CHINA GREEN BOND MARKET REPORT

2020

A USD44bn Chinese green bond market

Published jointly by the Climate Bonds Initiative and China Central Depository & Clearing Research Centre (CCDC Research).
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Introduction

In December 2020, the global green bond market reached the milestone of USD 1 Trillion cumulative issuance. Despite the impact of COVID-19, global green bond market volume in 2020 reached USD293.2bn, marking another new annual record- up by 9% on the 2019 figure.

The COVID-19 pandemic had clear implications for the green finance universe in China: Although it remained one of the largest sources of green bonds, China's domestic and overseas green bonds issuance witnessed a slowdown year-on-year, with the impact more pronounced in the first half of 2020. The drop in green bond issuance also partly resulted from the surge of other labelled debt instruments in the country – specifically Pandemic Prevention and Control bonds.

The total amount of green bonds issued by Chinese entities[1] on both domestic and overseas market reached USD44bn (RMB289.5bn) in 2020, representing a 21% decrease from the USD55.8bn (RMB386bn) achieved in 2019. China's green bond market slowed in the first six months of last year as the authorities focused instead on COVID-19-related financial instruments but a second-half recovery saw the nation again positioned as the number one emerging market economy in green bond issuance and China's cumulative green bond issuance remained the world 2nd largest. In the meantime, China's green bond market had also shown positive development in many aspects, such as the release of a consultation draft of China's 2020 Green Bond Catalogue, jointly released by China's central bank – People's Bank of China (PBoC), the China Securities & Regulatory Commission (CSRC) and the National Development & Reform Commission (NDRC) that removed clean coal related projects and brought China and the EU Taxonomy into closer alignment. Further, the market saw a continued increase of non-financial corporate issuers, and it had one of the largest offshore green bond market.

This is our fifth China Green Bond Market annual report, produced in association with China Central Depository & Clearing Company (CCDC) and with support from HSBC. It summarises the major green bond developments that have taken place in China and also dives into the social and sustainability-themed bond issuance.

Contents

About Climate Bonds Initiative

Climate Bonds Initiative is an international organisation working solely to mobilise the largest capital market of all, the USD100tn bond market, for climate change solutions. The mission is to help drive down the cost of capital for large-scale climate and infrastructure projects and to support governments seeking to increase capital market investment to meet climate goals. The Climate Bonds Initiative 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 range from investors representing USD14tn of assets under management and the world's leading investment banks to governments such as Switzerland and France. The Climate Bonds Initiative is the lead partner in the Green Infrastructure Investment Coalition. Sean Kidney, Climate Bonds Initiative CEO, is a member of the European Commission's Technical Expert Group on Sustainable Finance.

All figures are rounded in this report.

Exchange rates may vary throughout the report: the actual exchange rate on each bond's issuance date is reflected. Data sources for this report include WIND and Refinitiv Eikon, as well as bond prospectuses and company websites. Figures in this report refer to both onshore and offshore green bonds issued by entities domiciled in mainland China.

Green bonds

Overview: China's green bond market 2020

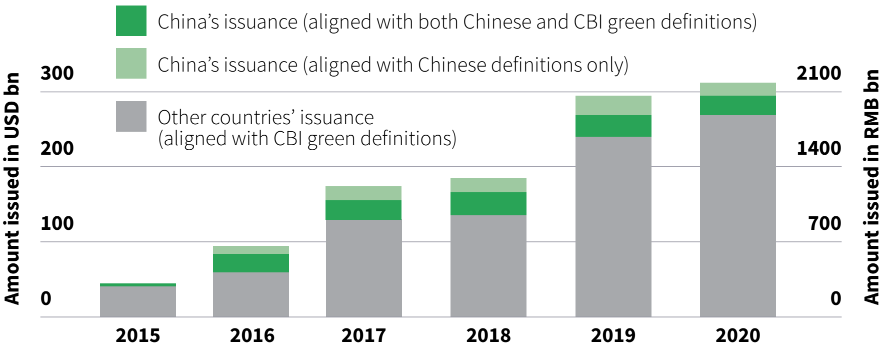
China has, for the last 6 years, been one of the world's largest green bond markets and yet, the market in 2020 was bumpy. Total Chinese green bond issuance in the domestic and overseas market reached USD44bn (RMB289.5bn), representing a 21% decrease from the USD55.8bn (RMB386bn) achieved in 2019. Onshore issuance stood at USD36.3bn (RMB234.9bn), translating into a 13% decrease from 2019. Offshore issuance also plummeted by 38% to USD7.8bn (RMB54.6bn). The labelled green bonds only accounted for less 1% of China's overall bond market in 2020, the potential for growth is huge.

Late May 2020 saw the removal of fossil fuels in the updated 'Green Bonds Endorsed Projects Catalogue (Consultation Draft)', which has brought China into closer alignment with international green classification systems, such as the new EU Taxonomy as well as the Climate Bonds Taxonomy. The final draft was published in April 2021 and has improved the prospect of taxonomy harmonisation and the confidence of international investors. However, discrepancies still exist between China's local green bond guidelines and the international ones, for example, some local green bond guidelines continue to allow the proceeds of green bonds to fund general working capital.

Screened against the Climate Bonds Initiative Green Bond Database Methodology (2020 version), we have identified USD23.8bn (RMB157.5bn) worth of Chinese green bonds that are aligned with both Chinese and Climate Bonds green definitions (henceforth referred to as 'aligned green bonds'), while a further USD20.2bn (RMB132bn) are only aligned with China's local definitions of green. The volume of aligned green bonds will continue to grow as standards are harmonised and transparency improves over time.

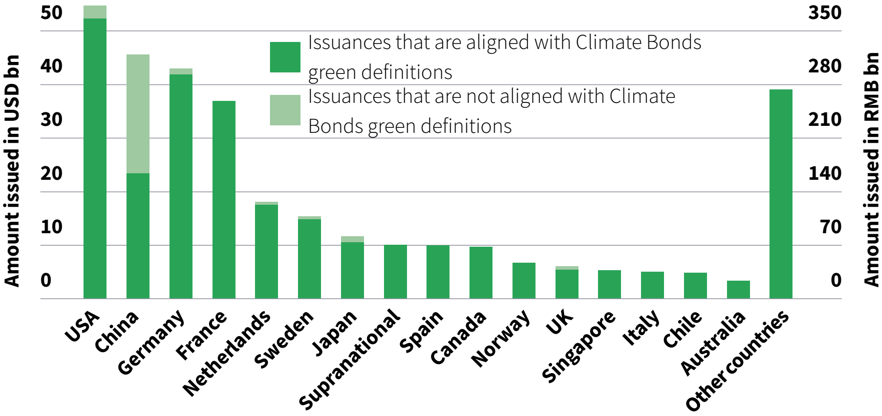
Beijing Jingneng Clean Energy is the largest Chinese issuer in 2020, with a total of RMB15bn

China's green bond market year on year



Source: Climate Bonds Initiative

China's green bonds in a global context



Source: Climate Bonds Initiative

(USD2.1bn) green bonds issued. This was the first time that a non-financial corporate became the largest issuer. Among the green bonds that are aligned with Climate Bonds green definitons, Low Carbon Transport remained the largest theme (30%) among bonds aligned with Climate Bonds Initiative's definition, followed by Energy (29%).

China's green bond market in the global context

In 2020, China was the world's fourth largest source of green bond issuance accounting for aligned green bonds only (or second if including all issuance).

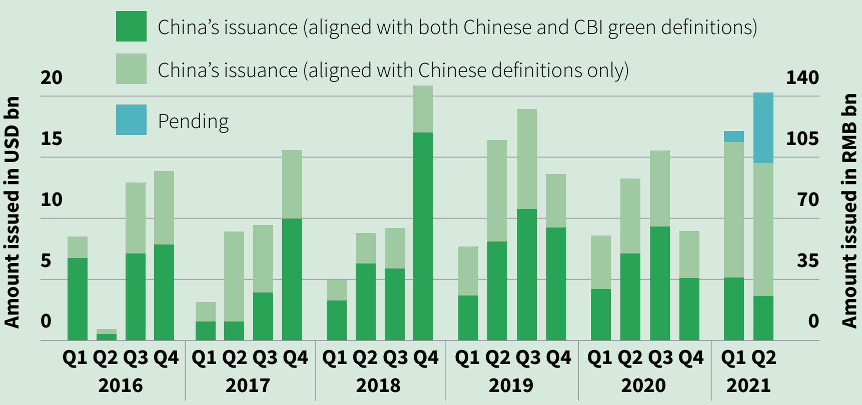
The **US** market had the largest number of individual issuers (144) and the largest volume (USD52bn), but its private sector green bond market is still underdeveloped and continues to lack large, benchmark-sized green bonds with adequate transparency. The market is dominated by municipal issuers (local government) and government-backed entities.

The amount of green bonds originating from **Germany** more than doubled from USD18.7bn in 2019 to USD41.8bn in 2020. Two sovereign green bonds propelled Germany into second place in 2020 (by Climate Bonds green definitions). The inaugural

Snapshot of China green bond market in H1 2021

China's green bond market had shown a strong momentum in H1 2021. There was a total of USD37.6bn green bonds issued both onshore and offshore, representing a 58% surge year-on-year. It had already reached almost 85% of the annual total issuance of 2020 and it is expected that the strong rebound would continue in the second half of 2021. In addition, the market had seen the close-up of the gaps between China's local green definitions and the international ones. 58% (USD22bn) of H1 volume is aligned with Climate Bonds green definitions.

China's quarterly green bond issuance (2016-2020)



Source: Climate Bonds Initiative

10-year green Bund was priced in September, followed by a 5-year deal in early November with a combined size of EUR11.5bn (USD13.8bn).

France landed in third place with a total of USD37bn. The green government bond (GrOAT) was tapped three times for a total of USD7.4bn in 2020. The GrOAT is the single largest green bond in the market, with a total amount outstanding of EUR27.4bn (USD31.1bn).

In **China**, the green bond market has clearly been affected by the ramifications of the COVID pandemic, with many issuers preferring to issue social-themed bonds, especially those pertaining to the pandemic response. This was also a result of the shift of regulatory focus to COVID-related financing in the first half of the year. However, the green bond market saw a rebound in the second half of the year, especially in Q3 when China made its carbon neutrality commitment. In addition to this policy announcement, China's green bond market also showed positive development in many aspects, such as the continued increase of non-financial corporate issuers. China also continues to have one of the largest offshore green bond markets in the world.

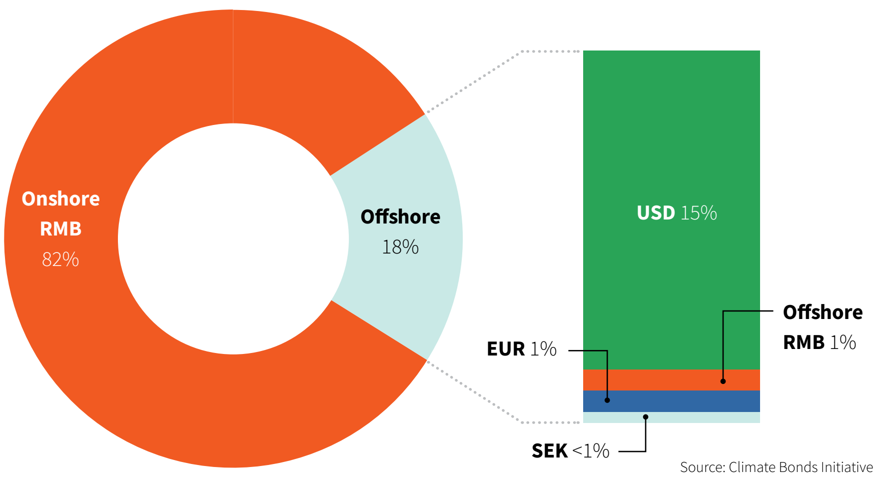
Onshore vs offshore

18% of green bonds were issued in the offshore markets

16 issuers raised a total of USD7.8bn (RMB54.6bn) in offshore green bond issuance. Despite the 38% decrease in volume from the USD12.5bn (RMB87.5bn) achieved in 2019, 11 of them were new to the overseas green bond market. This mainly included real estate developers such as Landsea Green Properties, Yango Justice, Yuzhou Group, and Zhenro Properties, as well as renewable energy operators ENN energy, Concord New Energy, and CIFI Holdings.

