

# The Development Prospects of New Energy Vehicles

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## ABSTRACT

With the continuous development of the country's economy, automobiles have transformed from luxury goods that only the wealthy can buy to ordinary people's means of transportation, entering thousands of households. However, people's living environment is deteriorating day by day due to the large amount of exhaust gas emitted by cars. The situation is getting worse and worse, and people's environmental awareness continues to increase. More and more people are choosing more green and environmentally friendly new energy vehicles. This article uses swot analysis method to study, the main findings and results are that new energy vehicles have relatively good advantages and development prospects. In order to fight against the shortage of resources and protect people's health, it is necessary to study the future development trend of new energy vehicles, so as to seek advantages and avoid disadvantages, and find positive ways to develop new energy vehicles.

**Keywords:** new energy vehicles, cars, development of car

## 1. INTRODUCTION

With the advancement of science and technology, new energy vehicles have gradually entered the public's field of vision, and people have begun to accept and drive new energy vehicles. As a result, the sales of new energy vehicles of various companies have increased. The research task is to use swot analysis to analyze the future trends and development prospects of new energy vehicles based on such a background[1].

Swot analysis is to obtain objective and reliable results by analyzing external and internal factors. When using swot analysis, you can set conditions based on the information you need, but you must analyze all relevant factors, which can be roughly divided into external factors, internal factors, threats, and shortcomings. By making full use of these factors, objective results can be obtained.[2-4].

This article uses swot analysis method, combined with various factors of new energy vehicles, and obtains a more objective and reasonable result for the future trend of new energy vehicles. In this article use current reports on various new energy vehicles to find the obvious advantages and disadvantages of new energy vehicles. Then we searched for various documents and related information about new energy vehicles. This article also

referred to the future plans of new energy vehicles of various car dealers and analyzed the internal structure of new energy vehicles. Combine this information to conduct a pros and cons analysis and draw reliable conclusions.

This article first introduces the positioning of new energy vehicles and the advantages that they will bring to society. Then analyze the pros and cons of new energy vehicles from the aspects of government policy, vehicle planning, and energy. Finally, the new energy vehicles are summarized, and the current trend of new energy vehicles is reasonably speculated.

## 2. POSITIONING OF NEW ENERGY VEHICLES

### 2.1. Improve environmental issues

New energy vehicles use clean energy and renewable energy as their main driving fuels, which greatly reduces carbon dioxide, which is prone to produce greenhouse gases, and the main substances that pollute the environment of traditional fuel vehicles-solid suspended particles in exhaust gas. In daily use, there is almost zero pollution and zero emission, making people's travel truly

green, low-carbon, environmentally friendly and convenient.[5-7]

**2.2. daily using**

With the continuous development of the new energy vehicle industry in recent years, the general mileage of new energy vehicles is more than 300 kilometers, and the endurance of ordinary family cars is only about 500 kilometers. With the current endurance of new energy vehicles Used in cities, it can be said to meet most of the driving needs of daily life, and the endurance in driving distances of short distances (within 50 kilometers) and small long distances (50 kilometers to 300 kilometers) is not inferior to traditional fuels. car. It can be said that it is very suitable for use in the city.

**3. ADVANTAGES AND DEVELOPMENT PROSPECTS OF NEW ENERGY VEHICLES**

**3.1. Government support and subsidies**

New energy vehicles are of great significance to the development of urban environmental protection and are still in the development period of the new energy vehicle industry. Therefore, the government is very supportive of the new energy vehicle industry and has given large subsidies. For example, in 2017, the "Medium and Long-term Development Plan for the Automobile Industry" issued by the Ministry of Industry and Information Technology, the National Development and Reform Commission, and the Ministry of Science and Technology clearly stated- ‘ ‘ Strive to be among the world ’ s automotive powers after ten years of continuous efforts. ——Major breakthroughs have been made in key technologies. The industrial innovation system has been continuously improved, and the innovation capability of enterprises has been significantly enhanced. Energy-saving technologies such as power systems, high-efficiency transmission systems, and automotive electronics have reached the international advanced level, and key core technologies such as power batteries and drive motors are at the international leading level. By 2020, cultivate and form several new energy vehicle companies that have entered the top ten in the world, and the development of intelligent networked vehicles will be synchronized with the international development; by 2025, the global influence and market share of key new energy vehicle companies will further increase, and intelligent networked vehicles The automobile enters the world's advanced ranks. ‘ ‘

