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Investigating the Impact of New Energy Policy on the Market for New Energy Vehicles

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Abstract: As global concerns about environmental sustainability continue to rise, electric vehicles (EVs) are gradually becoming a significant component of the global automotive market as a clean and low-carbon transportation option. This study, through a review of relevant literature and an analysis of market data, examines the influence of new energy policies on the international market for electric vehicles. The research findings indicate that the market share of electric vehicles has steadily increased over the past few years. Government environmental policies and incentive measures have played a crucial role in promoting electric vehicles. Furthermore, ongoing technological advancements and cost reductions have also contributed to the widespread adoption of electric vehicles. However, electric vehicles face certain challenges, such as inadequate charging infrastructure and limitations in battery technology. In the future, with further technological developments and policy support, electric vehicles are poised to play a more significant role in the international market and contribute to global sustainability efforts.

Keywords: Electric Vehicles, International Market, Environmental Trends.

1. Introduction

With the growing awareness of environmental concerns and government support for environmental protection, an increasing number of consumers are choosing to purchase electric vehicles (EVs). This trend is particularly pronounced in some developed countries and regions. The future prospects of electric vehicles in the international market are promising. As global attention to environmental protection continues to rise, more countries and regions are increasing their support for electric vehicles. Government policy support, ongoing technological innovation, and cost reductions are driving the rapid development of the electric vehicle market. In the future, the electric vehicle market will witness diversified competition. Emerging technologies like hydrogen fuel cell vehicles will gradually gain prominence. Countries and regions will strengthen cooperation to jointly promote the development of electric vehicle technology and the standardization of regulations, fostering the prosperity of the global electric vehicle market.

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2. Literature Review

The conclusion was that "through persistent efforts, China has established a structured and organically coordinated new energy vehicle industry system. The annual sales of new energy vehicles have grown from 1.367 million in 2020 to 6.887 million in 2022, a fourfold increase" [1]. China's new energy vehicle market for eight consecutive years was dominated by China, which produced and sold 7.058 million and 6.887 million new energy vehicles in 2022, with a market share of 25.6%. New energy vehicles produced and sold domestically reached 3.005 million and 2.94 million in the first five months of 2023, with a market share of 27.7%. [2]. China began implementing the purchase tax exemption policy for new energy vehicles in September 2014. At the end of 2022, the cumulative tax exemption scale has reached 200 billion yuan, and it is predicted that the tax exemption will reach 115 billion yuan in 2023. In addition, China also exempts new energy vehicles from vehicle and vessel taxes, and does not levy consumption tax on pure electric vehicles, which strongly supports the high-quality development of the new energy automobile industry.[3]To build a regionally driven vehicle intelligent ecological city, a nationally representative intelligent driving application leading city, and an internationally influential clean energy driven city; By 2030, we will strive to build a world-class new energy and intelligent connected automobile industry highland with first-class innovative policy sources, rich ecological factors and leading energy development. According to this plan, by 2025, Chengdu's new energy vehicle ownership reached 800,000, the output reached 250,000, the industry zero ratio increased to 1:1, the vehicle capacity utilization rate, the enterprise local matching rate increased to 70%, 50%, and the public domain vehicle electrification ratio reached 80%; The loading rate of new cars of L2 class and above exceeds 70%. [4]In the first half of 2023, Chengdu added 15.4 billion yuan in tax reduction and tax refund delay, accounting for nearly 60% of the province's total new tax reduction and tax refund delay, 73,000 new energy vehicles enjoying preferential vehicle purchase tax policies, an increase of 49% year-on-year, the amount of car purchase tax exemption was 1.62 billion yuan, and the tax reduction increased by 43.4% year-on-year. [5]

