

# ***Promoting Green Energy Vehicle: A Global Warming Solution***

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**Abstract:** Given the escalating concerns surrounding global warming, nations worldwide are confronted with the urgent need to curb greenhouse gas emissions. Transitioning to energy-efficient vehicles has emerged as a promising solution to mitigate environmental harm. This paper aims to delve into the present-day dynamics and incentives associated with these eco-friendly vehicles. Specifically, it scrutinizes governmental incentives that promote their acquisition, corporate ingenuity in their manufacturing and distribution, consumer allure factors, and the media's role in portraying both traditional auto industry constraints and affirmative narratives about these sustainable vehicles. Furthermore, the analysis sheds light on predicaments tied to energy vehicles, such as challenges in electricity infrastructure and potential overuse. Findings reveal that prevailing policies across nations remain imperfect, with some strategies focusing on bolstering the effectiveness of green vehicle directives while others are tailored to stimulate consumer buying tendencies. To secure a sustainable vehicular future, an integrated effort among governmental agencies, media outlets, and businesses is paramount.

**Keywords:** New energy vehicle. Global warming. ESG investment. Green investment

## **1. Introduction**

Although not universally acknowledged, one of the most prominent issues facing humanity is the escalating impact of global warming. According to the National Oceanographic and Atmospheric Administration of the United States, in August of this year, the average global land and ocean surface temperature reached an unprecedented high, with a deviation of about 2.25 degrees Fahrenheit (1.25 degrees Celsius) from the 20th-century average of 60.1 degrees Fahrenheit (15.6 degrees Celsius), resulting in abnormal heatwaves across continents [1]. To combat this trend and address the weighty goal set by the Paris Agreement, which aims to limit the global average temperature increase to well below 2 degrees Celsius above pre-industrial levels and strive to keep it within 1.5 degrees Celsius [2], it is imperative to control total global greenhouse gas emissions. Clean energy derived from natural resources, which has the potential to reduce reliance on fossil fuels, plays a crucial role in mitigating anthropogenic greenhouse gas emissions. The adoption of clean energy is most evident in the rapid growth of new energy electric vehicles and different branded trams since the transportation sector accounts for 23 percent of global carbon dioxide (CO<sub>2</sub>) emissions [3]. This article aims to analyze how governmental policies and corporate strategies influence consumers' willingness to purchase energy-efficient vehicles in the context of carbon reduction efforts.

## 2. Government pull

Many countries aiming for "emission reduction" encourage the adoption of energy vehicles by offering tax incentives, promoting such vehicles, enhancing user convenience, and incenting consumer purchases.

To achieve "zero emission" for all new cars in 2025, the Norwegian government has introduced "the polluter pays principle [4]", which increases the taxes on owners of cars with large carbon emissions and reduces the taxes on owners of low- and zero-emission cars. Individuals can save up to \$8,000 per year in taxes [3]. This financial stimulus, coupled with the tram charging piles laid on major roads across the country, has enabled the Norwegian people to own 500,000 energy vehicles in 2022 [4]. California's government adopted a similar method of lifting taxes, giving EV owners federal income tax credit that ranges from \$2,500 to \$7,500. More than that, the zero-emissions vehicles (ZEVs) action plan also includes establishing a carpool lane to diminish the opportunity to use cars. Germany's method of promoting green energy vehicles involves private EV car parking. In 2016, New Zealand announced an EV policy package targeting a rocket growth of national EV ownership. The package aims to increase EV adoption in several ways: waiving road user fees for both light and heavy electric vehicles, allocating funds for national electric vehicle promotional campaigns, advancing, and expanding public charging stations for electric vehicles, granting electric vehicles access to designated lanes and providing dedicated parking spaces for them [5].

Governments are leveraging both financial incentives and infrastructure enhancements from Norway's progressive "polluter pays principle" to California's federal income tax credits and New Zealand's multifaceted EV policy package. These concerted efforts not only incentivize individual consumers but also pave the way for a more sustainable and environmentally friendly future in transportation.

Global energy policies are rapidly developing to meet the urgent demand for more environmentally friendly and sustainable sources of electricity. This transformation is particularly evident in regions such as China, Asia, and Africa.

In China, the government has established overall rules to manage the long-awaited national electricity market. The purpose is to match supply and demand in almost real-time nationwide. This unified market will coordinate pilot projects in several different regional markets, expanding private generators and new entrants. This is an important milestone in the reform of China's electricity market.

