

# *The Interaction Between the Implementation of Environmental Policy and the Sustainable Development of Financial Market*

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**Abstract:** Environment is the material basis for people's survival and development, but with the rapid development of the economy, especially the expansion of some industries based on the use of environmental resources (such as mining, iron smelting, real estate enterprises and so on) will inevitably have an impact on the environment and produce environmental footprints in production. How to reduce the pollution and damage to the natural environment caused by these environmental footprints without affecting the development of enterprises has become an important issue to be solved in contemporary society. Through the interactive study of environmental policy and sustainable development of the financial market, this paper aims to provide a feasible reference for this topic. However, environmental policy involves many aspects, such as energy, soil, oceans, rare animals and nature reserves. This article mainly discusses policies aimed at energy and waste emissions. This paper uses the research methods of theoretical analysis, literature analysis and review, taking the rise and fall of stocks driven by environmental policies as a starting point, this paper explores the effects of relevant environmental policies on the industrial chain of new energy industries; at the same time, it also quotes Environmental, Society and Governance(ESG), Corporate Society and Responsibility(CSR) and other related terms to discuss the reaction of enterprises and investors to environmental policies in the financial market. This paper finds that environmental policy is conducive to the sustainable development of the financial market, and the development of the financial market can also provide suggestions for the formulation and implementation of environmental policy.

**Keywords:** environmental policy, "Porter Effect", corporate citizenship, environmental information disclosure

## 1. Introduction

In the short term, environmental policies may restrict the development of some industries like heavy polluting industries which include thermal power, iron and steel, cement, electrolytic aluminum, coal, metallurgy, chemical, petrochemical, building materials, paper, brewing, pharmaceutical, fermentation, textile, tanning and mining. However, in the long term, the implementation of environmental policies and the development of financial markets are mutually reinforcing. To be more specific, the implementation of the "double carbon" target has been promoting the development

of China's new energy industry chain that includes the upstream industry of the new energy industry mainly including solar energy, photovoltaic energy, water energy, wind energy and other new energy and renewable energy power generation equipment manufacturers, as well as these new energy and renewable energy component manufacturers; the midstream of the new energy industry, as an important link of the whole industry chain, mainly including energy suppliers of hydrogen energy, photovoltaic power, wind power and hydropower; the downstream of the new energy industry mainly including public and personal applications such as new energy vehicles, hydrogen refueling stations, charging piles, and power transmission.

Enterprises should not only be practitioners of environmental policies but also take the initiative to assume the role of corporate citizens and devote themselves to the formulation of environmental policies. At the same time, as an important subject of the financial market, investors' emphasis on environmental protection and their expectations and choices for enterprises can prompt enterprises to pay more attention to environmental responsibility, thus promoting the implementation of environmental policies.

This paper illustrates the interaction between environmental policy and financial markets. The data mentioned in this paper mainly comes from the Choice terminal. In the social context of environmental governance, this paper provides a reference for how the government can motivate companies, lead enterprises and investors, and exert its influence. At the same time, in terms of corporate governance, this paper provides suggestions on how to take into account their own interests in fulfilling environmental responsibility. It provides a thinking direction for scholars studying corporate finance and sustainable development.

## **2. Environmental Policy Drivers**

### **2.1. Limits on Some Heavy Polluting Enterprises in the Short Term**

China is one of the countries that rely on the traditional manufacturing industry to achieve rapid development, how to reduce the environmental footprint produced by these manufacturing industries, such as waste water and waste gas emissions, has always been an inevitable part of China's environmental treatment. China has also introduced many policies to limit the increase of these pollutants.

Sewage charges for industrial coal combustion came into effect in 1992 and for other pollutants in 2003. However, there are a series of factors restricting its effectiveness: the unit emission fee is lower than the marginal emission reduction cost, and enterprises have no incentive to reduce emission; enterprises only pay sewage charges for one (before 2003) or three (after 2003) pollutants at most, and there is an upper limit of sewage charges. Local governments tend to protect local enterprises, they pay more attention to the short-term benefits rather than the sustainable development of the local economy and enterprises, which leads to bargaining in the implementation of sewage charges. To solve the above problems, China implemented *the Environmental Protection Tax Law (EPTL)* on January 1, 2018, converting sewage charges into sewage taxes and abolishing the upper limit of sewage charges.