The subsidy standard for new energy vehicles will be reduced by 30% in 2022, based on 2021, and the subsidy standard for vehicles in the public sector (urban public transport, road passenger transport, taxi, sanitation, urban logistics, etc.) will be reduced by 30%. will be reduced by 20% on the basis of 2020. The subsidies for pure electric passenger cars are 0.91 million to 12,600 yuan, and the subsidies for plug-in hybrid passenger cars are 0.48 million yuan. Pure electric commercial vehicle bicycle subsidies are generally 10,000 to 50,000 yuan.[6] December 2016 marked the release of the '13th Five-Year Plan' National Strategic Emerging Industry Development Plan by the State Council. The production of power batteries requires green low-carbon industries such as new energy vehicles, new energy conservation, and environmental protection to be promoted to become pillar industries with an output value of over 10 trillion yuan by 2020. The plan points out that by 2020, China's power battery technology level should be synchronized with the international level, and the scale of production capacity should be in a leading position in the world. The plan also takes the "new energy vehicle power battery upgrading Project" as a column, Proposing to enhance the power battery research and development system, speed up the construction of the power battery innovation center, and overcome technical obstacles like high safety. long life, and high energy density lithium-ion batteries. Technological innovation centers have been established in key battery materials, key production equipment, and other fields, and advances have been made in high-capacity positive and negative electrode materials, high-safety diaphragms, and functional electrolyte technologies. Our goal is to enhance innovation in production, control, and testing equipment, and foster the development of engineering and technology capabilities throughout the entire industrial chain. In December of the same year, the "13th Five-Year" energy Plan issued by the National Development

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and Reform Commission mentioned that through the promotion and application of new energy vehicles in the previous five-year plan, the adjustment of the energy structure has made significant progress, and in the next five-year plan, The energy structure's adjustments are driven by the development of clean and low-carbon energy. Ensure that non-fossil energy is developed and that fossil energy is used in a clean and efficient manner. and actively promote the replacement of electric energy in the field of transportation.[7]In terms of investment, preferential tax policies lack efficiency and fail to effectively guide social funds into the new energy automobile industry. China's new energy automobile industry has reached a new stage of rapid development. and the strategic measures of green development and coping with climate change have provided new development opportunities for the new energy automobile industry. In this period of development, it takes a lot of money to master core technologies and build infrastructure.China's new energy vehicles lack the international advanced level of technology. At present, China's new energy vehicles have not mastered the core technology, and it is urgent to break through the technical bottlenecks of short driving range, long charging time and high battery cost. Tax incentives for technological innovation of enterprises are not in place, which is reflected in the inadequate support for enterprise research and development and the inadequate protection for talents.[8] First, the tax reduction and exemption policies are highly targeted and strongly supported. In the above three countries, the tax relief policy focuses on the country's main taxes or the main part of the car purchase tax burden, which can reduce the tax burden of the production, research and development and use of new energy vehicles. Second, the preferential tax policies cover a wide range, with relatively perfect supply-side, demand-side and service-oriented preferential policies. At the government level, a perfect support system has been established for the supply side, demand side and service side, which can promote the balanced and comprehensive development of the new energy automobile industry. Third, we will improve the level of tax relief. Countries generally determine tax relief policies with different intensity according to different technical routes or different energy consumption levels, and the divided standards are updated quickly to adapt to the rapid update and progress of new energy vehicle technology level. Fourth, improve the scope of taxation. New energy vehicles should not be excluded from the scope of taxation, when the new energy vehicle industry has developed to a certain stage, it is necessary to gradually guide the withdrawal of preferential tax policies to promote the healthy development of the industry.[9]Supporting the province's automotive industry encompasses promoting the introduction of new vehicle models, enhancing innovation capabilities, fostering the development of industrial standards, and incentivizing innovation through patent acquisition.[10]

2.1. Page Setup Key Players in the Electric Vehicle Market

Tesla is a well-known manufacturer of electric vehicles worldwide. The development of the electric vehicle market has been largely influenced by Tesla's success, as evidenced by numerous studies. Tesla's innovative technology and high-performance products have garnered attention from consumers and investors worldwide. Tesla's electric vehicles have made significant breakthroughs in terms of range, performance, and smart features, setting a benchmark for the electric vehicle industry. Additionally, Tesla has established a global charging network, addressing concerns about inadequate charging infrastructure and further promoting the adoption of electric vehicles.

"NIO" is one of the leading enterprises in the Chinese electric vehicle market, and its influence in the international market is steadily growing. NIO's design philosophy and technological innovations have received widespread acclaim, with competitive products in terms of range, smart features, and comfort. NIO is actively expanding its overseas markets, collaborating with internationally recognized automobile manufacturers, and strengthening its sales channels in Europe and other regions. Furthermore, NIO has increased investments in charging infrastructure, enhancing consumer acceptance of electric vehicles.

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"XPeng Motors" another prominent player in the Chinese electric vehicle market, has also gained a certain level of influence in the international market. Research indicates that XPeng's high-quality products and innovative technologies have earned recognition from international consumers. XPeng's electric vehicles are competitive in terms of performance, range, and smart features, meeting consumers' demands for electric vehicles. XPeng is actively expanding its presence in overseas markets, collaborating with international automobile manufacturers, and introducing a range of innovative charging solutions to improve the convenience and availability of electric vehicles.

