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Research and Prospects for the Development of Green Bonds under the Dual Carbon Target

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Abstract: In the context of the dual carbon target, the green bond market has emerged as an important tool for sustainable financing. This article studies the current situation of the green bond market under the dual carbon target, explores the development of policy support, market demand, diversity of issuing entities, and rising investor interest. It analyzes the problems faced by the market, such as inconsistent standards, insufficient information, complexity of project evaluation, and market liquidity, A series of effective measures have been proposed, including unifying standards, strengthening information disclosure, technological innovation, and cooperation with financial institutions, to promote the sustainable development of the green bond market and provide financial support for achieving carbon emission reduction and sustainable development goals.

Keywords: Green Bonds, Dual Carbon Targets, Sustainable Financing.

1. Introduction

With the continuous escalation of the global climate crisis and the rapid development of the sustainable development agenda, the dual carbon goals have become a global vision for addressing the challenges of climate change and achieving sustainable development. The dual carbon goals aim to reduce greenhouse gas emissions to net zero and promote sustainable development practices such as green, low-carbon, and renewable energy. In this context, the green bond market, as an important tool for sustainable financing, is gradually emerging, Provided key support for achieving the dual carbon goal.

Green bonds, as financial instruments, have unique potential in guiding funds towards environmental protection and low-carbon fields, promoting the development of sustainable projects. They provide issuers with a way to raise funds and also provide investors with opportunities to invest capital in projects with environmental and social value. However, to achieve this potential, a series of challenges need to be overcome, including inconsistent standards, insufficient information Project evaluation complexity and market liquidity issues. In depth research on the current situation of the green bond market under the dual carbon target, we will explore the development situation in policy support, market demand, diversity of issuing entities, and rising investor interest. At the same time, we will analyze the problems faced by the market, and propose a series of effective measures to promote sustainable growth of the green bond market, providing financial support for achieving carbon emission reduction and sustainable development goals. Through research, we hope to provide profound insights for policymakers, financial institutions, investors, and practitioners in the field of sustainable development, in order to promote the further development of the green bond market and accelerate the achievement of the dual carbon goal. At the same time, we will also emphasize the importance of the green bond market in promoting global climate action and sustainable development, in order to encourage wider participation and cooperation, Explore the role of the green bond market in achieving the dual carbon goals and find effective ways to achieve carbon reduction and sustainable development goals.

2. The Current Development Status of Green Bonds Under the Dual Carbon Target

2.1. Policy Support and Regulatory Framework

In the context of the dual carbon goals, green bonds, as an important financial tool to promote sustainable development and low-carbon economic transformation, have been positively influenced by policy support and regulatory frameworks. Governments and international organizations have formulated policies and regulations to promote the healthy development of the green bond market. Policy support is an important driving force for promoting the development of green bonds under the dual carbon goal. Many countries have issued relevant policies to encourage and guide financial institutions and enterprises to issue green bonds. These policies typically include tax incentives, preferential policies, and the establishment of green finance standards. For example, some countries have established green bond certification agencies to review and certify green bond projects, ensuring that funds flow to projects that truly meet sustainable development and environmental standards. In terms of regulatory framework, some countries have introduced clear laws and regulations to regulate the issuance and disclosure requirements of green bonds. This helps to improve market transparency and predictability, enhancing investors' confidence in green bonds. Some international legal and regulatory frameworks, such as the Green Bond Principles and Social Bond Principles, also provide guidance for the cross-border development of the green bond market. In addition, international cooperation is also promoting the development of the green bond market. Some international organizations and multinational institutions are committed to promoting cooperation and exchange in green finance, creating favorable conditions for the cross-border development of the green bond market[1].

