

The Global Politics of Climate Change

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Abstract. International Energy Agency (IEA)'s 2021 statistics show that “transportation was responsible for 37% of global CO₂ emissions (IEA, 2021).” The IEA also suggests that “carbon emissions from transportation must decrease by 20% by 2030 to achieve the global net zero target by 2050 (IEA, 2021).” This paper will concentrate primarily on the road sector, which accounts for 76.6% of transportation's carbon emissions and is one of the most dependent industries on fossil fuels. Therefore, the transition to clean energy in the transportation industry, particularly the road sector, is a pressing concern for the whole world. Introducing and promoting electric vehicles would be the most effective and feasible solution to work on in the near future. Compared to conventional gasoline and diesel vehicles, electric vehicles have advantages in both driving and manufacturing for carbon reduction. This paper will analyze the background of the global electric vehicle market and the divergence facing the industry, with an emphasis on China as a case study of a global leader in the industry. This paper will then evaluate the incentive effect of Chinese government policies on the electric vehicle market, investigating whether other countries could learn from China. To predict the future development strategy of China's electric vehicle industry, I also briefly interviewed Mrs. Zhang Ying, the manager of China's largest battery producer, Contemporary Amperex Technology Co., Limited (CATL). She is the most popular candidate to lead the new Shanghai department of CATL. This paper also covers the United States as a representative of countries with a strong will to develop the electric vehicle industry and attempt to reduce their dependence on China. Their prior efforts and future potential paths are assessed.

Keywords: Climate Change; The Global Politics; Electric Vehicle.

1. Background

Statistics of the past five years, from 2016 to 2019, show that the global electric vehicle market has maintained a stable increase, with significant growth in 2021. However, the current situation of electric vehicle development is quite varied across the globe. China and Europe have been the industry leaders from the beginning of the EV business in 2016. These two regions accounted for more than 85 percent of the global electric vehicle market. The performance of other countries was not that remarkable. Nevertheless, they have also achieved constant progress and exhibited a strong ambition in the domestic EV market.

1.1. China

The development of the Chinese EV market was never plain sailing. Instead, it entered a three-year period of stagnation since 2018. Not until 2021 did the market achieve considerable success. As far as I am concerned, the fast growth in electric vehicle sales is attributable to the Chinese government's policies, especially its financial subsidies.

The current fiscal policy in China, which includes consumer and business subsidies, is the most influential factor in China's EV market. The government has introduced a purchase subsidy policy for consumers of electric vehicles that satisfy national standards. The policy includes reduced consumption tax and vehicle purchase tax. Take Tesla Model Y, one of the most popular EVs in the Chinese market, as an example. The price of the vehicle would drop from roughly 300,000 RMB to 230,000 RMB after subsidies. Since its implementation in 2018, this subsidy policy with substantial incentives has increased consumers' desire to purchase electric vehicles. The Chinese government stated that subsidies would decrease annually since 2021, leading to a boom in consumer demand and



EV sales that year. The government also provides direct financial subsidies and tax-reduced policies to new energy battery and electric vehicle enterprises to help them develop businesses and expand global markets. This policy shows the Chinese government's supportive attitude toward electric vehicles at a very early stage, giving enterprises the confidence to invest and develop in the industry, setting China's current leading position in the EV market.

The Chinese government has released a series of obligatory and semi-obligatory non-fiscal policies. The government is rigorous in purchasing traditional petrol and diesel vehicle licenses in most developed cities, including Beijing and Shanghai. On average, licensing auctions would take common Chinese citizens 6-12 months. However, the Chinese government has announced that all consumers who purchase an electric vehicle will obtain a specialized new energy license for free. This incredibly generous policy played a key role in the 2018 growth of the Chinese EV market. Additionally, in emerging cities such as Shenzhen and Nanjing, the Chinese government has issued experimental semi-mandatory policies, such as the electrification of public transportation, including taxis and government vehicles.

