

# Synthesis of research on the synergy between the construction of green financial system and sustainable development strategy

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**Abstract.** The abstract should be centred across the page, indented 17 mm from the left and right page margins and justified. It should not normally exceed 200 words. The purpose of this paper is to provide a comprehensive overview of the research on the synergy between the construction of green financial system and sustainable development strategy. Firstly, it elaborates the key elements of green financial system construction, including policies and regulations, financial institutions, market system, and information disclosure and credit rating, etc. Then, it discusses the synergy between this system and sustainable development strategy at the planning, implementation and policy levels. Then, it discusses the synergy between the system and sustainable development strategy in planning, implementation and policy level, and analyzes the problems. Finally, the future direction of the synergy between the two is envisioned, including cross-sectoral cooperation, international collaboration, technological empowerment and social capital participation, with a view to providing useful references for research and practice in the related fields.

## 1 Introduction

Throughout the long evolution of human society, environmental problems have always been a key factor that cannot be ignored on the road to development. Back to the Industrial Revolution, although it brought about a leap in productivity, mechanized production to replace manual labor, factories, commodity production increased dramatically, to promote rapid economic development, but also opened a large-scale resource consumption and environmental pollution “Pandora's Box”.

London, England has long been “fog” haze, a large number of industrial emissions, resulting in air filled with sulfur dioxide, dust and other pollutants, seriously endangering the health of residents, respiratory diseases are frequent, the city traffic is also due to low visibility into chaos. The Minamata disease incident in Japan is also shocking, chemical enterprises wantonly discharged mercury-containing wastewater, mercury in the marine organisms in the body of the enrichment of human consumption after poisoning, the patient's body distortion, nerve damage, pain. These tragic environmental disasters have undoubtedly sounded the alarm for mankind and profoundly revealed the seriousness of environmental problems.

Stepping into the modern society, the global environmental problems are becoming more and more serious. Over-exploitation of resources has brought many non-renewable resources to the brink of

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depletion, and diminishing energy reserves such as oil and coal are restricting further economic development. Excessive greenhouse gas emissions have led to global warming, accelerated melting of glaciers and rising sea levels, threatening coastal cities; extreme weather events are frequent, with torrential rains, droughts and hurricanes wreaking havoc, seriously affecting the survival and development of mankind. Against this background, the concept of sustainable development has emerged and gradually become a global consensus, emphasizing the coordination of the economy, society and the environment and the pursuit of long-term stable development.

Under this environment, green finance, as a key force to promote the green transformation of the economy, has been increasingly emphasized for its synergy with the sustainable development strategy. Based on this background, the purpose of this study is to analyze the internal mechanism, existing problems and future development path of the synergistic development of the two, so as to provide theoretical support and practical guidance for the green transformation of the global economy. The study is of great significance, not only to enrich the academic research in the field of green finance and sustainable development and improve the theoretical system, but also to provide reference for the government to formulate policies and enterprises to make strategic decisions, and to help solve the dilemma of environment and development.

In terms of research methodology, the literature research method is adopted to extensively collect relevant literature at home and abroad, to sort out the development lineage and research status of the synergistic research on green finance and sustainable development strategy, and to grasp the cutting-edge dynamics. Using the case study method, we analyze the typical cases of green finance projects and sustainable development practices at home and abroad and summarize the successful experiences and lessons of failure. Through a combination of quantitative and qualitative analysis methods, the data model is used to quantify the synergistic relationship between the two, while qualitative analysis is carried out in conjunction with the actual situation to conduct a comprehensive and in-depth study.

