

Obstacles and Promotion Measures for the Promotion and Application of New Energy Vehicles in the Logistics Industry

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Abstract

With the introduction of various new policies in the new era, the distribution area of freight business continues to expand, and the logistics transportation develops rapidly. In order to better comply with the new requirements of energy conservation, environmental protection and smart logistics, and solve the old and new obstacles, the application of new energy vehicles in the field of green transport has been paid attention to. This paper comprehensively adopts the methods of data consulting, text and practice, starting from the promotion and problems faced by new energy vehicles in logistics transportation, focuses on sorting out the obstacles to the promotion of new energy logistics vehicles in different aspects, and puts forward corresponding possible countermeasures to provide reference for the promotion and application of new energy logistics vehicles in the logistics industry.

Keywords

New energy vehicles; Green logistics; Policies; Barriers.

1. INTRODUCTION

Since the reform and opening up, people's material living standards have been improving day by day. As a commonly used means of transportation in our daily travel, the automobile industry has grown rapidly and has now become an indispensable part of our life. Although some adjustments to China's economic structure in the 21st century and the outbreak of COVID-19 in the 2020s have had a certain impact on the development of the automobile industry, according to some recent data, it still has broad prospects. According to the latest retail sales statistics of Automobile Market Research Branch of China Automobile Circulation Association (Passenger Association), in March 2021, the domestic narrow sense passenger car market sales reached 1.752 million, with a year-on-year growth of 67.2%; From January to March, the cumulative sales volume was 5.092 million, a year-on-year increase of 68.88%. However, the traditional automobile industry, whose sales volume is growing like this, has always faced a series of problems, especially environmental pollution. In response to the national policy call of "energy conservation and emission reduction", many automobile manufacturers have turned their attention to the field of "new energy". New energy vehicles have emerged as the times require to solve a series of problems in the traditional automobile industry. The government attaches great importance to the R&D and promotion of core technologies of new energy vehicles. On November 2, 2020, the General Office of the State Council issued the Notice on Printing and Distributing the Development Plan of New Energy Vehicle Industry (2021-2035) and other notices, deploying a number of strategic tasks for the development of new energy vehicle industry.

In the logistics industry, with the continuous development of Internet e-commerce, the requirements of urban residents for logistics distribution are increasing, which also provides a

broad development space for the promotion and application of new energy vehicles in the logistics industry. As a logistics transportation in the city, pure electric animal vehicles are more economical and applicable than other transportation tools on the premise of meeting their endurance. On December 31, 2020, the Ministry of Finance and other four ministries jointly issued the Notice on Further Improving the Promotion and Application of Financial Subsidy Policies for New Energy Vehicles, which is both an encouragement and a challenge for the promotion of the logistics industry of new energy vehicles. In February 2021, the State Council issued guidance on accelerating the establishment and improvement of a green low-carbon circular development economic system, proposing to create "green logistics". Compared with traditional cars, new energy vehicles can achieve zero pollution and zero emissions. Promoting the development of new energy vehicles in the logistics industry can not only reduce pollution but also optimize resources, which is an important way to build green logistics. However, in recent years, the policies of purchase restriction and subsidy fade out have brought great challenges to the development of new energy vehicles in the logistics market. Through the investigation, it is found that under the influence of epidemic situation and declining subsidies, the development of the new energy vehicle market is not ideal. The problems in the promotion and application of new energy vehicles in the logistics industry are gradually emerging. There are still some problems in the purchase and use of new energy vehicles, product performance and related supporting infrastructure, which hinder their effective promotion in the logistics industry.

This paper combines literature with practical work, closely follows the important viewpoint of "green transportation" in the concept of "green logistics", expounds the obstacles and promotion measures in the promotion of new energy vehicles in the logistics industry through a variety of ways, combs the relevant national policies on new energy logistics vehicles in recent years, and analyzes them based on the actual situation. This will play a very important role in improving the system concept of new energy vehicles in the logistics industry and creating a market environment conducive to their development.