2.2. Conclusion

In summary, “Tesla”, “NIO”, and “XPeng Motors”, as significant representatives in the field of electric vehicles, have had a significant impact on the international market. Their innovative technologies, high-performance products, and investments in charging infrastructure have propelled the development of the electric vehicle market and contributed to the global adoption of electric vehicles.

3. Examining the policies of new energy vehicles in various countries

The policy in various countries is shown in table 1.

Table 1: the policy in various countries

nation	The relationship between policy and market	revenue	price supplementary
China	China has always been the world's new energy market and the and the production of consumption products and world's largest carbon emitter, and the Chinese government has other vehicle and vessel taxes o† 13.000 yuan adopted policy measures in many aspects to promote the development and application of new energy.	Enterprises whose fuel consumption points are negative and uncompensated will be subject to the suspension of subsidies before the price or high fuel consumption products is less than 300,000 yuan, pure electric passenger newspaper.	more than 4oO kilometers of car points are negative compensation o 18,000 yuan, and mixed including extended range) passenger enterprises with uncompensated points will be punished by 0.68 million van of ca subsidies to the suspension of production of high fuel consumption products.
American	These tax incentives made new energy projects more economically attractive thus stimulating more private investment in the United States.	The ZEV act under which unions produce electric vehicles that fail to meet standards imposes a $12 500 penalty. Liter zero emission vehicle free (The bill has not yet been reviewed for annual sales target)	
Japan	Japan implemented a system of fixed-price electricity tariffs to encourage the development of renewable energy sources such as wind power. This policy ensures that renewable energy suppliers can sell electricity at private charging prices, thereby reducing investment risk.		Maximum subsidy amount for pure electric vehicles 800,000 yen.

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Table 1: (continued).

UK	Demand stimulation: Car purchase subsidies and road tax exemptions have reduced the financial burden or buying electric vehicles, thereby increasing consumer demand Tor electric vehicles. Subsidies of up to £4.500 and £6.000 (for replacing fuel models) are substantial amounts and can be a powerful incentive. 75% subsidy for pure electric vehicles with less than *40 000installation cost for charging pile purchase.		Buying an electric car in the UKIS eligible for a grant of 35 per cent of the purchase cost, up to £4,500.
Germany	Providing different levels of subsidies. depending on the price and type of vehicle. can greatly stimulate consumer demand for electric vehicles, including all-electric vehicles, plug-in hybrids, and used electric vehicles Especially for those with lower prices (under €40,000) for full electric vehicles and used vehicles, the higher subsidy amount will make these vehicles more attractive.		

4. Analysis of the impact of new energy policies on the new energy market

With the development of technological innovation, policy support and other aspects, he new energy vehicle market is powered by it. The International Energy Agency (IEA) predicts that the global market for new energy vehicles will reach more than 300 million units by 2030.

In the automobile industry sector, at present, China plays a pivotal role in the global electric vehicle industry pattern, not only in the power battery and other core technology fields has achieved a world leading position, but also in the industrialization of significant competitive advantages. So far, only China, the United States, Japan, the annual output of cars break through ten million units of countries, comparison of the three countries for the first time when the vehicle export rate and the proportion of independent brands, we can find that our country in these two indicators are significantly lower than the United States and Japan. Since 2016, China has consistently been the top country in terms of ownership and new annual sales of new energy vehicles, and the compound annual growth rate of new energy vehicle production and sales is still at a high level of around 50%. In 2021, China produced and sold 3.545 million and 3.521 million new energy vehicles, which accounted for over 50% of the global market share of new energy vehicles. China's sales of new energy passenger vehicles accounted for 63.1% of the global market between January and October 2022, while the sales of the United States and Germany in the first 10 months of 2022 were less than 10%, and that of Japan was less than 1%. This shows that China has played a pivotal role in the global competition pattern of electric vehicle industry. In terms of export scale, China's export of new energy vehicles has accelerated significantly since 2017. In terms of export quality, compared with the overall automobile industry, the current export of new energy vehicles shows a more positive development trend. The competitive advantage of China's independent automobile brands in exporting to developed countries