The EPTL helped environmental protection but increased the production costs of traditional manufacturing industries and limited their development to a certain extent. Take the coal chemical industry concept plate as an example, after the promulgation of the environmental tax law, the average rise and fall of the plate in 2018 is -35.29%, which reflects that the development of the plate has been affected in the short term. These traditional manufacturing industries that emit pollutants also have to pay for their excessive emission of pollutants by paying sewage taxes.

To be more specific, choosing Inner Mongolia Dian Tou Energy Corporation Limited to reveal the data in Figure 1, their costs on pollution discharge costs rocketed from 2017 to 2018 since the Sewage Charges turned into Sewage Taxes:

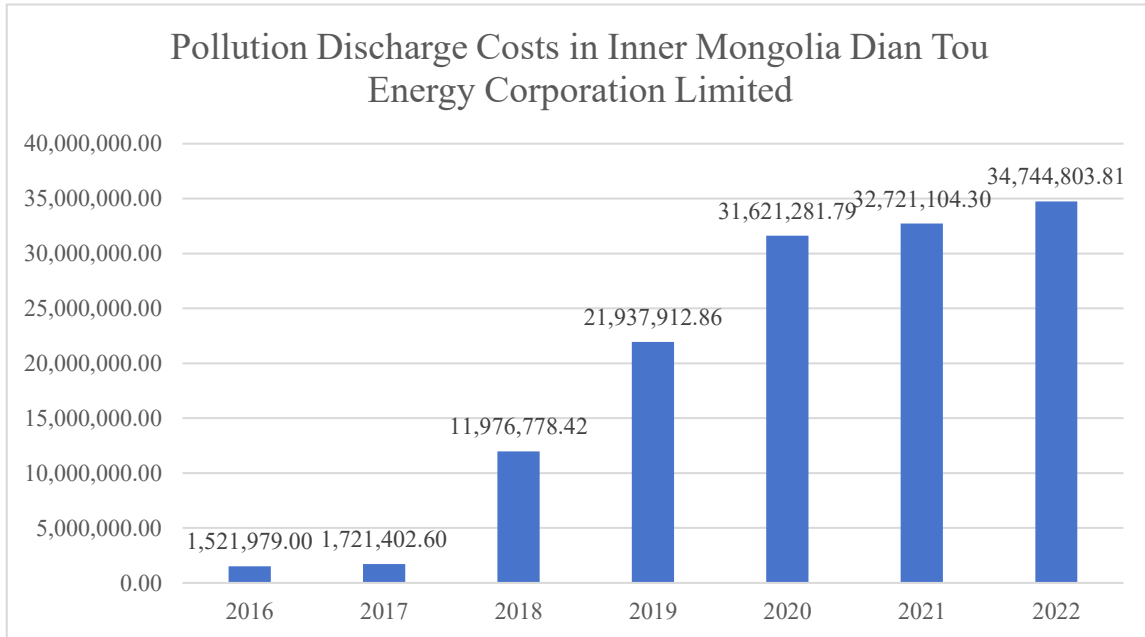


Figure 1: Pollution Discharge Costs in Inner Mongolia Dian Tou Energy Corporation Limited [1].

Furthermore, after the official announcement of the carbon peaking and carbon neutrality goals, China has formulated a series of guidance documents to promote the use of new energy, as well as many policies for energy conservation and emission reduction. These policies are not very friendly to enterprises that use fossil energy for production, leading to an increase in their production costs. For example, the average rise and fall of chemical raw material sector concept stocks since September 2020 is -35.08%, and that of coal chemistry sector concept stocks is -32.33%.

## 2.2. Promotions on Financial Markets in the Long Term

### 2.2.1. The “Porter Effect” of Strict Environmental Protection Policy

Strict rules and regulations make many enterprises have to abide by or find ways to achieve green development and green innovation in order to improve their performance and reduce the loss of production efficiency and the increase of costs caused by environmental policies. Specifically, environmental regulation significantly mitigates the scale efficiency and technical efficiency of regulated enterprises. However, it stimulates regulated enterprises’ technological innovation and improves their factor allocation efficiency [2]. In order to achieve the long-term goal of sustainable development, enterprises must improve the ability of green technology innovation, speed up the transformation of the original polluting mode of production, use the economic compensation effect, and properly deal with environmental problems, so as to improve profits and market competitiveness.

