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A Research on the Development Status of Green Finance in China

Zixin Luo[1,a,*]

[1]*School of Chemical Engineering and Energy Technology, Dongguan University of Technology, Dongguan, 523808, China*
a. luo.zixin@seafameedu.org
**corresponding author*

Abstract: China's green finance has become one of the important tools to promote sustainable economic development. This review first analyzes the environmental, social and governance (ESG) situation of chemical companies, which are high-energy-consuming and high-pollution companies that mainly use green financial instruments. Carbon emissions and pollutant emissions, safety of employees and surrounding residents, and legal and ethical issues were discussed to illustrate the chemical industries' situation. Then, this paper focused on the application of three green finance tools, green financing, green bonds and green insurance in Chinese capital market. Finally, this paper introduces the green financial incentive policies launched by the Chinese government and where the policies still need to be improved. Through the review of the above aspects, this paper concludes that China's green financial development has made significant progress, but it still needs to keep improve green financial products and face the challenges of more applications in other industries.

Keywords: Green Finance, Environmental, Social and Governance (ESG), Incentive Policies

1. Introduction

After decades of industrial development, China has built a complete industrial system, is also finish shift from labor-intensive production to technology-intensive production. While the rapid economic development makes our lives better, it also leads to many environmental problems, such as various pollutions and a waste of resources. The statistic shows that China now is the world's largest emitter of carbon, comprising about 27% of total global carbon dioxide emissions in 2022. Expect for the ordinary excess carbon dioxide emissions, the pollutant from chemical industry is a serve problem. When manufacturing new chemical products, some new pollutants may be produced. The unclear toxic action mechanism of new pollutants and the lack of efficient purification technology also hinder the treatment process of new pollutants. For some highly polluting products, it is difficult to develop alternatives for some chemical products. It is clear that China is still confronted with the challenge that maintaining sustainable economic development and protecting the environment at the same time.

As per the United Nations Environment Programme (UNEP), green finance entails amplifying the influx of financial resources—spanning banking, micro-credit, insurance, and investments—from both public and private sectors as well as not-for-profit entities towards sustainable development priorities. Distinguished from conventional finance, it accentuates the safeguarding of the environment and the judicious utilization of resources. Green finance stands as an emerging financial

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mechanism adept at harmonizing economic progress with environmental conservation. Its potential to foster sustainable economic advancement has led to its widespread adoption across various sectors in China, particularly within the chemical industry. This sector holds significant importance as a foundational raw material industry and a cornerstone of the nation's economy, albeit it is notorious for its high energy consumption and severe pollution issues. So now chemical industries pay more attention to ESG. There are multiple works of literature shows that the green finance does help the chemical industries more eco-friendly. Utilizing provincial-level data spanning from 1995 to 2017, this study delved into the impact of technological advancements driven by green finance within the industrial sector, as well as the influence of natural resource rents, financial development, and energy consumption on carbon emissions [1]. In addition to the reduction of carbon emissions, a study focusing on highly polluting listed companies in China's Shanghai and Shenzhen A-share markets from 2011 to 2020 revealed that green finance notably elevated the level of social responsibility among these entities, particularly regarding environmental aspects of ESG [2]. Moreover, the Chinese government's earnest commitment to environmental concerns is evident in its enactment of policies aimed at fostering the growth of green finance since 2015, which has made significant strides in aligning economic and environmental objectives. Despite the facilitation of green economic expansion by green finance, challenges persist concerning the efficacy of green bonds and loans.

This article reviews the development status of green finance in China. First, it introduces the problems existing in chemical enterprises, one of the industries with the most serious pollution emissions, from the perspective of ESG. Second it will introduce the current application status of green finance including green investment, green bonds and green insurance products in China. Third, also introduced China’s relevant green finance policies and areas that still need to be improved in green finance.

2. ESG Status of Chemical Companies

Green finance assumes a crucial role in directing capital towards the advancement of resource-conserving technologies and industries dedicated to ecological preservation, thereby prompting enterprises to prioritize environmentally sustainable practices in their production processes. Its primary aim is to empower enterprises to pursue sustainable development while steering clear of short-term profit-driven speculation. Therefore, it is necessary to know the ESG situation of a specific industry so that green finance can be more efficient according to the actual situation. The following will take the chemical industry, which is known to have high pollution and carbon emissions, as an example to introduce the ESG situation of chemical industry.

2.1. Environmental (E): Carbon Emissions and Pollutant Emissions Issues

In the last decades, the global emission of carbon dioxide shows a growing trend. Due to the covid-19 pandemic around the world, the global economic production is in a semi-stagnant state. So emission had a significant decline. China’s carbon dioxide emission takes up approximately 30% of the carbon dioxide emissions worldwide [3]. The carbon emissions of Chinese chemical industry account for 6% of the country's total carbon emissions in 2020, accounting for a lesser proportion of the country's total carbon emissions. Companies still have to make a lot of efforts to achieve the goal of carbon peaking and carbon neutrality. It is worth noting that many companies are struggling to achieve low-carbon production and technology upgrades due to insufficient capital and technology. So we can use the green finance to let more capital invest in developing greener and energy-saving technologies.

