China Green Finance Policy

Analysis Report 2021

Climate Bonds INITIATIVE

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Prepared by Climate Bonds Initiative and SynTao Green Finance.

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Introduction

In pursuit of China's carbon neutrality objectives, government regulators and stock exchanges have played a key role in the development of China's green finance initiatives, including the introduction and improvement of green finance policies. From the central to the local level, government agencies have deployed tools including facilitating measures, financial incentives, and appraisal rewards and penalties to support the growth and inclusivity of green finance.

Green bonds are the most established of the thematic labels and by the end of 2021, the Climate Bonds Green Bond Database recorded cumulative issuance of USD1.6tn. Chinese green bond issuance slowed down in 2020 as COVID-19 and its ramifications took centre stage (USD23.8bn). However, in 2021 the market rebounded sharply, and green bonds originating from China topped USD68bn, making it the second-largest country source of green bonds after the USA (USD82bn in 2021). A further USD41.4bn of green bonds originated from China that did not comply with the rules for inclusion in the Climate Bonds Green Bond Database. This report explores four interrelated elements of policy support in the Chinese green bond market.

1. China's green finance policy updates focusing on carbon neutrality:
An overview of 2021 developments in China's green finance policies, with a focus on green bonds. We explore the policy tools available to governments and assess their efficacy. This is complemented by our proprietary correlation analysis which establishes a linear relationship between green financial policies and the number of green bonds issued.

2. China's green bond market:
A summary of the current shape and size of the Chinese green bond market.

3. Regional green finance policy:
We assess the efficacy of green bond policies at the local level.

4. Stakeholder expectations:
A range of market stakeholders were interviewed to enable a broader perspective on how current policies impact green bond market participants.

China's green finance market must attract more issuers and investors to address severe and increasing climate risks, accelerate the green economy transformation, and achieve the carbon neutrality objectives. This report is intended for domestic and global stakeholders, including pension funds, asset managers, bond issuers, and relevant government departments.

Climate Bonds Initiative (Climate Bonds) is an international organisation working to mobilise global capital for climate action. Climate Bonds carries out market analysis, policy research and market development. It advises governments and regulators and administers a global green bond certification scheme.

Climate Bonds Partners include investors representing USD14tn of assets under management, leading global investment banks, and governments. Climate Bonds is the lead partner in the Green Infrastructure Investment Coalition. Sean Kidney, Climate Bonds CEO, is a member of the European Commission's Technical Expert Group on Sustainable Finance.

SynTao Green Finance (STGF) is one of the first Chinese organisations specialised in providing green finance and ESG responsible investment services, starting ESG data collection and research as early as in 2009. STGF ESG data and research on ESG key issues are widely employed to support investment decisions, risk management, policy making, and sustainable finance product innovation. STGF STaR ESG Database and STGF ESG Risk Radar System cover all A-share market, and Hong Kong stocks in the stock connect schemes, amounting to 5,000 listed companies. STGF PANDA Climate Data Platform provides carbon emission data of Chinese entities based on GHG protocol.

SynTao Green Finance is the founder of the China Social Investment Forum (China SIF), which advocates for the establishment of a responsible capital market in China and supports the country in policy research and practices to establish a green finance system.

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1. China's national green finance policies support the carbon neutrality goals

On 22 September 2020, at the 75th United Nations General Assembly, Chinese President Xi Jinping announced the targets of China's carbon dioxide emissions to peak by 2030 and reach carbon neutrality by 2060. Since then, low-carbon development and the green transition have become top priorities for developing domestic social and economic policies.

On 16 July 2021, the national carbon market was officially launched, which included more than 2,000 key emitters in the power generation industry. On 22 September 2021, the Central Committee of the Communist Party of China and the State Council issued the *Opinions on Completely Accurately Implementing the New Development Concept and Successfully Achieving Carbon Peaking and Carbon Neutralization.* On 26 October 2021, the State Council issued the *Carbon Peaking Action Plan Before 2030*, which described the top-level design of the carbon neutrality goal in full detail.

The achievement of the carbon neutrality goal will require the low-carbon transition of all entities, which will create a steady and plentiful supply of projects for green finance investors. A series of green finance policies are intended to stimulate the involvement of more participants from both the domestic and international markets.

Green bonds offer a crucial entry point for domestic investors to participate in green finance, and they are also the second green financial product to be developed following green credit. The bond market benefits from extensive participation. All types of financial institutions can own bonds, and issuers span the full range of asset classes from sovereign, supranational, and agency (SSAs), to financial and non-financial corporate entities. Many regions choose green bonds as the first green financial instruments to develop when they start to promote green finance. Thus, the green bond policies have important representativeness and benchmarking.

1.1 Green Bond policies

In September 2015, the Central Committee of the Communist Party of China and the State Council published its *Overall Plan for the Reform of Ecological Civilization System* which recommended to 'conduct research on the issuance of green bonds by banks and enterprises, encourage the transformation and implementation of green credit financing assets'. Consequently, regulators and trading platforms in the Chinese bond market have developed various green bond products, resulting in the rapid evolution of China's green bond market.

Three regulators are responsible for the Chinese bond market

Regulator	Responsibility
People's Bank of China (PBoC)	Interbank market
China Securities Regulatory Commission (CRSC)	Exchange market
National Development and Reform Commission (NDRC)	Enterprise bond issuance

Overview of green finance policies issued by the PBoC for the interbank market

2015/12/22	*People's Bank of China Announcement [2015] No. 39 (Announcement by the People's Bank of China on Green Financial Bonds)*
2016/8/31	*Guiding Opinion on Development Scheme for Green Finance Mechanism*
2017/3/22	*Business Guidelines for Green Debt Financing Instruments of Non-financial Enterprises*
2017/9/25	*Issues Related to Implementing Credit Policies and Strengthening Environmental Protection Work*
2017/12/13	*Guidelines for Green Bond Evaluation and Certification (Interim)*
2018/2/5	*Notice of the People's Bank of China on Matters Concerning Strengthening the Supervision and Management of Green Financial Bonds in the Duration Period*
2018/7/20	*Green Credit Performance Evaluation Scheme for Bank Deposit Business of Financial Institutions (Trial)*
2019/5/13	*The People's Bank of China Supporting the Green Financial Sector Reform and Innovation Pilot Zone on Issuing Green Bond Financing Instruments*
2021/3/18	*Notice on Clarification of the Mechanism Related to Carbon Neutrality Bond*
2021/4/2	*Green Bond Endorsed Project Catalogue (2021 Edition)*
2021/5/27	*Green Finance Evaluation Scheme for Banking Financial Institutions*
2021/4/28	*NAFMII Launching Sustainability-Linked Bonds - Ten Questions and Ten Answers to Sustainability-Linked Bonds (SLB)*
2022/1/10	*Notice on Strengthening the Self-Regulatory Management of Information Disclosure During the Duration Green Financial Bonds*

Interbank market

In December 2015, the People's Bank of China (PBoC) issued a landmark policy document for the green financial market, the *PBoC Announcement [2015] No. 39*, which provided guidelines for the issuance of green financial bonds in the interbank bond market and marked the official launch of China's green bond market. Along with this announcement was the *Green Bond Endorsed Project Catalogue (2015 Edition)*, which, as the first domestic green bond standard, provided an important reference for green bond issuers and intermediaries in the following five years. The catalogue was updated in 2021.

In December 2017, the PBoC and the China Securities Regulatory Commission (CSRC) published the *Guidelines for Green Bond Evaluation and Certification (Interim)*, which established regulations and guidelines for the evaluation and certification of green bonds by third-party institutions. In March 2018, China released the *Notice of the PBoC on Matters Concerning Strengthening the Supervision and Management of Green Financial Bonds in the Duration Period*. This policy strengthened the required supervision and disclosure of green bonds' Use of Proceeds (UoP), contributing to enhanced information disclosure. In June of the same year, the PBoC announced an extension of the medium-term lending facility (MLF) collateral scope, which included the addition of green bonds and loans and added new applications for the instruments.