2. THE RISE OF NEW ENERGY VEHICLES

2.1. Brief Introduction to New Energy and New Energy Vehicles

The United Nations Conference on New and Renewable Energy, held by the United Nations in 1980, defines new energy as "based on new technologies and materials, the traditional renewable energy can be modernized developed and utilized, and the inexhaustible renewable energy can replace the fossil energy with limited resources and environmental pollution." New energy, also known as unconventional energy, is a variety of forms of energy other than traditional energy. For example, the energy that has just been developed and utilized or is under active research and needs to be promoted, solar energy, geothermal energy, wind energy, marine energy, biomass energy and nuclear fusion energy are all new energy. As for the "new energy vehicles" with high popularity at present, China's Administrative Rules for the Access of New Energy Vehicle Manufacturers and Products officially implemented on July 1, 2009 clearly pointed out that new energy vehicles refer to those vehicles that use unconventional vehicle fuel as the power source (or use conventional vehicle fuel and new on-board power devices), integrate advanced technologies in vehicle power control and drive, and form advanced technical principles Vehicles with new technology and new structure.

2.2. Policy Driven by New Energy Vehicles

As one of the main means of transportation for people to carry out various activities, automobile has become an integral part of our life in the process of continuous development. However, the development of automobile not only helps to promote economic development

and improve people's life happiness, but also brings a very serious pollution problem. A large number of air pollutants emitted by traditional vehicles during driving are extremely harmful to human health and ecological environment. These problems have been highly valued by the state in recent years. To achieve a balance between sustainable development and ecological protection, the promotion of the use of new energy vehicles is an extremely important step. Governments of all countries generally regard the development of energy-saving and environment-friendly vehicles as an important part of their energy and environmental policies and the sustainable development of the automobile industry.

"Energy conservation and emission reduction" is the eternal theme of the development of the automobile industry. Constantly strengthening energy conservation and emission reduction has become an urgent need for China's economic development. For China's automobile industry, the government has introduced many incentive policies in order to stimulate consumption and promote the development of the industry. For example, for traditional vehicles, the number limit is applied, while for new energy vehicles, the number limit is not required. At the same time, certain subsidies are given to new energy vehicles; The introduction of "863" and other plans has also promoted the development of China's new energy vehicle industry. [1] The country has taken a series of measures since the "11th Five Year Plan": since 2009, the central and local governments have successively implemented a number of measures to promote the development of new energy vehicles, such as the "fuel tax", "old for new" and other policies issued by the Chinese government in 2008-2009 to encourage the research and development of small displacement vehicles; On September 7, 2011, the Ministry of Finance, the National Development and Reform Commission and the Ministry of Industry and Information Technology signed the "Notice on Adjusting the Subsidy Policies for the Promotion of Energy saving Vehicles", raising the threshold for energy saving vehicles included in the subsidy scope; On July 9, 2012, the State Council officially released the Development Plan for Energy Saving and New Energy Vehicle Industry (2012-2020), indicating that the development of new energy vehicle industry will be driven by pure electricity as the main strategic orientation for the development of new energy vehicles and the transformation of the automobile industry. Since 2016, the focus of the policy has changed, from initially promoting its rapid development and expansion to rectifying industry expansion, determining norms and improving technology. [2] On November 2, 2020, the General Office of the State Council issued the Notice on the Development Plan of New Energy Vehicle Industry (2021-2035), analyzing the current development trend of new energy vehicles and indicating the future development direction and overall deployment; On January 24, 2022, the State Council issued the Notice on the "Fourteenth Five Year Plan" Comprehensive Work Plan for Energy Conservation and Emission Reduction, which mentioned the development goal of "by 2025, the sales of new energy vehicles will reach about 20% of the total sales of new vehicles"

From promotion, expansion to standardization, the development of new energy vehicles is constantly finding and solving problems, and gradually moving towards a perfect and high-quality industry.

2.3. Application of New Energy Vehicles in Logistics Industry

The application of new energy vehicles in the logistics industry can be reflected as a key word - transportation.

In recent years, China's e-commerce industry has risen and new retail industry has developed rapidly, followed by the "hot" domestic logistics industry. Urban distribution, express delivery, cold chain and other fields have attracted much attention, and the demand for short distance transportation within cities and towns has increased significantly. Under the background of "green logistics", short distance high demand and high operating cost of fuel vehicles, new energy logistics vehicles appear in people's vision. For large logistics enterprises

with abundant funds, it is easy and beneficial to replace heavy pollution and high cost fuel vehicles with zero emission, energy-saving and environment-friendly new energy logistics vehicles. In December 2017, JD Liu Qiangdong said that he would replace the freight vehicles in Beijing with new energy vehicles before the Spring Festival. The basic goal was reached in less than three months. Its next direction is to promote to the JD Line and other cooperative logistics companies across the country.