In terms of the pollutant emissions that produced by the chemical industries, combustion activities in chemical production processes usually produce large amounts of atmospheric pollutants, such as

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sulfur dioxide (SO_2), nitrogen oxides (NO_x) and volatile organic compounds (VOCs). These pollutants are produced due to the combustion of fossil fuels and emissions during chemical reactions. The wastewater generated during the chemical production process may contain various organic and inorganic matter, such as heavy metal ions, ammonia nitrogen, cyanide, etc. These pollutants often come from by-products of production processes, wastewater discharges, and activities such as equipment cleaning. Untreated wastewater may cause serious pollution to the water environment and adversely affect aquatic life and human health [4]. In addition, solid waste generated during chemical production is also an important environmental issue. These solid wastes include waste, residues, discarded packaging materials, etc., which may contain toxic substances and harmful chemicals and need to be properly treated and disposed of to prevent harm to the environment and human health. These pollutants we already have complete detection equipment for these pollutants and have corresponding remedial measures. We now take the emerging contaminants more seriously, for these substances may potentially toxic, but researchers have not found any effects on humans or the environment [5].

2.2. Social (S): Safety of Employees and Surrounding Residents

Not only does the chemical Industry chemical industry occupies a very important position in the development of the national economy, it also provides many employments. But now some chemical industries are confronted with the loss of employees, because of the bad working condition, low salary or possible physical problems [4]. There is study about a national high-tech fluorine chemical company, which is facing the problem of high turnover rate among frontline workers. During the production, the intricate production emits fluorine-containing pollutants that are diverse, large in quantity, and extraordinary toxic. Frontline workers refer to people who do the basic works, they are directly exposed to hazardous substances and participate in processes that produce toxic substances. They also generally have low educational background. which contributes to lack the awareness of self-production. Changing the work frequently, they do not have a good command of the production operations. For these reasons, although the workers armed with the protection suit and masks, their lungs still affected by the dust. Some workers even appear symptoms of urinary fluoride [6].

Besides, the residents who lived near the chemical industries have a higher chance of being affected by substances produced during chemical production processes. Taking petrochemical companies as an example, people may have various health outcomes other than cancer. Residing near petrochemical industrial hubs means individuals face heightened exposure to various airborne pollutants, including sulfur oxides, nitrogen oxides, carbon monoxide and dioxide, volatile organic compounds, and polycyclic aromatic hydrocarbons. These increase prevalence of asthma, other respiratory diseases and adverse effects on pregnancy and birth outcomes.

2.3. Governance (G)

The chemical industry has a great responsibility in environmental protection and sustainable development, but there are still some deficiencies in regulations and ethical standards. First, relevant regulations need to be more stringent and improved to standardize the production and emission behaviors of chemical companies. There are still many emissions with unknown toxicity and risks. If they once have an impact on humans or the environment, laws related to the substance should be improved in a timely manner. Secondly, the application of ethical standards in the chemical industry also needs to be further strengthened. Chemical companies should assume social responsibilities and pay attention to issues such as environmental protection, production safety and employee health, rather than just pursuing economic interests. For some chemical companies with high pollution and high energy consumption, they can also develop in a greener direction based on the strength of their

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own companies. This will not only enhance the reputation and image of the company, but also have a positive impact on society and the environment.

3. Green Finance

Over the past few years, China has prioritized the advancement of green finance, resulting in notable progress in establishing a sustainable financial system [7]. Presently, it has cultivated a varied green financial market with a primary emphasis on green investments, green bonds, and green insurance, thereby supporting and financing the eco-friendly and low-carbon progression of the economy.

3.1. Green Financing: Used to Reduce Carbon Emissions

Green financing refers to financial activities that provide financial support to environmental protection and sustainable development projects through financial institutions or markets. In the current increasingly severe global environmental problems, green financing, as a positive financial practice, has become one of the important ways to promote green development. Some companies have realized the importance of green development, such as reducing carbon emissions, but sometimes they face the problem of lack of financial support. Instead of invest large number of money in new technology or machines, the companies would maintain the old production methods which is high energy consumption and highly polluting.

Similar problems have also been encountered in China's construction of the Belt and Road Initiative. Some of the countries that the Belt and Road Initiative passes through are low- and middle-income countries. These countries have higher economic, political and financial risks. To avoid risks, private capital is often not inclined to participate in infrastructure projects. but with the government's guarantees, which is an effective way to reduce the risk factors of infrastructure project financing, people's investment confidence in projects will increase. Kazakhstan's Wind Power Project officially started construction in July 2019, and in September 2020, the first batch of wind turbines were connected to the grid to generate electricity. As a key green infrastructure project in the "Belt and Road" region, it not only get the green financing from the Kazakhstan but also other banks. The green financing plays an important role in helping Kazakhstan reduce the use of Fossil Energy and the construction of the Belt and Road Initiative [8].