In March 2017, the National Association of Financial Market Institutional Investors (NAFMII) published the *Business Guidelines for Green Bond Financing Instruments of Non-financial Enterprises* and its supporting forms. This policy clarified green bond standards for non-financial corporate issuers, which supported the rapid growth of green bonds in China. In 2021, NAFMII introduced a pair of new green instruments, carbon-neutrality bonds and sustainable development-linked bonds, to attract more capital to the market.

Stock exchanges

In the first half of 2016, the Shanghai Stock Exchange (SSE) and the Shenzhen Stock Exchange (SZSE) respectively published the *Developing Green Corporate Bond Pilot Project* and the *Developing Green Corporate Bond Business Pilot Project*. These documents included detailed guidance for green corporate bond issuers, including project types, environmental objectives, and UoP.

The CSRC issued the *Guiding Opinions on Supporting the Development of Green Bonds* in March 2017, which explained the requirements for green corporate bonds and green asset-backed securities (ABS) and established a green platform to enhance the speed and simplicity of corporate green bond issuance.

Overview of the list of existing green finance policies issued by the CSRC and the SSE and SZSE

2016/3/16	SSE – Developing Green Corporate Bond Pilot Project
2016/4/22	SZSE – Developing Green Corporate Bond Business Pilot Project
2017/3/2	Guiding Opinions on Supporting the Development of Green Bonds
2017/12/13	Guidelines for Green Bond Evaluation and Certification (Interim)
2018/3/22	SSE Corporate Bond Financing Regulatory Questions and Answers (1) - Green Corporate Bonds
2018/5/7	Answers to Questions Related to Green Corporate Bonds of SZSE
2018/8/13	Q & A on ABS Business of SSE (II) - Green ABS
2020/11/27	Business guidelines for innovative varieties of corporate bonds of SZSE Exchange No. 1 green corporate bonds
2021/4/2	Green Bond Endorsed Project Catalogue (2021 Edition)
2021/7/13	SZSE Corporate Bonds Innovative Products Business Guidelines No. 1 - Green Corporate Bonds (Revised in 2021)
2021/7/13	Guidelines for the Application of the SSE Corporate Bond Issuance and Listing Review Rules No. 2 - Specific Types of Corporate Bonds (Revised in 2021)

Overview of green finance-related policies issued by NDRC

2015/12/31	Guidelines for the Issuance of Green Bonds
2016/8/31	Guidance on Building a Green Finance Mechanism
2016/9/21	Pilot Scheme for Paid Utilization and Trading System of Energy Utility Right
2017/2/6	Trial Project on the Implementation of Renewable Energy Green Power Certificate Issuance and Voluntary Subscription Trading Mechanism
2017/12/20	National Carbon Emissions Trading Market Development Scheme (Power Generation Industry)
2019/3/5	Industry Guidance Catalogue (2019 Edition)
2020/10/21	Guiding Opinions on Promoting Investment and Financing for Addressing Climate Change
2021/4/2	Catalogue of Green Bond Supporting Projects (2021 Edition)

In the 2018 Exchange Regulatory Questions and Answers section, the SSE and the SZSE refined the definitions of green corporate bonds and green ABS. The document offered detailed guidance on third-party evaluation, certification, and information disclosure requirements.

On 13 July 2021, the SSE and SZSE successively issued announcements revising the guidelines for bond types, clearly adding new sub-types of green corporate bonds such as carbon neutrality bonds and blue bonds. The revisions rationalised the UoP categories and the information disclosure requirements to ensure the flow of capital to the green low-carbon sectors.

Enterprise bonds

At the end of 2015, the National Development and Reform Commission (NDRC) published the *Guidelines for the Issuance of Green Bonds*, which specified the external review requirements for green corporate bonds and categorised the twelve UoP sectors from energy conservation and emission reduction technology transformation to green urbanisation.

In March 2019, the NDRC and six other ministries and commissions jointly issued China's first *Green Industry Guidance Catalogue (2019 Edition)*, guidance for establishing green industry policies, and references for social capital investment.

1.2 Impact of China's key policies on the market

Green bonds are critical to enabling the achievement of China's carbon neutrality goals. In 2021, several supporting policies were introduced.

The green bond market expands

In April, the PBoC, the NDRC, and the CSRC jointly revised and released the *Green Bond Endorsed Project Catalogue (2021 Edition)*, using the *Green Industry Guidance Catalogue (2019 Edition)* as a basis. The Catalogue introduced the internationally recognised principle of "do no significant harm", and tightened carbon emission reduction requirements. Before the introduction of the Catalogue, different types of green bonds had to reference different guidelines from the corresponding regulators. The updated Catalogue was a crucial step in developing a standardised green bond market because it unified domestic standards. Starting from 1 July 2021, issuers and intermediaries could issue, evaluate, and certify green bonds using a single reference document. The Catalogue also converged with international green bond standards. Several fossil-energy-related projects such as clean coal utilisation, ultra-low emission transformation of coal-fired power plants, and clean fuel production were removed in line with international standards.

Meanwhile, market mechanisms have been gradually introduced to further regulate market behaviour. In September, the Green Bond Standards Committee, established under the guidance of the Central Bank and the CSRC, issued the *Operational Rules for Market-Based Assessment and Certification Institutions for Green Bonds (for Trial Implementation)* and supporting documents to formally conduct market-based assessment and certification of third-party review and certification institutions involved in green bond issuance. This policy was China's first industry standards document for green bond certification institutions and introduced regulations to ensure the quality and independence of green bond evaluation and certification institutions and prohibit greenwashing. This policy will help improve the transparency of domestic green bonds, verify the green features of bonds, and attract domestic and international investors.

The above two policies were intended to facilitate the steady, transparent, and standardised growth of China's green bond market.

Increased institutional participation in the green bond market

In June, the PBoC released the *Green Finance Evaluation Scheme for Banking Financial Institutions* (the Evaluation Scheme), the updated version of the *Green Credit Performance Evaluation Plan for Banking Deposit Financial Institutions* in 2018. The new Evaluation Scheme extends the application target from depository financial institutions in the banking industry to all banking financial institutions. The evaluation of green credit performance is extended to domestic green bond products, with the possibility of including all types of green financial products in the future. The Evaluation Scheme broadens the application of the incentive and restraint mechanism for green finance, expands the application scenarios of the evaluation results, and clarifies that the rating results will be incorporated into the PBoC's financial institution ratings and other related policies and prudential management tools.

The Evaluation Scheme has activated more green market participation from banking financial institutions and led to an increased number of green bond transactions.

In November, the PBoC officially introduced a policy of preferential lending to support emission reductions. National financial institutions can borrow from the PBoC at 1.75% to support lending for clean energy, energy conservation, and carbon emission reduction technologies. After issuing carbon emission reduction loans, financial institutions can apply to PBoC for the preferential lending rates by publicly releasing the carbon emission reduction data related to the relevant projects and loans. The loan's carbon emission reduction data must be verified by a third-party professional institution and publicly disclosed for scrutiny, ensuring the tool supports carbon emission reduction. However, financial institutions face stricter regulatory requirements at the operational level, and it remains uncertain whether the spread currently offered is attractive enough.

Information disclosure pilot projects

In August, the PBoC published the *Guidelines for Environmental Information Disclosure by Financial Institutions* (the Guidelines). This was one of China's first green finance standards, setting requirements and guidelines for environmental disclosure by financial institutions. The Guidelines have been piloted in green financial innovation pilot zones in six provinces across China.

Prior to this, financial institutions generally referred to the requirements of the Task Force on Climate-related Financial Disclosures (TCFD) and made disclosures in four areas: governance, strategy, risk management, and metrics and targets. Although disclosure is not yet mandatory, the requirements to provide structured and standardised disclosures will encourage financial institutions to evaluate the environmental and climate-related risks they face, and to manage and prevent them. This will also enable financial institutions to apply due diligence to the environmental and climate change related impacts of their own investment and lending activities which could divert financial capital from high-emitting industries to low carbon alternatives, further supporting the green transition.