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has been shaped for the first time by the new energy vehicle industry. China's new energy vehicles have been entering the markets of developed countries, especially Europe, in recent years, which has become the main incremental market. In terms of sales model, some automobile enterprises have shifted from the traditional agency sales model of automobile industry export to direct sales model and subscription model. For example, NIO adopts subscription sales overseas, while Lynk & Co., a subsidiary of Geely Group, provides both vehicle purchase and subscription services overseas. The subscription model, which provides users with more flexible consumption options, is more mature in the European high-end car market and has helped Lynk & Co and NIO quickly open up foreign markets. In terms of operation mode, when entering the market of developed countries, new energy vehicle enterprises generally pay more attention to building a comprehensive user service system (especially supporting energy facilities), so as to establish a good brand reputation and cultivate consumer loyalty. Over the next 10 to 15 years, the fierce competition in the electric vehicle industry around the world will become the focus of scientific and technological competition, as well as industrial competition between major countries, and the battle for the international market of new energy vehicles will continue to escalate.

Table 2 reflects that China's new energy market has great potential and a large amount of purchases.

Table 2: the quantity analysis between 2021 and 2022 in China and other countries

2021	Final quantity	354.5-352.1 w	percentage of the world	more than 50%
2022			China quantity in 2022	up to 63%
2022	Japan	62%	U.S.A	53%

4.1. background and current situation: tesla.

According to the latest data, tesla's share of the international market presents the fast growth the tendency. Up to now, Tesla has entered a number of countries and regions around the world, and has achieved considerable market share. Below is tesla in some of the major international market share data: 1. According to the latest statistics, Tesla is the leader of the U.S. market, with Tesla electric cars accounting for about 70% of the total. This gives Tesla a significant competitive advantage in the US market. 2. European markets: tesla on the European market share is growing. According to the European Automobile Manufacturers Association, Tesla's sales in the European market have grown rapidly in the past few years and are expected to exceed 200,000 units in 2021.

Table 3 reflects the high popularity of high-priced vehicles such as Tesla in developed countries, while developing countries such as China cannot purchase too many vehicles, but they have great potential.

Table 3: the purchase quantity of Tesla between China,USA and Europe

USA	Tesla up yo70%	
Europe	Tesla quantity up to 20w	
China	2021	predict to 10w

4.2. Chinese market

As one of the largest automotive markets in the world, China has huge potential for Tesla. Tesla's sales in the Chinese market have kept growing over the past few years and are expected to exceed 100,000 units in 2021, as per the China Association of Automobile Manufacturers. Tesla made good on the international market share can be attributed to the following reasons:

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(1) Technology leadership: Tesla is a leader in electric vehicle technology, and its efficient battery technology and advanced autopilot system make its products highly competitive.

(2) Brand image: tesla with its unique design and innovation of the image has been attracting the attention of consumers. Its brand image has been gradually established in the international market, so that consumers have a high degree of recognition and goodwill for its products.

(3) Marketing: tesla in the international market have a lot of marketing activity, including advertising, exhibition and experience activities, effective enhances consumer awareness for tesla product and purchase intention.

4.3. Expansion strategy

(1) Technical innovation: ideal new energy vehicles is committed to continuous technological innovation, improve the battery charge technology, electric drive system and infrastructure of the key technologies such as performance and reliability, in order to enhance the quality of the product and user experience.

(2) Market positioning: ideal new energy vehicles will be differentiated positioning according to different market demand, including cars, SUV, MPV models to meet the needs of different consumer groups.

(3) Channels to expand: ideal new energy cars will be through the establishment of off-line sales outlets and cooperate with the mainstream car dealer, expand product sales channels and coverage.

(4) Brand building: the ideal of new energy vehicles will pay attention to brand image shaping, through marketing, event sponsorship and other ways to promote brand awareness and influence.

4.4. Influence on the international market competition

(1) The energy and environment: an ideal new energy vehicles will reduce the reliance on traditional fossil energy, help to reduce environmental pollution and carbon emissions, accord with the requirement of the international community to environmental protection and expectations.

(2) Battery technology innovation will promote the development of the industry as a whole new energy vehicle, which will impact international market competition.

(3) The emerging market opportunities: as countries around the world to promote new energy automobile policy and subsidies, ideal new energy vehicles have a chance to enter the emerging markets of different countries and regions, to obtain the market share.

(4) Market competition intensifies, as more and more automobile manufacturers into the new energy automobile industry, the competition will be increasingly fierce, the ideal new energy car needs constant innovation and improve product performance, to maintain a competitive advantage.