From the viewpoint of the current situation of domestic and foreign research, foreign countries started earlier and conducted in-depth research on green financial product innovation and policy system construction, such as the European Union, which has achieved remarkable results in the development of green bond standards and environmental risk assessment of financial institutions. pointed out that the United Nations Organization, the International Development Bank, the International Monetary Fund and other international organizations to promote the development of green finance one after another [1]. Domestic research has developed rapidly in recent years, combined with national conditions in green finance and regional sustainable development, industrial green transformation and other aspects of exploration, centered on green credit, green securities and other business innovations as well as policy synergies to carry out research. However, the existing research in the cross-sectoral cooperation mechanism, international cooperation mode and other aspects still need to be improved, there are research gaps and deficiencies, to provide direction for subsequent research.

## **2 Status of Synergy Between Green Financial System and Sustainable Development Strategy**

### **2.1 Planning Synergy**

Many countries and regions have included green finance in their strategic planning for sustainable development. For example, China's "14th Five-Year Plan" at the national level explicitly proposes to vigorously develop green finance and promote comprehensive green transformation of the economy and society, and local governments have also formulated corresponding green finance development plans and sustainable development goals according to their own regional characteristics, so as to guide the green financial system from the macroscopic level to be in line with the sustainable development strategy. However, in terms of the specific implementation details and quantitative indicators set in the plan, the synergy between different regions and departments still needs to be strengthened, and there are problems such as generalized planning content and difficulty in implementation

## **2.2 Implementation Synergy**

In practice, the government has guided financial institutions to provide financial support for sustainable development projects through financial subsidies, tax incentives and other policy instruments. Financial institutions actively innovate green financial products and services, such as the development of microfinance products for the green transformation of small and medium-sized enterprises. However, in the process of project implementation, due to information asymmetry, it is difficult for financial institutions to accurately assess the risks and benefits of green projects, which leads to difficulties in financing some of the green projects; at the same time, the lack of an effective coordination mechanism among different departments in the approval and supervision of projects affects the efficiency of the implementation of the project and the synergistic effect.

## **2.3 Policy Synergy**

Pointed out that China's green financial policy began with environmental protection financing, and with its increasing impact on industrial development and structural adjustment, it has been expanded to green credit, insurance, securities and other fields [2]. Countries have developed a series of green financial policies and sustainable development-related policies. Green financial policies, such as subsidized loan policies to encourage financial institutions to reduce the cost of financing green projects, risk compensation mechanisms to share the environmental risks of financial institutions. Sustainable development policies include industrial policies to support green industries and environmental policies to restrain polluting enterprises. However, there are deficiencies in the synergy between policies, and policy conflicts or policy gaps may occur. For example, the strict enforcement of certain environmental policies may result in the initial cost of some green industry projects being too high, while existing green financial policies have failed to effectively compensate for this cost gap, affecting industrial development and strategy promotion.

# **3 Interaction between Green Finance and Sustainable Development**

## **3.1 Supporting Role of Green Finance for Sustainable Development**

### *3.1.1 Optimization of capital flow*

In promoting green development, the government plays a key leading role. The government conducts in-depth research on the green development needs of various industries and formulates accurate policies. By utilizing tax incentives and giving tax breaks, tax rebates and other benefits to enterprises investing in core green areas such as clean energy, the government has guided the active flow of capital to these areas, providing financial security for the research and development and infrastructure construction of the clean energy industry.

Financial institutions have also responded positively by continuously innovating financial products. For example, the launch of green index funds, tracking green industry-related indexes, pointed out that to provide investors with convenient green investment channels, to attract diversified capital, including enterprises, individuals, social security funds and other capital to enter the green market [3]. At the same time, strengthen the information disclosure mechanism, with the help of big data technology to fully integrate the environmental benefits of green projects, financial status and other information, to help investors make a reasonable choice.

In terms of international cooperation, we actively work with other countries to jointly establish green investment funds, promote cross-border flows of green capital, realize the optimal allocation of green capital on a global scale, and jointly address global environmental challenges such as climate change.