2. China's green bond market

A total of USD109.4bn green bonds were issued in China in 2021. The Climate Bonds Green Bond Database recorded USD68bn of green bonds originating from China which accounted for 62% of total issuance. A further USD41.4bn of green bonds originated from China that did not comply with the rules for inclusion in the Climate Bonds Green Bond Database. Among those, 32% did not meet the Climate Bonds green definitions and 6% were in the pending category, awaiting further clarity from issuers around UoP.

2.1 Certified Climate Bonds

In 2021, 15 Certified Climate Bonds, amounting to USD16.9bn originated from China, a 374% increase on the prior year. China Development Bank and Industrial and Commercial Bank of China were among the global top ten Certified Climate Bonds issuers. China Development Bank was the world's largest Certified Climate Bonds issuer in 2021, with a total of USD11.6bn, with proceeds earmarked for low-carbon transportation, wind power, and photovoltaics. The China Development Bank issued the largest individual bond. The RMB20bn bond (approximately USD3.1 bn) was issued in March to support carbon emission reduction projects, including wind power and photovoltaics. This bond was the first labelled carbon neutrality bond Certified by Climate Bonds, and verification was obtained from Lianhe Equator.

2.2 Pending and excluded bonds

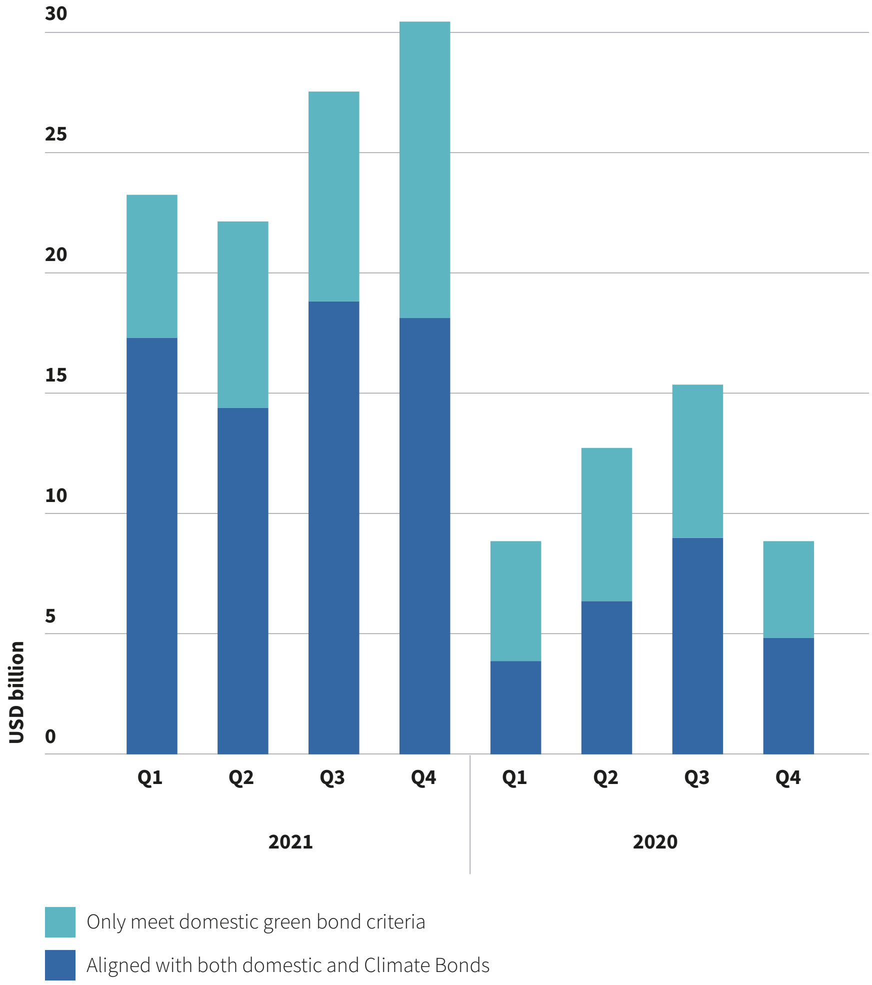
In 2021 32% of labelled green bonds originating from China did not qualify for inclusion in the Climate Bonds Green Bond Database, a decrease from 46% in the prior year.

The three main factors for exclusion were:

1. Proceeds were allocated to general working capital for operational purposes and thus unrelated to green projects or assets.
2. The project categories of the UoP were not in the Climate Bonds green bond database methodology.
3. Inadequate disclosure regarding UoP.

According to the Climate Bonds Green Database methodology, if adequate disclosure around UoP is unavailable, Climate Bonds temporarily classifies the bond as pending. Climate Bonds makes reasonable attempts to contact the issuer for further clarity. If this is received and satisfies the rules for inclusion, the bond will then be added to the Climate Bonds Green Bond Database. As of March 2022, bonds originating from China in 2021 and with pending status amounted to USD6.4bn, 6% of the total.

Figure 1. China's green bond market rebounded in 2021



Issuers of Certified Climate Bonds in China in 2021

Issuer	The total amount of Certified Climate Bonds (USD billion)	Certification Verifier
China Development Bank	11.56	Lianhe Equator
ICBC	4.19	CICERO, Lianhe Equator
ICBCIL Finance	0.75	CICERO
GD Power Development Co., Ltd.	0.28	iGreenBank
Jinneng Group Co., Ltd.	0.08	Lianhe Equator

2.3 Non-financial corporates dominate

In 2021, China's green bond issuers were primarily financial and non-financial corporates. Non-financial corporate issuers have been responsible for the largest share of volumes since 2017 and accounted for 46% of the total volume in 2021 (USD31.2bn). Financial institutions comprised the second-largest issuer type, supplying 35% of the total (USD23.9bn).

Figure 2. Financial and non-financial corporates issued 80% of volumes in 2021

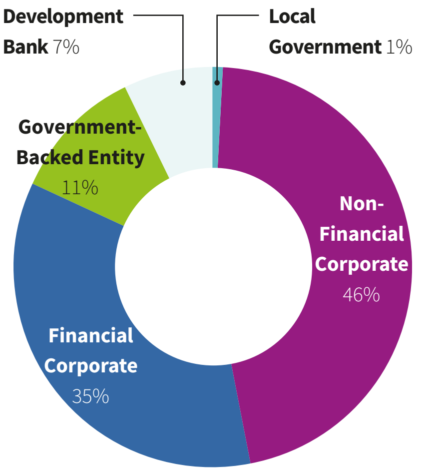
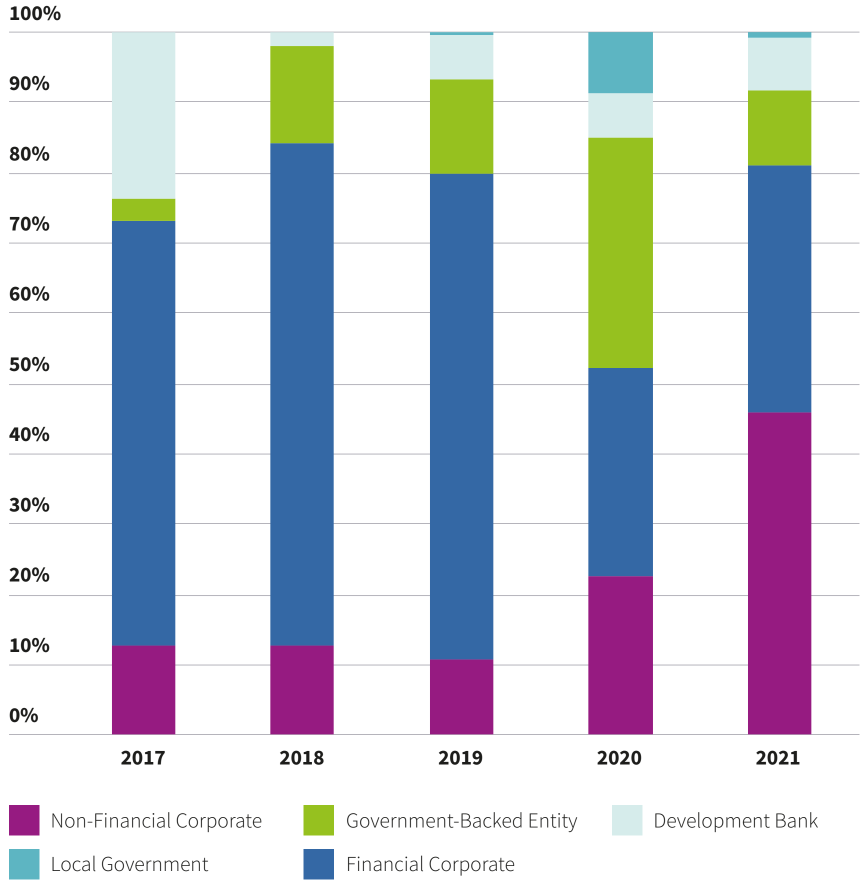