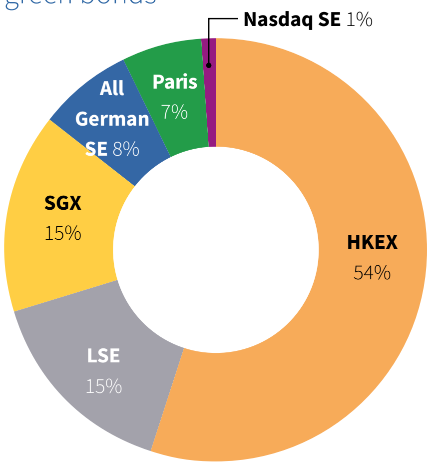
Most (86%) of the offshore deals were denominated in USD, and EUR ranked the second (7%), followed by CNY (5%). Hong Kong Exchange (HKEX) remained the largest listing venue for Chinese offshore green bonds, accounting for 54% of the total offshore volume in 2020. London Stock exchange (LSE) was the second largest offshore market for Chinese deals, with Singapore Stock Exchange (SGX) being the third. Green building was the largest sector financed by offshore green bonds (35%), followed by low carbon transport (29%).

Currency denominations of Chinese green bonds in 2020



Source: Climate Bonds Initiative

Listing venue of Chinese offshore green bonds



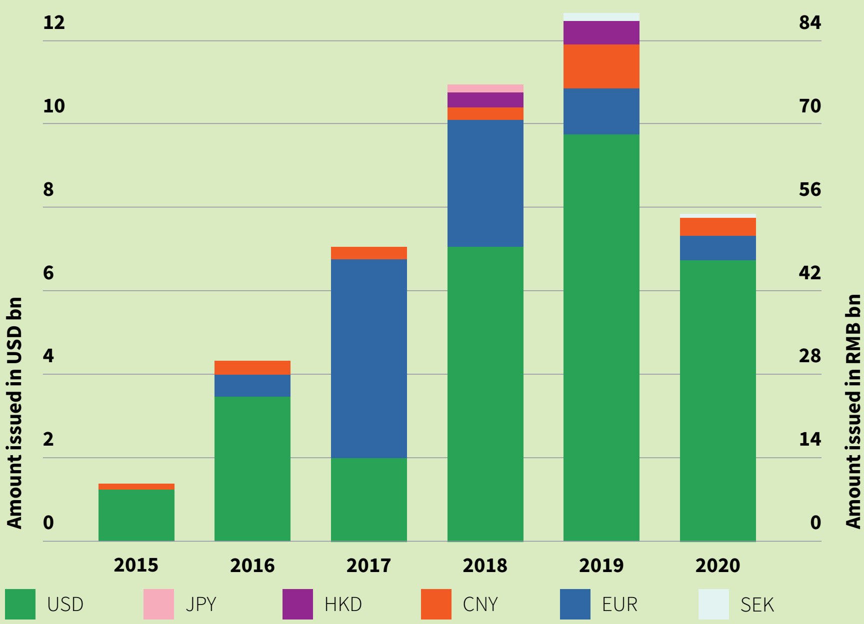
Source: Climate Bonds Initiative

Green kungfu bonds

Kungfu bonds - referring to Chinese bonds denominated in USD and issued offshore, are a rising asset class gaining traction in the global market. Greater onshore regulation and rising funding costs in China's debt capital market are driving the growth of Kung Fu bonds. There is an increasing preference for corporates to source funding for their activities from the dollar bond market. Kung Fu bonds also give the issuer exposure to a new investor base. For global investors looking to capture higher yields, Kung Fu bonds are an appealing way of gaining exposure to the Chinese market while managing financial risks.

As of December 2020, there had been a total of USD30bn (RMB210bn) Kung Fu bonds labelled as green, representing 68% of overall Chinese green bonds issued offshore since 2015. Among the 40 green Kung Fu bond issuers, Industrial and Commercial Bank of China (ICBC) is the largest issuer with a total of USD6.75bn issued cumulatively, followed by Bank of China (USD5.1bn from via three branches).

Chinese offshore green bonds by currency



Source: Climate Bonds Initiative

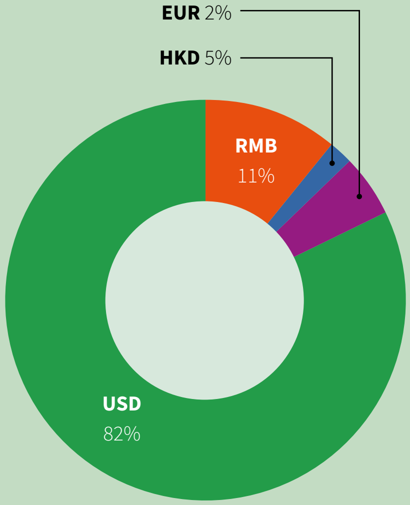
Green dim sum bonds

A dim sum bond refers to an RMB-denominated bond issued in Hong Kong. Dim sum bonds are marketed to foreigners who wish to circumvent Chinese capital controls, but still have direct exposure to RMB-denominated assets. Multinational corporations may choose to issue these bonds to access regional financing from foreign creditors without restrictions or strict oversight from Chinese authorities.

Hong Kong Exchange is the largest marketplace for offshore Chinese green bonds, with a total listing volume of USD15.4bn (RMB107bn). This accounts for 37% of all Chinese offshore green bond issuance since 2015.

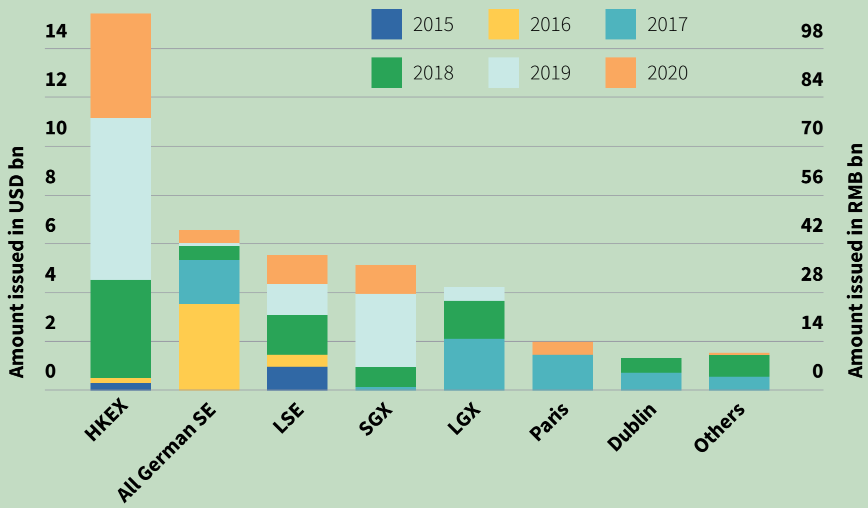
Cumulatively, USD1.6bn (RMB11.4bn) of Chinese green bonds listed on Hong Kong Exchange are denominated in RMB - hence classified as Green Dim Sum bonds. Bank of China is the largest green Dim Sum bond issuer, with a total of three issuances in 2016 (RMB1.5bn), 2019 (RMB2bn) and 2020 (RMB3bn), respectively.

Denominated currency of Hong Kong listed Chinese green bonds



Source: Climate Bonds Initiative

Chinese offshore green bonds by listing venue (2015-2020)



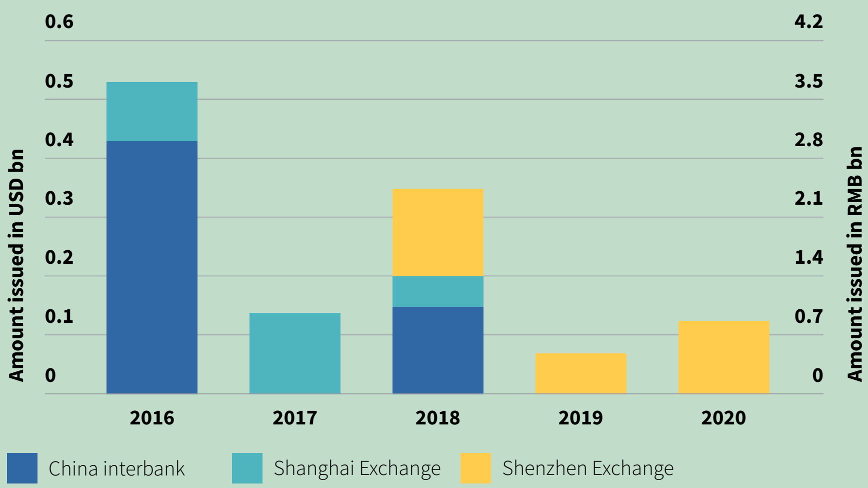
Source: Climate Bonds Initiative

Green panda bonds

Panda bonds are onshore RMB-denominated debt issued in China by foreign/overseas issuers. The panda bond market is used as a capital-raising platform for foreign entities targeting domestic investors and hence, domestic investors are the main purchasers of these bonds. The New Development Bank is the largest green panda bond issuer (RMB3bn, 2016), while Beijing Enterprise has the most deals (a total of three deals issued in 2016, 2019 and 2020).

The China Interbank Market is the largest marketplace for green panda bonds that has a total of USD571m issued, representing 47% of all cumulative issuance. Shenzhen Stock Exchange is the second largest, with USD342m (28%), followed by Shanghai Stock Exchange (USD300m, 25%).

Green panda bond issuance



Source: Climate Bonds Initiative

Overview of the green themed bonds

	Green kungfu bonds	Green dim sum bonds	Green panda bonds
Number of issuers	40	5	5
Number of bonds:	64	5	9
Total amount issued	**RMB210bn (USD30bn)**	**RMB11.4bn (USD1.6bn)**	**RMB8.5bn (USD1.2bn)**

Issuer types

2020 was marked by new developments in China's profile of issuer types. The most noticeable was the strong growth in the total volume of green bonds issued by government-backed entities that increased by 18%, representing 38% of the total volume of issuance in 2020.

Government-backed entities contributed USD17bn (RMB119bn) to total green bond issuance in 2020, representing 38% of 2020 issuance. Climate Bonds Initiative categorises local government financing vehicles (LGFVs) as government-backed entities in China's context. LGFVs are financing firms established and owned by the local government in order to fund the construction of public projects. Green bonds issued by LGFVs largely reflect Chinese local governments' ambitions to address climate change and local environmental issues.

There are four formal levels of administration in China - provincial, prefectural, county and township. The issuance of government-backed entity green bonds varies significantly across provinces. Metro and urban public transit projects are the most funded project type by government-backed entity issuers. Local water authorities such as Guizhou Water Investment, Qingdao Water Group and Hangzhou Water Affaires Group are among the largest government-backed entity issuers. In 2020, the amount issued by government-backed entity green bonds volume was up 30% from the preceding year.

