

Legal Regulation for New Energy Electric Vehicle Greenhouse Gas Emission

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Abstract: Introduced the background of new energy electric vehicle greenhouse gas emission. Pointed out that on the background of coal power, electric vehicle is not green vehicle. The New Energy Vehicle Production Access Management Regulation in China and the present situation of electric vehicle carbon emission regulations in the United States and the European Union were analyzed. Combining with our national condition, we proposed an evaluation method which greenhouse gas emission in the production process and in the actual course of using were evaluated and analyzed in the form of equivalent CO₂. Electric vehicle greenhouse gas emission regulations were explained mainly from aspects of market access, CO₂ emission trading and carbon taxes.

Keywords: Legal Regulation; Greenhouse Gas Emission; Newenergy Electric Vehicle

1. Introduction

In past year, the production of automobiles in China was 23.72million, sales volume was 23.49million. China has become the world's largest auto production and sales country. Air pollution problem, energy shortages, traffic jam become more serious with the continually increasing number of automobiles. Environmental pollution has been the bottleneck that affects residents' health and economic development. Since 2013, fog and haze occurred frequently in many cities, especially in Beijing and Shanghai, one of the most important factors is automobile exhaust[1]. In the year 2009, CO₂ emission caused by China Road Traffic Department Energy Consumption was about 4 million tons and about accounts for eight percent. In city air about 82%CO, 48%NOX, 58%HC and 8% particulate matter comes from automobile exhaust. Besides the environmental pollution, problems of energy supply in China are serious. Dependence on foreign energy is increasing, especially from 32% at the beginning of this century increased to 59.6% in 2014, approach to 60%.According to prediction dependence on import energy will break through 60%.So the new energy vehicle technology is the solution to the environmental protection and energy challenge [2,3,4].

New energy electric vehicle refers to a kind of vehicle, which is taking the rechargeable battery as power source, driven by the electromotor, and can satisfy every request by rules of road traffic safety[5]. There were no exhaust emission during the driving process, so electric vehicle always is defined as zero emission environmental protection vehicles, but this evaluation mode is unilateral. We should from the whole product life cycle point of view when we evaluating products. When comes to evaluate

electric vehicle greenhouse gas emission, production link and using process should be paid special attention.

According to statistics, during the electric vehicle producing process, the CO₂ emission is much than common automobile. Based on statistic data, which was published by LowCVP, produce a fuel automobile will lead to 5.6 tones CO₂ while produce an electric vehicle will lead to 8.8 tons CO₂.

In China, electric power mainly contains thermal power. This reflects the composition of new energy electric vehicle's power. In this case, when we analyze electric vehicle emission, we shouldn't only focus on the pollution during the course of using. Electric vehicle take electricity as power, if the electric power comes from coal power only, the carbon emissions are 7.3 percent higher than fuel vehicles and SO₂emissions is 2~6 times higher than fuel vehicles. CO₂ and sulfide emission are produced during thermal power generation process. For example, Tesla electric vehicle CO₂emissionsare180g per 100km, while similar fuel vehicles only emissions150g.We can see from the data. Huge electric vehicle isn't environmental protection automobile.

In a word, no matter in the production processnor in the actual course of using, electric vehicle could not be recognized as zero-discharge car.

In the expected 20 years, such tendency of the coal power will remain unchanged. Coal power will take over 80 percent. Compared with China, European energy structure is different. The ratio of coal power had reduced to be 1%.California of American devotes major efforts to develop electric vehicle, but they take hydropower and solar energy as their main electric power. So in Europe and California, they needn't to consider the transfer of pollutants when they develop electric vehicle.

2. Research Status of Electric Vehicle Carbon Emission Regulation at Home and Abroad

The China New Energy Vehicle Production Access Management Regulation was put in practice in November 1, 2007. However, relevant regulations are sketchy at present. It prescribed conditions of new energy electric vehicle access to market, but there were no implementing regulations. Some fiscal and incentive policies have already been flagged. In the final analysis, there are no stringent rules for new energy vehicles and new energy vehicles technical standard, especially deficiency of new energy vehicles emission standard. Which lead to some automobile corporations, even some other industries also inrush into new energy vehicles field, which results in plenty of low level repeated technology. This caused resource waste and excessive greenhouse gas emission, to some extent.

As early as in 2010, the government of the United States announced that, in the American Automobile fuel efficiency Regulations does not support the propaganda slogan that electric vehicle is zero emission automobile which was putted forward by automotive producers, and electric vehicles were evaluated by carbon dioxide emission in power plant. The most representative regulation in America is Automobile Greenhouse Gas Emission Standard which was promulgated by the California Environmental Protection Agency Air Resources Committee, this standard take automobile upper reaches emission into consideration[6]. The implementation of standards can reduce the hydrocarbon and nitrogen oxides from upstream firm, till 2020 will reduce 6t/d, till 2030 will reduce 10t/d.

European Union automobile emission standard is always the research frontier, EU promulgated a large number of law documents, publishing a large number of prerequisite and legislative suggestions for vehicle emission within the European Community in the name of Council of Europe and European Council, the well-known is Euro V and Euro VI[7,8,9]. Those documents scope of application includes passenger wagon, commercial vehicle, etc. But, they didn't give the standard to the new energy vehicle emission.

Professor Sheri Markose in Britain Essex University points out that, only when the electric energy comes from low carbon renewable energy, the electric vehicle can play an important role in greenhouse gas emission reduction. Otherwise electric vehicle is just transfer the pollution from driving to power generating. It doesn't help for carbon dioxide emission reduction.