Figure 3. Private sector issuers supply most China's green bonds



2.4 UoP support China's carbon neutrality

Based on the Climate Bonds criteria, 61% of the UoP from Chinese green bonds issued in 2021 was earmarked for Renewable Energy (USD41.3bn), the most recorded in any year. This supports China's carbon neutrality goals.

Figure 4. Renewable Energy dominated UoP of Chinese green bonds in 2021

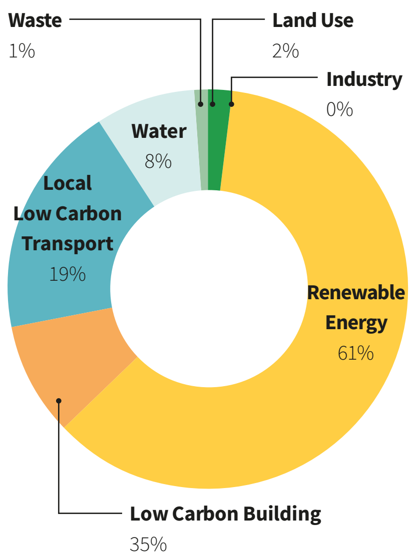
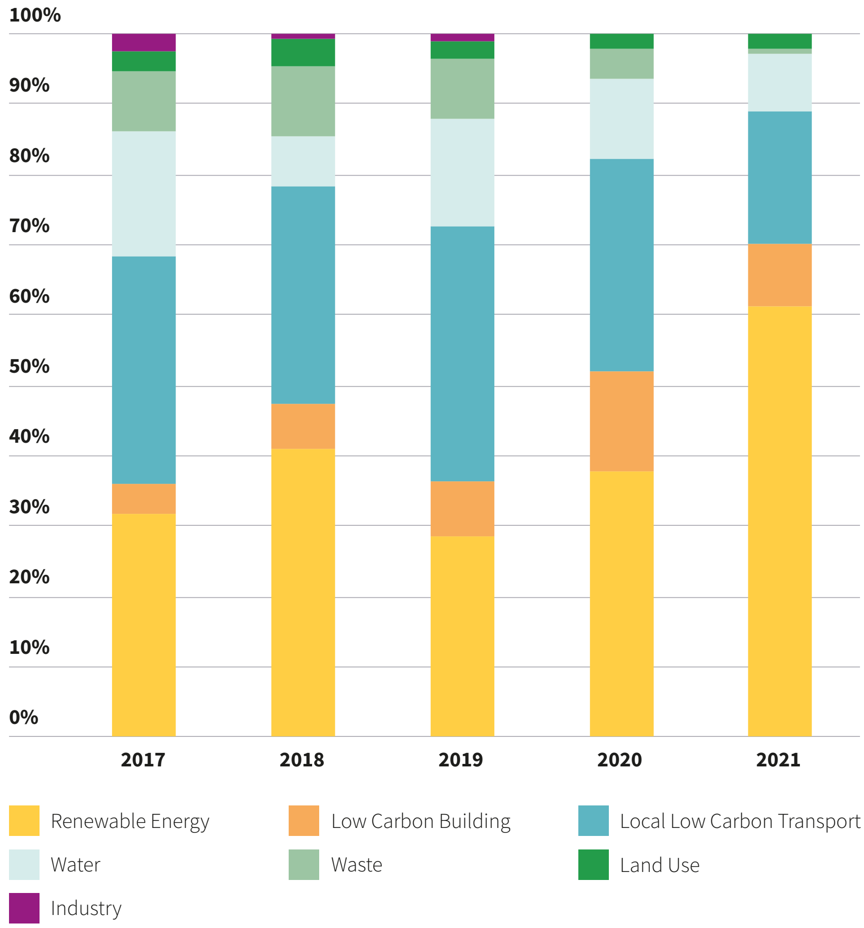


Figure 5: Renewable Energy UoP overtook Low Carbon Transport in 2021



3. Regional green finance policy

3.1 Local policies support carbon neutrality

Government departments throughout China responded to the central government's call and developed locally tailored programmes to support green finance.

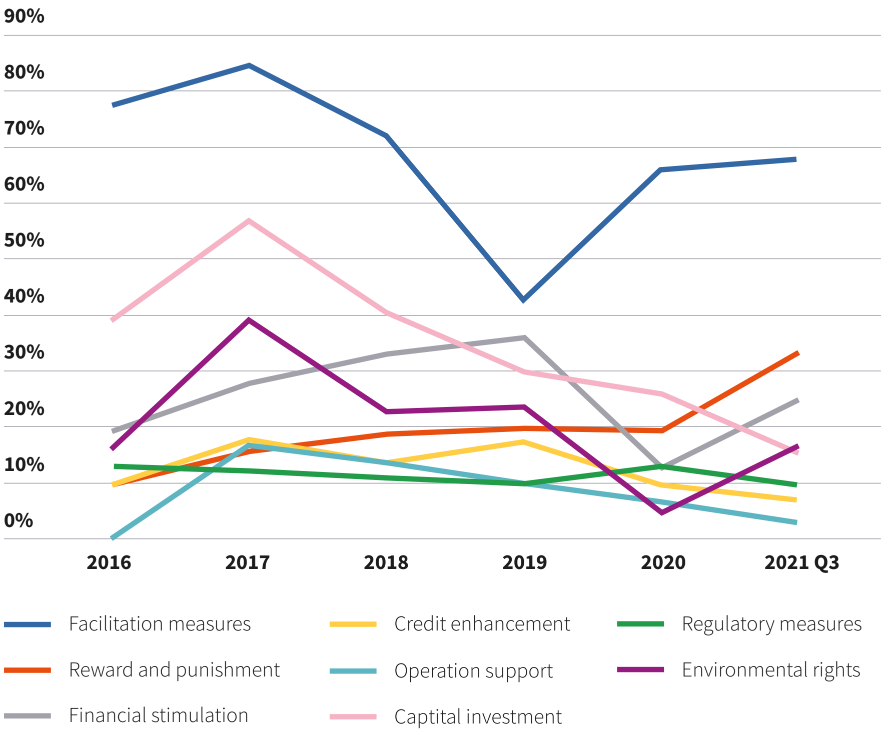
SynTao Green Finance's Policy Database indicates that in the first three quarters of 2021, a total of 107 green finance-related policies were introduced nationwide and at the local level, including 27 special policy papers on green finance. These policies reflect China's carbon neutrality objectives and shift the focus away from traditional green finance concerns such as environmental protection and pollution to low-carbon transition and climate change. Multiple policies have mentioned low-carbon, carbon emission rights, and climate change keywords.

From 2016 to the third quarter of 2021, SynTao Green Finance compiled statistics on local green finance-related policies and identified and counted various incentives adopted by the policies and their proportions (Figure 6).