Replacing traditional power models with new energy models has not only responded to the national "green logistics" policy, but also saved some energy expenditure. The new energy vehicle industry and logistics industry have been developed, which is a win-win strategy. However, for small and medium-sized logistics enterprises with relatively compact capital turnover chain, although there are corresponding national fund subsidy policies, the investment in replacement vehicles and the maintenance costs required for after-sales service exceed their affordable range. Therefore, the "third-party leasing" market has sprung up, and a number of enterprises such as Bapima and Ground Railway have risen rapidly. Different models and multiple leasing models have provided different types of new energy vehicles for the market to adapt to different logistics business scenarios. Big data monitoring, platform system adjustment and other models have also simplified operation management, reduced the cost of using new energy vehicles, and provided a replacement way for small and medium-sized logistics enterprises.

3. IDENTIFICATION OF BARRIERS TO THE PROMOTION OF NEW ENERGY VEHICLES IN THE LOGISTICS INDUSTRY

3.1. Technical Dimension

First of all, as a scientific and technological product, new energy vehicles have their own technical defects:

(1) Infrastructure construction is not perfect and there are shortcomings. During the use of new energy vehicles, the charging problem is more prominent. From the current situation, there is a serious information asymmetry between the charging facilities in various regions and the new energy vehicles themselves. Charging piles are mainly distributed in the central urban area, and they are mainly slow charging piles, which can not better meet the needs of users. There are often long queues of vehicles in some service areas, while there is no one in front of charging piles in some service areas. Some users insist on charging to 100% in the charging area with high charging efficiency requirements on the expressway, which leads to serious congestion in the back and affects others to supplement energy.

(2) Short range. Some users said that when the new energy vehicles were first purchased, the endurance could meet their daily needs, but after a period of use, the endurance began to decline, which was inconsistent with the endurance described by the car sales staff. In addition, new energy vehicles are vulnerable to external factors (temperature, etc.). Some car owners report that the endurance of new energy vehicles they buy will be seriously shortened when the temperature is low in winter. Due to the hot weather in summer and cold weather in winter, the car owner has to start the air conditioner when driving. Long time operation of the air conditioner increases the power consumption, which greatly affects the endurance of new energy vehicles. Secondly, frequent braking starts and long-term idle will also shorten the endurance of new energy vehicles.

(3) Insufficient performance stability. The product quality of new energy vehicles is uneven. According to the electric card observation and research, there are many failures and high repair rate of new energy logistics vehicles in China. The data shows that in recent years, the proportion of new energy logistics vehicles that need to be stopped for repair due to Level III

failures has reached more than 20%, which fully reflects the reality that the current technical level of the whole vehicle is not high. At the same time, with the emergence of battery aging problem in use and the growing production demand of customers, the security problems of new energy vehicle products began to break out significantly. The supervision and management of the products before and after delivery are insufficient. There are products with poor consistency and low reliability in the market. Some new energy logistics vehicles have "spontaneous combustion" during charging and operation. Once such a situation occurs, the damage is huge, and there are large potential safety hazards:

In 2018, four new energy logistics vehicles in Shenzhen had spontaneous combustion during charging in a month, and most drivers dared not charge the logistics vehicles to full load, which seriously hindered the normal freight uniform speed.

In November 2019, Shaoxing, Zhejiang Province, Huizhou, Guangdong Province and Nanjing, Jiangsu Province all suffered from fire accidents of electric logistics vehicles for express delivery.

The sales volume of new energy vehicles will keep growing in 2022, but the number of accidents will continue to rise. Since the beginning of summer, the continuous high temperature in southeast China has led to frequent spontaneous combustion accidents of new energy vehicles. On July 22, famous artist Lin Zhiying drove Tesla ModelX into a car accident and the car caught fire; On August 1, an ideal ONE Chengdu Chongqing Expressway caught fire in Sichuan Province; On August 16, a BYD Han EV in Langzhong, Sichuan, ignited spontaneously just three days after it was put on the license plate.