Table 1. Issuance of ordinary green bonds in china in 2022 and investment direction of raised funds

Investing trend of fund-raising	Issuance scale (100 million yuan)	Number of issues (pieces)
Multiple orientations	3120	98
Clean energy industry	2004	144
Green upgrade of infrastructure	1066	90
undisclosed	199	29
Energy conservation and environmental protection industry	156	24
Clean production industry	32	5
Ecological environment industry	22	6
Green Services	5	1

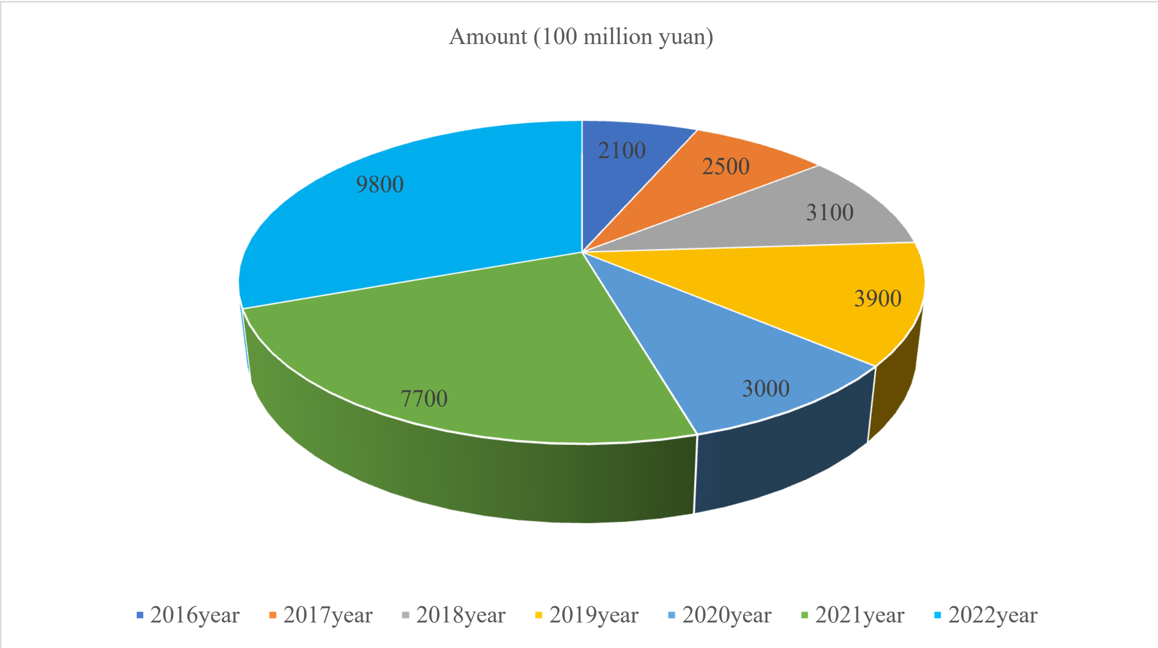

Figure 1. Scale of domestic and international green bond issuance in China from 2016 to 2022

2.2. Gradually increasing market demand

In recent years, with the increasing global call for the dual carbon goal, the green bond market has seen rapid growth, mainly due to the increasing market demand, increasing attention from investors and institutions to climate change and sustainability risks, as well as increasing awareness of environmental protection and social responsibility, driving strong demand for green bonds.

The increase in market demand is partly attributed to the increasing importance of environmental, social, and governance (ESG) factors in investment decision-making, as investors increasingly recognize the impact of environmental and social factors on the long-term sustainability and value creation ability of enterprises. Therefore, they are more inclined to invest their funds in projects that meet sustainable development standards, and green bonds provide a pathway for investors' funds to directly flow into environmental protection and low-carbon fields.In addition, the global concern of climate change is also driving the growth of market demand. As people's awareness of climate change risks gradually increases, the demand for reducing carbon emissions and achieving energy transformation is becoming increasingly urgent. The characteristics of green bonds make them an effective way for funds to flow to these key areas, so investors are increasingly inclined to invest in such environmentally friendly and low-carbon projects.

The vigorous development of the green bond market is closely related to the gradual increase in market demand. Investors' concerns about sustainability, awareness of climate change risks, and emphasis on environmental protection and social responsibility have all driven the rise of the green bond market. This increase in market demand not only contributes to the financing of environmental protection and low-carbon projects, but also provides important financial support for achieving the dual carbon goals.

