



Capital Path of Green Revolution: Green Finance and Strategies of High Energy-consuming Enterprises

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Abstract. As the global climate problem grows worse and worse, green finance has become the focus. High-energy-consuming companies are in a situation of high emissions, and their green transformation is extremely urgent. This study systematically analyzes the transformation path of high-energy-consuming companies and puts forward practical and feasible suggestions. The study result indicate that the transformation paths include financial support which is the inland free trade zones promote financial reform to guide the capital; the carbon market and the carbon pricing mechanism help power generation enterprises reduce emissions and optimize the industry structure; For institutional innovation, such as low-carbon pilot projects, the transformation of environmental protection fees into taxes, and the construction of green finance pilot zones. This study recommended starting from strengthening technological innovation, empowering financial services, innovating green financial products, and optimizing government policies. It also provides practical schemes for the transformation of high-energy-consuming companies in order to help energy saving and emission reduction, also plays an important role in boosting the sustainable development in green finance. What's more, it is of great significance in optimizing the allocation of financial resources and achieving carbon neutrality goals.

Keywords: Green Finance, High-energy-consuming Enterprises, Green Transformation, Carbon Emissions, Policy Support.

1 Introduction

Green finance is a financial practice model which combines ecological protection and sustainable development concepts into financial decision-making and operations. The key lies in incorporating ecological environment protection and climate control into the funding allocation mechanism, thereby guiding funds to flow into eco-friendly projects and helping to achieve sustainable development goals. Green financial products mainly include green bonds, green securities, green funds, green insurance, etc [1]. It is a green financial market innovation and an indispensable means to achieve green and low-carbon economic development.

Green finance emerged globally at the end of the 20th century. As the climate problems become increasingly severe, governments and international organizations are gradually realizing the positive role of green finance in ecological conservation. The

EU has taken the leading part in implementing green finance strategies and has established multiple green finance frameworks, such as the EU Sustainable Finance Label and Green Bond Standards. The United States, Japan and other countries have also carried out key practical activities in green bonds and green funds. The development of green finance in China started relatively late, but its development is astonishing. In 2016, the People's Bank of China issued the Guiding Opinions on Building a Green Financial System, which laid a policy foundation for the development of green finance. Since then, the number of financial products such as green bonds and green loans in China has sharply increased. Many cities have established green finance pilot sites. In 2020, China proposed the strategic goal of "peak carbon emissions and carbon neutrality", which further promoted the development of green finance [2].

High-energy-consuming companies play a very important role in the economy. Industries like steel and chemicals, which use a lot of energy, are the basic support for a country's economic growth. Steel companies make a large amount of steel. This steel is a key material for building infrastructure in the construction industry. It helps build and develop cities. Chemical companies produce basic chemical materials. These materials are used a lot in light industries such as medicine-making, plastics, and textiles. Whether it's common plastic products in daily life or difficult drug research, they all need chemical products. Also, high-energy-consuming companies create many jobs. They cover different jobs, from skilled professionals to workers on the production line. This helps a lot with employment in society and keeps the economy stable [3].

However, these companies use a lot of fossil fuels like coal and oil when they produce things. A report from the International Energy Agency says that high-energy-consuming companies produce a large part of the world's carbon emissions. The large amount of greenhouse gas they give out makes global climate change worse. Extreme weather is happening more often. This seriously upsets the balance of ecosystems and puts the human living environment at risk. So, it's really important for high-energy-consuming companies to cut down on their emissions. This is not just something companies must do to be responsible and protect the Earth. It's also a must to follow the global trend of green development, become more competitive in the world, and help the world reach its carbon neutrality goals [4].

In this situation, green finance, which helps companies go green, is getting more and more attention. High-energy-consuming enterprises are key in the green transformation because they use a lot of energy and produce many carbon emissions. This study is about helping high-energy-consuming enterprises change. It lists ways like financial help, carbon markets, pricing systems, new rules, and green finance trials. For financial help, it focuses on guiding money flow and changing credit resource allocation through financial reform in inland free trade areas. The carbon market helps power generation companies cut emissions and improve the industry structure. New rules include low-carbon projects, environmental tax changes, and new ideas in green finance trial areas. At the same time, suggestions are given from four sides. These are: boosting tech innovation, improving financial services, making new green financial products, and bettering government policies. This study is important as it gives different ways and ideas for high-energy-consuming enterprises to transform. It helps them use less energy, cut pollution, be more competitive, and make the economy grow green and sustainably. It also

helps with using financial resources well, improving industry structure, and reaching carbon neutrality goals.

2 Path

2.1 Financial Support

In terms of financing channels, China's inland free trade zones have actively pushed forward financial reforms. They've made many innovative achievements in areas like SME financing, fintech, and green finance. In particular, in green finance, they focus on creating new green bonds and green debt financing tools and setting international green finance standards. This guides financial institutions to put money precisely into special areas such as energy conservation, environmental protection, and pollution control to help high-energy-consuming enterprises transform.

On the one hand, after high-energy-consuming enterprises turn into green ones, it's much easier for them to get financing. They can obtain financial resources more easily. With these resources, enterprises can drive their own green transformation and become more competitive. By buying energy-saving and emission-reducing equipment and other self-incentive measures, they can finally reach their pollution-reduction goals. At the same time, inland free trade zones have increased credit resource allocation. They lean towards low-energy and low-pollution enterprises when distributing financial resources. Before, heavy chemical industries like steel and oil, which are high-energy-consuming, high-polluting, and have high-value collateral assets, could get financial resources more easily. Now, this situation has changed. This has also helped high-energy-consuming enterprises transform to some degree [5].