Compared with traditional fuel vehicles, the biggest advantage of new energy vehicles lies in their battery, motor and electric control system. As the technical core of new energy vehicles, the three electric system is still in the rapid development and iteration stage of technology. Although this has brought great opportunities to the development of the entire new energy vehicle industry, the emergence of problems such as battery thermal runaway and fire risk has also hindered the promotion process of new energy vehicles in other industries.

3.2. Policy Dimension

The effective promotion of new energy vehicles in the logistics industry depends on many aspects. As an important factor to promote its development, the relevant policies issued by the country and regions have greatly affected the allocation of resources such as capital and the adjustment of authority in various regions.

(1) Right of way. Although the new energy logistics vehicles have slight advantages over the fuel logistics vehicles in terms of urban traffic and tail number restriction, there are differences in the right of way preferential policies issued by various regions throughout the country. When carrying out long-distance trans regional transportation, violations occur because drivers are not clear about the driving area policies. At present, the right of way policy for new energy logistics vehicles in some big cities is still strict, various passes for fuel logistics vehicles are still in use, the promotion and application of new energy logistics vehicles are still facing many problems, and there is still a certain gap between the development speed and new energy passenger vehicles. In some regions, there are still problems such as unclear policies and inadequate implementation, which seriously affect the effective promotion of the application of new energy vehicles in the logistics industry.

(2) License plate problem. Since the implementation of the new blue card policy on March 1, 2022, the new energy light trucks, micro trucks and multi-function light trucks with prominent road right advantages have benefited from it. The urban distribution and transportation market has accelerated to tilt to new energy vehicles, but some users do not have a good understanding of the policy, and they will be punished for license plate non-compliance. For the logistics industry, there are some regulations: "New energy logistics vehicles need the government to

issue operation licenses, otherwise they cannot enter the city." Because of the limitations of the logistics vehicle market, the local governments will strictly control the amount of operating license plates, and the new energy logistics vehicles cannot operate without a license plate. Therefore, the new energy logistics vehicles are basically sold locally, not across the country, which limits the scope of their promotion.

(3) The connection between urban and rural areas. Many cities strictly implement the relevant policy requirements for cities and towns, but they have a "broken pot" attitude towards rural areas, ignoring the delegation of tasks and policy deployment, and have not formed a three-tier urban and rural distribution network with reasonable layout, perfect functions and effective connection, and have not built a three-tier urban and rural efficient distribution system that is efficient, intensive, collaborative, shared, integrated and open. At present, many commercial vehicle enterprises have not laid out and formulated short-term or long-term plans to explore the rural market, and they hope to invest more resources in positions with more significant results. Some professionals believe that the cost of purchasing vehicles and the difficulty of charging are two major problems that hinder the construction of the rural market for new energy logistics vehicles. Most of the existing new energy logistics vehicles are refitted from fuel vehicles and cannot adapt well to rural road conditions and freight scenarios. At the same time, compared with urban financial leasing and other operation modes, the rural market is relatively short of reasonable financial and operation schemes in terms of procurement and use, and the disadvantages of high one-time procurement costs are highlighted. New energy logistics vehicles have no advantages in rural markets where they are used at low frequencies and do not need to be restricted. At the same time, "fast charging" is difficult to be popularized in rural areas in a short time. How to realize the convenience and safety of vehicle charging and changing is a problem that must be solved for the development of new energy logistics vehicles in rural areas.

3.3. Economic Dimension

In terms of early purchase cost, new energy vehicles are higher than traditional fuel vehicles. For the logistics industry, due to the high initial purchase cost and the recent decline of state subsidies, the initial business activities are difficult to continue without the support of a large amount of funds, which has brought great difficulties to the expansion and development of its business scope. Moreover, there is still a big gap between new energy logistics vehicles and traditional logistics vehicles in terms of product cost performance (load, power, space, mileage, etc.). In 2023, the national subsidy will be basically withdrawn. If there are no other appropriate policies to continue, the promotion of some new energy vehicles that do not have competition with traditional logistics vehicles will be restricted. In addition, the use direction of the subsidy fund of the Ministry of Finance for new energy vehicles also needs to be revised and optimized within the industry. The current fund allocation has not achieved much in optimizing the operating efficiency of new energy vehicles, and the efficiency problems that most customers care about have not been solved.