### ***3.1.2 Promotion of technological innovation***

In the grand blueprint for sustainable development, green finance is constantly injecting surging power for technological innovation. With the help of green credit, financial institutions provide low-interest, long-term loans to enterprises in energy-saving and environmental protection, new energy and other cutting-edge fields to alleviate their financial pressures; points out that through green investment, it can provide blood transfusion for the key links of technological research and development and application, and ensure the smooth progress of the project [4]. This series of initiatives not only significantly reduces the difficulty and cost of financing for innovative enterprises but also acts like a catalyst to accelerate the transformation process of scientific and technological achievements from the laboratory to the market.

Take the solar energy technology innovation enterprises as an example, under the financial support of green finance, enterprises have overcome many technical problems and significantly improved the energy conversion efficiency. Green finance and technological innovation are complementary to each other, and together they open up a wide world for sustainable development

### ***3.1.3 Environmental protection and social aspects.***

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From the perspective of environmental protection, it provides financial support for renewable energy projects such as solar and wind power generation, promotes the development and utilization of clean energy, and reduces the dependence on traditional highly polluting energy. At the same time, green finance also helps pollution control projects, including sewage treatment and solid waste treatment, to improve the ecological environment. For the social level, it helps to enhance social well-being. Green finance-supported projects such as public transportation can reduce low-carbon emissions, as well as create jobs and improve the quality of life of residents.

## **3.2 Feedback Effects of Sustainable Development on the Development of Green Finance**

### ***3.2.1 Brief contribution of environmental improvement to the enhancement of the value of green financial assets***

Environmental improvement reduces the physical risk associated with climate change and environmental pollution, reduces the overall risk, and reduces the interference of environmental factors in the production and operation of enterprises, and increases the stability of earnings. Improved public awareness of environmental protection and increased demand for green products and services have prompted enterprises to increase green investment, expanding the scale of the green financial market, increasing demand for green financial assets and driving up their value.

### ***3.2.2 Sustainable development policies provide market demand for green financial product innovation***

With the increasing global attention to environmental protection, resource conservation and social equity and other sustainable development goals, a series of related policies have been introduced. Renewable energy development policies have promoted the large-scale construction of solar energy, wind energy and other clean energy projects, which have provided rich application scenarios for financial products such as green credit and green bonds. points out that green bonds are widely welcomed by the market and are now issued by international financial organizations, multinational corporations, banks and even governments and municipalities. In recent years, the scale of China's green bond market has remained high, and the scale of green bonds issued domestically and abroad in 2020 amounted to 278.662 billion yuan [6].

## **4 Challenges Facing the Green Financial Development System in Sustainable Development**

### **4.1 Complexity of Risks and Ways to Deal with Them**

In terms of risks, environmental risks are the most important. Climate change leads to frequent occurrence of extreme weather, heavy rainfall and hurricanes, which cause direct physical damage to green project facilities such as wind power stations and solar power stations, and seriously affect the operational returns of the projects. Technology risk is equally tricky, as green technology iterates rapidly, and if the technology route on which the investment is betting is replaced by a new breakthrough, it will face investment failure. pointed out that market risk should not be ignored, policy adjustments and market sentiment fluctuations have a huge impact, and changes in subsidy policies can make green business operations and related financial products unstable [7]. On credit risk, emerging green projects are difficult to assess, and some enterprises may conceal risks, leading to financial institutions facing default losses.

The challenges are centered on several aspects. Low market participation, insufficient investor knowledge of green financial products, lack of product innovation, mostly focused on credit and bonds, unable to meet diversified needs. Global green finance standards are not harmonized, and the cost and risk of cross-border business has increased. There are also difficulties in regulation, as green finance involves multiple fields and the traditional regulatory model is prone to gaps and overlaps.

In the face of these problems, corresponding measures can be taken. To improve the risk management system, financial institutions should establish professional assessment models, track technology trends and strengthen credit management. Strengthen investor education, carry out online and offline popularization activities, promote product innovation and develop diversified products. Actively promote international cooperation, and countries should join hands to formulate unified standards and strengthen regulatory coordination. pointed out that it is also necessary to strengthen regulatory coordination, establish a cross-sectoral coordination mechanism, use big data and other technological innovations to regulate and maintain market order [7].