Non-financial corporates had the highest share since 2015. Beijing Jingneng Clean Energy was the largest non-financial corporate issuer in 2020, with one bond amounting USD2.1bn (RMB15bn). The bond's net proceeds were exclusively directed to financing and refinancing wind and solar projects, as well as to supplement the working capital that was related to the company's wind and solar business. Among the total 53 corporate issuers, 45 were new to the market. These included Shenhua New Energy – a fully owned subsidiary of Shenhua which is the largest state-owned coal mining enterprise in Mainland China and in the world – that issued a RMB1bn green bond purely financing wind and solar project development. Chongqing Rail Transit, Jiangsu Railway and Shenyang Metro were also among the new issuers bringing finance to intercity and urban rail construction.

Financial corporates' share decreased by 19% year-on-year. The actual amount and share of financial corporates both dropped from 2019, witnessing the lowest annual issuance in absolute terms since 2016. There were only 14 financial corporates issuing green bonds in 2020, totalling USD6.6bn (RMB46.2bn). USD2.9bn (RMB20.3bn) were issued in the domestic market, while USD3.7bn (RMB25.9bn) were issued in the offshore market.

Among the nine domestic issuers, five were commercial banks and four were financial leasing companies. Huaxia Bank, Bank of Ganzhou, Auhui Maanshan Rural Commercial Bank, Chongqing Rural Commercial Bank and Fuyang Yingquan Rural Commercial Bank are first-time issuers that brought a total of USD2bn (RMB14.1bn) to market in 2020.

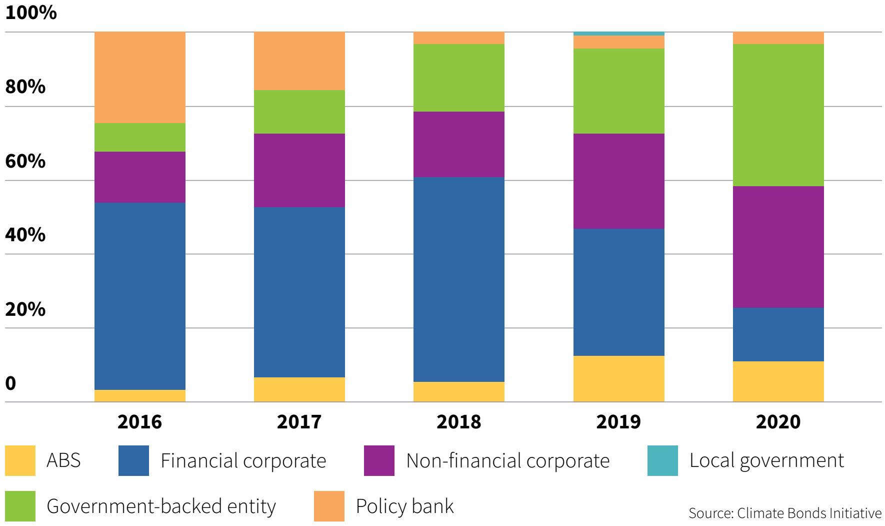
Offshore issuance included Industrial Bank's debut offshore green bond (USD450m) that provided financing for the implementation, construction, maintenance, and development of energy efficiency-enhancing technologies that must result in at least 20% of energy savings. Bank of China brought a dual currency (USD and RMB) 'Blue' bond through its Paris and Macau branches respectively, adding USD942m to its existing green bond programme. The offshore green deals from China Construction Bank (USD1.2bn) and China Merchants Bank (USD800m) both carry Climate Bonds Certification.

ABS issuance fell by 33% year on year. The first Chinese green ABS were issued in 2016. however, green securitisations remain a small proportion of the green bond market, and the potential for growth is huge. Allocations have covered a variety of use of proceeds categories such as renewable energy, low-carbon buildings, water management and low-carbon transport. The types of securities have also become more diversified and included revenues from wind turbines and other renewable energy equipment leasing, green commercial building mortgage receivables, and account/bill receivables.

In 2020, however, ABS issuance saw a 33% decrease from the 2019 basis. There were also eight green ABS deals that did not meet the Climate Bonds Database requirements either because the underlying assets were not considered green or there was a lack of disclosure. Examples include Chongqing Yuanda Flue Gas Treatment Franchise Co and Xi'an Hi-tech Zone.

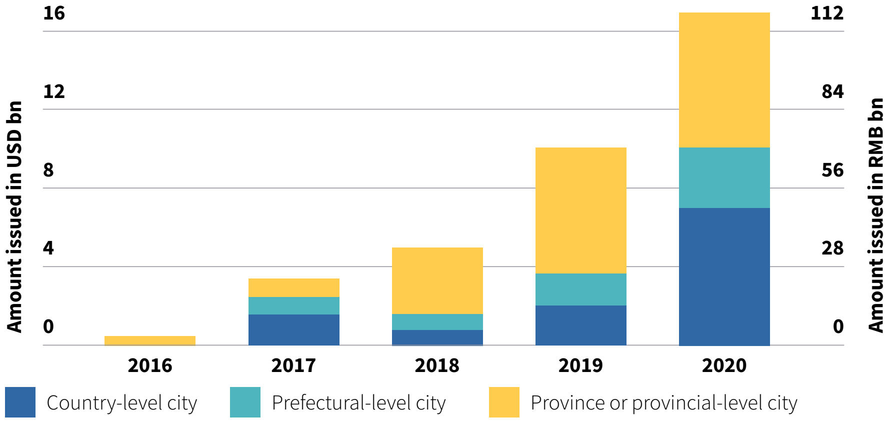
By aggregating smaller-scale funding into a common structure split into tranches with different risk profiles, securitisations enable institutional investors with different mandates to finance small-scale assets and small- and medium-size businesses. An ABS instrument can be defined as "green" when the underlying cash flows relate to low-carbon assets or where the proceeds from the deal are earmarked for investing in low-carbon assets.

The evolution of green bond issuer types



Source: Climate Bonds Initiative

Government-backed entity green bond issuance



Source: Climate Bonds Initiative

External reviews

The majority of green bonds carry a SPO

The profile of external reviews obtained by Chinese issuers changed significantly in 2020. The total volume of green bonds that carried any form of external reviews dropped drastically from 78% to 61%. Specifically, all offshore issuance carried at least one form of external review, while 47% of bonds issuance onshore did not carry any external review - which is a substantial increase versus only 28% of non-reviewed deals in 2019. These mainly comprised private placements, ABS deals and bonds approved by NDRC whose green bond guidelines do not require an external review.

Second-Party Opinions (SPO) remained the most popular external review type in both onshore and offshore markets, representing 62% and 42%, respectively.

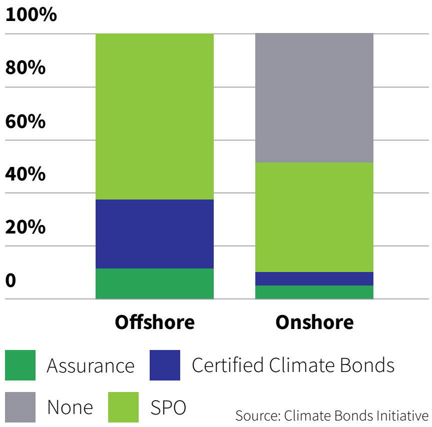
The volume of **Certified Climate Bonds** (CCB) increased by 24% year on year. CCB remained a larger share on the offshore market – 25% of all Chinese offshore green bonds volume carry Certification, compared to 5% on the domestic market. Domestic CCB from 2020 included bonds from Nanjing Jiangbei New Area Public Assets Investment & Development, Anhui Maanshan Rural Commercial Bank, and China Development Bank.

See appendix 4 on the differences between types of external reviews, including green bond assurance, SPO, Climate Bonds Certification and green bond rating.

Lianhe Equator became the largest external reviewer with USD7.2bn deals including a USD57m (RMB400m) Certified Climate Bond. This is followed by EY, with a total of 6.7bn including USD2.9bn offshore and USD3.7bn onshore deals. EY remained the largest external reviewer in the offshore market.

Local external review providers are gaining substantial market share despite three of the top four still being international firms (by volume). The rise of local external reviews is largely due to the rise of SPOs, which are provided by a diverse set of environmental consultants – many of which are Chinese – as opposed to a relatively small group of assurance providers.

Chinese green bonds external reviews by markets



Source: Climate Bonds Initiative

Other top local reviewers include CCX, CECEP, iGreenBank, and Golden Credit. All of these were able to increase their volumes considerably in 2020.

China remains one of the largest global sources of Certified Climate Bonds

In 2020, Chinese issuers brought four new Certified deals to the market. In addition to these, China Development Bank's four tap issuances following the initial deal that carries Climate Bonds Certification. In total, there were USD3.6bn green bond issuance are Certified, representing a 24% increase from the 2019.

Nanjing Jiangbei New Area Public Assets Investment & Development (RMB490m), debuted with a green bond Certified against the Water Infrastructure Criteria of the Climate Bonds Standard, maturing in three years' time. The proceeds will be used to refinance the construction of three new sewage treatment plants in Jiangbei New Area, which is part of the Yangtze River delta area. Annual reports will have information on the allocation of the proceeds, as well as indicators of the sewage treatment plants, including the amount of water treated. It is also the first time the Climate Bonds Standard Version 3.0 being used for a Certification in China.

Maanshan Rural Commercial Bank. In 2017, IFC launched an innovative framework to encourage Chinese commercial banks to mainstream green finance and channel more capital into climate-smart investments. China Maanshan Rural Commercial Bank has signed an agreement with IFC, and was the first partner to adopt the framework. The RMB400m issuance, marking the first green bond from a commercial bank issued in China's onshore market that carries Climate Bonds Certification, has demonstrated the bank's commitment to adopt the international best practice. All net proceeds are allocated to solar and water infrastructure.

China Development Bank. In 2020, China Development Bank received Certification for new tap issuances of a green bond it had issued in November 2019. These taps were the first onshore bond to be sold in the interbank bond market, the Shanghai Stock Exchange, the Shenzhen Stock Exchange, the Bond Connect scheme and the over-the-counter market all at the same time.

China Construction Bank. The first Certified Climate Bond from the issuer was through its Luxembourg branch in 2018, the bond refinanced loans that they have made to companies that have build projects in the relevant Sector Criteria. For example, the loan portfolio includes loans made to a 344km electrified railway, a 200MW wind farm and a sewage treatment plant. In 2019 and 2020, the bank has brought another two Certified Bonds through its Hong Kong branch.

China Merchants Bank. The first Certified issuance from China Merchants Bank was issued through their Hong Kong branch. The proceeds will be allocated to 7 urban metro projects in China.

The Climate Bonds Standard and Certification Scheme is a labelling scheme for bonds, loans & other debt instruments. Rigorous scientific criteria ensure that it is consistent with the goals of the Paris Climate Agreement to limit warming to under 2°C. The Scheme is used globally by bond issuers, governments, investors and the financial markets to prioritise investments which genuinely contribute to addressing climate change.

