, but under the guidance of national policies, it has developed rapidly over the years. China spent more than 200 billion yuan on electric vehicle subsidies and tax breaks between 2009 and 2022. Tesla has benefited from this series of policies and subsidies. The government also gave subsidies to consumers who purchased vehicles. In addition to financial support for Tesla, the Chinese government has also prioritized and supported the development of the necessary infrastructure for electric vehicles. Until May 2024, the number of Tesla Supercharger stations in China has exceeded 1,950. A lot of cities in China are covered. The Chinese government has been committed to expanding opening up and providing a fair market environment for foreign companies. Tesla faces competition from many domestic EV industries in the Chinese market, but the Chinese government encourages such competition, which has prompted Tesla to improve its product quality and service continuously. In 2018, Tesla signed an agreement with the Shanghai government to build a Gigafactory. Shanghai Provided Tesla with land, capital, and other support to help it build quickly and get into production. However, Tesla’s development in China does have a lot of difficulties. There have been numerous non-market issues for Tesla. To begin with, The increasing connectivity of vehicles has raised concerns about data collection, stor-

age, and potential breaches. This emphasized the urgency for China to enhance its cybersecurity infrastructure and regulations to safeguard critical data and protect consumer privacy [5]. One of the most significant non-market issues Tesla faces is the regulatory environment concerning data security. The Chinese government has implemented strict regulations to protect data privacy and ensure that data generated within its borders remains under its control. Data is regarded as one of the most valuable things for governments and firms [7]. Tesla also faced the challenge of aligning its technological innovations with China’s data security and cybersecurity regulations. As connectivity and autonomous driving features became necessary for Tesla’s vehicles, ensuring the security and privacy of customer data while meeting Chinese regulations became a delicate task, further highlighting the intricacies of harmonization [6]. The Chinese government and some regulators have implemented several policies for Tesla to avoid the risk of sensitive data being exposed. In 2017, it required companies to store data collected in China on local servers and obtain government approval before transferring data overseas. In 2021, the Data Security Law further strengthened these requirements, imposing additional restrictions on the collection, storage, and processing of data. Another non-market issue that Tesla encounters is the Autonomous driving compliance issue. Tesla wants to bring the FSD technology to the Chinese market. However, China has strict standards and regulatory requirements for the safety and reliability of autonomous driving technology. Although Tesla’s FSD technology is in a leading position

in the world, in the Chinese market, its technical standards and algorithms may differ from China's laws and regulations. On the other hand, In China, the testing and driving of FSD requires permission from relevant departments and agencies. When Tesla is testing and promoting its FSD technology, it needs to meet China's approval procedures and regulatory requirements, which to some extent increases the difficulty and cost of its technology application.

In recent years, China's total investment in reducing environmental pollution has shown a trend of increasing yearly, and the level of government environmental regulation has gradually strengthened, showing a high degree of recognition [8]. With the rise of global warming, the level of carbon dioxide emissions has constantly increased. Therefore, China's environmental pollution problem is serious, and more environmental regulation policies are needed. During the production process of Tesla's vehicles, a lot of energy, including electricity, and natural gas is required. A large amount of wastewater and exhaust gas is generated during the automobile production process. Furthermore, the production of electric vehicle batteries requires a large amount of raw materials, such as lithium, cobalt, nickel, and graphite. During the mining and processing of raw materials, pollutants such as wastewater, waste residue, and waste gas may be generated. If the factory's waste products treatment facilities are not operated in a standardized manner, it may lead to excessive pollutant emissions and cause pollution to the surrounding environment.

## 4. Analysis of the Tesla's Non-market environment

### 4.1 Reasons for the Arising of the Non-market Issues and Benefits

The Chinese government considers the electric vehicle industry strategic and has supported its development through a series of policy measures to expand supply and demand. China has provided a lot of support to Tesla resulting from several factors. Tesla's rapid development and innovation can largely favor the development of domestic industries. Firstly, it could have a technological effect on industries. In 2018, Tesla built its first research and development center (R&D Center) in Beijing China. Tesla directly transferred relevant core technologies and patents to the Beijing R&D Center for its R&D use. Due to Tesla's absolute leading position in the field of NEV, the speed and quality of its Beijing R&D Center are much higher than similar NEV industries in China. The more research its Beijing R&D Center conducts and the more re-

search results it produces, the more likely it is to produce a technological spillover effect, thereby indirectly promoting the advancement of relevant technologies in China [10]. Secondly, In the long term, the introduction of Tesla, a new energy vehicle catfish, will be conducive to the improvement of the local new energy vehicle industry chain [11]. Some industries do not have enough motivation to innovate and they have problems concerning the quality and service. Tesla has stimulated the competitive awareness of domestic new energy vehicle companies, prompting them to increase R&D investment, and improve product quality and service level, to gain a competitive advantage in the market.