Incentive labels of green finance policies

Incentives	Specific Measures	Descriptions
Facilitation measures	Pilot project for demonstration	Appoint selected areas as green finance pilot projects.
		Selected industries and enterprises as pilot projects of green finance.
	Green channels	Set up green channels and give them priority.
	Industry docking	In conjunction with green finance to promote the information sharing of green transformation in specific economic sectors.
	Information sharing	Includes establishing project database, environmental violation information database, reporting process mechanism, etc.
Reward and punishment	Performance evaluation	Give green financial performance evaluation.
	Commendation and criticism	Publicity and dissemination of relevant information, give commendation or criticism.
Financial stimulation	Cost-sharing	Share the cost of green financial activities by providing bank subsidies and bond discounts.
	Risk sharing	Compensate for the loss of investment or loan.
	Tax relief	Provide tax relief to issuers, investors, etc.
Credit enhancement	Guarantee and credit enhancement	Provide financing guarantee or make up for the compensation amount incurred by the guarantee institution.
	Other credit enhancement	Enhance credit level through debt-loan portfolios, specially constructed fund portfolios, etc.
Operational support	Introduction via institution	The government subsidises green finance-related institutions newly entering the region.
	Talent introduction	The government provides human capital investment and introduces green financial talents.
Capital Investment	Financial investment	Directly invests in financial funds by establishing green development funds and Public-Private-Partnerships (PPP).

Figure 6: Facilitation measures are the most common policy tools



Based on the green finance policies using different incentives released in the past six years, we observe:

1. Despite a drop in 2019, facilitation measures were the most frequently used incentives for local green finance policies. Facilitation measures are used to connect specific regions or sectors for pilot runs when introducing green finance, and to establish green project databases and open green platforms for green financial product approval during the development phase. Facilitation measures enable the government to efficiently allocate resources to increase market activity and will eventually be replaced by market mechanisms.

Sichuan Province launched the Sichuan Green Finance Supermarket named Lv Rong Rong, which includes five service modules connecting green projects and capital: green funds, green projects, green technology, green information, and capacity building.

Guangdong Province uses green finance to develop the province's construction sector. Guangdong Province provides a platform for financial matching services such as matching green credit and green bonds to energy-efficient buildings, green buildings and construction projects with smart construction and new building industrialisation methods and encouraging green bond issuance to support related projects or provide credit enhancement measures.

2. The use of evaluation rewards and penalties, and financial incentives has increased since 2020. In 2020, policies promoting the development of the green finance market by economic means, such as interest rates subsidies, tax reduction, or bonuses, decreased due to the impact of the COVID-19 pandemic. The incidence of such policies has rebounded in the context of China's carbon neutrality goal in 2021, and the subsidies will be relatively concentrated in the fields of green loans and green insurance.

Shenzhen, a city in Guangdong province, offers a green bond subsidy of up to RMB0.5m (USD78,932) to local enterprises that issue green bonds. The subsidy is based on 2% of the issue size.

Huzhou, a city in Zhejiang province, offers 1% of the value of green bonds with a maximum of RMB0.5m (USD78,932) to local private enterprises or financial institutions that issue green bonds.

3. The percentage of capital investment policies has continued to decline. This might be because government funding typically leads to market development. The private sector will step in when the market starts to expand rapidly.

Local policy highlights 2021

1. Jiangsu Province, 4 November 2021, Guiding Opinions on Vigorously Developing Green Finance (Jiangsu Opinions)

The Jiangsu Opinions consists of ten parts with 30 articles, describing Jiangsu's green finance development agenda. A green financial development framework, accounting for the idiosyncrasies of Jiangsu Province, addresses the four systems of policy, organisation, product, and risk control. Green finance support will be directed to upgrading of industrial enterprises, green development in agriculture, the green transition of the energy system, and green low-carbon technology progress. The Jiangsu Opinions also put forward 24 specific measures in 8 categories, such as building a basic institutional framework for green finance, improving the system of green financial institutions, and establishing a green financial incentive and restraint mechanism.

2. Sanming City, Fujian Province, 8 March 2021, Guiding Opinions on Sanming Banking and Insurance Green Finance Reform Pilot Work (Fujian Opinions)

The Fujian Opinions define three main goals: the continuous expansion of green finance, the constant improvement of green finance standards, and the ongoing improvement of green finance innovation. The Fujian Opinions defines 32 support measures divided into five categories: 1) developing a green project identification system; 2) encouraging the development of professional green finance institutions; 3) matching the coordinated development of specific industries; 4) developing risk compensation; 5) technology empowerment. Sanming is one of Fujian Province's green finance reform pilot zones. The policy provided examples of valuable practical experiences that could be replicated to develop the green finance system in Fujian province.

3. Nanning City, Guangxi Zhuang Autonomous Region, 18 March 2021, Several Policies for Promoting High-Quality Development of the Financial Industry in Nanning

This policy will support green bond market development and encourage green financial reform and innovation to encourage the development of the local financial industry. Financial institutions demonstrating excellent results from green financial reform practices are eligible for bonuses of up to RMB800,000 (USD126,292) through the policy. Incentives for issuing green sustainability themed bonds have also increased to 4‰ of the issue size and up to RMB1.5m (USD240,000).

3.2 Assessment of policy efficacy

To provide a more objective picture of the adequacy of local government green finance policy since 2016, we catalogued rules and regulations that had been effective. Based on the extent of the implemented rules and the impact of the policies, the research team assigned and calculated a green finance policy efficacy score for the past six years for each province and municipality directly under the central government.

The measure of policy efficacy has two dimensions:

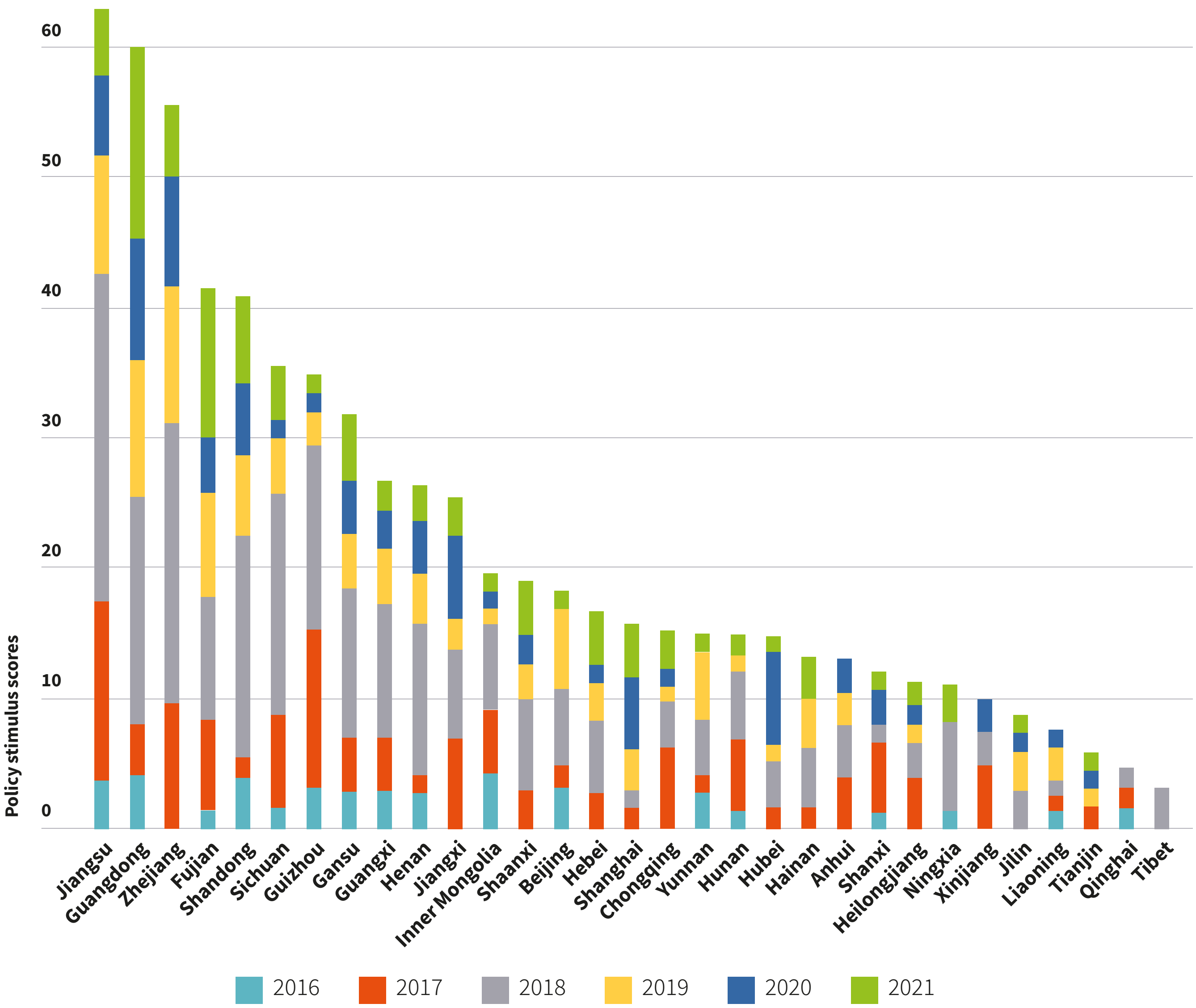
- The **extent** of details implemented. Calculated as: a=1+5% (x-1), where x is the number of categories of implemented details in the policy;
- The **scope** of green finance policy impact. The scope, b, is determined by the level of the issuing institution. b=1.4 for provincial level units, b=1.2 for municipal level units, and b=1 for county level units.