Certified Climate Bonds

Issuers	Date	Size (in issuance currency)	Size (USD)	Sector Criteria	Climate Bonds Approved Verifier
China Merchants Bank	09/2020	USD800m	USD800m	Low carbon Transport	EY China
China Construction Bank	08/2020	USD500m	USD500m	Low carbon Transport	EY China
		USD700m	USD700m	Low carbon Transport	EY China
China Development Bank	08/2020	RMB6bn	USD1.43bn	Low carbon transport	EY China
Anhui Maanshan Rural Commercial Bank	06/2020	RMB400m	USD57m	Solar, water	Lianhe Equator
Nanjing Jiangbei New Area Public Assets Investment & Development	04/2020	RMB490m	USD69m	Water	The iGreen Bank

Use of proceeds

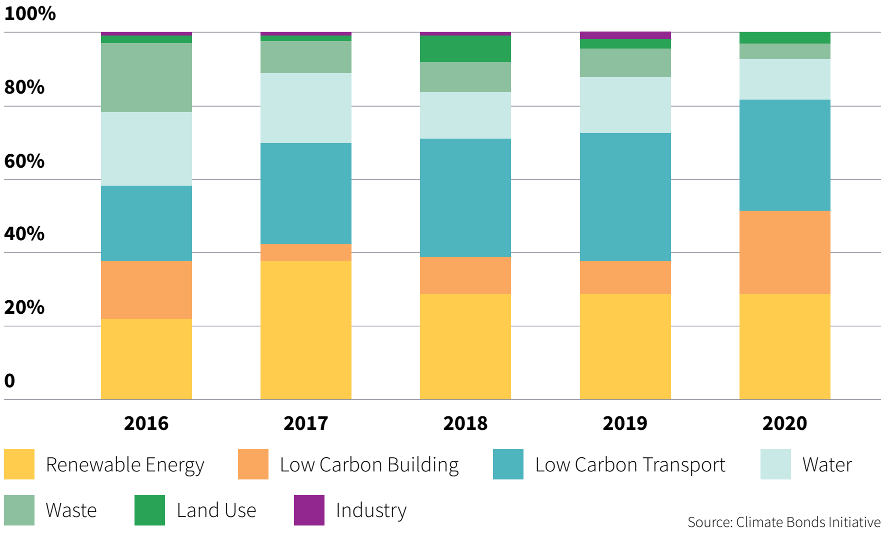
Use of proceeds by Climate Bonds Initiative definition

Low Carbon Transport remained the largest theme (30%) among bonds aligned with Climate Bonds Initiative's definition, followed by Energy (29%). In the meantime, proceeds going to Low Carbon Building assets have seen a big surge in both absolute values and shares. In 2020, USD5.2bn worth of proceeds are allocated to green building or energy efficiency in the built environment that are in line with Climate Bond definitions. This more than doubled the volume in 2019 and represents 22% in the overall CBI-aligned green bonds. The other sectors, including Water, Waste, Land use have decreased in relative shares and volumes.

Use of proceeds by China's local definition

In 2015, the People's Bank of China (PBOC) issued Guidelines defining criteria and category for green bond projects, which cover green financial bonds within the inter-bank market. It sets out the official requirements for what projects qualify as green, management of proceeds and reporting, and a taxonomy in the form of a Green Bond Endorsed Project Catalogue. May 2020 saw the release of a consultation draft of China's 2020 Green Bond Catalogue, jointly rolled out by PBoC, China's central bank, the China Securities & Regulatory Commission (CSRC) and the National Development & Reform Commission (NDRC). The official version of the new green bond catalogue was released in April 2021. The consolidation of the multiple pre-existing green bond catalogues means that going forward, the identification of the "green" attributes of all bonds will be based on the criteria of the Green Bond Endorsed Project Catalogue (2021 Version), regardless of their type or the market in which they are issued.

Use of proceeds (by Climate Bond Initiative definition)



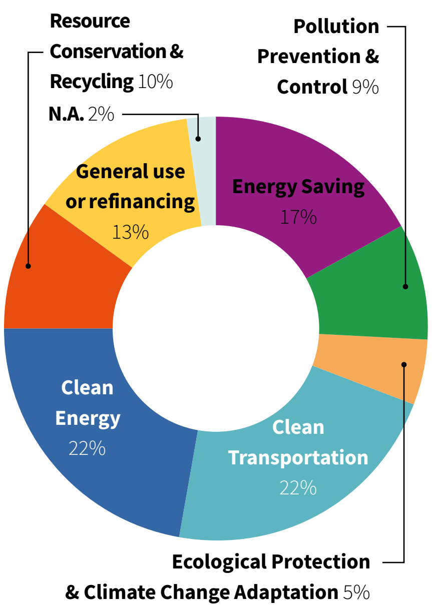
Source: Climate Bonds Initiative

The draft catalogue classifies green projects into 6 level-I industry categories: Energy-saving and Environmental Protection Industry, Cleaner Production Industry, Clean Energy Industry, Eco-environment Industry, Green Upgrading of Infrastructure, and Green Services, thereafter, followed by 25 level-II, 48 level III and 203 level-IV categories.

The 2020 Catalogue aims to form a unified catalogue, and adjustments have been made in the following aspects. First, it removes controversial coal investments such as "clean" coal usage including super-critical coal-fired powerplants, coal mining and coal washing, bringing China into closer alignment with international standards. Secondly, it follows the structure of the 2019 Green Industry Guidance Catalogue and made re-categorisation from the 2015 version. The further alignment with the industry catalogue together with its associated technical criteria instruction document enables, in principle, multiple Chinese authorities to better coordinate policies regarding investment, pricing, budgets and taxation to facilitate the development of green industries. For example, Energy-saving, and Pollution Prevention and Control sectors in the 2015 version are integrated into the Energy-saving and Environmental Protection Industry in 2020 Catalogue and Clean Transportation is replaced by the Green Upgrading of Infrastructure, etc.

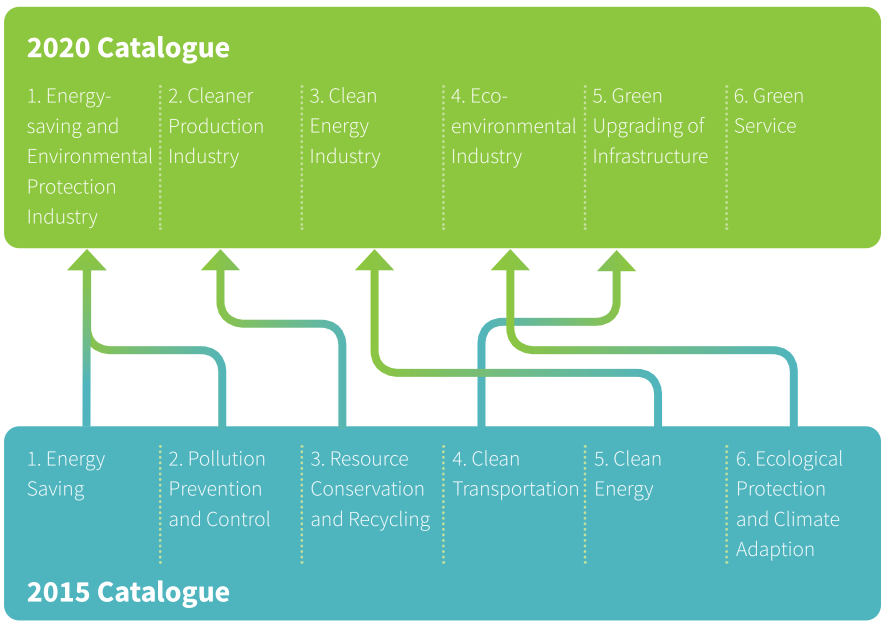
In Climate Bonds Initiative's research on Chinese green bonds, use of proceeds (UoP) allocation in accordance with the 2015 version catalogue has been analysed as the new 2020 catalogue had not been adopted by the majority of issuers. However, a hight level mapping can be seen as follows.

Use of proceeds by China's local definition



Source: Climate Bonds Initiative

Comparisons between 2015 and 2020 version of China green bond catalogue



The share of Clean Transport that fits PBOC definitions fell to 22% - this was despite the increase in absolute volume from USD11.8bn(RMB82.3bn) to USD14.4bn(RMB100.5bn). The share of proceeds raised to support Ecological Protection & Climate Change Adaptation and Resource Conservation & Recycling also experienced a fall as compared to 2019. The largest increase came from the Clean Energy sector).

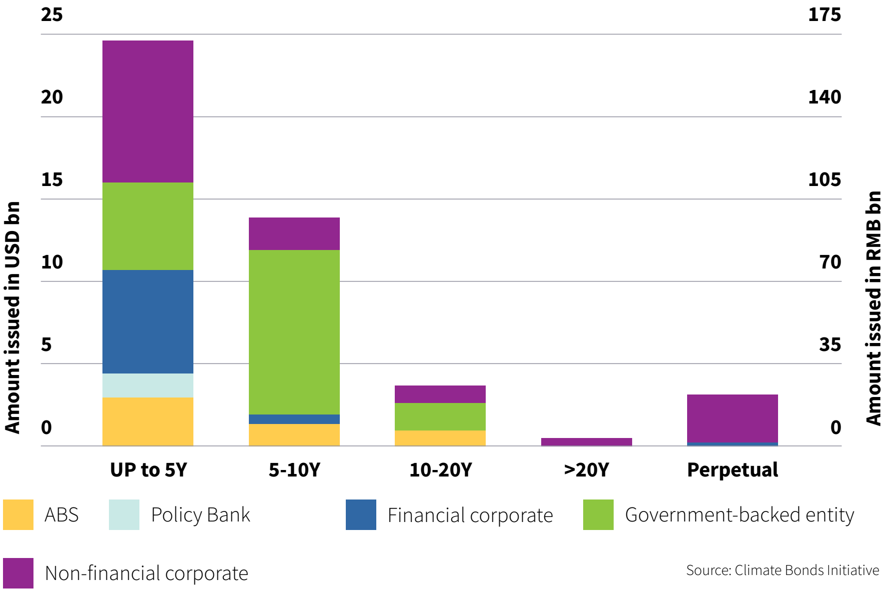
Tenor & Rating

55% of China's domestic market is composed of short-dated bonds (term up to 5 years) and these are primarily issued by Non-Financial Corporates. Bonds with a tenor of 5-10 years make up 30% of the total, and government backed entity dominate this bracket. Bonds with a tenor longer than 10 years make up 8% of the total.

Maturity profile of the onshore green bond market

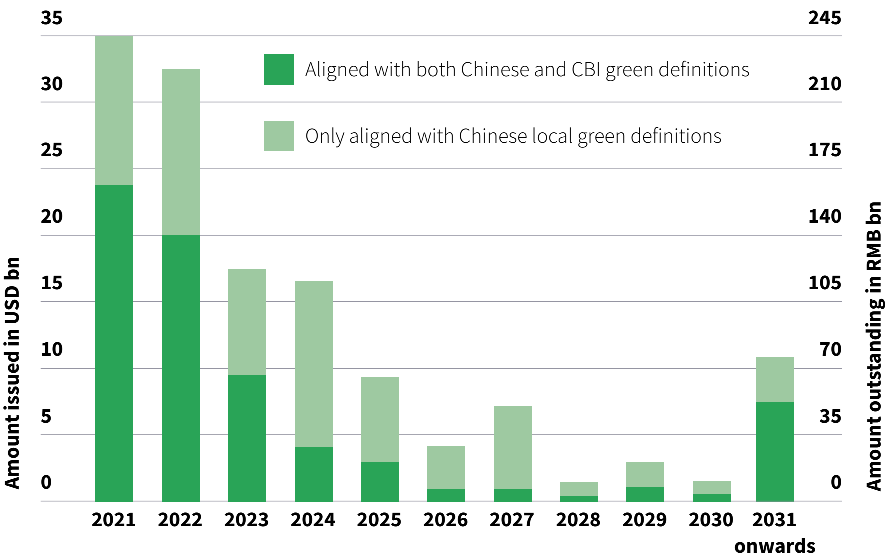
By the end of 2020, the total outstanding amount of China's domestic green bond market stood at USD139bn(RMB917bn), including USD71bn(RMB468bn) of internationally aligned green bonds and USD68n(RMB448bn) of bonds which only comply with China's local definitions. A total of USD111bn(RMB732.6bn) worth of green bonds in China reach maturity in the next 5 years, representing 80% of the total outstanding – this reflects that most Chinese bonds are medium- or short-termed. Meanwhile, the maturity profile suggests a significant opportunity for green bond refinancing. The potential of future increase could also be coupled with the potential of green bond labelling from climate-aligned issuers. This would naturally be further encouraged by policy incentives by providing more incentives to green bond issuers.