Tesla's non-market treatment and regulations subject to the Chinese government result from several factors. From a political perspective, as Tesla's EV technology becomes increasingly advanced, the government has raised concerns over data security. Tesla's vehicles, which are equipped with advanced sensors and cameras, collect vast amounts of data, including information about the vehicle's surroundings, driving behavior, and user preferences. There are stringent data security checks that Chinese regulators construct to prevent some sensitive information from exposing to America. In 2021, Tesla's eclectic vehicles are banned from entering some state properties such as airports, military districts, and a few areas that belong to the government. The Cybersecurity Law, which came into effect in 2017, requires companies to store data collected in China on local servers and obtain government and regulators' approval before transferring data overseas. In 2021, the Data Security Law further strengthened these requirements, imposing additional restrictions on the collection, storage, and processing of data.

The most essential part of a product is its function. If Tesla wants its products to gain a competitive advantage, satisfying consumers with its product functions is the key. With the development of my country's economy and the improvement of the national income level, people not only pursue the core functions of products but also have higher requirements for extended and additional functions [12]. Tesla is continuously seeking breakthroughs in the FSD technology. However, the promotion and popularization of FSD are controversial. Tesla company is now preparing to get full FSD package approval in China. It also needs to pass the tests by technical sections in China. As consumers in China have higher standards for EVs and a rise in the average income level, the Chinese government has raised its concerns over the security issue of FSD. Therefore, Tesla company must ensure that this technology does not have problems and could satisfy and attract consumers in China. From a

From a social perspective, China is now trying to attain

the goal of carbon peaking and carbon neutrality. The government is promoting a Green, environmentally friendly, and low-carbon lifestyle [13]. There are countless public service advertisements and activities on energy conservation and environmental protection. Under the advocacy of governments and social groups, there are countless public service advertisements and promotional activities on energy conservation and environmental protection. Consumers are becoming more aware of environmental protection and are choosing products that are more environmentally friendly but lack price advantages. In other words, today's Chinese society needs and prefers more environmentally friendly products [14]. The Chinese local regulators have confirmed that Tesla did have environmental problems. For example, in 2021, an environmental group stated that Tesla had caused water pollution and leakage of wastewater. Additionally, Facility construction and drainage management are not qualified, materials are scattered and spilled in many places, and clean drainage is contaminated with many pollutants. As China takes the environmental problem and low-carbon lifestyle seriously, the regulations on these problems are stringent.

#### 4.2 Future Outlook of Tesla in China

Several strategies and tactics are necessary if Tesla wants to achieve benign development. Tesla should maintain its competitiveness, expand its competitive advantages, and further increase its market share in China. Firstly, it needs to further strengthen the brand effect. Tesla could Customize and improve vehicles based on the preferences and needs of Chinese consumers to make their EVs unique and stand out from other domestic EV industries. Tesla can localize the products and meet the demand of Chinese consumers. The service and quality of EVs also need to have breakthroughs, so that more consumers will favor them. Moreover, Tesla needs to reinforce the research and development of software technology, especially autonomous driving technology [12]. For example, the R&D of FSD technology, although it is ahead of other industries, it is still having potential safety hazards. Furthermore, Strengthening international cooperation is very important. It could Promote economic development, and employment, increase tax revenue, and cultivate professional talents [15].

### 5. Conclusion

This study investigates firstly, the development of Tesla in the Chinese market and the development status of the whole Chinese NEV industry. Secondly, it analyzes the non-market environment challenges Tesla is facing, and government regulation. Therefore, the study delivers a

series of reasons why Tesla encounters these non-market problems in economics, politics, and social perspectives. Thirdly, it presents a few pieces of advice to help Tesla overcome them and develop more rapidly.

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