1.2. China's Current Policy Stagnation

In conclusion, fiscal policy incentives compensate for the low price competitiveness when the electric vehicle market is still immature. When the market begins to take shape, the government could stop direct interventions but rather regulate it through policy instructions. This development path is ideal for countries with limited budgets and China, which has continued to spend on pandemic controls over the past two years. Although the Chinese government is trying to conform to President Xi's 3060 goal, which includes CO2 emissions peaking by 2030 and being carbon neutral by 2060. Its fiscal policy has been significantly weakened, said Mrs. Zhang Ying, according to the number of government subsidies received by CATL these years. Nanjing is also a victim of the rapid reduction in government funding. The local government originally planned to replace all public transportation with EVs by 2023. However, the strategy is now postponed indefinitely.

An industry dilemma following China's leading position

China is taking absolute leadership in the electric vehicle industry. However, the global supply chain's concentration in one country is not beneficial. The entire world is exposed to an unavoidable risk, especially in light of China's locked stance on Covid-19. These potential risks have prompted other countries to worry about China's leading position in the EV market and try to reduce their dependence on the Chinese industry by any means possible.

1. As stated above, it is difficult for other countries to evaluate whether the Chinese government's attitude toward electric vehicles will remain positive and whether Chinese companies will be able to maintain their current performance without government subsidies.
2. Based on the past two years, once the Chinese government quarantines a region, all economic and production activities will be suspended without notification in advance. The trade risks that other nations would have to face are considerably high because of the unpredictability of the Chinese government and the potential for sudden breakdowns in the supply chain.
3. Chinese firms are also accused of disregarding the human rights of their employees. China has a long history of blocking domestic information, which makes the rest of the world challenging to know the actual circumstances of Chinese real lives and enterprises. Distrust among countries is particularly fatal for climate-related cooperation.

1.3. Exclusive Policies

The United States is one of the countries with the strongest reaction to China's leading position in the EV market. Represented by the Inflation Reduction Act released by Biden in 2022, the U.S. government has continued to release exclusive trade policies to minimize the use of made-in-China batteries and electric vehicles to protect the domestic manufacturing and selling industry. While the

Act's implementation has helped achieve a speedy transition to renewable energy domestically and establish a positive reputation as a climate leader. Countries all over the world, especially South Korea, China, and the European Union, have reacted strongly to the discriminatory policy and distorting subsidies in the ACT, accusing it of negatively impacting global trade cooperation. While governments are compromising on using government subsidies to help domestic businesses compete on the global market fairly, they cannot predict whether some countries will leave the market to prioritize their own economic interest. This typical collective action problem is a major concern for all climate-related cooperation.

1.4. Industry Divergence

“The global electric vehicle battery market is now divided into two parties, lithium-ion batteries in Europe and North America and lithium iron phosphate batteries in China (Electric Vehicle Info, 2021).” The former has better performance and reduces carbon emissions per vehicle. The latter is less expensive and will not experience an energy crisis in the near future since it is cobalt-free. Mrs. Zhang said the Chinese industry widely appreciates the cost-effectiveness of lithium iron phosphate batteries and will continue to put more effort into this field. She also mentions that due to “the continuous accusations of child labor and poor working conditions in the Democratic Republic of the Congo (DRC), the world's largest producer of cobalt (Albawaba, 2020).” A rising number of U.S. automakers are considering lithium iron phosphate battery cooperation with China. For instance, Ford officially announced its technical cooperation agreement with CATL for lithium iron phosphate batteries in 2022. Due to Biden's Inflation Reduction Act, the two companies are considering a new ownership structure in which Ford owns 100 percent of the factory, including the building and infrastructure, while CATL operates the factory and owns the battery production technology. This ownership structure ensures that the batteries can obtain U.S. government subsidies and production tax credits. This time, Ford serves as a model for the rest of the world in determining whether cooperation with Chinese battery producers will improve the cost and performance of electric vehicles. According to Mrs. Zhang, Tesla is now considering the same cooperation mode. However, not all enterprises in Europe and North America have decided to switch to lithium iron phosphate batteries, as it indicates increased dependence on China.