Green bonds tenor



Source: Climate Bonds Initiative

Maturity profile of onshore Chinese green bonds



Source: Climate Bonds Initiative

Alignment with Climate Bonds Initiative Green Bond Database Methodology

Climate Bonds Initiative Green Bond Database Methodology (2020 version) in a snapshot

To reflect the green bond market evolution as well as changes made in the recently published the Climate Bonds Standard Version 3.0 and the new Climate Bonds Taxonomy, the Green Bond Database Methodology (2020 v1.1) was released.

The revised Methodology is a substantial revision of the 2018 Methodology and seeks to provide significantly greater transparency and clarity on the process, considerations and distinctions between different segments of the Climate Bonds Green Bond Database.

What's new?

- 100% of net proceeds need to be aligned. Only bonds which are expected to allocate all net proceeds to aligned green assets, projects and activities will be included in the Climate Bonds Green Bond Database. Climate Bonds Initiative previously required at least 95% of gross proceeds to be aligned as a Database inclusion criterion and allowed issuers use up to 5% of proceeds to cover issuing costs or other expenses.

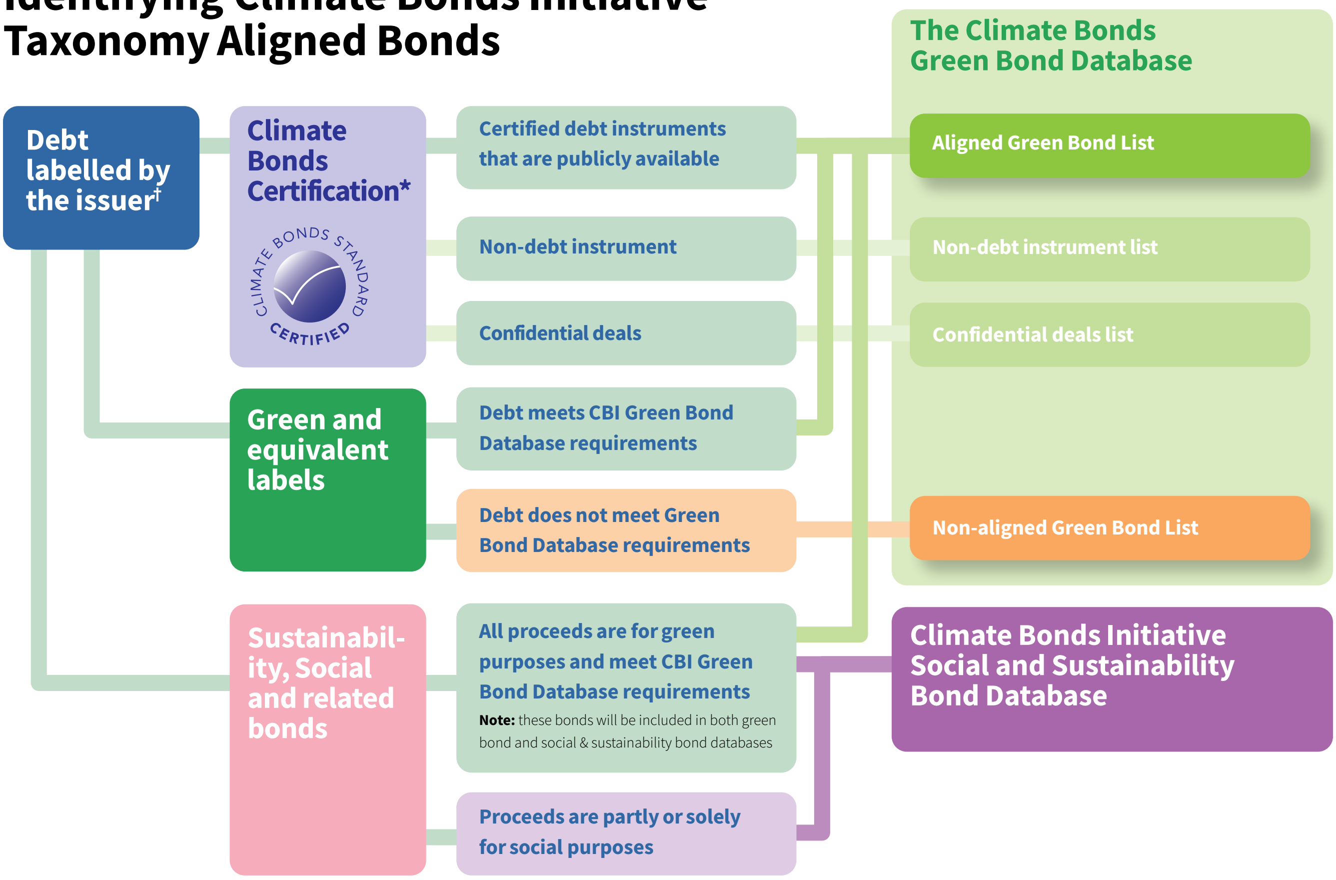
The change from 95% to 100% primarily reflects the current market practice where most issuers tend to disclose the use of net proceeds, which is the amount received after all costs and expenses are deducted. The new requirement will better reflect the green credentials of a bond in the database.

- Eligible expenses are a new aspect. Historically, the focus has been on direct financing of physical assets and projects and indebtedness incurred to finance physical assets. This has been expanded to other related and supporting expenditures for physical assets that conform to the eligibility criteria. For example, Climate Bonds Initiative is supportive of Research & Development (R&D) aimed at improving our collective ability to address climate change for example by helping to commercialise new low-carbon technologies. We encourage late stage R&D spending that is likely to provide an immediate to near-term investment in capital assets that can deliver positive climate benefits.
- The EU taxonomy may be used as a point of reference or proxy for sector-specific criteria for which there are no relevant Sector Criteria yet under the Climate Bonds Standard. This will be re-assessed as Climate Bonds Initiative develops and releases new Sector Criteria.

CBI-aligned vs non-aligned green bonds

Source: Climate Bonds Initiative

Identifying Climate Bonds Initiative Taxonomy Aligned Bonds



- Clearer rules on Adaptation and Resilience (A&R) measures. Most green bond financing to date has been allocated to climate change mitigation. Climate change adaptation and resilience (A&R) measures are also eligible. Climate Bonds Initiative published new Climate Resilience Principles in late 2019 year which shaped our views around database inclusion.

  Financing of A&R will be included in the Climate Bonds Initiative Green Bond Database if the issuer can demonstrate that the A&R use of proceeds do not finance assets or activities that undermine emissions reductions goals. For example, adaptation and resilience projects that lock in fossil fuel technology will not be eligible and may lead to the bond not being included.

Although regulators in China have made tremendous efforts to bridge the gap between green bond definitions, the continued discrepancy between local and international definitions on green assets means that some projects considered green in China are not aligned with the Climate Bonds Initiative Green Bond Database Methodology (2020 version). In 2020, the volume of non-aligned green bonds has reached USD20.2bn (RMB132bn), or 46% of the total issuance. Steps toward addressing the discrepancies in the Use of Proceeds (UoP) requirements by some Chinese regulators would further encourage international investors to access a significant amount of labelled green bonds from Chinese domestic market.

Our analysis of green bond data has identified three main factors leading to this non-alignment:

1. proceeds allocated to working capital that is not linked to green projects/assets;

2. proceeds used for financing projects that are not in line with Climate Bonds Taxonomy, and

3. lack of information on the use of proceeds

Proceeds allocated to general working capital accounts for the largest non-alignment category

As required in the updated methodology, all net proceeds of a green bond proceeds should be clearly linked to specified green assets, projects and/or activities. However, this threshold requirement has been relaxed for several subsections of Chinese domestic markets, irrespective of the rolling out of an unified green bond catalogue that defines what projects can be considered as green.

For example, NDRC – the regulator overseeing China's Enterprise Bond market - allows green bond issuers using up to 50% of bond proceeds to fund general working capital. The Shanghai Stock Exchange also sets rules for green Corporate Bonds listed on its platform, allowing issuers with more than 50% of operating revenue generated from defined green industries to issue green corporate bonds without specifying the underlying green projects, and and issuers can label the bond as 'Green' as long as a minimum of 70% of the funds raised is used in green sectors.[2]

In 2020, over USD15bn (RMB97.5bn) worth of labelled green bonds did not meet the green asset threshold due to proceeds allocation to general working capital, accounting for three quarters of total non-aligned volume in 2020, reaching the highest share and representing a significant surge from a mere 1.4% of in 2016 when the market started to grow.

The share of bonds financing non-aligned projects has continued to fall

In 2020, USD3.6bn (RMB23.4bn) worth of bonds are excluded from the Climate Bonds Initiative Green Bond Database due to the use of proceeds in non-aligned projects. However, the share (by volumes) in the overall non-aligned categories continued to fall, dropping from 83% in 2016 to 17% in 2019. The fall reflects the effectiveness of the efforts made to harmonise the China's local green bond definitions with global ones.

In the 2020 catalogue, the following project types related to 'clean coal' are removed, including the Ultra-low emissions retrofits of coal-fired power plant, clean fuel production, clean utilization of coal, manufacturing of non-regular oil and gas exploration and development equipment, manufacturing of offshore oil and gas exploration and development equipment, manufacturing and operation of extraction and utilization facilities of coalbed methane (coal mine gas), renovation project and operation of peak shaving for coal-fired generator sets, etc.

However, gas remains in the new Chinese green bond catalogue, and this has led to exclusion of some Chinese bonds. For example, Tianjin Nengyuan Investment finances 'coal-to-gas' - a switching by retiring existing coal-fired capacity and replacing it with new and high efficiency gas plants. Similarly, Chongqing Yuanda Flue Gas Treatment Franchise and Xi'an Hi-tech Zone's issuance backed by gas-related projects are also excluded from Climate Bonds Initiative's database.

A small amount of bonds is considered as non-aligned due to the lack of information

The lack of sufficient information on a bond's green credentials may also result in the non-alignment to international green bond definitions. USD1.6bn(RMB10.4bn) worth of green bonds has been excluded due to the lack of transparency in 2020.