In the broader Asian region, the Asian Development Bank's 2021 energy policy aims to support universal access to reliable and affordable energy services while promoting low-carbon transformation. This policy recognizes the constantly changing environment and growing demand of developing members, while also noting the impact of increasing energy use on climate and the environment. It aligns its energy operations with the 2030 strategy, which sets ambitious goals of providing reliable energy access for all.

In Africa, countries are preparing for energy transformation by implementing policies and legislative frameworks that consider the energy crisis and the demand for renewable, decarbonized, and decentralized energy supply. Africa has put forward many agreements, with a focus on enhancing the response to Africa's energy challenges, establishing a transformative energy partnership in Africa, mobilizing domestic and international capital, and providing innovative financing for the African energy sector. Mobilizing domestic and international capital to provide innovative financing for the energy sector in Africa, supporting African governments in strengthening energy policies, regulation, and sector governance, and increasing the Bank's investment in energy and climate financing.

These measures reflect the global trend towards cleaner and more sustainable energy development. They emphasize the commitment of these regions to address climate change and promote economic

development through innovative energy policies. As these policies continue to evolve, they will play a crucial role in shaping the future of global energy production and consumption.

The advantages of new environment policies in regions such as China, Asia, and Africa are also evident. Firstly, sustainability promotes the use of renewable energy sources such as solar and wind energy. Compared to fossil fuels, these renewable energy sources are sustainable and have less impact on the environment. Secondly, there is economic growth. Investing in renewable energy industries can attract many investors in environmental protection and this area to invest heavily. For example, the manufacturing, installation, and maintenance of renewable energy infrastructure can provide employment opportunities. Increase the economic level of the country. Another issue is energy security. By utilizing local renewable and new energy sources, these regions can reduce their dependence on imported fossil fuels and enhance energy security. This is also beneficial for the health of surrounding people, as shifting to cleaner energy can improve air quality and bring health benefits to the population. Finally, there is the need to mitigate climate change. Compared to fossil fuels, renewable energy emits fewer greenhouse gases, which helps these regions contribute to global efforts to mitigate climate change. These advantages highlight the important role of policies for new energy vehicles and trams in promoting sustainable development and a green environment.

As the world strives to address the urgent demand for more environmentally friendly and sustainable energy, regions such as China, Asia, and Africa are at the forefront of implementing new energy policies. However, the existing problems also need to be addressed. It has different suggestions for different countries.

For China, there is a need to improve energy efficiency. Although China has made significant progress in the development of new energy and renewable resources, it is necessary to pay attention to some important aspects, including energy efficiency in all sectors including industry, housing, and transportation. Secondly, it is necessary to strengthen the infrastructure of the power grid. In order to adapt to the influx of renewable energy, China should invest in strengthening its power grid infrastructure. Finally, it is to encourage the public, as people are also an important group in environmental protection. Participating in public awareness and participation can play a crucial role in the success of energy policies.

For Asia, the first step is to strengthen investment in research and development, as investment can bring about production and enhance labor efficiency. Investment in research and development can bring breakthroughs in renewable energy technologies. Secondly, implementing preferential policies for renewable energy, in which the government plays a very important role. The government should encourage businesses and individuals to adopt renewable energy. In order to improve efficiency. Finally, strengthening regional cooperation, where mutual assistance between countries can not only improve efficiency but also benefit the country. Asian countries can benefit from sharing resources, knowledge, and technology.

Finally, for Africa, utilizing local resources is important, as it has abundant renewable energy sources such as solar and wind energy. So, policies should encourage the use of these resources more. Secondly, there is an improvement in energy supply, as many regions in Africa still lack electricity supply. Policies should aim to provide universal access to reliable and affordable energy. Finally, there is capacity building, which the country needs to carry out at all levels, from decision-makers and regulatory agencies to technical personnel and end users.

These suggestions aim to improve the effectiveness of new energy policies in these regions. They emphasize the importance of a holistic approach that considers not only technical aspects but also social-economic factors.

### 3. Company's effort under a competitive market

This section must be in one column. Government subsidy policies for energy vehicles have given many companies a sense of the future booming development of the energy vehicle market and have encouraged many automobile companies to produce energy vehicles or complete the transformation of production lines. As a result, competition in the energy vehicle sector has intensified. This section primarily delves into strategies companies can employ to entice more consumers to purchase energy vehicles and secure a more prominent market presence.