The green finance policy efficacy score of a single policy is calculated as m=a×b, and the green finance policy efficacy score of a region is the sum of all green finance policy efficacy scores of the said region within a given time frame.

Figure 7 displays the green finance policy stimulus scores of provincial administrative units from 2016 to the third quarter of 2021. The 31 regions scored an average of 22.29 with a standard deviation of 15.81. Zhejiang and Guangdong are among the first national green finance innovation and reform pilot zones, and together with Jiangsu province, scored above 50 points. A high score indicates that local governments at all levels in the province are active in green finance-related practices and have established a mature cross-regional green finance environment.

Figure 7 also shows that current green finance-related policies in some provinces in the past two years are less than in previous years. The decrease in green finance policies suggests that the COVID-19 pandemic may have hindered the development of local green finance infrastructure.

Figure 7. Provincial green financial policy stimulus from 2016 to Q3 2021



3.3 Local Green Finance policy support results in more green bonds

According to Climate Bonds data, from 2016 to the third quarter of 2021, more than RMB1.5tn (USD240bn) of green bonds originated from China, with approximately RMB300bn (USD47bn) issued in the first three quarters of 2021. [1]

By plotting the scores of local green financial policy incentives calculated above in the same coordinate system with the scale and number of green bonds issued by various regions, we see the correlation between the stimulus of supporting green financial policies and the number of bonds issued. [2]

Figure 8. Correlation between policy stimulus intensity and green bonds issued from 2016 to Q3 2021

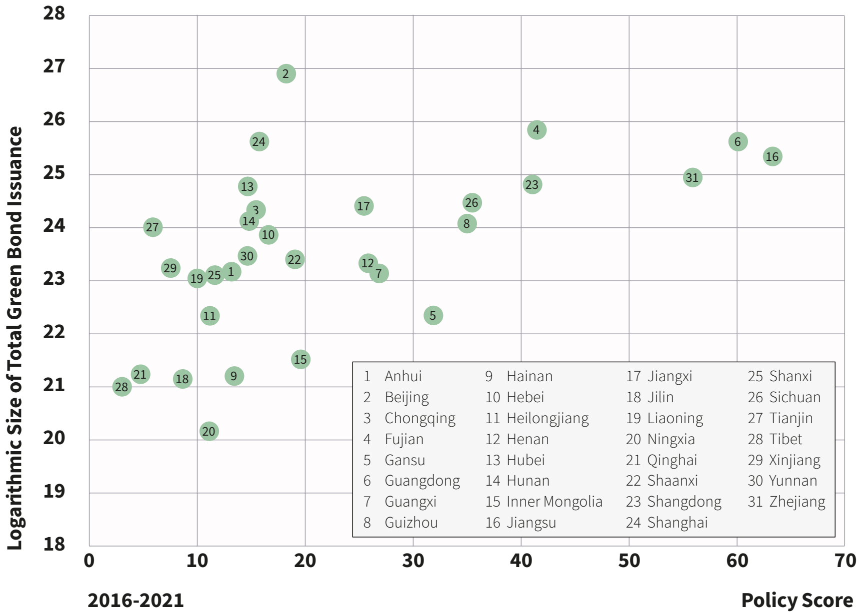
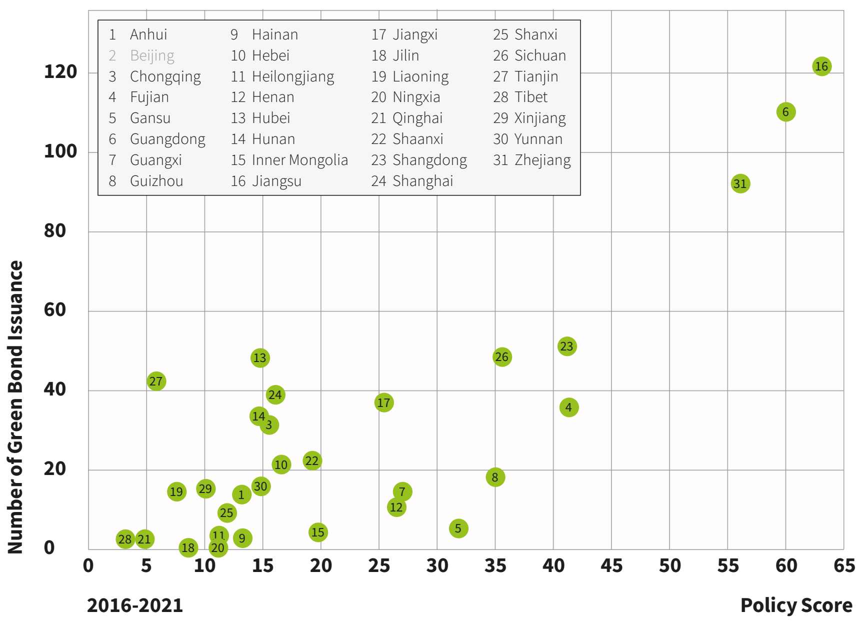


Figure 9. Correlation between stimulus intensity and green bond issuance quantity from 2016 to Q3 2021 (excluding Beijing)[3]



Stronger policy incentives result in more green bonds

As shown in figure 8, the size of green bond issuance is positively correlated with the policy efficacy score, and the size of green bond issuance is also larger in regions with more supportive policies. A similar conclusion can be found in Figure 9, which excludes Beijing.

Extensive green finance policies and better supporting infrastructure increase both supply and demand extending the policy benefits to both issuers and investors. Such positive outcomes strengthen the government's determination to build a green finance system and develop a green finance market, increasing the confidence of market participants. These factors work together to boost the steady expansion of the local green bond market.

The Yangtze River Delta and the Pearl River Delta Economic Belt have well developed green financial infrastructure

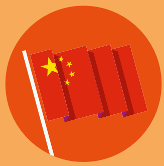
Jiangsu Province, Guangdong Province and Zhejiang Province have formed relatively complete green finance systems with extensive supporting policies and large green bond markets. This is partly due to the well-developed economy and sound financial environment and infrastructure in the delta region, which provide a springboard for green finance. The first green financial innovation and reform pilot zones were in Guangdong and Zhejiang Province, which have provided valuable experience for developing green financial infrastructure in other regions of the province.