2.3. Diversification of issuing entities

Under the dual carbon target, the green bond market shows a trend of diversified issuers, with various institutions and enterprises actively participating, promoting market development and innovation. This diversification not only expands the scale of the green bond market, but also helps to achieve broader sustainable development goals. Firstly, financial institutions are important participants in the green bond market. Financial institutions such as banks, insurance companies, and asset management institutions actively issue green bonds to guide funds towards sustainable and environmentally friendly projects. These institutions not only raise funds through issuing their own bonds, but also promote the comprehensive development of green finance by providing customers with green financing products, such as green loans and green trusts. Secondly, enterprises have also become important issuers in the green bond market. From energy companies to manufacturing, from technology companies to retail, companies in various industries are beginning to recognize the importance of environmental sustainability and are issuing green bonds to finance green projects. This not only helps companies establish an environmental image in the market, but also promotes low-carbon transformation in various industries. At the same time, the government and government agencies also play a key role in promoting the development of green bonds. Some countries and regions' governments issue sovereign green bonds and use the funds raised to support sustainable projects. Government participation not only provides benchmarks for the market, but also guides private capital into sustainable areas. In addition, urban and local governments also play a role in the green bond market. They issue local government green bonds for urban sustainable development projects such as clean energy, public transportation, and environmental protection, which helps to achieve more specific local sustainable development goals[2].

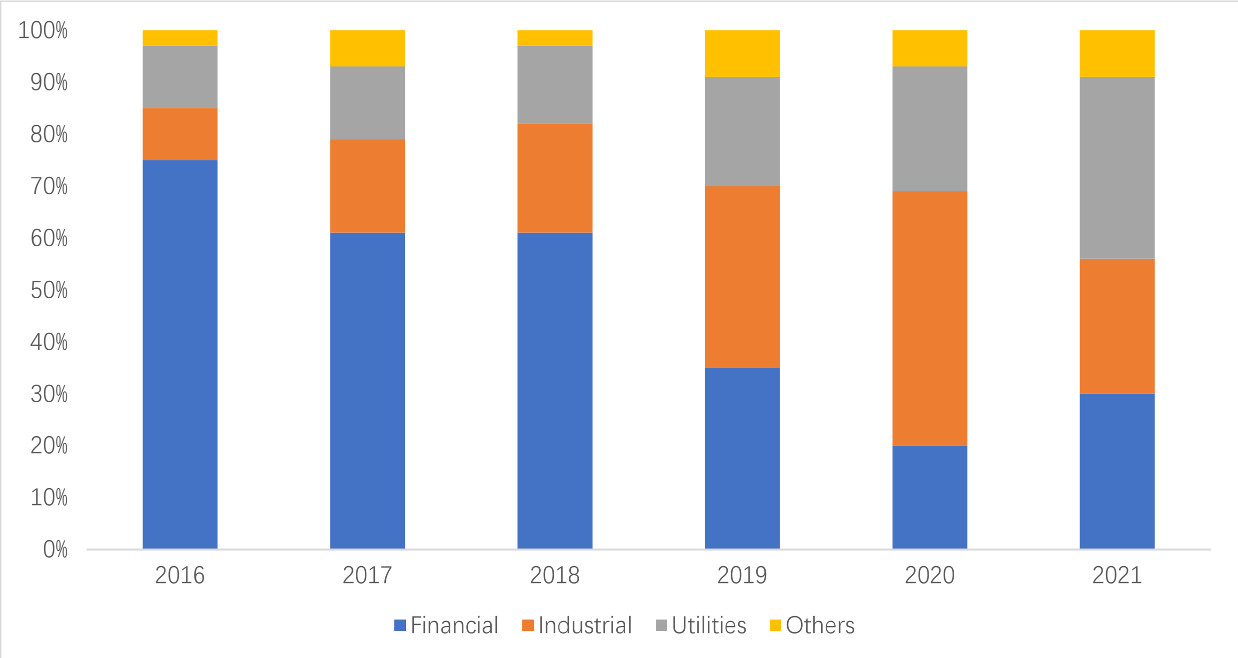

Figure 2. The industry distribution of Chinese green bond issuers from 2016 to 2021