The key research object of Wang Chao et.al is the total factor productivity (TFP) of enterprises, which explores the development of heavy polluting industries after the implementation of the *Environmental Protection Tax Law (EPTL)* in 2018 [3]. Overall, EPTL increased the TFP of heavily polluting enterprises by 3.4%, and the results confirmed the “Porter effect” in the context of China.

Based on the panel data of A-share listed companies in Shanghai and Shenzhen stock markets from 2006 to 2019, YU Yongze and LIN Binbin investigated the impact of overall emission reduction

target constraints on enterprise technological innovation, in order to test the existence of Chinese-style “Porter Hypothesis”. Under the fixed effect of city, year and individual, the number of invention patent applications and the number of invention patent grants are taken as dependent variables, and the estimated coefficients of SO<sub>2</sub> emission reduction targets are significantly positive at 1% and 5%, respectively [4]. The above results show that when facing the high-intensity SO<sub>2</sub> emission reduction targets set by the government, the technological innovation level of enterprises has been significantly improved in terms of innovation quantity and innovation quality, and the hypothesis has been effectively verified.

### **2.2.2. The Promotion of New Energy Industry**

The new energy industry is one of the industries most related to the environmental policy discussed in this paper. As the international community pays more and more attention to environmental protection, energy saving and emission reduction, new energy, as a substitute for fossil energy, has great potential for development. Because the new energy has the characteristic of not destroying the environment and is consistent with the policy goal of protecting the environment, it has received great attention in contemporary society.

In September 2020, China announced the implementation of the “double carbon” target, which directly contributed to the rapid growth of clean energy sectors, such as solar, wind and lithium batteries sectors (upstream of new energy vehicles). From September 2020 to now, the average rise and fall of the three sectors is 27.52%, 26.45% and 21.42%.

## **3. The Counteraction Force of Financial Market Development**

### **3.1. The Role of the Enterprise**

#### **3.1.1. Practitioner**

As one of the main components of the financial market, the enterprise is inevitably subject to the jurisdiction of the law. However, from the perspective of enterprises, many enterprises, especially some large enterprises, need to invest a lot of costs that are higher than the administrative punishment to reduce pollution emissions, which leads to the unwillingness of some enterprises to comply with their environmental and moral responsibilities, and also hinders the implementation of environmental policies. In order to promote environmental protection, enterprises should be regarded as the subjects of governance instead of only the objects.

#### **3.1.2. Subject**

Corporate Social Responsibility (CSR) has gradually become the theoretical basis for enterprises to participate in social governance. As a matter of fact, many enterprises have consciously fulfilled their social responsibilities in the prevention and control of the epidemic. With sensitive information research and judgment, rapid decision response, and professional and efficient organization and management ability, they show extremely high operational efficiency and become an important force of social governance.

Corporate citizen is the extension of the theory of corporate social responsibility. It is generally believed that the support of a country mainly depends on three major forces, the government, enterprises and social organizations. Not only do enterprises play an important role in the financial market, they are “citizens” of the country. In other words, the meaning of the word “citizen” in enterprises means that enterprises have the right and responsibility to contribute to the general development of society.

Taking the iron and steel industry with serious environmental pollution as an example, it should pay attention to the following three key points in environmental governance:

The transparency of environmental governance information will be higher and higher. In the future, iron and steel enterprises may need to disclose the names of major pollutants, discharge methods, implementation standards, as well as the construction and operation of pollution prevention facilities through enterprise websites and other channels, and be responsible for the authenticity of the information. With the three-dimensional comprehensive monitoring of gas, water and waste in the future, and the continuous upgrading of the information construction of iron and steel enterprises, the environmental quality can be better improved.