Policy efficacy and economic development work together

Green finance policies cannot enhance issuer fundamentals and work less well where vanilla bond markets are not well established.

The points close to the horizontal axis and skew to the right indicate strong policy stimulus. However, bond issuance is low, implying that the stimulus effect of those green financial policies is limited. Most regions facing such challenges are those with immature economic development and slower industrial transformation. Provinces with poor credit conditions cannot deliver green bonds with the desired credit quality. Under such circumstances, the efficacy of green financial stimulus policies appears to be limited.

4. Stakeholder expectations



Despite a late start, China's green bond market has grown rapidly and is among the largest globally. Unlike the European and American green bond markets stimulated by market mechanisms, China's green bond market development has been driven by top-down policy guidance. Pilot green financial reform and innovation zones provide feedback on the impacts of policies. However, China is a vast country with diverse natural characteristics in various regions, and the economic development remains uneven. Green finance policies must account for regional idiosyncrasies and establish specific green finance development paths.

The economic foundation of the central and western regions is weak compared to the coastal regions, and the financial infrastructure is still developing. Due to the unique features of regional economic and industrial development, local governments often lack policy experience for reference and replication when designing local green finance policies. As a result, local green bond market development has been more challenging. The domestic green bond market will gradually transition from policy-led to market-based mechanisms as the scale grows.

At present, green bond issuers and investors in the domestic market are guided by the reward and penalty policy, whilst the market mechanism has limited influence. As policy support reduces, local governments must determine how to maintain stakeholder interest in the green bond market.

China's green bond market has grown rapidly but is still a tiny fraction of the vanilla bond market. The research team conducted five interviews with issuers and investors to complement our quantitative research analysis. To explore the impact of economic development differences on the green bond market, the research team interviewed corporate issuers based in the northwest and southeast coastal regions respectively. Public funds and commercial banks are the main investors in green bonds, while investment banks, as intermediaries in the bond market, are sensitive to policy guidelines and market supply and demand. Therefore, we included interviews from public funds, commercial banks, and investment banks respectively. The five institutions interviewed represent the main stakeholders in the Chinese green bond market, and they provided their insights on the impacts and efficacy of policies from the perspectives of issuers and investors. Respondent details are in the appendix.

4.1 Asset selection presents challenges

Green Bond Endorsed Projects Catalogue (2021 Edition) and the *Common Ground Taxonomy* between Europe and China were both introduced in 2021. These policies support the unification of green bond standards across markets, simplifying the asset selection stage. However, selecting green assets still presents challenges for issuers who have no experience with green bonds or green credit.

Gansu Province Highway Traffic Construction Group is in the process of issuing green bonds for the first time. An employee who responded to our questions noted that the financing department and the engineering department had different interpretations of the green features of projects due to different perspectives.

When the specific situation of the project is not fully described in the *Catalogue*, project managers can only evaluate in the literal sense whether a project qualifies. Issuers can seek guidance from external professionals, such as experienced brokerage firms, or green bond assessment and certification institutions who can be invited to conduct pre-screening of projects.

The complexity of green bond issuance and lack of issuer experience can impact investors. One interview respondent, the head of interest rate investment at a commercial bank, noted the lack of supply in the Chinese green bond market. Cheng Daming, Managing Director of the Investment Banking Department of China International Capital Corporation (CICC), stated that the western region is endowed with natural resources such as wind power and photovoltaic. These represent high-quality assets for issuing green bonds; however, issuers need more experience to identify green assets, and issue green bonds with the required disclosure and reporting. Many regions have launched green project banks and low-carbon project banks, but investment institutions still need to conduct in-depth research on the green attributes due to the different standards referenced or deviations in the control of access standards of the project banks. Li Yi, a senior researcher of fixed income of E Fund Management (E Fund), said that the *Green Bond Endorsed Projects Catalogue* and the internationally accepted green bond standards are the main references at present. The complexity of green bond issuance and lack of issuer experience can impact investors.

4.2 Investors want better disclosure

The advantages of investing in green bonds compared to vanilla bonds has been the subject of much market research, and different investors have their own views. According to Li Yi from E Fund, the current green bond issuers are mainly central and state-owned enterprises and financial institutions with good credit qualifications; although the bond yields are relatively low, the short-term credit risks are relatively controllable. Another interviewee from a commercial bank also highlighted the low-interest rates and poor short-term earning capacity characteristics of green bonds, though cheaper funding is an advantage for the issuers and may encourage more entities to issue green bonds. Unlike mutual funds, commercial banks value green bonds' low-cost advantages in internal and external assessment. This is because the PBoC's *Green Financial Evaluation Program for Banking Financial Institutions* includes green bonds in the scope of green finance business assessment, supporting banks to increase their investment in green finance.

In fact, bond products are closely linked to the issuer's credit quality, both in terms of risk and return levels. According to Cheng Daming from CICC, the limited growth of green bonds in some provinces is partly due to immature bond markets leading which includes smaller ticket sizes. But he also believes that, despite this, the UoP and information disclosure requirements of green bonds should not be relaxed.

Although domestic market regulators have explained the environmental disclosure requirements of various green bonds, there is a lack of framework and operable disclosure guidelines. The quality of information disclosed by issuers must improve. Many issuers often use conceptual, institutional and general expressions when disclosing green-related information, which conveys limited substantive information and makes it difficult for investors to make objective and accurate judgements. Li Yi from E Fund said that the guidelines for disclosure of green information could be further standardised, while issuers are encouraged to conduct a third-party professional assessment and certification of green bonds. She mentioned that the Green Bond Standard Committee has started to conduct market-based reviews of green bond evaluation and certification agencies to improve professional standards and reliability through market mechanisms. The information disclosure will be more substantial and effective under the verification of professional assessment and certification institutions, which will enhance investors' confidence in green bonds.

Current information disclosure is insufficient. Climate Bonds' data shows that the proportion of green bonds issued in the past two years with pre-release third-party assessment and certification has decreased, which means the proportion of green bonds with insufficient disclosure is on the rise. Issuers need support to enhance their information disclosure. According to Lin Weiying, a researcher at the Energy Development Institute of Southern Power Grid, the Group has already faced considerable costs to issue green bonds and support other green finance-related activities. The costs of green transition will continue to mount up in the short term as the group needs to commission environmental risk testing, carbon data disclosure, and strengthen supporting infrastructure and technology to monitor green assets and expenditures and track their performance and impacts.

Information disclosure is being supported by the Green Bond Standard Committee. This Committee has already issued a policy paper and started evaluating third-party assessment and certification agencies. This is expected to effectively regulate the standards of third-party assessment and certification institutions, and indirectly affect the disclosure of environmental information of green bonds. Thus, the cost of meeting investors' requirements for assessment and certification or environmental data, and the implicit cost of issuing green bonds, will be reduced.

4.3 Policy is not the only reason to issue green bonds

The growth of the domestic green bond market requires more buyers and sellers. Existing green finance policies are designed to increase the supply of green bonds through facilitation measures, financial incentives, and risk-sharing. Interviewees stated that they issued green bonds to satisfy funding needs and respond to the country's policies and guidelines for building green infrastructure and promoting green development. China's carbon neutrality goals have resulted in state-owned enterprises issuing green bonds to demonstrate their commitment to transitioning to a green and low carbon society, which has increased supply.

Green bond issuance is motivated by more than supportive policy. In the case of subsidies, for example, the financial incentives provided by existing policies are mostly in the range of a few hundred thousand to one million RMB, and the stimulus effect on green bond issuance is likely to be seen as the icing on the cake. In this regard, Cheng Daming from CICC believes that the current policy has a certain incentive effect for issuers. Our other issuer respondent, Lin Weiying, said that Southern Power Grid Group benefitted from easy access when building its green finance leasing platform. The Group will also examine which policies are in place when developing other green financial businesses. However, incentive policies alone are not sufficient to justify issuing a green bond.

