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Green Finance and Insurance: Driving Forces for Low-Carbon Transition and Sustainable Development

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Abstract: *The paper explores the importance of green finance and insurance in promoting a low-carbon economy and sustainable development. It focuses on China's adoption of these practices to support its economic goals. The study highlights their role in environmental sustainability, economic growth, and mitigating climate risks. It also discusses the challenges and the need for innovation and policy support. The conclusion stresses the integration of green finance into broader economic strategies for inclusive growth.*

Keywords: *Green Finance, Green Insurance, Sustainable Development, Economic Growth, Environmental Sustainability*

1. Introduction

The 21st century has witnessed an unprecedented global push towards sustainable development, with the realization that traditional economic models are unsustainable in the long term. Climate change, environmental degradation, and resource scarcity have emerged as critical challenges, prompting the international community to seek innovative solutions. Green finance and insurance are two such solutions that have gained significant traction in recent years. This paper examines the role of green finance and insurance in promoting sustainable development and facilitating the transition to a low-carbon economy.

2. Literature Review

The literature review section will provide a critical analysis of the existing body of knowledge on green finance and insurance, highlighting the contributions of various researchers and the evolution of thought in this field. Early conceptualizations of green finance can be traced back to the works of Li and Liang (2021) [1], who emphasized the role of financial systems in promoting environmental sustainability. The integration of environmental considerations into investment decisions was further explored by An (2008)[2], who discussed the potential of socially responsible investing. The pivotal role of insurance in risk management and its potential to drive green initiatives was underscored by Li (2022)[3], who examined the insurance industry's response to environmental risks. In the context of China, the strategic incorporation of green finance into economic policy was analyzed by Xie and Zhang (2022)[4], who discussed the country's initiatives to promote green lending and investment. The rapid growth of China's green finance market was documented by G20 Green Finance Study Group (2016)[5], which provided a comprehensive overview of the mechanisms and policies driving the sector. Jin, Zhang and Shi (2022) [6]focused on the micro-level effects of financial constraints on firm exports, providing insights into how green finance can alleviate these constraints. The literature also encompasses the examination of environmental regulations and their economic implications, with the "pollution haven hypothesis" (Cai and Zhang, 2014[7]) being a significant debate. Contrarily, Deng(2012)[8] and Feng (2011)[9] found that environmental regulation in China has led to a reduction in export volumes, particularly in high-pollution industries.

In summary, the literature reveals a growing consensus on the importance of green finance and insurance in fostering sustainable economic practices. However, it also points to the need for further research, particularly in understanding the long-term impacts and the role of these financial

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mechanisms in emerging economies like China.

3. Methodology

This paper combed through the domestic and foreign green finance and insurance and economic sustainable development of the relevant literature, respectively, green finance, low carbon economy and economic sustainable development and other concepts were defined in detail, and the green financial theory of low carbon economic theory and sustainable economic theory was introduced in detail, as the basic theory of this research. In the part of the analysis of the current situation, the current policies of green finance are sorted out and analysed. In order to gain a deeper understanding of the operational mechanisms and effects of green finance and insurance in practice, a number of representative cases are selected for in-depth study.

In terms of data collection, we used a variety of sources and methods. Public information such as relevant statistical yearbooks, government work reports and official databases were consulted to obtain basic data and statistical information on green finance and insurance. The latest research results and case information in related fields at home and abroad were collected through internet search and literature review. In terms of data analysis, we adopted a combination of qualitative and quantitative methods. The collected data were classified, organised and counted to reveal their general characteristics and trends. Methods such as case studies and comparative analyses were applied to provide in-depth analyses and comparisons of specific cases and phenomena.

4. Findings

In the Guiding Opinions on Building a Green Financial System issued by the People's Bank of China and seven other ministries and commissions on 31 August 2016, green finance is defined as an economic activity that supports environmental improvement, response to climate change, and the economical and efficient use of resources, i.e., financial services provided for project investment and financing, project operation, and risk management in the fields of environmental protection, energy conservation, clean energy, green transport, and green buildings.