The Global EV Outlook 2023 report by the IEA presents an optimistic picture [6]. In 2022, 14% of all new car sales were electric vehicles, up from 9% in 2021 and only 5% in 2020. The projections for 2023 are even more encouraging: sales are expected to reach 14 million by the end of the year, marking a 35% increase from the previous year, with a notable surge in purchases anticipated in the latter half of the year. Mukherjee et al. report a Global Passenger Electric Vehicle Model Sales Tracker: Q1 2018 – Q2 2023 [7], indicating Tesla and BYD group are two leading company in EV market. Table 1 shows the growing trend of these two EV company among the global EV market share.

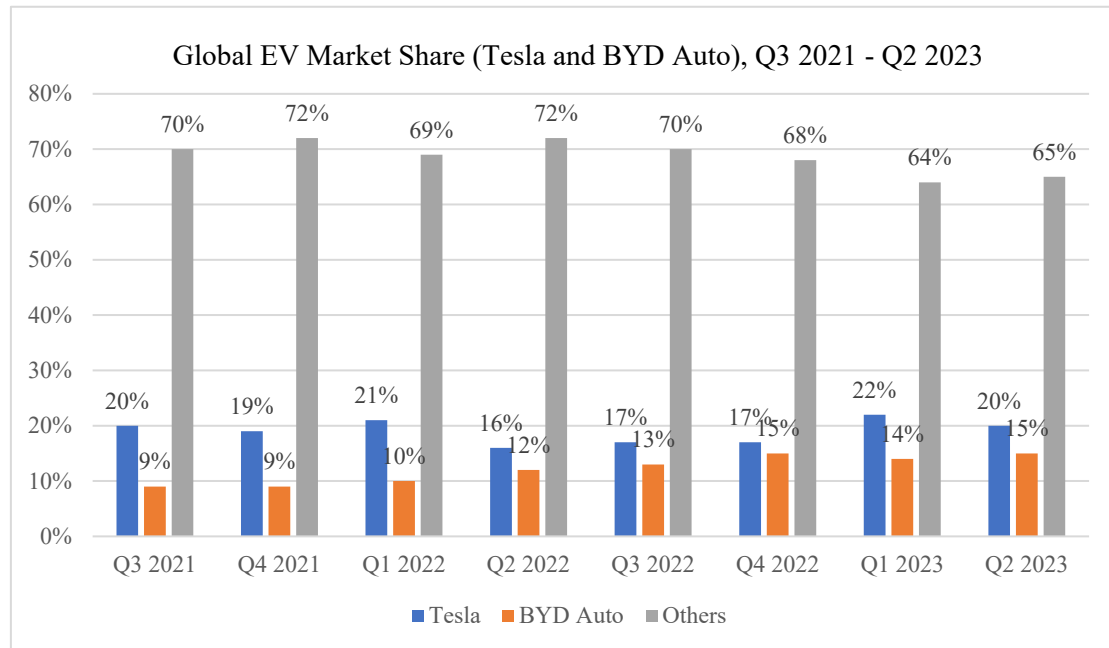


Table 1: Global EV Market Share (Tesla and BYD Auto), Q3 2021 - Q2 2023

Starting as a battery manufacturer, BYD Group has capitalized on its deep knowledge of battery technology to make strides in electric vehicle production. Their diverse offerings range from consumer batteries to solar cells and energy storage systems, establishing a comprehensive portfolio in the battery sector. This technological prowess, especially in the three-electric system and vehicle platforms, has often seen BYD outperform Tesla in battery tests [8]. Furthermore, BYD's ability to develop independent production lines has enabled the company to consistently expand production, reduce costs, and maintain top product quality. As a result, once BYD enters a market, its self-reliant production and product excellence allow it to set energy vehicle prices competitively, offering consumers value-driven options.

About these two electric vehicle companies, their policies also very different. Tesla is a pioneer in the electric vehicle industry, with a comprehensive set of policies that prioritize customer privacy and data protection. Tesla's privacy policy is very strict, emphasizing transparency and user control over

data sharing. The company does not sell or rent personal data, and users can adjust their data sharing preferences at any time through the car's touch screen. And don't worry about your privacy being leaked. Tesla has also developed a policy for the rational use of supercharging stations to ensure a consistent charging experience for supercharging stations worldwide. In addition, many charging stations have been established in many regions to ensure that their products can be used with confidence in every region. In terms of corporate governance, Tesla has set high standards for its employees, executives, and directors. The company also provides comprehensive welfare benefits for employees.