From the demand side, financial institutions have increased their green bond holdings since the PBoC inclusion of green bonds in the green finance assessment of banking financial institutions.

However, representatives of commercial banks affected by the policy stated that setting up assessment targets to guide the green market behaviour of banking financial institutions would not be enough. For the green bond market to develop healthily, the policies should offer incentives to first movers. These could be benefits that look beyond the books, such as administrative licenses and preferential rights when opening branches, incentives in refinancing and taxation, preferential deposit reserve ratios and so on.

For mutual funds, which are not yet affected by the regulatory assessment policy, the investment requirements from overseas clients are major incentives for them to hold green bonds. Li Yi from E Fund explained that the overseas green bond market has bred a group of investors with mature knowledge in green finance and environmental, social, and governance (ESG) expertise. E Fund is among the first domestic mutual funds to carry out ESG research and investment and provides ESG-related investment research services to overseas clients. Unlike the domestic, policy driven green bond market, the international green bond market is characterised by sophisticated green bond investors. The high demand for green bonds from overseas clients has prompted fund managers to screen bond products against international green standards, which could encourage an improvement in the quality of domestic green bonds.

4.4 Green finance policy recommendations

Improve green finance standards

The primary green bond reference standards are described in the national *Green Bond Endorsed Project Catalogue*. Regions across the country should avoid developing local standards which could increase confusion, investment difficulties, and compliance costs for investors.

Local green project databases should disclose their project entry criteria to facilitate investment institutions understanding of the green projects in the pool. Currently, the standards for identifying green assets are used in green bonds. However, there is still a lack of consistency in the green standards in other financial sectors in China. The unification of domestic green financial standards and the development of a green financial service system will contribute to developing a green financial market which covers credit, insurance, bonds, funds, and other multi-level financial products.

In 2021, the International Platform for Sustainable Finance (IPSF) Working Group led by China and Europe launched the first version of the *Common Ground Taxonomy* (CGT), further integrating China's green bond and international green standards. The CGT supports the expansion of the green bond market and makes it easier for Chinese entities to issue green bonds overseas. The CGT work will expand over time and other jurisdictions will be included to increase global comparability and interoperability. Existing taxonomies must be extended to include transition guidance for high-emitting sectors.

Develop standards for the transition finance market

The low-carbon transition of high-carbon emission industries is critical in addressing climate change. Transition finance is still in its infancy, and it is still underway to determine the sector appropriate transition pathways.

China's definitions and standards for transition finance need to align with the 1.5°C targets of the Paris Agreement. Transition finance-related policy frameworks and standards should be science-based to ensure a credible low-carbon transition of high-emitting sectors. Meanwhile, policies should assist financial institutions to develop specific performance indicators and measurement tools to track the progress of transition activities.

Strengthen information disclosure

The quality of information disclosure in the current market is inadequate, and there is a lack of standardised environmental information disclosure, which could hamper the growth of the green capital market. In November 2021, the establishment of the International Sustainability Standards Board (ISSB) responded to global efforts to address standardised, transparent, reliable, and comparable reporting by companies on climate and other ESG matters. [4]

Such disclosure is the basis for the development of the green financial market and policies need to be introduced to guide institutions. Regulatory agencies could gradually establish a mandatory information disclosure system to limit invalid information disclosure.

Green bond issuers should increase information disclosure and conduct forward-looking assessments of the bond's environmental impact or performance (for example, the issuer's expectation of the environmental benefits of future investment projects). Regulators and investors could then determine if a bond complies with local and international green standards or meets the expected environmental performance. Regulators could introduce an environmental benefit information disclosure platform and promote green bond databases.

Provide capacity building

Policy development should be accompanied by guidance and capacity building. The rapid development of green finance has resulted in a shortage of sufficiently qualified human capital. Climate and governance frameworks and the professional capabilities of financial institutions and intermediaries must be strengthened. Financial institutions should also be encouraged to establish a scientific, standardised, and operable management system, for example, improving financial institutions' understanding of transition finance and biodiversity finance, encouraging the issuance and innovation of green products, conducting research on emission reduction support measures, and supporting financial institutions in setting scientific emission reduction targets and measuring carbon emissions.

Many regions choose green bonds as the primary product when developing a green finance presence. To accelerate market development, issuers in financially underdeveloped regions could be offered guidance to navigate the green bond issuance process.

Support green product innovation

Continue to launch innovative bonds.
Achieving carbon neutrality requires the transition of all economic sectors, including the transition of brown assets. Thematic labels such as sustainability-linked bonds (SLBs) or transition bonds can offer market access to a broader range of potential issuers. SLBs are flexible, forward-looking, performance-based instruments. Institutions that issue SLBs can set key performance indicators related to their sustainability strategies. Large-scale high-emitting entities are excluded from issuing labelled green bonds if they do not have the assets, projects, or expenditures for green UoP. Transition bonds can be introduced to support emission reduction projects from high-emitting enterprises.

Further development of green municipal bonds.
Green municipal bonds are increasingly used to close investment gaps in climate change mitigation and adaptation infrastructure. Local governments in the United States, Australia, New Zealand, South Africa, and Sweden have issued green municipal bonds to finance green or climate-resilient projects. To date, Ganzhou of Jiangxi Province, and Shenzhen and Guangzhou from Guangdong Province have issued green municipal bonds to finance the construction of local green infrastructure.

Green municipal bonds can provide more robust support for local governments' carbon neutrality goals. For example, converting municipal debt linked to green infrastructure investment into green bonds, or supporting local governments to issue green bonds overseas could attract a diverse group of investors and provide access to low-cost funds in the international capital markets.

Explore sovereign green bonds.
Sovereign green bonds demonstrate a country's commitment to a low-carbon sustainable development strategy, thereby attracting private sector investment (crowding in). Internal collaboration between different government ministries is a positive outcome from sovereign green bond issuance. Cross-ministerial cooperation can provide continuous support for implementing the country's long-term low-carbon strategies. In addition, sovereign green bonds can set a benchmark price for the domestic green bond market. [5]

Develop green bond indices.
Green bond index research and construction and promoting cooperation between trading platforms will help improve the efficiency of green bond trading and clearing and attract international investors, including passive investment. Market participants can develop more new products to improve the liquidity of green bonds and manage the associated risks.

Attract more investment

Governments at various levels need to develop policy incentives to encourage domestic and international investors to come to the Chinese green bond market and commit more capital at scale. More participation will lead to the healthy and rapid development of the green bond market. Examples of possible incentives include traditional tax incentives, re-lending, or reducing the capital cost to investment institutions.

Appendix

We thank the following individuals for their kind participation in our stakeholder survey.

Interviewees	Institutions	Types
Representative	Gansu Province Highway Traffic Construction Group Co., Ltd	Issuer
Lin Weiying, researcher at the Energy Development Institute	Southern Power Grid	Issuer
Li Yi, senior researcher of fixed income	E-Fund Management	Asset Manager
Representative	A commercial bank	Commercial bank
Cheng Daming, Managing Director of the Investment Banking Department	China International Capital Corporation (CICC)	Investment bank

Endnotes

1. The types of bonds covered in the statistics of this report include enterprise bonds, corporate bonds, financial bonds, convertible bonds, exchangeable bonds, directional instruments, local government bonds, ABS, short-term financing bonds, medium-term notes, etc.
2. The size of the bond is taken according to the natural logarithm.
3. Most of the central enterprises and state-owned enterprises are registered in Beijing, which makes the issuance of green bonds in Beijing too high when counting for provincial-level administrative units, diluting the role of green financial policies in promoting the issuance of green bonds. In order to highlight the relationship between the number of green bonds issued in other provinces, autonomous regions and municipalities and the intensity of policy incentives, Beijing has therefore been removed from this chart.
4. https://www.ifrs.org/groups/international-sustainability-standards-board/
5. https://www.climatebonds.net/resources/reports/sovereign-green-social-and-sustainability-bond-survey

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