2.4. Increased investor attention

Investors' attention to green bonds has significantly increased, reflecting a strong interest in sustainability within the broader investment community. More and more investors are incorporating environmental, social, and governance (ESG) factors into one of the core considerations of their investment decisions. The transparency and traceability of green bonds enable investors to have a clear understanding of the whereabouts of their funds, which increases investment trust and feasibility. Some large asset management companies have developed ESG investment strategies that incorporate sustainability factors into their investment portfolio management processes, further promoting the growth of the green bond market. The increasing attention of investors to green bonds not only contributes to the development of the market, but also drives issuers to pay more attention to achieving sustainability goals to meet investors' needs. This will help the green bond market provide more support for achieving the dual carbon goals.

3. The Problems in The Development of Green Bonds Under the Dual Carbon Target

3.1. Lack of consistency in standards

Under the dual carbon target, an important issue faced by the green bond market is the lack of consistency in standards. Different countries and institutions adopt different standards and definitions to determine what green bonds are. This has led to the existence of multiple standards and certification systems in the market, resulting in a lack of consistency, making the definition and quality of green bonds unclear, making it difficult for investors and issuers to determine which projects meet green standards, This reduces the transparency and credibility of the market, and this inconsistency may also trigger misleading green bond issuance, hinder the financing of truly sustainable projects, and increase market risk [3].

3.2. Project Evaluation Complexity

Another issue facing the green bond market is the complexity of project evaluation. Determining whether a project meets the green bond standards often requires complex environmental and social impact assessments, which involve multiple aspects such as data collection, monitoring, and reporting. The complexity of project evaluation requires issuers to spend a lot of time and resources, thereby increasing the cost of green bond issuance, Investors may also have difficulty obtaining sufficient information to accurately assess the sustainability of the project, and this opacity may reduce investor confidence and hinder the flow of funds into the green bond market[4].

3.3. Insufficient information transparency

Insufficient information transparency is another issue in the green bond market under the dual carbon target. Investors need to have a detailed understanding of the projects they are investing in, including their environmental and social benefits, in order to make wise investment decisions. However, some issuers fail to provide sufficient information, or the information is not clear and transparent enough. This lack of information may lead to inaccurate investors' risk estimates of the projects, This leads to a lack of trust and feasibility in the market, and at the same time, insufficient information also increases the difficulty for regulatory agencies to effectively supervise the operation of the market and ensure the sustainability of projects.

3.4. Relatively low market liquidity

The relatively low market liquidity is also a problem in the green bond market. Compared to traditional bond markets, the green bond market has a smaller scale and limited trading volume, which leads to poor market liquidity. Investors may face higher transaction costs when buying and selling green bonds. In addition, due to the relatively low market liquidity, investors may find it more difficult to buy and sell green bonds, making the market more unstable, This issue of market liquidity may limit the flow of more funds into the green bond market, affecting its healthy development[5].

Table 2. Comparison of yield spreads between Chinese green bonds and conventional credit bonds in the years 2021-2022

Category	Subject level	Sample size (pieces)	The lower limit of the issue spread range (BP)	Upper limit of issue spread range (BP)	Median Issue Spread (BP)
Green credit bond	AAA	365	-16	410	61
	AA+	56	41	320	108
	AAA	34	69	343	125
Ordinary credit bond	AAA	4896	-15	510	85
	AA+	4622	28	603	146
	AAA	3815	58	640	280