3.2. Green Bonds: Meeting Funding Needs

Green bonds are crafted to bolster designated climate-centric or environmental initiatives, often accompanied by tax benefits to enhance their appeal to investors. Regarded as one of the established instruments within the realm of green finance, green bonds have consistently garnered significant attention from securities firms [9]. In recent times, China's green bond market has undergone rapid expansion, evolving into the world's second-largest arena for green bond transactions. Special statistics on securities company bond underwriting business in 2023 released by the Securities Association of China show that in 2023, there will be a total of 60 securities companies serving as the lead underwriters of green corporate bonds or managers of green asset securitization products (ABS), underwriting (or managing) [10]. The bonds (or products), with a total amount of 182.853 billion yuan, have a year-on-year increase of 6.52%.

Shenzhen SF Holding Co., Ltd. (S.F. Holding) is China's largest comprehensive logistics service provider. The company includes a variety of express delivery services and is labeled with efficiency and safety. On April 26, 2021, SF Holding announced that it had completed the issuance of 500 million yuan in green bonds, with a bond term of 3 years and a coupon rate of 3.79% [11]. The 70% of the bonds proceeds was used to repay the construction loans of green buildings and the remaining

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part to supplement funds for part of the company's operations. Green bonds enable company itself broaden financing channels to meet project funding needs.

3.3. Green Insurance Products: Bear Environmental Compensation and Reduce Disaster Risks

Green insurance refers to insurance products and services that are specifically designed to cope with environmental risks and promote sustainable practices. Green insurance plays a crucial role in supporting environmentally responsible initiatives and projects by providing financial protection against environmental risks and liabilities.

Ping An Insurance (Group) Co., Ltd. of China is the world's largest insurance group by assets and is committed to becoming a leading international provider of comprehensive financial and medical health services. As early as 2008, Ping An of China officially launched "Ping An Environmental Pollution Liability Insurance", aiming at achieving low-carbon operations, promoting the development of sustainable green finance [12].

Research focusing on 12,496 high-polluting industries in China, spanning from 2008 to 2020, illustrates that green insurance facilitates resource acquisition for companies and bolsters their risk management capacities. Moreover, by fostering green innovation, green insurance contributes to the enhanced environmental performance of insurance firms. By offering comprehensive expertise coupled with robust financial backing to polluting enterprises, green insurance empowers these companies to better mitigate risks and devise sustainable development strategies [13].

3.4. The Incentive Policy of Green Finance

In August 2016, the issuance of the "Guiding Opinions on Building a Green Financial System" by the People's Bank of China and other stakeholders marked a pivotal moment. These "Guiding Opinions" delineated the trajectory, objectives, and imperatives of green finance, positioning China as the inaugural nation to craft a comprehensive framework for green financial initiatives. Bolstered by robust and consistent policies, China's green finance sector has experienced rapid expansion. According to the People's Bank of China's report on financial institutions' loan investments, by the conclusion of 2021, the combined balance of domestic and foreign currency green loans reached 15.9 trillion yuan, reflecting a year-on-year surge of 33%. Additionally, the issuance of 755 green bonds in 2021, with a total financing volume of 80.276 billion yuan, showcased a substantial year-on-year increase of 46.3% [14].

Though the policy has promoted the development of economic, it still needs perfect. Green finance incentive standards are not unified, and participants may have doubts when participating in green finance projects, or some companies choose original less eco-friendly production methods because of incentives or preferential policies [15]. There are flaws in the green finance information disclosure mechanism. A sound green financial information disclosure mechanism is an important part of the construction of an incentive mechanism. However, China lacks an indicator system for evaluating green financial development stocks and information disclosure at both the national and local levels. For example, it is currently popular in my country to use ESG scoring as the evaluation standard. However, China ESG rating system is still in its initial exploration stage, and a complete and unified standard system has not yet been established.

4. Conclusion

In the process of green finance application, there have been many positive developments. However, it still faces some challenges. First, the richness and pertinence of green financial products can be further improved, requiring more innovation and green financial services specially designed for

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specific situations. Secondly, laws and regulations related to green finance and supervision by relevant departments also need to be continuously improved. All these can let the green financial product market develop healthily, and then help China's green development more efficiently and effectively.

With the continuous development of green finance, we all expect the application and promotion of green finance not only in industries with high pollution and high energy consumption. Green finance can also be used for the construction and research of protected areas and the continuous expansion and development of existing green enterprises. Through financial support and financial innovation, green finance promotes these industries to develop in a more environmentally friendly and sustainable direction. It can also enable the continuous development of green finance as a financial tool to meet people's needs.

In general, green finance is one of the crucial methods to achieve environmental protection and sustainable development. Although it faces some challenges, its potential and prospects are still very broad. Green finance should be more widely applied globally, which can contribute to building a greener, low-carbon, and sustainable future.

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