3. Research on Legal Regulation of China Electric Vehicle Greenhouse Gas Emission

Nowadays, greenhouse gas mainly produced in the production process and the actual course of using. Actually, the greenhouse gas produced in the actual course of using had already transferred to power generating. So we should propose an evaluation method which greenhouse gas emission in the production process and in the actual course of using were evaluated and analyzed in the form of equivalent CO₂. The greenhouse gas emission of new energy vehicle should be analyzed by the whole life cycle, form a unified evaluation index system. Set up a mathematical model converts greenhouse gas emission to CO₂ emission, which is so called equivalent CO₂ emission. Compare the electric vehicle equivalent CO₂ emission and fuel vehicles equivalent CO₂ emission, find out the equilibrium point which we can define the electric vehicle as environmental protection automobile. What's more, this equilibrium point should be discussed in the market access system.

With reference to foreign successful laws and regulations, combining the domestic idiographic instance, put forward some suggestions of establishing relevant acts and laws, in the main stage of greenhouse gas emission in electric vehicle life cycle. For instance in the production process, we can take equivalent CO₂ emission in the whole life cycle as market access principle, cull technology laggard enterprise.

On the using phase, give full consideration to the regional diversity. The electric power combination of each province is not the same. So when we driving an electric vehicle the greenhouse gas emissions caused by electrical power are different. We can accord the location and the combination of each province making different solutions. According to the current situation of emission permits trade of carbon in China, introduce emission permits trade of carbon to the entire electric vehicle corporations and related enterprises. Electric vehicle greenhouse gas produced in the consumer using process should be assigned to electric vehicle corporations. Encourage electric vehicle corporations and upstream industry implement widely technical innovation to improve level of producing technology and improve management level by emission permits trade of carbon, improving industrial environmental protection level through economy lever and market mechanism. Adjusting electric vehicle production with carbon dioxide emission trading, what's more carbon taxes have been frequently advocated as a cost effective instrument for reducing carbon emissions, the carbon taxes shouldn't be ignored when we control the market. CO₂ emission trading and carbon taxes showed different value in the detection of control market, and they have complementary advantages. Emission trading has the environmental benefit, flexibility and efficiency. Emissions trading can do benefits designing definite carbon emission index for electric vehicle corporations. On the otherwise, for the traditional automobile

manufacturer, implemented carbons taxes can regulate the development of fuel vehicle or encourage the fuel vehicle manufacturers improve technology or turn to electric vehicle, promote the electric vehicle development. On the other hand, improve the consumption environment, to adjust consumption policy and induce proper

consumption concept. Encourage consumer buying miniature electric vehicle with the help of regional regulations and policy guidance, avoid excessive consumption. The research idea is shown in Figure1.

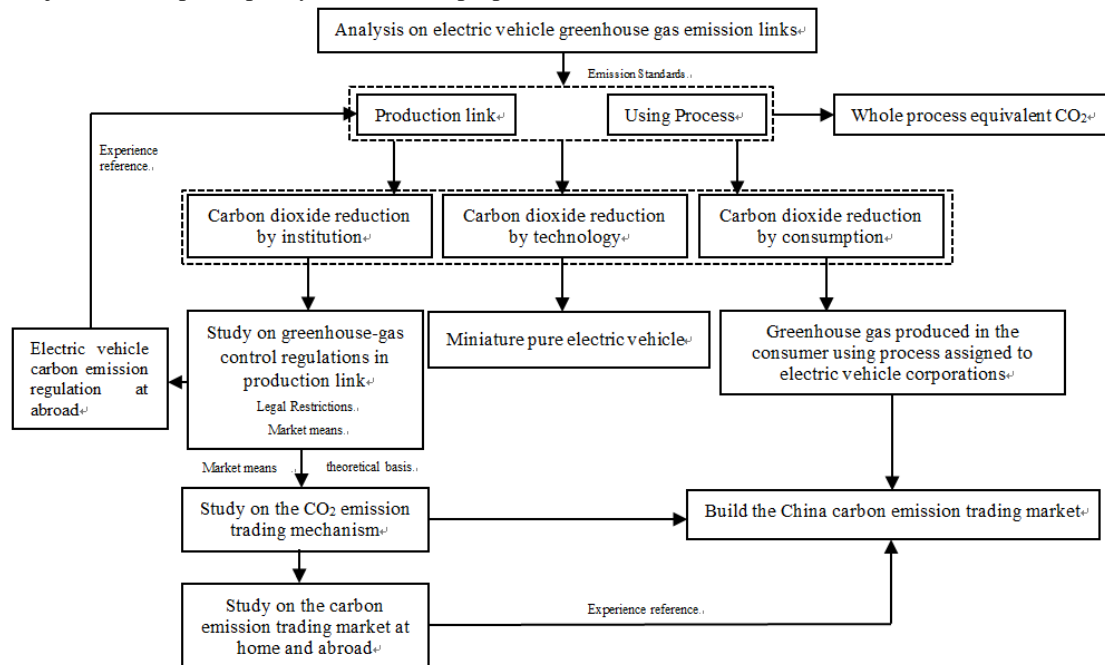


Figure 1. Research idea

4. Summary

Study on the new energy electric vehicle legal regulation from the view of greenhouse gas emission conducive to perfect technical standard of New Energy Vehicle Production Access Management Regulation, do benefits to normative development of China new energy vehicle, green establish brand image of low carbon, energy saving and environmental protection, improve competitiveness and occupy more markets. One day the fuel automobile market and the electric vehicle market are of equal importance. Legal regulation has important significance for jumping development and environmental protection.

5. Acknowledgment

This work was supported by the 2015Shandong Province Planning Topic of Educational Science for Adolescents, Academic Subject for College Students(15BSH088); Science and Technology Innovation Fund of Shandong University of Science and Technology for Postgraduate(YC140104), The authors would like to thank the anonymous reviewers for their helpful suggestions, which greatly improve the paper.

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