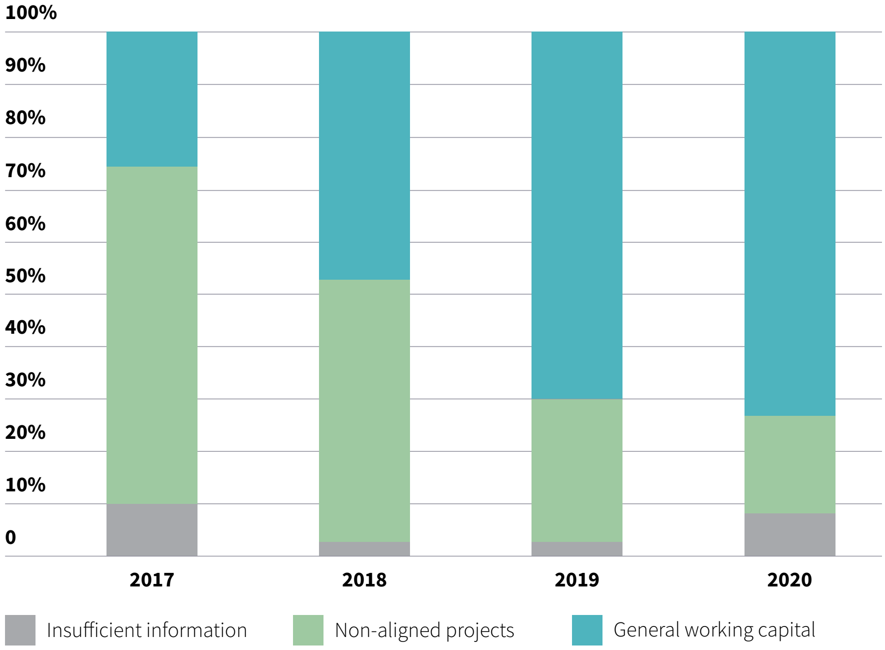
The minimum disclosure requirements on green bond issuers at issuance include:

1. specifying the use of proceeds category definitions, e.g. energy efficiency financing should be linked to a sector such as buildings, transport, grids, etc;

2. clarifying if social programmes also have specific green objectives or benefits, e.g. energy efficiency upgrades to social housing; and

3. confirming that no financing is directed towards fossil fuel power generation or related technologies.

Categories of non-alignment



Source: Climate Bonds Initiative

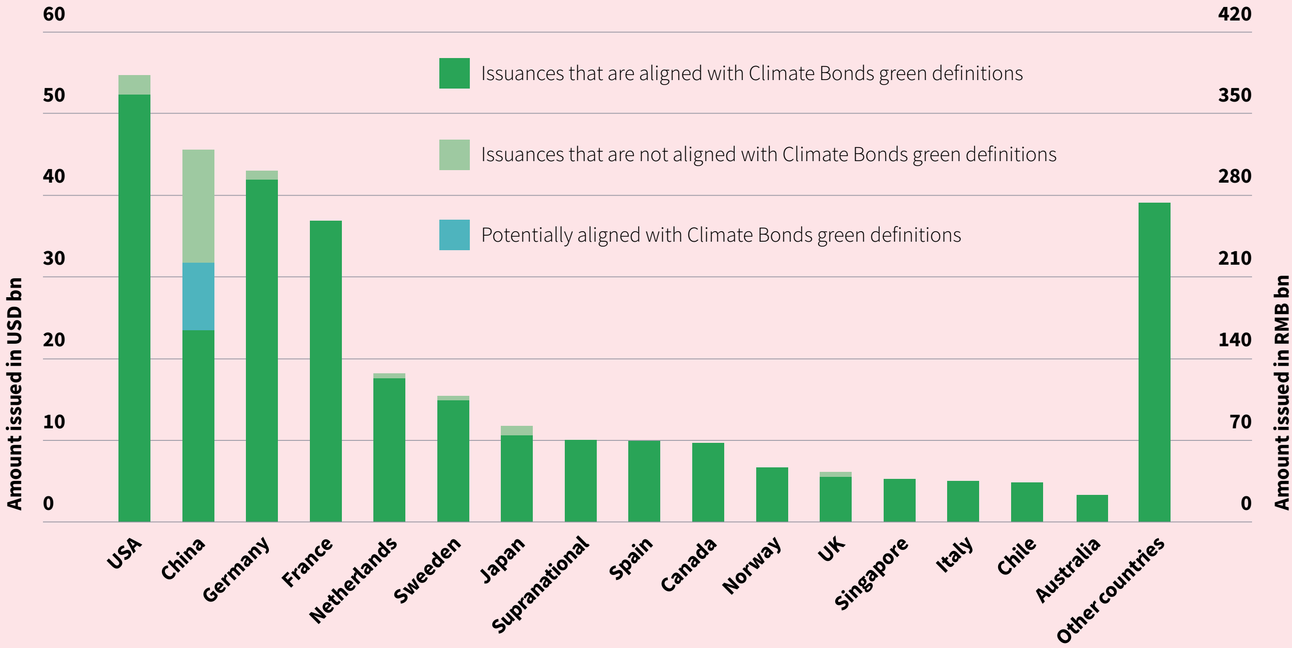
The potential for future internationally aligned green bond market

By Climate Bonds' definition, if not 100% of net proceeds is used for projects or assets that meet the eligibility criteria the bond will not be eligible for inclusion.

Our research on the proceeds allocation of non-aligned bonds uncovers that of the USD20.2bn (RMB132bn) of Chinese green bonds that failed to meet the criteria in 2020, at least USD7bn (RMB45.5bn) was in fact allocated to eligible green projects but could not be included as a part of the same bond was financing general working capital or there was a lack of transparency.

If the general working capital rule was removed, the CBI-aligned allocation of proceeds could have reached USD30.8bn (RMB200.4bn) in 2020.

Volume of proceeds potentially aligned with CBI definition



Source: Climate Bonds Initiative

Climate-aligned bond market

Labelled bonds, including green bonds, benefit from a greater degree of transparency, as disclosure on the green credentials of the funding is often provided alongside financial information. This is due to well-established green definitions and market guidelines, which provide investors additional transparency on the use of proceeds.

In the meantime, the identification of a wider range of climate investment opportunities that are not necessarily labelled - is also crucial. In 2018, Climate Bonds identified more than USD1tn of climate-aligned bonds, with an additional USD389bn of labelled green bonds. To date, the labelled green bond market has more than doubled, having reached more than USD1tn.

Climate Bonds Initiative identifies climate-aligned bonds. These bonds are not labelled as green bonds by the issuer, but finance climate-aligned activities/assets. Climate-aligned bonds are identified via two research phases: the 'issuer screening' and the subsequent 'identification of climate-aligned bonds'. (See Climate-aligned methodology in Appendix A)

With USD325bn of climate-aligned bonds outstanding, China accounts for 36% of the overall climate-aligned universe identified by Climate Bonds Initiative. Most of the country's climate-aligned debt comes from the Transport theme, with railway companies being the most prevalent.

The commitment to become net-zero by 2060 will require a shift to the country's energy paradigm with a drastic change in its energy generation mix. The ambitious carbon neutrality pledge also requires trillions of dollars in private-sector capital to finance both green and transition activities. The Chinese bond market is large enough to fill in the gap in climate funding.

96 climate-aligned issuers

69 fully-aligned issuers

27 strongly-aligned issuers

USD325bn outstanding climate-aligned debt

Top three climate themes: Transport (USD261.2bn), Energy (USD48.5bn), Water (USD10.6bn)

Top 3 currencies: RMB (USD321.3bn), USD (USD2.7bn), HKD (USD1bn)

Therefore, scaling up climate finance via labelled green bonds will be one of the key paths for China if to push ahead its net-zero target.

Rail dominates China's climate-aligned universe. China Railway Corp is the top issuer with a cumulative USD230.1bn of aligned outstanding bonds, which make up for 25% of the overall climate-aligned universe and 71% of that of China.

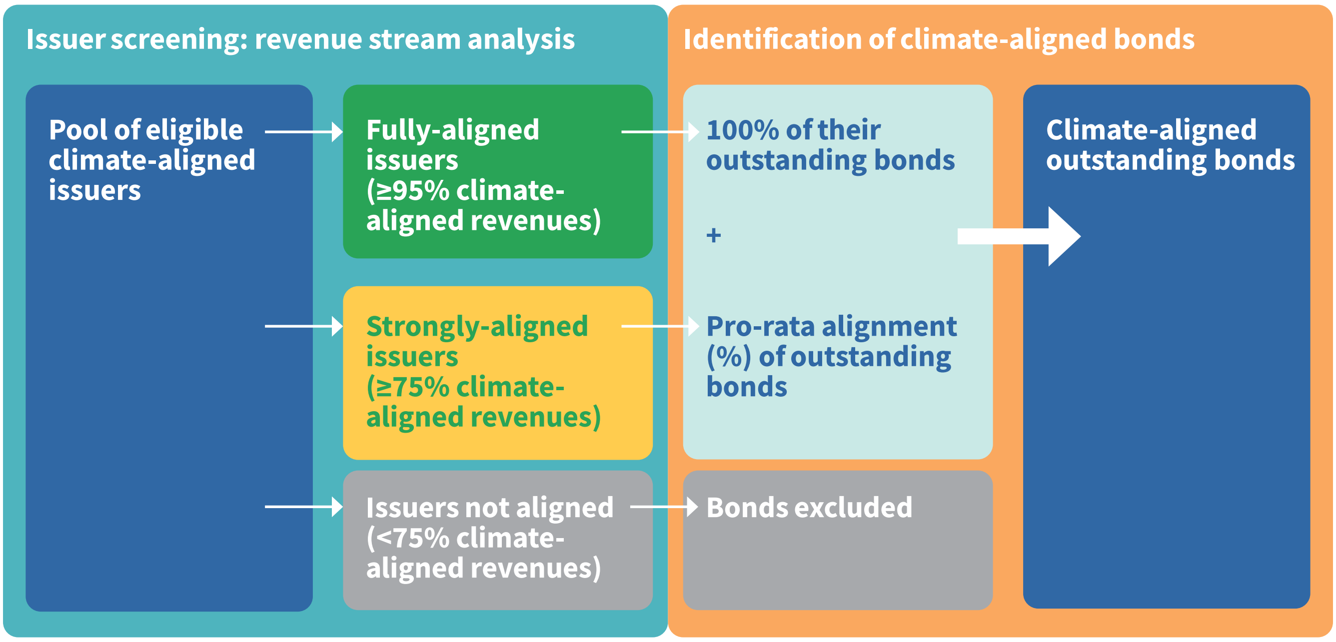
Energy is the second largest climate theme

The Energy theme is China's second largest climate theme after Transport and accounts for approximately 15% of climate-aligned outstanding volume (USD48.5bn and 37 climate-aligned issuers). The top three issuers are China National Nuclear Corp (3% of China's volumes, USD10.6bn), China Three Gorges Corp (3%, USD9.1bn) and China Yangtze Power (2%, USD7.8bn).

Water, Waste and Land use & agriculture account for over USD1bn of climate-aligned outstanding debt. Water represents 3% of total volume (USD10.6bn and 22 climate-aligned issuers) with Beijing Enterprises Water Group being the top issuer (USD2.7bn). With USD2.4bn and 13 climate-aligned issuers, waste makes up roughly 1% of the volume; Yunnan Water Investment Co Ltd (USD<1bn) tops the theme's ranking. Land use & agriculture also accounts for 1% of volume (USD2.2bn and 3 climate-aligned issuers), with Sinar Mas Paper China Investment Co Ltd being the top issuer (USD1.5bn).

Opportunities for scaling up labelled bond issuance

More than half of China's outstanding climate-aligned bonds (56%) will mature by 2024. This highlights opportunities for climate-aligned issuers to refinance their debt with labelled green bonds. Most opportunities come from the Transport theme, followed by energy and water. An additional USD69.7bn will mature by 2029, indicating more opportunities from 2025, particularly for transport and energy issuers.



Social and sustainability bonds

The COVID-19 pandemic had clear implications for the green finance universe: Although China remained one of the largest sources of green bonds, both domestic and overseas issuance witnessed a slowdown year-on-year, with the impact more pronounced in the first half of 2020. The drop in green bond issuance also partly resulted from the surge of other labelled debt instruments in the country – specifically 'Pandemic Prevention and Control' bonds ('Pandemic' bonds or 'COVID' bonds).

Policy developments

On January 31, 2020, five ministries including the People's Bank of China, Ministry of Finance, CBIRC, CSRC and Ministry of Foreign Exchange jointly issued the "Notice on Further Strengthening Financial Support to Prevent and Control the Pandemic", created a 'fast registration route' for bonds whose proceeds are used for pandemic control.