4. Effective Measures to Promote the Development of Green Bonds under the Dual Carbon Target

4.1. Unified Standard System

Under the dual carbon target, the green bond market shows a trend of diversified issuers, with various institutions and enterprises actively participating, promoting market development and innovation. This diversification not only expands the scale of the green bond market, but also helps to achieve broader sustainable development goals. Firstly, financial institutions are important participants in the green bond market. Financial institutions such as banks, insurance companies, and asset management institutions actively issue green bonds to guide funds towards sustainable and environmentally friendly projects. These institutions not only raise funds through issuing their own bonds, but also promote the comprehensive development of green finance by providing customers with green financing products, such as green loans and green trusts. Secondly, enterprises have also become important issuers in the green bond market. From energy companies to manufacturing, from technology companies to retail, companies in various industries are beginning to recognize the importance of environmental sustainability and are issuing green bonds to finance green projects. This not only helps companies establish an environmental image in the market, but also promotes low-carbon transformation in various industries. At the same time, the government and government agencies also play a key role in promoting the development of green bonds. Some countries and regions' governments issue sovereign green bonds and use the funds raised to support sustainable projects. Government participation not only provides benchmarks for the market, but also guides private capital into sustainable areas. In addition, urban and local governments also play a role in the green bond market. They issue local government green bonds for urban sustainable development projects such as clean energy, public transportation, and environmental protection, which helps to achieve more specific local sustainable development goals[6].

4.2. Strengthening Information Disclosure

In order to improve the transparency of the green bond market, issuers should strengthen information disclosure, which includes providing detailed project information, including the environmental and social benefits, uses, and progress of the project. Issuers should also regularly disclose project performance data, so that investors can track the progress and impact of the project. Strengthening information disclosure will help investors have a more comprehensive understanding of their investment and reduce uncertainty, To enhance the credibility of the market, regulatory agencies should also strengthen their supervision of information disclosure to ensure that issuers comply with disclosure requirements.

4.3. Support for technological innovation

Technological innovation can greatly simplify the project evaluation and monitoring process of the green bond market. By adopting advanced technologies such as blockchain and artificial intelligence, data traceability and transparency can be improved, and the problem of insufficient information can be reduced. At the same time, technological innovation can also reduce the complexity of project evaluation and improve efficiency through automation and data analysis. To encourage technological innovation, governments and international institutions can provide support and incentives, Encourage fintech companies to participate in the green bond market to improve market operations[7].

4.4. Cooperation with Financial Institutions

Cooperation between financial institutions is a key factor in promoting the development of the green bond market. Cooperation can include joint issuance of green bonds, joint development of green bond products, and sharing of best practices. Financial institutions can share risks, reduce issuance costs, and attract more investors through cooperation. In addition, financial institutions can also jointly develop industry standards and guidelines to promote market consistency and sustainability, The cooperation of financial institutions helps to expand the scale of the green bond market and provide more financial support for achieving the dual carbon goal[8].

5. Conclusion

This study delves into the green bond market under the dual carbon target, aiming to provide financial support for addressing climate change and sustainable development challenges. Firstly, the study emphasizes the importance of policy support and regulatory frameworks, including tax incentives and the establishment of environmental regulations, which provide impetus for the healthy development of the green bond market. In addition, The global green finance standards and guidelines of international institutions such as the United Nations and international financial organizations help coordinate national policies and promote market consistency. The study also emphasized the increasing market demand, as investors and institutions increasingly focus on climate change and sustainability risks, leading to a rapid increase in demand for green bonds. This increase in market demand is reflected in the increasing importance of environmental, social, and governance (ESG) factors in investment decisions, as well as concerns about climate issues. The characteristics of the green bond market make it an ideal tool to meet this market demand, as they clearly allocate funds for environmental and sustainable projects and provide transparent information. On the other hand, research has also pointed out the problems faced by the green bond market, including challenges such as inconsistent standards, insufficient information, complexity of project evaluation, and low market liquidity. In order to address these issues, the study has proposed a series of effective countermeasures, including developing a unified international standard system to eliminate standard differences, strengthen information disclosure, promote technological innovation, and encourage cooperation between financial institutions.

This study highlights the key role of the green bond market in achieving the dual carbon goals, providing strong guidance for policymakers, financial institutions, and investors to promote climate change action, support sustainable development, provide financial support for the dual carbon goals, and help solve global challenges. Through these measures, the green bond market will continue to provide key support for financing environmental protection and low-carbon projects, Promote the growth of global sustainable financing.

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