3.4. Social Dimension

(1) The logistics industry itself has many defects. Different from traditional vehicles, new energy vehicle manufacturers and battery suppliers belong to different subjects. Therefore, in terms of positive supply chain, China's new energy vehicle industry is not yet complete. [3] From the development in recent years, the logistics industry has low threshold, complex business, price sensitive, difficult operation, and chaotic management. There has been a long-term phenomenon of "small disorder and poor management" in the industry. The quality of employees is relatively low, which requires a large number of middle managers to manage with

high difficulty. The profit is diluted by the cost of these employees, which is not conducive to the development of the new energy logistics vehicle market in the logistics industry.

(2) Impact of the epidemic. Since the end of 2019, China's prevention and control of COVID-19 has entered a relatively stable stage. Under the huge economic losses, various factors hindering the promotion of new energy vehicles in the logistics industry have appeared frequently:

① Production is blocked and demand is reduced. Since March this year, the domestic epidemic situation has spread in many places and appeared a trend of partial outbreak. Many enterprises have stopped production, and the supply of goods has decreased significantly. The demand for new energy logistics vehicles in the logistics industry has also decreased. Under the influence of the epidemic situation, the phenomenon that new energy logistics vehicles have no goods to pull can be seen everywhere in the country, which seriously hinders the penetration of new energy logistics vehicles in the logistics industry.

② It is difficult to pass and maintenance is not guaranteed. During the epidemic prevention and control period, drivers transporting goods inevitably become the focus of prevention and control. In some places, in order to strictly control the epidemic, drivers are required to do nucleic acid continuously, or even be isolated for various reasons, which makes them unable to complete the transportation task normally. Vehicle failure was also a problem that enterprises were very worried about during the epidemic. Failure to find the manufacturer for maintenance became an important reason that affected customers' purchase of vehicles. In addition, during the epidemic, many new energy logistics vehicles purchased by customers could not be registered normally due to prevention and control needs, which also affected the promotion of new energy logistics vehicles.

4. PROMOTION MEASURES OF NEW ENERGY VEHICLES IN THE LOGISTICS INDUSTRY

4.1. Technology: Strengthen Infrastructure Construction and Support Technological Innovation and Breakthrough.

The solution of technical problems is a key to promote the rapid penetration of new energy logistics vehicles into the logistics industry. All regions should speed up the construction of infrastructure for charging and changing electricity and vehicle road coordination, improve the ability to guarantee key resources, and promote the research and development of high-performance technologies and products for new energy logistics vehicles and batteries. At the same time, it is also necessary to continue to pay attention to and support the innovation and breakthrough of key technologies, give support to enterprises' scientific research funds, promote enterprises to accelerate the development of high-performance new energy products, further improve the organization of technology research and development, gather R&D resources to competent enterprises, and cultivate high-quality enterprises with innovative and competitive advantages.

4.2. Policy: Improve Various Policy Systems and Pay Attention to The Implementation of Regulatory Linkage.

The introduction and improvement of policies are conducive to assisting in resource allocation and authority adjustment in various regions. Local governments should vigorously promote preferential policies for new energy logistics vehicles, formulate and strengthen the implementation of the right of way policy with obvious advantages, and encourage enterprises to purchase new energy logistics vehicles. We will promote the establishment of a coordinated mechanism for industrial development, adhere to the organic combination of an effective

market and a promising government, implement detailed work tasks, and thoroughly study and solve relevant problems.

Further strengthen the supervision of policy implementation, refine regulations and management requirements, continue to improve a number of standard systems, and strengthen the supervision of network data security. Promote the good combination of industries between urban and rural areas, strictly implement the task deployment of the higher authorities, form a three-level urban and rural distribution network with reasonable layout, perfect functions and effective connection, and build a three-level urban and rural efficient distribution system with high efficiency, intensive, collaborative sharing, integration and opening.