Issuers are eligible to label the bond as 'Pandemic prevention and control' if the entity is registered or operated in a region that is severely affected by COVID, and/or operates in an industry that either affected by COVID or can contribute to the control of pandemic.

Market developments

The COVID pandemic impacted the issuance of all types of bonds towards the end of the first quarter 2020. However, the bond market proved to be a flexible source of finance to help with both the immediate impacts as well as longer-term recovery plans. This led to the rapid growth of the sustainable and social debt markets globally, and the massive increase in Pandemic Prevention and Control bonds in February and March.

The first Pandemic bond of 2020 was issued on 5 February, a RMB1bn (USD143m) deal from Zhuhai Huafa Group from China. Pandemic themed issuance peaked in February and continued to decline until June when the series of sovereign Pandemic control bonds were issued (RMB1trn, USD156bn). As of December 2020, the total Pandemic bonds in China reached RMB1.55trn (USD210bn).

There are also two 'Pandemic' bonds categorised as 'International Organisation' panda bonds issued by the New Development Bank and AIIB respectively.

The New Development Bank's Pandemic bond raised funds to provide Emergency Program Loan to the People's Republic of China for Supporting China's Economic Recovery from COVID-19. Specifically, it provides support to the provincial government of Guangdong, Hubei and Henan Provinces.

The Asian Infrastructure Investment Bank (AIIB) brought its inaugural renminbi-denominated Sustainable Development Bond (Pandemic Prevention and Control) in the China Interbank Bond Market in June. The RMB3bn issuance has a maturity of 3 years with a coupon rate of 2.40% and carries the Combating COVID-19 label approved by the National Association of Financial Market Institutional Investors.

The bonds were 2.78 times oversubscribed by more than 20 investors with 35% allocated to domestic and 65% to international investors. The bond is zero percent risk weighted in China, and was priced at 23bps lower than the valuation of China Development Bank Bonds as of close of business June 10, 2020. The proceeds will be used to support public health, such as by providing emergency loans to China's public health departments, and to support economy recovery as well as investment in infrastructure.

Climate Bonds Initiative's Social and Sustainability Bonds Methodology

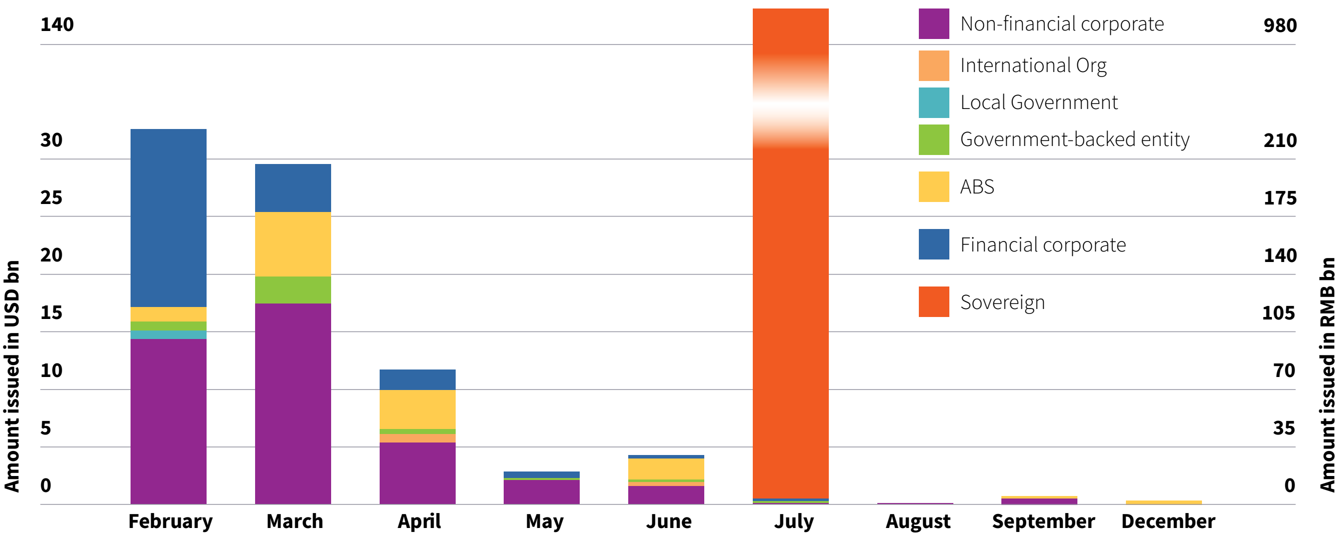
Social and sustainability Market participants have not yet developed a "social taxonomy" or equivalent classification and screening system, though work on this is ongoing in the EU and elsewhere.

Climate Bonds does not screen social and sustainability bonds' use of proceeds against performance thresholds. The use of proceeds is, however, classified in accordance with the respective labels and categorised as follows:

Sustainability: label describes a combination of green and social projects, activities, or expenditures e.g., sustainable; SDG; SRI; ESG, etc.

Social: label is exclusively related to social projects e.g., pandemic, COVID-19, housing, gender, women, health, education, etc. Thus, any instrument financing only green projects is included in the green theme irrespective of its label. On the other hand, a sustainability-labelled bond that only finances social projects, as well as one that finances a combination of green and social, is considered to fall under the sustainability theme. Because of this, our analysis of other themes provides an initial indication of capital market funding aimed at each theme based on the deal label (see Appendix B). NB: Throughout this report 'Pandemic' refers to deals with a COVID-related label such as pandemic response, COVID-19 etc.

The development of COVID bonds in China



Source: Climate Bonds Initiative

Green bond policy development

Throughout the year of 2020, and especially after the announcement of China's pledge to become carbon neutral by 2060, the nation's top policy-makers and regulators continued to double down on providing incentives to market stakeholders to incorporate environmental, social and climate considerations into their investment decision. Nevertheless, the discrepancies in the UoP rules and the regulations around the green external review providers are still in the process of being studied. We have identified several noteworthy policy developments as follows.

China's Five-Year Plan (FYP) for carbon emissions reduction

On March 11, 2021, the National People's Congress (NPC) of China released the country's 14th Five-Year Plan (2021-2025), setting a 18% reduction target for CO2 intensity and 13.5% reduction target for energy intensity.[3] The FYP also aims to boost the share of non-fossil sources in the energy mix to around 20% and increase forest coverage to 24.1% by the end of the period.

A 2060 climate target

Chinese President Xi Jinping pledged at the United Nations General Assembly in September that China would peak carbon emissions by 2030 and achieve carbon neutrality before 2060. China's carbon goal will have a profound positive impact on the world and itself. In December, building on the "30-60" target, President Xi further proposed several milestones: By 2030, China's carbon dioxide emissions per unit of GDP will be reduced by 65% compared with 2005, non-fossil energy will account for about 25% of primary energy consumption, and the total installed capacity of wind and solar power will reach more than 1.2 billion kilowatts. In the next ten years, China's economy and society will have a comprehensive low-carbon transition

CBIRC issued requirements for ESG risk management

In January 2020, the China Banking and Insurance Regulatory Commission issued "Guiding Opinions on Promoting the High-Quality Development of the Banking and Insurance Industry", which puts forward higher requirements for ESG risk management of Chinese financial institutions in banking industry.

The Opinions states clearly to develop green finance. Its requirements for banking financial institutions are to: a) to put in place a sound environmental and social risk management system, and incorporate ESG factors into the credit granting process; b) encourage setting up green finance departments and green branches; c) encourage green financial products innovation. The unprecedented importance has been attached to ESG, and in the future, the ESG risk management will be a key indicator for the performance appraisal of banking financial institutions.

China Scraps Quota Limits on QFII, RQFII Foreign Investment Systems

On May 7, 2020, the PBOC and the State Administration of Foreign Exchange (SAFE) jointly issued the Regulations on Funds of Securities and Futures Investment by Foreign Institutional Investors, which removes the remaining quotas for QFII and RQFII investments, further easing the restriction of foreign investors in accessing China's financial market.[4]

New Green Bond Endorsed Projects Catalogue (2020 Edition) released for consultation

In July, the People's Bank of China, together with the National Development and Reform Commission and the China Securities Regulatory Commission, publicly solicited opinions on the "Notice on Promulgating the Green Bond Endorsed Projects Catalogue (2020 Edition) (Draft for Solicitation of Opinions)".

The updated version was jointly issued by the three ministries marking the harmonization of domestic green definitions. The exclusion of clean coal projects was a remarkable step towards the harmonization with international standards. The consultation draft also refined the three-level classification of the original catalogue, increased it to a four-level classification, and expanded the scope of endorsed projects in the fields of agriculture and ecological protection.

Note: In May 2021, the Green Bond Endorsed Projects Catalogue (2021 Edition) was released. The new edition incorporates constructive feedbacks collected during consultation period, and unifies domestic green standards.

Shanghai Stock Exchange announces new regulation on green company bonds

On November 27, 2020, the Shanghai Stock Exchange (SSE) issued the "No. 2 Guidelines for the Application of the Review Rules for the Issuance and Listing of Corporate Bonds-Specific Types of Corporate Bonds, which includes regulatory standards, information disclosure and verification requirements for six specific types of bonds including short-term company bonds, renewable bonds, green company bonds, poverty alleviation bonds, innovation bonds, and disaster relief bonds.[5] The Guide stipulates that no less than 70% of funds raised from the green company bonds should be used in the green project, and sets additional information disclosure requirements including environmental benefit targets.

Green bonds included in the new Green Financial Performance Evaluation Plan for Banking Depository Financial Institutions

In July 2020, the People's Bank of China issued the "Notice on Releasing the Green Financial Performance Evaluation Plan of Banking Depository Financial Institutions" (Draft for Solicitation of Opinions). This consultation draft revised the "Green Loan Performance Evaluation Plan of Banking Depository Financial Institutions (Trial)" formulated by the PBOC two years ago in three places:

1. the evaluation scope was expanded to cover not only green loans, but also green bonds, and room reserved for further incorporation of green equity and green trust;

2. evaluation indicators were revised accordingly based on the expanded scope;

3. the evaluation results can be applied in more scenarios, for instance, it will be referenced to by the central bank in the ratings of financial institutions. It showed the central bank upgraded its evaluation methods on banks' green finance performance.

On 9 June 2021, after consultation, the "Green Finance Performance Evaluation Plan for Banking Financial Institutions" was officially released. Green bond holdings of financial institutions are explicitly included in the evaluation alongside green credit balances and are assigned the same weighting.

Five Ministries promote climate investment and financing

In October, five ministries with the Ministry of Ecology and Environment issued the "Guiding Opinions on Promoting Climate Investment and Financing". The Opinions proposed to create a policy environment conducive to the development of climate investment and financing, to set standards for climate investment and financing, and to initiate local-level pilot programs.

Green finance standards and green bond market development in the Greater Bay Area (GBA).

China is speeding up the unification of green finance standards and green bond market in the Greater Bay Area (GBA). In May, four ministries including the People's Bank of China issued the "Opinions on Finance Supporting the

Construction of the Guangdong-Hong Kong-Macao Greater Bay Area (GBA)", calling for green financial cooperation in the GBA.

The Opinions proposed to establish a unified set of green finance standards in the GBA, which will gradually conform to international standards, and attract international investors. It supported Guangdong local financial institutions to issue green bonds and other green financial products in Hong Kong and Macau, and to support green enterprises in the GBA with raised funds. The GBA is on frontier of China's green finance reform.