In 2019, the "Development Plan for the New Energy Vehicle Industry (2021-2035)" (draft for comments) put forward: ‘ ‘ Strive to achieve the international leading level in the core technology of my country ’ s new energy vehicles after 15 years of continuous efforts. The

plan predicts that by 2025, new energy vehicle sales will account for about 25% of new car sales, intelligent networked vehicles will account for 30% of new car sales, and highly autonomous intelligent networked vehicles will achieve commercial applications in limited areas and specific scenarios. ‘ ‘

In the "Energy-saving and New Energy Vehicle Technology Roadmap 2.0" published by the Ministry of Industry and Information Technology and the China Automotive Engineering Association, it is mentioned that by 2035, the new energy vehicle market will account for more than 50%, and the number of fuel cell vehicles will reach about 1 million. Energy-saving vehicles have fully realized hybridization, and the automotive industry has realized an electrification transformation.

The above policies all reflect the country's emphasis on the new energy automobile industry and the importance of the new energy automobile industry. At the same time, the goal set by the government to reach the international level has also promoted the vigorous development of the new energy automobile industry. There are many policies similar to the above, which means that new energy vehicles still have great development prospects.[7]

**3.2. market situation**

At present, the new energy vehicle market has already developed a market scale, and the new energy market is becoming more and more attractive. Many companies want to enter the new energy market to get a share of the pie. The leading company Tesla has an unabated advantage in the new energy market, but the global new energy vehicle market concentration will shrink in 2020. With many new companies pouring into the new energy vehicle market, the competition among companies in the market has become more intense In the continuous change of enterprises, the advancement of new energy vehicle technology can be said to be advancing by leaps and bounds, which has promoted the development of the new energy vehicle industry, and the overall trend is good[8].



**Figure1** 2019-2020 global new vehicle market proportion

**3.3. the company of new energy vehicles plan**

The development prospects of new energy vehicles are obvious to all major automobile companies and have formulated their own plans for new energy vehicles.

The following is a summary of the plans of the major auto companies:

**Table1** The company of new energy vehicle plan

Brand	Strategy	Planning law	Detailed planning
Volkswagen	Together 2025	By 2025, produce 2 to 3 million new energy vehicles annually, accounting for 25%-30% of total sales	By 2025, at least 30 models of pure electricity will be launched  Motor vehicle products, investing USD 2 billion in batches to invest in the construction of new energy vehicle charging infrastructure projects and to promote zero-emission pure electric awareness
BMW	The first new plan	By 2025, account for 25%-30% of total sales	BMW's "New First Plan" will guide the company to 2025. BMW will launch more green and environmentally friendly models to enhance the travel experience
Volvo	Omtanke plan	By 2025, deliver 1 million new energy vehicles	By 2025, climate zero load operation will be achieved. (By improving energy efficiency and purchasing climate zero-load energy supply, the realization of automobile  Manufacturing zero carbon dioxide emissions)
Ford	2020 strategy	By 2020, new energy vehicle sales will account for 10%-25% of total sales	40 new energy models will be launched by 2022

As can be seen from the above table, major new energy vehicle companies attach great importance to new energy vehicles and vigorously develop new energy vehicles, and incorporate new energy vehicles into a very important sector of the company. In the new energy vehicle market, many new energy “new forces” have joined the new energy vehicle market such as Xiaomi and Huawei, which promotes market competition and

accelerates the technological innovation of new energy vehicles.

#### **4.THE DEVELOPMENT OF BATTERY**

The battery is the core of a new energy vehicle and the most critical part of a new energy vehicle. The battery determines the battery life and safety of new energy vehicles.

There are many types of batteries in the new energy market, such as lead-acid batteries, nickel-metal hydride batteries, aluminum batteries, lithium batteries, and zinc batteries. Among them, lithium batteries stand out in the market due to their advantages of high voltage, high specific energy, and long life. At present, two kinds of lithium batteries are widely used in the market, ternary lithium batteries and lithium iron phosphate batteries. Both batteries have their own advantages and disadvantages. The following is a comparison of the two batteries.

Lithium iron phosphate battery:

Lithium iron phosphate battery is a newly developed new energy battery, which performs extremely well in terms of battery safety. The safety of new energy vehicle batteries has always been a commonplace issue, and many consumers have doubts about the safety of new energy vehicles. The emergence of lithium iron phosphate batteries can cater to consumers who are concerned about the safety of new energy vehicles. Lithium iron phosphate battery is currently the most safe battery on the market. Even if an extreme accident such as a battery puncture occurs, it will not easily catch fire.