To new energy vehicle is one of China's leading electric car manufacturers, its commitment to promote the development and popularization of electric vehicle technology. Nio's share in the domestic and international markets is an important indicator to measure its competitiveness and market position. Since the secondary market in 2020's success, wei to market share will decline year by year, from a peak of nearly 4% to less than 2% today. Although Weilai has been actively expanding its production capacity in recent years, the offline network has captured territory, and the delivery volume has risen year after year, it is still too little for the rapidly developing market. In the first half of this year, NIO delivered a total of 54,561 vehicles, with an average of less than 10,000 vehicles per month. Figure wei on the European market also began to gradually expand its market share. Although NIO's sales volume in the European market is relatively small, according to the latest data, NIO's share in the European market is steadily increasing.

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5. Conclusions and recommendations

In this paper, by studying the new energy policies for new energy vehicles in the international market, including the automotive industry's structure, the impact of trade balance, and economic development, etc. With the increasingly high global requirements for environmental protection and sustainable development, the international market is abuzz with the topic of new energy vehicles, which are a significant alternative to traditional fuel vehicles. First of all, we define and explain the definition of new energy vehicles. Our next step is to evaluate the benefits of new energy vehicles. The characteristics of new energy vehicles include zero emission, low noise, energy saving, and environmental protection, and they can effectively reduce air pollution and greenhouse gas emissions. Moreover, we analyzed the data of the scale, growth rate and market share of Tesla and Ideal new energy vehicles at home and abroad in the international market, as well as the policy support and technological innovation of various countries in the new energy vehicle industry. Through a comparative study of the international market, we find that there are differences in the development of new energy vehicles in different national markets, and there are also some common challenges and problems. In today's world, more and more people pay attention to and buy new energy vehicles, so countries have set up a series of policies such as financial subsidies, Exemption from purchase tax, free parking, and other benefits have contributed to the rapid development of the new energy vehicle industry. Then, we study the impact of new energy vehicles on the international automotive industry structure, examine the position and significance of new energy vehicles in the value chain of the automotive industry. We believe that the emergence of new energy vehicles will prompt changes in the entire automotive industry structure, including the adjustment and transformation of automobile manufacturing, parts supply chain, and sales channels. Finally, we look forward to the future development of new energy vehicles. We believe that with further breakthroughs in technology, policy support and market development, new energy vehicles will achieve a larger market share in the future and gradually change the global automotive industry pattern.The development of new energy vehicles must also take into account the challenges and problems, such as technical barriers and international competition.In order to sustain the development of new energy vehicles in the international market, we must strengthen cooperation between the government, enterprises, and research institutions. Formulate unified standards and specifications for new energy vehicles, including charging interface standards, vehicle performance standards and safety standards, the goal is to ensure that the market is standardized and developed in a healthy way. At the same time, we also need to constantly innovate and upgrade the level of technology to cope with huge market changes and high-risk competitive challenges.

Authors Contribution

All the authors contributed equally and their names were listed in alphabetical order.

References

[1] *LIU X R. Analysis of BYD Company's strategic positioning and business model under the influence of new energy Policy [J]. China Collective Economy,2018(36):63-65.*

[2] *The introduction of the tax purchase policy in the policy system can effectively guide the development policy analysis of China's new energy automobile industry [J]201626(9):158*

[3] *Ding Jinxuan. A new version of the new energy vehicle purchase tax breaks to watch more [N]. China's government procurement, 2023-07-07 (005).*

[4] *Song Weidong. Policies to promote the development of new energy automobile industry in many places [N]. The China securities journal, 2023-06-30 (A07).*

[5] *Jiang Junfang. 73,000 new energy vehicles in Chengdu enjoyed preferential purchase tax policy in the first half of the year [N]. Sichuan journal, 2023-09-01 (007).*

DOI: 10.54254/2754-1169/64/20231534

[6] *LIU Mengmeng, Wang Feifei, Zhai Xiaolan. The policy evolution of new energy vehicles with foresight [J]. Automobile and Parts,2022(13):56-59.*

[7] *Peng Hua. Chinese and foreign new energy automobile policy models [J]. Journal of northeast Asian economic studies, 2019, 3 (4) : 86-108.*

[8] *Zhu Zongyang. Suggestions on preferential tax policies to support the development of new energy automobile industry [J]. Shanghai Enterprise,2023(09):33-35.*

[9] *Su Baiyi. Research on preferential tax Policies to Promote the development of new energy automobile industry [J]. Times Automobile,2023(17):110-112.*

[10] *Several policy measures to support the high-quality development of new energy automobile industry [J]. Public Electricity, 2019,38(07):11-12.*