4.3. Economically: Reduce Costs, Improve Cost Performance, And Optimize The "Double Points" Approach

The purchase cost and cost performance ratio are two aspects that most customers first consider when purchasing new energy vehicles. The implementation of preferential policies and subsidy policies will help reduce the purchase cost of users and help enterprises improve the cost performance ratio of new energy vehicles. Before the subsidy is completely withdrawn, the relevant departments need to highly optimize and improve the management method of "double credits", promote the rapid and effective implementation of the credit policy for new energy vehicles, and create a better industrial development environment.

4.4. Social Aspects: To Rectify the Industry, Reduce the Impact of The Epidemic and Tap Talents

Good atmosphere is the catalyst for the development of the industry. The first step to rectify the industry is to strictly regulate the access rules of the industry, further strengthen the guidance of the industrial layout, not only the relevant practitioners, but also the introduction of new energy vehicle projects with high starting point and high level. At present, there are many different new energy vehicle enterprises and products introduced in China. It is necessary to prevent products without industrial foundation and key technologies from entering the market, and prevent the structural surplus of new energy logistics vehicle product market.

After this epidemic, many operators are in trouble. In order to maintain the normal operation of enterprises under the current situation, all operators should strengthen cooperation, cooperate at the regional coordination, resource utilization, vehicles, customers, resources and other levels, carry out certain appropriate mergers and acquisitions and integration, and enhance their ability to resist risks. Instead of blindly conducting simple and extensive asset expansion, they cannot effectively integrate the target of mergers and acquisitions. In addition, under the influence of the epidemic, the industry will see a large number of elite talents flowing in the market. For operators who need to recruit or replace teams, this is a rare opportunity to tap talents.

Although the use of new energy logistics vehicles has significant benefits, if the use scenario of new energy logistics vehicles is not appropriate and the economy, right of way, practicality and other aspects of new energy logistics vehicles are not comparable to traditional energy vehicles, other fuel vehicles should be properly matched to supplement, and the investment of new energy vehicles should not be rushed. The penetration of new energy vehicles in the logistics industry needs to be achieved step by step. It should be realized step by step according to the actual situation. New energy logistics vehicles serve the logistics industry and should focus on application. [4] The use of auxiliary tools cannot be confused with the goals of the industry.

5. SUMMARY

The development of the new energy vehicle industry has been highly concerned by the world. With the awakening of human environmental protection awareness and the need for sustainable development of modern logistics industry, governments of all countries vigorously promote green logistics, and new energy vehicles have played a crucial role in the field of green transport.

Some time ago, many European countries have publicly announced plans to ban the sale of fuel vehicles, and Chinese officials from the Ministry of Industry and Information Technology have also publicly stated that they are studying and formulating a timetable for banning the sale of fuel vehicles. Under the multiple pressures at home and abroad, the logistics industry must vigorously promote the transformation of new energy vehicles. Since the Ministry of Industry and Information Technology only recommended new energy vehicles (and logistics vehicles) as new energy vehicles for promotion and application in 2016, the application of new energy vehicles in logistics enterprises has just started. [2] In the early stage, new energy logistics vehicles have been complying with the market development and finding opportunities to enter the logistics market. The state has provided a lot of financial subsidies to help them lay a foundation in the logistics industry.

At this stage, due to the impact of the epidemic, the promotion of new energy vehicles in the logistics industry has been hindered to some extent, and their development has suffered a certain stagnation. However, it is an inevitable choice for the market to guide the green transformation of logistics and promote the development of new energy logistics vehicles. With the gradual stabilization of epidemic prevention and control, the new energy logistics vehicle industry is also gradually warming up. In this critical period of development, we should rely on multi-dimensional policy support to solve various obstacles in the promotion of new energy vehicles in the logistics industry and ensure the healthy and stable development of the new energy logistics vehicle industry. [5]

Under the background of continuous urbanization and steady growth of urban logistics demand, the state and local governments have given relevant support policies to new energy logistics vehicles, and the commercial operation of new energy logistics vehicles is also accelerating. In the future, the technical level and product quality of new energy logistics vehicles will become more important factors affecting their development. Whether new energy vehicles can penetrate the logistics industry largely depends on whether enterprises can solve various defects of new energy logistics vehicles well and make great breakthroughs in technology, cost performance and operating policies.

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