Secondly, there is the problem of battery charging. The lithium iron phosphate battery can fully charge the battery without affecting the vehicle, while the ternary battery can only charge about 90% daily.

Third, compared to ternary lithium batteries, lithium iron phosphate batteries use lithium iron phosphate as the cathode material of lithium ion batteries, which do not contain precious metal elements (such as cobalt), so the price will be cheaper.

Fourth, the life of lithium iron phosphate battery is longer, and the life of lithium iron phosphate is longer, and it can be completely charged and discharged about 2000 times. The ternary lithium battery can only be fully charged and discharged about 1200 times. In contrast, the battery life of the lithium iron phosphate battery is longer than that of the ternary lithium battery.

In general, lithium iron phosphate batteries have the advantages of long life, strong safety and stability, low price, and better cycle performance.

Ternary lithium battery:

Although the ternary lithium battery is relatively expensive, the ternary lithium battery also has its own advantages.

The biggest advantage of ternary lithium batteries is low temperature resistance. Generally, new energy vehicles using lithium iron phosphate batteries will shrink severely in winter, but even at a low temperature of minus 20 degrees, the battery performance is still maintained at 70 % above.

Generally speaking, both batteries have their own advantages and disadvantages in meeting the power requirements of automobiles. But it can meet the daily needs of car owners[9].

## 5. INSUFFICIENT

The low value of new energy vehicles in the second-hand market is the main reason why many consumers do not choose to buy new energy vehicles. The main reason is that the core part of new energy vehicles is the battery. It is too high, and the new energy vehicle market is currently in a period of rapid technological iteration. The technology is developing rapidly, and the number of cars purchased is "increased without price increase", which has caused many car owners to maintain a wait-and-see attitude towards new energy vehicles. The fundamental reason is that there is still a lot of room for development in technology[10].

## 6. CONCLUSION

With the strengthening of people's awareness of environmental protection, more and more people are beginning to pay attention to new energy vehicles. Based on this background, I decided to make a simple analysis of the new energy automobile industry. The analysis shows that the performance of new energy vehicles has made great progress through the development of the past generations. The market has a lot of room for development, and many people do not understand that the new energy industry is the main obstacle to the development of the new energy vehicle market. I believe that with the passage of time, with policy support and promotion, with the iteration of technology, people's acceptance of new energy vehicles will become higher and higher, and the new energy vehicle market will reach a new height. However, new energy vehicles still have great shortcomings in terms of batteries. It is necessary to strengthen the promotion of new energy vehicles to allow more people to join the ranks of using new energy vehicles.

The purpose of analyzing new energy vehicles is to make more people believe that new energy vehicles are a powerful tool that can help avoid resource shortages in the future, and new energy vehicles will also become a tool to protect people's health. The significance of this article is to make the issuer aware of the current problems of new energy vehicles and how to improve.

After that, this article will continue to analyze the development trend of new energy vehicles, but will be more extensively combined with other factors related to the development of new energy vehicles for summary analysis and keep up with the times and discover new problems.

**REFERENCES**

- [1] Xilong Zhao 2021 Analysis on the status quo and problems of the development of new energy vehicles. *Technology and market*(07),88-89.
- [2] Wang Zhiling 2021 Strategic analysis of under-forestry economy development in Guizhou based on SWOT method
- [3] Yiran Jiang 2021 SWOT analysis of meat logistics cold chain in Beijing
- [4] Robert G.Dyson 2002 Strategic development and SWOT analysis at the university of Warwick
- [5] Yongliang Hua 2018 Analyze the environmental impact and energy efficiency of new energy vehicles. *Car and driving maintenance (maintenance version)*(04),70-71.
- [6] Wei Xv 2015 Environmental impact and energy efficiency analysis of new energy vehicles. *Technology outlook*.(05),249.
- [7] (2018-05-22).Only free competition can promote innovation. *21st Century Business Herald*,001.
- [8] Xiaoxue Zheng,Dengfeng Li,Zhi Liu & Shoujiang Zheng 2020 Research on the effect difference of different modes of government subsidies for new energy vehicles. *System Science and Mathematics*(10),1821-1835.
- [9] ]Zhigang Ying,Jing Wang & Minhua Cao 2021 Performance comparison of nickel-cobalt-manganese ternary battery and lithium iron phosphate battery. *Battery Industry*(03),136-142
- [10] Dasilva C.M., & Trkman ,P. 2014 business model: What it is and what it is not. *Long range planning*, 47(6), 379-389.