

Low-Carbon Transition Bonds in China: The Status Quo and Prospects

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Abstract: Low-carbon transition bonds, as innovative green financial instruments, hold significant potential to address climate change by facilitating sustainable economic transitions. This article evaluates the status quo of China's low-carbon transition bonds, analyzes their challenges, and proposes recommendations. With substantial market potential, low-carbon transition bonds are poised to play a pivotal role in China's financial landscape, contributing to global green finance and sustainable development.

Keywords – China, financial innovation, green finance, low-carbon transition bonds, sustainability

I. Introduction

As the global climate crisis intensifies, the international community feels imperative to promote a green economy and balance ecological protection and economic growth. Against the backdrop of increasingly severe global climate change, low-carbon transition has become a significant approach to achieving sustainable development. Chinese President Xi delivered an important speech at the 75th session of the United Nations General Assembly, stating that China aims to peak carbon dioxide emissions before 2030 and achieve carbon neutrality before 2060.^[1] Under the carbon peaking and carbon neutrality strategies, enterprises are in urgent need of transformation support due to the pressure of emission reduction.

High-carbon industry has financing gaps in the process of low-carbon transition and requires substantial financial support.^[2] But traditional green finance cannot meet the huge demand for financing. People's Bank of China and China International Capital Corporation Limited estimated China's financing demand for carbon peaking and carbon neutrality to be 139 trillion yuan, while Institute of Climate Change and Sustainable Development Tsinghua University estimated the figure to be 174.38 trillion yuan.^[3] This means there is a huge potential market. Low-carbon transition bonds are a type of debt instrument specifically designed to support the funds needed by companies and projects during their transition to a low-carbon economy. The funds raised primarily support initiatives driving low-carbon transition, including research and deployment of energy-saving, carbon-reduction, and resource-efficient technologies, as well as enhancements in energy conservation and environmental protection.^[4] Therefore, low-carbon transition bonds can meet the huge capital

demands of various types of high-carbon industries in their transition process.

Since 2021, China has been striving to develop transition financial products; from 2022 to 2023, Shanghai Stock Exchange(SHSE), Shenzhen Stock Exchange(SZSE), and National Association of Financial Market Institutional Investors(NAFMII) all issued low-carbon transition bonds and transition bond products, and successively released guiding documents on the usage, management, information disclosure, and third-party assessment and certification for (low-carbon) transition bonds. ^[5] To clarify the industrial boundaries, in early 2024, the National Development and Reform Commission released a new Catalogue for Guiding the Transition of Industries to Green and Low-carbon. In December of the same year, SHSE and SZSE revised the company bond issuance guideline, and projects that comply with the Catalogue for Guiding the Transition of Industries to Green and Low-carbon will be included in the low-carbon sector. Although the concept of transition finance has earned widespread attention in China, the development of transition bonds, as one of the transition finance products, is still in its early stages. Given this, this article analyzes the status quo and prospects of China's low-carbon transition bonds, based on data from transition bonds issued up to 2024, and proposes corresponding recommendations. The global low-carbon transition bond market, especially those supporting the low-carbon transformation of high-carbon industries, has achieved rapid development. Thanks to policy support, its issuance scale has been continuously expanding. However, there are still problems such as the lack of top-level policy design, the single nature of the issuing entities, the need for improvement in the professional level of financial institutions, and the cautious attitude of investors. In the future, it is necessary for the government and enterprises to work together to solve these problems.

The rest of this article is arranged as follows. The second section examines the status quo of the low-carbon transition bonds in China, which is followed by a third section that analyzes challenges, including the lack of top-level policy design, homogeneity in issuer types, the limited professional level of financial institutions, and the overly cautious attitude of investors. Section 4 proposes recommendations from the perspectives of government, regulators, businesses, financial institutions and investors. Section 5 concludes the article.