1.5. My Proposals

China Automotive Technology & Research Center Co., Ltd. (CATARC) reported that the electric vehicle market in Europe, North America, and some Asian countries is now facing a critical period when the market penetration is about to reach 16 percent. The period is called "chasm", which means that electric vehicles, as a rather new product, will not be able to reach the mainstream market fast until this chasm is crossed (Geoffrey A. Moore, 1991). Since shifting to electric vehicles is necessary to reach the net-zero goal. My proposed solution will primarily focus on the following three aspects for the world to cross the chasm more quickly and efficiently.

1.6. Government Policies

Government policies remain to play the most significant role in promoting the development of the electric vehicle industry. As a first step, governments should provide as much financial support as possible to the industry. In addition, governments should establish a reliable carbon emission standard system for the car industry as soon as possible to support the implementation of carbon emission management policies. On this premise, leading automobile producers should be pushed to complete the low-carbon transformation, which includes an annual carbon emission announcement to the public and establishing an automobile carbon labeling system. The government is expected to intervene in 2025 to impose a carbon tax on vehicles with higher carbon emissions in order to accelerate the automobile industry's decarbonization. It would be beneficial for governments to learn from China's success with the license policy and the electrification of public transportation. It is important to emphasize that, unlike China's authoritarian government model, other countries should consider

cooperating with local governments to promote the usage of electric vehicles in the whole country more efficiently. There are still a large number of conservatives who are still reluctant to switch to electric vehicles. To help them change their preference, governments should cooperate with businesses to advertise the benefits of electric cars in *Automobile* Sales Service shops and websites. Free test drives, insurance, and other incentive policies are recommended.

2. Construction of Zero-carbon Plants

In addition to carbon released from driving, governments should also consider carbon emissions from electric vehicle-related productions. The construction of zero-carbon manufacturing has become a global trend and is essential to all industries. At the most recent COP27, the certification of the CATL's Yibin factory as the world's first zero-carbon battery factory is of great importance for the electric vehicle industry. The factory features advanced energy conservation and emission-reduction facilities, such as the CFMS intelligent plant management system, which uses artificial intelligence to customize optimal operating conditions for each machine rapidly. The use of driverless vehicles in manufacturing and the factory's policy to encourage employees to use electric or shared vehicles is also worth mentioning.

Intelligent technologies also contribute to addressing the human rights problems of workers in the raw battery material industry, which is now a worldwide concern. Since most of the large producers of noble metals used in batteries are less developed nations, even if they have laws trying to protect workers, they cannot monitor the implementation of these laws.

The ongoing distrust of western countries meant that the situation did not improve much when Chinese businesses took over the cobalt production of DRC. This issue will be greatly solved by promoting the real-time management system in the Yibin factory to the rest. Mrs. Zhang Ying emphasized that Chinese businesses have always been very conscious of their international image. CATL, for instance, has a very notable statement on its official website regarding its care for every employee and its intolerance for illegal employment such as child labor to reduce Western countries' bias. The successful test of the real-time management system in the Yibin factory also meant to show that they have been working on and achieving progress on working environment-related issues.

3. International Cooperation

Although international cooperation is difficult to achieve, it remains the most cost-effective way to reach net zero. Each country has strengths in the electric vehicle industry, from energy production to raw material processing to advanced technology. International cooperation should include cooperation between leading countries, such as China, the European Union, and the United States, as well as assistance to less developed countries. International businesses are greatly interested in cross-border cooperation in the current international environment, yet, there is still no agreement among governments. As the world's political and economic superpowers, China, the United States, and Europe should quickly form an agreement on selling electric vehicles and batteries. China should gradually eliminate its huge financial subsidies to domestic businesses. By increasing products' prices to a reasonable level, China would be able to leave a fair playing field for international competitors.

Subsequently, the United States should no longer release exclusive trade policies against China. The three countries could keep collaborating on better battery options, such as incorporating the advantages of lithium-ion batteries and lithium iron phosphate batteries and sharing new technologies with the world.

4. Conclusion

As the IPCC has warned, time is getting late for the world to react, and delaying action would only increase costs (The World Bank, 2014). According to the statistics published by CATARC in 2021, government policy is proved to have a very significant impact on the reduction of carbon emissions

in the electric vehicle industry. But existing policy is still insufficient to achieve the net zero goal. Transportation, an industry that would increase carbon emissions without intervention, will necessitate international cooperation starting now.

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