### **4.2 Imperfect Market Development and Countermeasures**

In the process of sustainable development, the green financial development system plays a key role, but its market development is still imperfect, and there are many problems.

The imperfect market development is mainly reflected in the following aspects. First, the product homogenization is serious. Currently, green financial products in the market are concentrated in green credit, green bonds, such as green insurance, green trust and other products are involved, but the scale is small, and it is difficult to meet the diversified needs of different investors. Secondly, the market activity is low. Investors have insufficient knowledge of green financial products and little enthusiasm for participation, which makes the trading frequency of green financial products low and liquidity poor. Third, the participation of market players is not balanced. Large financial institutions and head enterprises dominate the green financial market, while many small and medium-sized financial institutions and small and medium-sized enterprises participate to a lesser extent due to the limitations

of capital, technology, talents and other aspects. Fourth, the standard is not unified. pointed out that there are differences in the identification standards of green financial products and projects in different regions and institutions, which not only increases the communication cost of the market, but also hinders the standardized development of the green financial market [9].

To address these problems, the following countermeasures can be taken. First, encourage product innovation. Financial institutions should increase R&D efforts to develop green futures, green options and other financial derivatives to enrich the green financial product system and meet the needs of investors with different risk preferences. Second, strengthen investor education. Popularize green financial knowledge by organizing online and offline lectures, publishing popular science articles, etc., to improve investors' knowledge and acceptance of green financial products, stimulate investment enthusiasm and enhance market activity. Further, points out to promote the diversified participation of market players. The government introduced tax incentives, financial subsidies and other policies to reduce the cost of small and medium-sized financial institutions to carry out green financial business [10]; the establishment of a green industry guidance fund to guide the investment of social capital, to solve the financial problems faced by small and medium-sized enterprises in green transformation. Finally, unify green financial standards. Relevant departments and industry associations should strengthen cooperation to formulate unified identification standards for green financial products and projects, clearly define the scope and assessment methods, provide normative guidance for market development, and promote the healthy and orderly development of the green financial market.

Only by solving the imperfections in the development of the green finance market can we better play the role of green finance in sustainable development, promote the green transformation of the economy and realize the coordinated development of the economy and the environment.

## 5 Conclusion

At a time when the world is actively searching for a balanced path between economic development and environmental protection, the construction of a green financial system and the synergy of sustainable development strategies have become a key path to realize the green transformation and sustainable development of the global economy. In recent years, the synergy between the two has achieved some remarkable results. For example, many countries have introduced green financial support policies, and a large amount of capital has begun to flow into clean energy, eco-agriculture and other green industries, which has promoted the vigorous development of related industries.

However, the road ahead is still thorny. In the process of synergy, there are many thorny challenges. There are communication barriers to cross-sectoral cooperation, poor information sharing among finance, environmental protection, industry and other sectors, and poor policy synergies, resulting in obstacles to the promotion of green projects. Various types of risks are intertwined, and environmental risks, technological risks, and market risks are superimposed on each other, increasing the uncertainty of green financial investment. Green financial product innovation is insufficient, it is difficult to meet diversified investment demand, and market activity needs to be improved.

However, we also see the direction of breaking through. Strengthen cross-sectoral cooperation, build an efficient communication platform, realize real-time information sharing, formulate unified policies, and enhance synergistic efficiency. Establish a perfect risk assessment and prevention and control system to control all kinds of risks and safeguard the sound development of green finance. Utilize big data, blockchain and other cutting-edge technologies to empower green finance, improve risk identification and pricing capabilities, and innovate financial products and services. Promote the participation of social capital in green investment through policy guidance, publicity and education to broaden the source of funds. In the future, it is necessary to continue to explore and improve relevant research and practice, further enhance the synergistic effect, and build a solid foundation for global environmental improvement and sustainable economic development.

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