II. The Status Quo of Low-Carbon Transition Bonds in China

In recent years, the global low-carbon transition bond market has experienced rapid development, especially those sustainable development-linked bonds and transition bonds which support the low-carbon transition of high-carbon industries. ^[6] The issuance of low-carbon transition bonds is mainly concentrated in some developed countries and emerging market countries. European countries, as global leaders in green finance, play a significant role in the low-carbon transition bond market. France, Germany and the Netherlands have been particularly active in issuing and investing low-carbon transition bonds. Although the United States started relatively late, its low-carbon transition bond market is also developing rapidly with the strengthening of policy support and the increase in market demand. China, Japan and South Korea are the major issuers of low-carbon transition bonds in Asia and have made active efforts in promoting green finance and the low-carbon economy.

This section introduces China's low-carbon transition bond market from three aspects: policy support, issuance scale, and issuers.

2.1 Policy support

On September 11, 2015, the Political Bureau of the Central Committee of the Communist Party of China held a meeting and adopted the Overall Plan for the Institutional Reform for Ecological Civilization. And on December 22, 2015, the People's Bank of China announced the Catalogue of Green Bond-Supported Projects. Since then, China has gradually established a green financial system. SHSE and SZSE issued the *Notice on Conducting Pilot Programs for Green Corporate Bonds* in 2016. Later in 2017, the China Securities Regulatory Commission, NAFMII and the People's Bank of China respectively issued policy documents such as the *Guiding Opinions on Supporting the Development of Green Bonds*, the *Business Guidelines for Green Debt Financing Instruments of Non-Financial Enterprises*, and the *Interim Guidelines for Green Bond Evaluation and Certification Behaviors* to guide the related work of green finance. After 2021, the focus of work shifted to strengthening the policy framework of low-carbon transition bonds to promote the low-carbon transition of high-carbon industries. In January 2021, the Bank of China and the China Construction Bank issued the *Statement on the Management of Transition Bonds* and the *Framework for Transition Bonds*, laying early groundwork for transition finance instruments. In May 2022, NAFMII issued the *Notice on Conducting Innovative Pilot Programs Related to Transition Bonds*, launching the transition bond pilot program and officially using the raised funds for the low-carbon transition of high-carbon industries. In June of the same year, the Shanghai and SZSE revised the *Guidelines for Specific Types of Corporate Bonds* and included transition bonds as a special type. The *G20 Transition Framework* was adopted in November, providing guidance on aligning with international standards. In 2024, policy-making accelerated. The National Development and Reform Commission released the *Guidance Catalogue for Green and Low-Carbon Transition Industries (2024 Edition)* to define the scope of support. In October, the National Association of Financial Market Institutional Investors issued the *Notice on Further Optimizing the Relevant Mechanisms for Green and Transition Bonds*. In December, SHSE and the SZSE issued the *Guidelines No. 2 for Reviewing Corporate Bond Listings—Special Types of Corporate Bonds (2024 Revision)*, which has promoted information disclosure and supervision of transition bonds. These policies, by defining the boundaries of transition activities, standardizing certification criteria, and improving market mechanisms, systematically support high-carbon industries such as steel and energy in upgrading to low-carbon operations, signifying that China's transition finance has entered a stage of standardized and large-scale development.

2.2 Bond Issuance Scale

As the world's second-largest economy and a leading carbon emitter, China has made an effort in the transition of a low-carbon economic model. By 2024, 22 (low-carbon) transition bonds were issued in the country, accumulating to a total value of 217.98 billion yuan. In 2022 alone, 14 such bonds were launched, amounting to 76.3 billion yuan in issuance. The following year saw the release of 3 transition bonds totaling 22.68 billion

yuan. Then, in 2024, five (low-carbon) transition bonds were introduced, raising a substantial 119.00 billion yuan,^[5] a notable surge compared to the previous year.

2.3 Key Issuers

2.3.1 State-Owned Enterprises in High-Carbon Industries

These companies mainly focus on traditional high-emission sectors, including steel manufacturing, energy, construction materials, architectural decoration (mainly infrastructure construction), chemicals, transportation, and public utilities (primarily powered by electricity and occasionally by gas). Under the pressure of energy conservation and emission reduction, this type of enterprise is more inclined to raise funds by issuing low-carbon transition bonds.