There are more than 100 definitions of sustainable development, but the one that is widely accepted as having the greatest impact is still the definition by the World Commission on Environment and Development in Our Common Future. In that report, sustainable development is defined as "development that meets the needs of the present without jeopardising the ability of future generations to meet their own needs". It encompasses two important concepts: the concept of needs, in particular the basic needs of people in all countries of the world, which should be given special priority for consideration; and the concept of limits, the limits imposed by the state of technology and social organisation on the ability of the environment to meet immediate and future needs. Low-carbon economy refers to a form of economic development that, under the guidance of the concept of sustainable development and through a variety of means, such as technological innovation, institutional innovation, industrial transformation and new energy development, reduces as much as possible the consumption of high-carbon energy sources, such as coal and oil, and reduces greenhouse gas emissions, so as to achieve a win-win situation in terms of economic and social development and ecological and environmental protection.[10]

In January 2024, China highlighted the importance of building a beautiful China as part of its national rejuvenation strategy, with policies supporting green finance and insurance. On April 10, 2024, key financial regulators in China released "Guiding Opinions" to strengthen financial backing for green and low-carbon development, including improving green financial standards and expanding green insurance coverage. In May, the State Financial Supervision and Administration Bureau issued further guidance tailored for the banking and insurance sectors, emphasizing the enhancement of green finance and insurance services, with a focus on ESG performance improvement. These policies form a robust framework to drive China's low-carbon transformation and sustainable development, offering significant support for the growth of green finance and insurance.[11]

In terms of green insurance coverage, the combined green insurance coverage of listed insurance companies in 2023 will exceed RMB 200 trillion. Among them, China Taipao, China Property and Casualty Insurance and Ping An of China ranked the top three in terms of green insurance coverage, with 109.2, 75.5 and 48.9 trillion yuan respectively.

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In terms of green investment balance/scale, as of the end of 2023, China Life ranked first with a green investment scale of 462.788 billion yuan; PICC ranked second with a green investment scale of 97.9 billion yuan, and China property and casualty insurance followed with a green investment scale of 38.74 billion yuan.

Environmental pollution liability insurance is an insurance that takes the liability for the damage caused to the third party by the pollution accident of the enterprise as the subject of compensation according to the law, and it is the earliest type of green insurance to start. The implementation of environmental pollution liability insurance has been in place for some time, and according to Table 1, it is possible to see how it has been implemented in several specific provinces.

Table 1: Insurance coverage of environmental pollution liability insurance in some regions

Area	Environmental pollution liability insurance
Shenzhen, Guangdong	2008, the first pilot city in China, 2008-2018, Shenzhen, a total of 774 enterprises insured, premium 19.3607 million yuan, risk coverage of 1.152 billion yuan.
Shandong	2013.4-2019.3, Shandong Province, a total of 391 enterprises insured, premium 18.09 million yuan, risk coverage of 1.5 billion yuan, cumulative payout of 3.52 million yuan for 56 enterprises.
Fuzhou, Fujian	2017-2018, Fuzhou City, a total of 96 enterprises insured, premium 2.7638 million yuan, risk protection amount of 257 million yuan
Guizhou	2013.10-2018.6,Guizhou Province achieved a cumulative premium income of 2,478,700 yuan, with a risk protection amount of 137 million yuan
Hebei	2015.1-2019.3,Hebei Province has insured a total of 3,738 enterprises, with a risk protection amount of 12.851 billion yuan.
Yunnan	Since 2018, the province has been steadily promoting the pilot work of compulsory liability insurance for environmental pollution, so far, 102 pilot enterprises have insured a premium amount of 2.124 million yuan, providing insurance protection of 197 million yuan for the insured enterprise

Source: CBI, Societe Generale Carbon Finance Institute

Overall, although some time has passed since the mandatory implementation of the environmental liability insurance policy, the scale of environmental liability insurance is still relatively small. On the one hand, enterprises' willingness to take out environmental pollution liability insurance is not high, mainly due to the lack of environmental protection enforcement and continuity; on the other hand, environmental liability insurance is not supported by enough laws in China, there are insufficient data references, and insurance companies are too strict in terms of terms and conditions and payout appraisal, which, to a certain extent, has also dampened the incentive of small and medium-sized enterprises (SMEs) to participate in the insurance scheme.[12]

Data released by the People's Bank of China, as of the end of the first quarter of 2024, the balance of local and foreign currency green loans of 33.77 trillion yuan, an increase of 35.1% year-on-year, higher than the growth rate of all loans by 25.9 percentage points, an increase of 3.7 trillion yuan in the first quarter, the quarterly increment hit a record high. Among them, loans invested in projects with direct and indirect carbon emission reduction benefits amounted to RMB 11.21 and RMB 11.34 trillion respectively, accounting for 66.8 per cent of green loans in total. Since the end of 2021, the year-on-year growth rate of China's green loan balance has remained above 30 per cent.

According to CBI data, by the end of 2023, the cumulative issuance of CBI-compliant green bonds globally was about USD2.8 trillion, accounting for more than 60% of the total cumulative issuance in the sustainable bond market, of which USD587.6 billion of new issuance was issued in the whole year of 2023, representing a year-on-year growth of 15%. China's cumulative issuance of green bonds that meet the CBI definition is about US$372 billion, ranking second globally after the United States. Among them, in 2023, the annual issuance scale of China's green bonds reached US$83.5 billion, which was lower than that of 2022, but the annual issuance scale still ranked first in the world for the second consecutive year.