2.2 Carbon Market and Carbon Pricing Mechanism

Since China's national carbon market was launched, the first batch of 2,162 included power generation companies have cumulatively reduced carbon emissions by about 200 million tons through carbon trading. The national carbon market depends on a reasonable quota allocation and clearance mechanism to enhance enterprises' responsibility for emission reduction. Take the "Total Quota and Allocation Plan for the National Carbon Emission Trading Power Generation Industry in 2023 and 2024" as an example. It allocates quotas for free using the baseline method and encourages enterprises to cut emissions. According to the data, in 2023, the carbon emission intensity of thermal power plants in China decreased by 2.38% compared with 2018. The carbon emission intensity per unit of electricity decreased by 8.78%, and the annual average carbon emission intensity of heating in the power generation industry dropped by 2.5%. These figures strongly demonstrate that power generation enterprises have reduced about 200 million tons of carbon emissions through carbon trading and other measures, making contributions to carbon reduction efforts [6].

2.3 Institutional Innovation and Green Finance Pilot

In 2010, China officially initiated effective low-carbon city pilot projects. These projects have, to some extent, spurred high-energy-consuming enterprises to carry out

green innovation, especially in some high-carbon industries and many non-state-owned enterprises in terms of technological innovation. The transformation from environmental protection fees to environmental taxes is a significant move in China's environmental tax system reform. It greatly promotes the green transformation of heavily polluting enterprises [7]. In 2021, the People's Bank of China promoted the expansion of green finance reform pilot areas. These areas have become "experimental grounds" for green finance policy innovation. They actively explore differentiated green credit policies and innovate the regulatory indicator system for green finance. Meanwhile, they vigorously innovate in green financial products and services. For example, they introduce green supply chain credit and special green bonds. They also strive to improve the green finance market mechanism, build a trading platform, standardize the criteria, and promote the efficient allocation of green financial resources.

3 Suggestions

3.1 Strengthening Technological Innovation

Technological innovation is crucial for high-energy-consuming enterprises to go green. Right now, some of these enterprises don't have strong innovation abilities. They need to spend more on research and development. They should figure out green technologies that fit their own business, and team up with universities and research centers to get past tough technical problems. The country should also put together projects to help businesses, universities, and research groups work together and give them technical help. At the same time, because the technology market isn't perfect, the government should set up a place where people can trade technology. It should get rid of obstacles and match green technologies with what enterprises need. Besides, digital technology offers a new way for high-energy-consuming enterprises to change. They can use it to make production better, use less energy, manage how they affect the environment with IT, give data to help make policies, and show they're green by sharing information [7].

3.2 Empowering Financial Services

Financial institutions need to improve their financial services urgently to promote the green transformation of enterprises. Currently, high-energy-consuming enterprises have heavy assets and slow growth, and they face many challenges during the green transformation. Financial institutions should make good use of financial technology actively, optimize the enterprise evaluation system, and innovate investment and financing models. They should strengthen online financial services and build a financial ecological chain covering the whole life cycle of enterprises. Through data sharing and analysis, a system of "prospect evaluation + financing assistance + ecological services" should be established. At the same time, financial institutions should cooperate with fund companies, insurance companies and guarantee companies, innovate the information sharing mechanism, design green financial products, and optimize financing guarantee services to provide strong support for enterprises in tackling key technical problems [8].

3.3 Innovation of Green Financial Products

Come up with new ways for green loans to make money. Make special credit products for different high-energy-consuming industries, depending on how they're changing. For example, give special loans for energy saving and cutting emissions to steel companies for their R & D. This can help them buy good environmental protection equipment, improve their production, and use less energy and make less pollution. Based on traditional green industries, give more credit to key areas of high-energy-consuming enterprises' green change, like green manufacturing, using new energy, and researching new materials. Get involved in the carbon trading market. Look into new carbon finance services like carbon futures. Offer carbon asset management and carbon trading financing to high-energy-consuming companies. Make "green + inclusive" products. Lower the cost and make it easier for small and micro high-energy-consuming enterprises to get money for green transformation. This will help all high-energy-consuming enterprises go green [9].

3.4 Government Policy Optimization

The government can make a complete set of money-related policies that match the carbon-neutral goal. Use active money-structure policies and zero-carbon prudential rules. This can help guide financial institutions. They can then offer good financial services and new investment and financing ways for high-energy-consuming enterprises' green change. For example, using policies to tell financial institutions how to change the money they give to high-energy-consuming enterprises, especially those changing to be green [10].

4 Conclusion

This study sums up ways for high-energy-consuming enterprises to become green. The utilization of financial changes in inland free trade zones to allocate funds to transformation projects is one such way. Additionally, the carbon market and its pricing mechanism can be utilized to assist power-generation companies in reducing emissions and optimizing the industry structure. The initiation of low-carbon projects, the conversion of environmental protection fees into taxes, and the establishment of green finance pilot zones and other new systems can strongly support the transformation. Based on this, ideas are proposed from different aspects such as technology, finance, products, and policies. These involve enhancing technological innovation, improving financial services, creating new green financial products, and perfecting the government's policy system. This research provides practical methods for high-energy-consuming enterprises to transform. It enables them to save energy, cut emissions, and promotes the growth of the green economy. It is important for the effective use of financial resources and the attainment of the carbon-neutral goal. It is expected to contribute to global climate management.

For future research, methods like system dynamics models can be adopted to demonstrate how green finance and industrial transformation interact. At the same time, more

interdisciplinary efforts should be carried out. The combination of methods from environmental economics and engineering technology can offer more comprehensive theoretical support for high-energy-consuming enterprises to develop sustainably.

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