2.3.2 Commercial Banks

Commercial banks play a crucial role in the financial sector. They are active participants in the low-carbon bond market. They not only support green and low-carbon projects by issuing green bonds to support low-carbon technology or clean energy projects in high-carbon industries (such as steel, cement, and chemicals), but also promote a low-carbon economy and society by providing financial services such as green credit.

2.3.3 Policy Banks and Other Financial Institutions

Beyond commercial banks, various other financial institutions, including policy banks, securities firms, fund management companies, and insurance companies, are also engaged in issuing low-carbon transition bonds. These organizations channel financing into sustainable initiatives through instruments like green bonds and environmental investment funds, thereby fostering the green finance ecosystem.

2.3.4 Local Government Financing Vehicles

Certain municipal governments and urban investment entities have leveraged local financing platforms to issue low-carbon transition bonds. These funds are typically allocated toward regional sustainability efforts, such as upgrading heating systems, transforming industrial parks into greener spaces, and improving environmental governance. Issuing such bonds helps to upgrade local economies and promote sustainable urban development.

III. Challenges in the Development of Low-Carbon Transition Bonds

At present, the policies related to low-carbon transformation bonds in China mainly consist of various “guidelines” and “instructions” concerning green bonds, transition bonds, and specific types of bonds. Only the industrial guidance catalogue is involved in the low-carbon transition, and there are no unified regulatory frameworks that stipulate the definition, scope of application, information disclosure, carbon reduction targets, performance targets, and penalty provisions of low-carbon transition bonds.^[7] Although the *Guidance Catalogue for Green and Low-Carbon Transition Industries (2024 Edition)* has made many adjustments in content, the updated definition of green credit includes multiple instruments such as green credit and

transition-related credit.^[8] Thus, the evaluation and assessment methods have not yet been unified.

The market participants in the issuance of low-carbon transition bonds lack diversity. Most of the issuers of low-carbon transition bonds have been state-owned enterprises in high-carbon industries. Private enterprises and companies in other forms of ownership have rarely participated in the low-carbon transition bond market due to insignificant cost advantages, complicated issuance processes, and a lack of transition technologies.^[9]

Compared with ordinary financial bonds, the issuance process of low-carbon transition bonds is more complicated. In addition, the certification and issuance process of low-carbon transition bonds also involves a large amount of non-financial knowledge, such as emission reduction and environmental protection. Currently, most financial institutions have insufficient reserves of relevant professional talent. The low-carbon transformation projects funded by low-carbon transition bonds are confronted with various risks stemming from the market, policies, and technology. The financial institutions cannot manage risks that emerge from multiple sources and are hard to identify. At present, the issuance volume and scale of domestic low-carbon transition bonds have not yet met the financing needs of low-carbon transition enterprises. The issued low-carbon transition bonds are less active in the financial market, and most low-carbon transition bond products and services have not been promoted or appropriately applied.^[10]

When making investments, investors generally only consider the level of return on investment and the length of the payback period. Most of them do not consider factors such as the environment, social responsibility and sustainable development, and fail to understand the long-term impact of these factors on environmental protection and their significance for achieving China's "dual carbon" goals. Compared to other bonds, low-carbon transition bonds do not offer superior investment returns^[11] and the payback period is relatively long. These characteristics make it challenging for low-carbon transition bonds to meet investor expectations for profitability.

IV. Recommendations on Vigorously Developing Low-Carbon Transition Bonds

The government should promote the development of low-carbon transition bonds through laws and systems, and meanwhile, adoptspecific fiscal policies to facilitate the low-carbon transformation process of enterprises. Policy standards that match low-carbon transition bonds should be established to guide and urge high-carbon enterprises to transform towards low-carbon.^[12] Government can reduce the production costs of transforming enterprises in terms of technology, equipment and talent cultivation through targeted subsidy policies. The issuance cost of low-carbon transformation bonds for enterprises can be reduced by lowering the registration fee and service fee for issuance, etc. By establishing tax preferential policies, the tax burden cost of transforming enterprises can be reduced. Meanwhile, the government should enhance international cooperation on low-carbon transformation bonds for industries and enterprises, actively participate in the formulation of international standards and norms, share successful experiences, and establish an international cooperation platform for transition finance and promote the healthy development of the global low-carbon transition bond market.