The boundary of the responsibility of the subject of pollution control will be clearer. As a legal person, iron and steel enterprises are the main body of environmental pollution control, and enterprises should have complete autonomy in the choice of pollution treatment technology, which forces enterprises to strengthen the construction of internal environmental governance responsibility system. The Technical Guide for Ultra-low Emission Transformation of Iron and Steel Enterprises issued by China Environmental Protection Industry Association recommends that iron and steel enterprises set up independent environmental protection departments, and the determination and application of any pollution control process should clarify the main body of responsibility within the enterprise. Although iron and steel enterprises have a high willingness to manage the environment, they should not invest blindly. They should fully communicate with the local government authorities from the perspective of process environmental protection and energy environmental protection, and should have their own planning and implementation steps for enterprise environmental governance to avoid enterprises from sacrificing economic benefits to cater to general strategic guidance. This requires enterprises to actively become corporate citizens, give full play to the role of “A community with social governance”, seriously analyze their own rights and responsibilities, and independently compile their own strategies to undertake environmental protection responsibilities and then balance the impact of internal development and environmental governance.

The continuous strengthening of *The Extended Producer Responsibility System*. *The Extended Producer Responsibility System* refers to the system that extends the resource and environmental responsibility of producers to their products from the production link to the whole life cycle of product design, circulation and consumption, recycling and waste disposal. This system is an effective system explored and implemented in the field of electrical and electronic products in China, and the competent government departments think that it should be copied and popularized. For an iron and steel enterprise, it could be determined to some extent how many tons of steel it produces, how many raw materials and energy media it consumes, how many industrial by-products it produces and how many pollutants it emits. However, in the early years, China’s iron and steel industry was dominated by “extensive development”, and the damage to the environment has not yet been solved and treated. Iron and steel enterprises should first solve the problem of the treatment of existing pollutants, and at the same time focus on reducing the environmental pollution in the current production process.

### 3.2. The Options of Investors

Investors are the most important subjects among stakeholders, and their investment choices are decisive factors for the development of financial markets. In recent years, with the population of Environmental, Society and Governance (ESG) investment concept, investors have paid more and more attention to the sustainable development ability of enterprises. The environmental responsibility of financial investment and strategic investment of listed companies should also be paid attention to, so the environmental data of directly or indirectly participating enterprises are included in the A-share Green Report project database. In addition to some common factors including enterprise management

ability, financial condition, industry competition, environmental risk has become one of the important business risks of listed companies. Environmental risk is related to corporate development and corporate image. Therefore, whether an enterprise has undertaken the corresponding environmental responsibility has increasingly become the standard for investors to consider investing an enterprise.

Evidence from studies in the United States and Canada suggests that capital markets could respond to the release of information, and that countries that pollute more are more affected by the release of information than countries that pollute less. This conclusion appears to be the result of regulators' willingness to take strong enforcement action and the possibility of capital markets ranking and comparing companies' environmental performance [5]. However, the choice of investors will be affected by information asymmetry and information disclosure in any country. The content of environmental information disclosure will affect investor sentiment. When the environmental information disclosed is more positive, investor sentiment is relatively stable, and investors have more trust and loyalty to enterprises, and the risk of stock price crash is lower. When the environmental information disclosed is relatively negative, investor sentiment fluctuates greatly, trust and loyalty to enterprises begin to decline, and the risk of stock price crash is higher [6].

At the same time, the choice of investors can also react to information disclosure and promote the improvement of environmental governance policies. In order to avoid a crash caused by a decline in investor confidence in the stock market, the government needs to further enhance the transparency of environmental information disclosure. The improvement of transparency prompts enterprises to pay more attention to environmental protection, and requires enterprises to consciously assume social responsibilities, cultivate themselves as corporate citizens, and promote environmental policies to truly play their governance role.

#### 4. Conclusion

This paper explores how environmental policy and financial markets interact under the larger topic of environment, society and governance. The conclusion is that environmental policy is conducive to the sustainable development of the financial market, and the development of the financial market can also provide suggestions for the formulation and implementation of environmental policy. However, what is not covered in this paper for the time being is whether investors tend to invest in enterprises with good environmental performance after responding to environmental information released by regulators or environmental performance information of enterprises. This question still needs more data and cases to support it. Future research may focus on how to achieve a fully coordinated and sustainable development between environmental policy and financial markets.

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