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5. Discussion

The central role of green finance and insurance in driving the low-carbon transition and sustainable development cannot be ignored. There are several notable trends and key points to observe from the data, which provide strong support for our understanding of green finance and insurance as a key driver.

Firstly, the growth in green insurance coverage and investment scale shows the insurance industry's positive response to the green transition. The notable investment in green insurance by large insurers such as China Taipao, China Property and Casualty and Ping An demonstrates not only their keen market insights, but also their strong commitment to sustainable development. Meanwhile, the growth in green investments also reflects the capital market's strong confidence in low-carbon sectors such as clean energy, eco-agriculture and green buildings.

Second, while environmental pollution liability insurance (EPLI) currently faces many challenges, its potential for environmental risk management cannot be ignored. In order to give full play to the role of environmental liability insurance, we need to strengthen policy guidance and legal support, as well as improve the formulation of terms and conditions for insurance companies and the mechanism for identifying claims, so as to increase the willingness of enterprises to take out insurance and the coverage of environmental liability insurance.

Again, the rapid development of green loans and green bonds is one of the highlights of the green financial market. They provide an important source of funding for low-carbon projects and effectively promote low-carbon transformation and sustainable development. In particular, the proportion of loans invested in projects with direct and indirect carbon emission reduction benefits is as high as 66.8 per cent, a figure that fully demonstrates the positive role of financial institutions in the field of green financing.

When analysing the drivers of green finance and insurance in depth, we find that they provide a strong impetus for low-carbon transition and sustainable development through the provision of financial support and risk management tools. These financial instruments not only promote the development of the low-carbon sector, but also facilitate the green transformation and upgrading of traditional industries. At the same time, they have guided the flow of social capital to the green sector and promoted the formation of green industrial chains and green ecosystems.

6. Conclusion

Green finance and insurance play a crucial role in promoting low-carbon transition and sustainable development. By providing financial support and risk management tools, they offer strong protection for the implementation of low-carbon projects and the development of green industries. However, to fully realise the potential of green finance and insurance, we need to further strengthen policy guidance and legal support to enhance the attractiveness and coverage of green finance and insurance.

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Specifically, policymakers should increase support for green finance and insurance, and incentivise financial institutions and enterprises to participate in green financing through tax incentives and financial subsidies. At the same time, relevant laws and regulations should be improved to clarify the standards and regulatory requirements for green finance and insurance, so as to provide the market with a clear development path and stable expectations. In addition, international cooperation and exchanges should be strengthened, drawing on international advanced experience and technology to promote the international development of green finance and insurance.

7. Recommendations

Based on the findings and discussions, the following recommendations are made for policymakers, financial institutions and other stakeholders in strengthening regulatory frameworks to support the development and adoption of green finance and insurance products:

Recommendations for policymakers:

Improve green finance laws and regulations: Policymakers should further improve green finance-related laws and regulations to clarify the definitions, standards, and regulatory requirements for green financial products, and provide clear legal guidelines for financial institutions and enterprises.

Establish a green finance regulatory body: It is recommended to set up a specialised green finance regulatory body to be responsible for the approval, supervision and evaluation of green financial products, so as to ensure the healthy and orderly development of the green finance market.

Provide incentives: The government can encourage financial institutions and enterprises to actively develop and adopt green financial products by providing incentives such as tax incentives and financial subsidies to promote the rapid development of the green financial market.

Suggestions for Financial Institutions:

Strengthen the R&D of green financial products: financial institutions should increase the R&D of green financial products, and launch more green financial products that meet the requirements of environmental protection by combining market demand and policy orientation.

Enhance green financial risk management capability: Financial institutions should strengthen the risk management of green financial products and establish a scientific risk assessment system to ensure the sound operation of green financial products.

Strengthen international cooperation and exchange: Financial institutions should actively participate in international green financial cooperation and exchange, learn from international advanced experience and technology, and enhance the international competitiveness of China's green financial market.

Suggestions for other stakeholders:

Raise environmental awareness: Enterprises and individuals should raise environmental awareness, actively participate in the promotion and application of green financial products, and jointly promote the development of the green financial market.

Enhance information disclosure: Enterprises should enhance information disclosure of green projects and improve transparency so that investors and the public can have a better understanding of the operation and environmental benefits of green projects.

Strengthen public opinion supervision: The media and the public should strengthen public opinion supervision of the green financial market, expose and expose the bad behaviours in the market in a timely manner, and promote the healthy development of the green financial market.

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