On the other hand, BYD Motors, China's largest electric vehicle manufacturer, reflects its commitment to environmental sustainability and social responsibility through its policies. BYD has really played a significant role in the environment. BYD has been committed to electrification of urban public transportation to reduce global greenhouse gas emissions. As of April 19, 2022, BYD has saved 10756330036 kilograms of carbon emissions, equivalent to planting approximately 896360836 trees. In terms of social responsibility, BYD promotes dignity by providing opportunities for everyone. The company is committed to hiring women, veterans, second chance workers, and others who face obstacles in manufacturing employment. BYD also encourages vulnerable enterprises and businesses owned by a few women to become suppliers.

In summary, although both Tesla and BYD are committed to promoting the development of the electric vehicle industry, their policies reflect different priorities. Tesla focuses on customer privacy and data protection, while ensuring a high-quality user experience. By contrast, BYD emphasizes environmental sustainability and social responsibility while ensuring data privacy.

#### 4. Media effect

Nowadays, the development of the media is gradually expanding, and the media's attention to anything is gradually increasing. All aspects of the country are included in the reports of journalists. With the increasing awareness of environmental protection, the media's attention to green investment, corporate environmental protection, and new energy has also gradually increased. For the automotive industry, the issue of global warming has become a concern for all countries due to the gradual emission of car exhaust. In the past two years, global carbon dioxide and carbon monoxide have been gradually increasing. The media is gradually paying attention to this. Media attention is essentially an external supervision and governance function of external stakeholders of the enterprise, and the media also pays special attention to green investment. Due to the increasing media coverage of corporate carbon emissions data, many automobile companies have received warnings or fines from relevant government departments, bringing additional costs to the companies. More and more negative exposure from media impede the reputation of companies that emit excessive Carbon dioxides; Consumers and investors' trust and loyalty to the automobile industry are also waning accordingly. The risk of investment in the automotive industry grows sharply, which discourages many potential speculators. Attaching to the old way of development, realized by many automobile companies, would increase unnecessary risks.

On the contrary, more companies are transforming into new energy vehicles. In recent years, consumers of new energy vehicles such as Tesla and BYD have grown exponentially, and their sales nationwide are gradually increasing. New energy vehicles have a particularly good impact on the environment. New energy vehicles, such as electric vehicles (EVs), have a significant impact on the environment. One of the main benefits of EVs is that they produce zero emissions when running on electricity, which can help to reduce air pollution and greenhouse gas emissions. In addition, The engine noise of traditional fuel vehicles has a negative impact on the quality of life of urban residents. In contrast, the electric drive system of new energy vehicles operates more quietly, reducing noise pollution. Besides, new energy vehicles are becoming increasingly popular around the world.

Governments are offering incentives to encourage consumers to purchase EVs, and many companies are investing in the development of new green technologies.

As more people adopt sustainable transportation practices, the environmental benefits of new energy vehicles will become even more pronounced. By reporting on environmentally friendly companies in the media, new energy vehicles can attract ESG investors by launching more environmentally friendly products and services, which helps improve the company's environmental and social performance and enhance the level of environmental evaluation given by the company in financial institutions. Secondly, introducing green supply chain management to improve the supply chain environment and social performance of enterprises can help enhance their reputation and credibility among ESG investors. By strengthening corporate governance, enterprises can enhance their transparency and fairness, thereby enhancing their attractiveness among ESG investors and helping to improve ESG rating performance. Enterprises with ESG concepts will gradually tend to actively participate in sustainable capital markets, such as issuing green bonds or other sustainable financing methods to raise funds, which are used to support the company's green investment and sustainable business activities, as a result, improving the company's green investment returns. Overall, enterprises can enhance the quality and efficiency of green business, reduce green financing costs, and increase their attractiveness to green investors by strengthening their ESG performance.

## 5. Conclusion

The government has vigorously promoted an optimal environment, giving more enterprises confidence to promote technological innovation and product manufacturing. Enterprises can develop more high-tech and superior products under the pressure of market competition, which may have a positive impact on solving global warming issues faster. Of course, there are still many issues that need us to reflect on.

Firstly, the countries we mentioned in this article are all developed countries, and energy vehicles rely on a combination of energy supplements such as batteries and charging. Currently, the global electricity coverage rate is not 100% (specific data is required), and for areas with incomplete electricity coverage, energy vehicles cannot be introduced. People in these areas may still be using charcoal burning to provide energy. For these regions, more innovation to reduce carbon emissions may be needed.

Secondly, due to strong support for energy vehicles in developed regions, people may buy more cars and drive longer distances. Although the emissions of each car have decreased, the total amount of carbon emissions may increase. So future research should focus more on energy utilization efficiency (complete combustion for hybrid cars) and the development of cleaner and more sustainable energy.

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