To promote the healthy development of the low-carbon transition bond market, regulatory authorities need to promptly unify the assessment and certification scope of low-carbon transition bonds, clearly stipulate the low-carbon transition requirements for different industries, to guide financial institutions to formulate business strategic plans for low-carbon transition bonds as well as quantifiable and executable goals and tasks. Analyze and assess the possible risks of low-carbon transition bonds and the corresponding countermeasures.^[13] They should accelerate the improvement of the environmental information disclosure system for low-carbon transition bonds, requiring low-carbon transition enterprises to disclose environmental indicators and specific performance indicators involved in low-carbon transition projects, so as to enhance the transparency of information on low-carbon transition bonds. They should establish a disclosure model and operational guidelines for low-carbon transition bonds, further clarify the framework for environmental information disclosure, and unify the disclosure format and requirements to enhance the quality of environmental information disclosure for low-carbon transition bonds.

Low-carbon transformation enterprises should take reducing carbon emissions and improving energy efficiency as their core goals, optimize production technologies, improve production processes, reduce energy consumption, minimize waste emissions, and lower production costs. Low-carbon transformation enterprises should strengthen their environmental management systems, optimize their corporate governance structures, take the initiative to assume social responsibilities, and shape a positive corporate image. Low-carbon transformation enterprises should attach great importance to environmental information disclosure and fund management. "On the basis of disclosing the environmental performance indicators of low-carbon transformation, they are encouraged to actively disclose their transformation goals and plans as well as the use of funds."^[14] Enterprises should attach great importance to risk prevention work, ensure energy security and industrial chain security, avoid financial risks caused by business risks,^[15] and ensure the rationality and sustainability of fund usage.

Financial institutions should standardize the issuance standards and business processes of low-carbon transformation bonds, guide low-carbon transformation enterprises to strictly follow the issuance standards, and strengthen fund supervision. A dedicated business line for low-carbon transition bonds can be established to strive to enhance the professional skills of financial institution staff and provide specialized services for the issuance of low-carbon transition bonds. Financial institutions should increase the application of digital technology in the field of low-carbon transition bonds and collect detailed data on low-carbon transition bonds through financial technology.^[16] Build a real-time updated data statistics platform for low-carbon transition bonds to assist financial institutions in reasonably pricing low-carbon transition bonds,^[17] and reduce investment risks; utilize the real-time updated statistics on low-carbon transition bonds to enhance the risk identification capabilities of financial institution employees and improve the risk management level of financial institutions themselves.

When investors enter the bond market, they should proactively understand the significant impact of

high-carbon enterprises' low-carbon transformation on environmental and economic sustainable development, comprehend the profound social significance of investing in low-carbon transition bonds, accept that there are indeed differences in investment returns between low-carbon transition bonds and traditional financial bonds and green bonds, enhance their recognition of low-carbon transition bonds, and form a correct investment concept for low-carbon transition bonds.

V. Conclusion

China's low-carbon transition bond market is developing rapidly, driven by policy support, market demand and financial innovation. However, it faces challenges due to the lack of top-level policy design, issuer diversity, and the financial institutions' know-how, and investors are cautious in their attitude, etc.

To address these challenges, the government should provide policy guidance and financial support, and strengthen international cooperation and coordination. The regulators should strengthen the supervision of the low-carbon transition bond market. Enterprises should optimize production technology, strengthen environmental management systems, enhance the transparency of information disclosure, and attach importance to risk prevention. Financial institutions need to formulate special policies and standards, increase the application of digital and financial technology, enhance their collaborative risk resistance capabilities, and enhance their recognition and confidence in low-carbon transition bonds.

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