CSRC Includes ESG information in listed firms' Investor Relation Management

On February 5, 2021, China Securities Regulatory Commission (CSRC) published a consultation draft of its Investor Relations Management Guidelines for the Listed Companies.[6] One of the key updates has been that the Environmental, Social and Governance (ESG)-related information is now required, for the first time, in the Company's investor relation management. The guidelines also emphasize that the listed firms must be proactive in managing their investor relations and encourage a culture of long-term, rational, and value-driven investment.

MEE Launches Public Consultation of National ETS Draft Law

On March 30, 2021, the Ministry of Ecology and Environment (MEE) issued a new draft national ETS legislation[7] for public consultation. The Interim Regulations for the Management of Carbon Emissions Trading" refines the existing measures and moves the regulations one notch higher within China's legal hierarchy. For the first time, the draft law connects national ETS to the carbon emissions peaking and carbon neutrality targets.[8]

Outlook

2020 has been a tumultuous year for China's green bond market as the country, like the rest of the world, rushed to respond to the impacts of the COVID-19 and to find its own path to post-pandemic recovery with coordinated macroeconomic policy, regulatory, institutional and technological developments.

Chinese regulators have continued to stimulate market growth through an array of financial and regulatory incentives, and sought to further integrate China's green financial market into the global capital market. The year has seen an important market consolidation with a long-awaited unification and update of its domestic green bond standards, which will improve the attractiveness of Chinese green bonds for offshore investors and pave the way for better taxonomy coordination between China and the rest of the world.

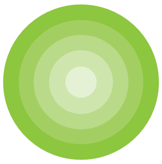
Outside of the green bond universe, there was a growth in other labelled bonds s, with a spike in the issuance of sustainability and social-related debt instruments, and a cluster of new products, such as "carbon neutral" bonds, sustainability-linked bonds (SLBs) and social bonds.

Nonetheless, the gaps that remain between Chinese and international green bond standards have the potential to dent foreign investors' enthusiasm, while the international investors still need to grow understanding and confidence in the emerging products including the "carbon neutral" and transition bonds from the Chinese market.

Going forward, the government's role in providing consistent and credible policy signals will continue to be paramount for the sustained and orderly growth of China's domestic green bond issuance volume, yet the market stakeholders will need to keep abreast of the rapidly evolving and proliferation of debt instruments. The key "gatekeepers" of the labelled bond market, such as the external review providers and underwriters, also need to insist on high standards.

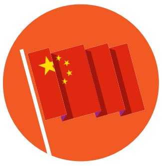
There are a number of themes to watch for understanding the further development of one of the world's most important green financial markets.

Transition finance is becoming a prominent theme



China's green debt instrument universe has seen an impressive growth in recent years, with a broadening number of commercial banks, government-backed entities and corporates engaging with both local and overseas investors to finance projects, assets that can delivery positive environmental and climate impact. Large emitters, however, are still largely absent and present an opportunity for the markets to aid their sustainable transition. In order to fill this gap, the 'transition bond' concept and label can be introduced for those bonds that do not meet the criteria and market adopted standards for green bonds but which are associated with issuers who are transitioning to decarbonized business models -- and are particularly targeted at the high carbon-emitting sectors.

A China sovereign green bond?

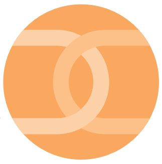


As of December 2020, 22 national governments had issued sovereign green, social and sustainability bonds totalling USD96bn. The rise of the sovereign green bonds is to support the growth of a local green bond market. Sovereign issuers can serve as role models for other types of issuers. They can provide investors with safe, liquid investment opportunities and contribute to larger strategic initiatives such as the strategic initiative to achieve NDC and carbon neutrality targets. Over 110 countries that have committed to becoming carbon neutral by mid-century, including China. Governments must act on these commitments by implementing large-scale green infrastructure plans as part of the post-covid recovery to build back better.

Carbon neutrality bonds expected to expand China's green bond market and bring it closer to international green definitions

The National Association of Financial Market Institutional Investors (NAFMII) issued a notice in March 2021 introducing carbon neutrality bonds mechanism that aims to further support the low-carbon transition and green growth. According to the Notice, projects that receive investment via the carbon neutrality bonds should comply with the local green bond catalogue or international classifications of green industry (including the Climate Bonds Standards) and should focus on low-carbon and emission reduction projects such as clean energy, clean transport, sustainable buildings and low-carbon renovation of industrial projects. According to Climate Bonds Initiative's analysis, bonds that carry a Carbon Neutrality label has shown a closer alignment with Climate Bonds green definitions. We expect this will turbo-charge China's green bond market in 2021 and attract more attention from international investors.

Sustainability linked-bonds to fuel transition finance



China's National Association of Financial Market Institutional Investors (NAFMII) introduced an innovative debt capital market tool "Sustainability-Linked Bonds (SLB)" to the interbank market in April 2021, for the purpose of broadening financing channels for enterprises engaged in sustainable development. NAFMII defines SLBs as any type of bond instrument for which the financial and/or structural characteristics can vary depending on whether the issuer achieves predefined sustainability or ESG objectives. It is a forward-looking performance-based instrument with a flexible structure. Entities that issue SLBs can set key performance indicators (KPIs) which are aligned with their sustainability strategies. Allowing the issuer to set more general, overarching sustainability goals, rather than being tied to financing specific projects may further accelerate the transition finance market in certain sectors such as steel, cement, and utilities. However, science-based tools for the evaluation of the targets are important to provide transparency to investors.

Appendix 1 Methodology

We cover three sustainable debt themes based on the projects, activities, and expenditures financed: green, social, and sustainability. Pandemic bonds are included as a sub-set of the social theme.

The themes can be described as follows:

Green: dedicated environmental benefits (captured since 2012)

Social: dedicated social benefits (captured since 2020)

Sustainability: green and social benefits are combined into one instrument (captured since 2020).

The methodology used to identify climate aligned bonds and issuers is described below and is independent.

Methodology overview

This report is based on the Climate Bonds Green Bond Database, as well as the Social and Sustainability Bond Database. To qualify for inclusion, debt instruments must a) have a label and b) finance sustainable projects, activities, or expenditures. Debt labels describe the types of projects, activities, or expenditures financed, and/or their benefits. 'Green', 'Social', and 'Sustainability' labels are the most common in each theme, but a broad range of labels is used.

Green

All deals in the green theme have been screened to verify their integrity. Screening is based on a set of process rules stipulated in Climate Bonds Green Bond Database Methodology, including the following two overarching criteria:

1. Deals must carry a variant of the green label

2. All net proceeds must verifiably (based on public disclosure) meet Climate Bonds' green definitions based on the Climate Bonds Taxonomy.[9]

Social and sustainability

Market participants have not yet developed a "social taxonomy" or equivalent classification and screening system, though work on this is ongoing in the EU and elsewhere. Climate Bonds does not screen social and sustainability bonds' use of proceeds against performance thresholds. The use of proceeds is, however, classified in accordance with the respective labels and categorised as follows:

Sustainability:

Label describes a combination of green and social projects, activities, or expenditures e.g., sustainable; SDG; SRI; ESG, etc.

Social:

Label is exclusively related to social projects e.g., pandemic, COVID-19, housing, gender, women, health, education, etc.

Thus, any instrument financing only green projects is included in the green theme irrespective of its label. On the other hand, a sustainability-labelled bond that only finances social projects, as well as one that finances a combination of green and social, is considered to fall under the sustainability theme. Because of this, our analysis of other themes provides an initial indication of capital market funding aimed at each theme based on the deal label (Appendix B).

Climate-aligned methodology

Climate-aligned bonds are identified via two research phases: the issuer screening and the subsequent identification of climate-aligned bonds.

1. Issuer screening

In the first phase, climate-aligned issuers are identified through an analysis of the revenue streams of a global pool of public and private companies and entities. Revenue streams are assessed based on their alignment with the Climate Bonds Taxonomy across eight climate categories: Renewable Energy, Transport, Buildings, Water, Waste, Land Use and Agriculture, Climate Adaptation, and ICT (Information and Communications technology). Only companies (or their subsidiaries and/or financing arms) with outstanding debt are eligible for inclusion.

- Companies that derive at least 95% of their revenue streams from climate-aligned activities are classified as fully-aligned issuers
- Companies that derive between 75%-95% of their revenues from climate-aligned activities are classified as strongly-aligned issuers

2. Identification of climate-aligned bonds

In phase two, the amount of climate-debt is calculated. Bonds issued by climate-aligned issuers are defined as climate-aligned bonds as they finance and/or refinance operating activities that have been identified as climate-aligned. The total climate-aligned outstanding debt is calculated as follows:

- For **fully-aligned** issuers: 100% of outstanding debt is considered climate-aligned
- For **strongly-aligned** issuers: a pro-rata amount based on the issuers' percentage alignment is considered climate-aligned. For example, if an issuer is 80% aligned, then 80% of its outstanding debt is considered climate-aligned.
- The combination of climate-aligned outstanding volume issued by fully- and strongly-aligned issuers is defined as **climate-aligned outstanding debt**, and this is the basis for the charts and market analysis below.

Methodology notes and caveats

1. Due to the methodological difference between Green and other themes, our analysis of other themes is merely an indicator of the financing aimed at each, based on the deal's label. For instance, some deals labelled as 'SDG', and therefore included under the Sustainability theme, may only actually finance social projects. Importantly, there will also, for example, be various deals under the Social and Sustainability themes that finance, in whole or in part, pandemic-related investments. Climate Bonds is developing the more granular UoP analysis for other themes.

2. Some of the analysis is shown in terms of 'number of issuers' rather than 'amount issued' – this reflects the number of issuers in each individual theme. The total number of issuers is slightly lower than the total adding across themes, since some issuers have printed deals that cover more than one theme.

3. Our Green Bond Database includes many loans and ABS (securitised) deals. We have historically treated these as issuer types, and the same applies to this report. However, under our new methodology, these are considered different instrument – not issuer – types. It remains uncommon to see loans or ABS deals with a sustainability, social, or pandemic label (a reminder that performance-linked loans are not included).

4. In addition to the exclusion of performance-linked instruments and transition labels, we excluded several deals because we could not find publicly available labels. This included some by repeat issuers, most of which had issued clearly labelled deals – where possible, we suggest improving the availability and clarity of information related to each deal, including labels.

Appendix 2 Terminology

Terminology

Labelled green bonds

In China's domestic market, labelled green bonds are either approved by regulators or registered at stock exchanges with a green label in the bond name. In the overseas market, issuing documents or external review reports are used to identify the green label.

Aligned green bonds

Only bonds with 95% or more of proceeds dedicated to green assets or projects that are aligned with the Climate Bonds Taxonomy are included in Climate Bonds Initiative Green Bond Database. These bonds are referred to as green bonds aligned with CBI definitions in this report.

Non-aligned green bonds

If a bond's use of proceeds (UoP) is not aligned with the Climate Bonds Taxonomy, the bond is not included in the Climate Bonds Initiative Green Bond Database. The same applies if more than 5% of proceeds are expected to be used for general corporate purposes, working capital, social assets or projects/assets that are not aligned with the Climate Bonds Taxonomy. Lack of sufficient information to determine the alignment of use of proceeds also results in exclusion. These bonds are also referred to as excluded green bonds, non-aligned green bonds or green bonds only aligned with local definitions.

Certified Climate Bonds

Climate Bonds Initiative administers the Climate Bonds Certification Scheme. Issuers can certify their green issuance under the Climate Bonds Standard and Sector Criteria. Independent approved verifiers provide a third-party assessment that the use of proceeds comply with the objective of capping global warming at 2°C.

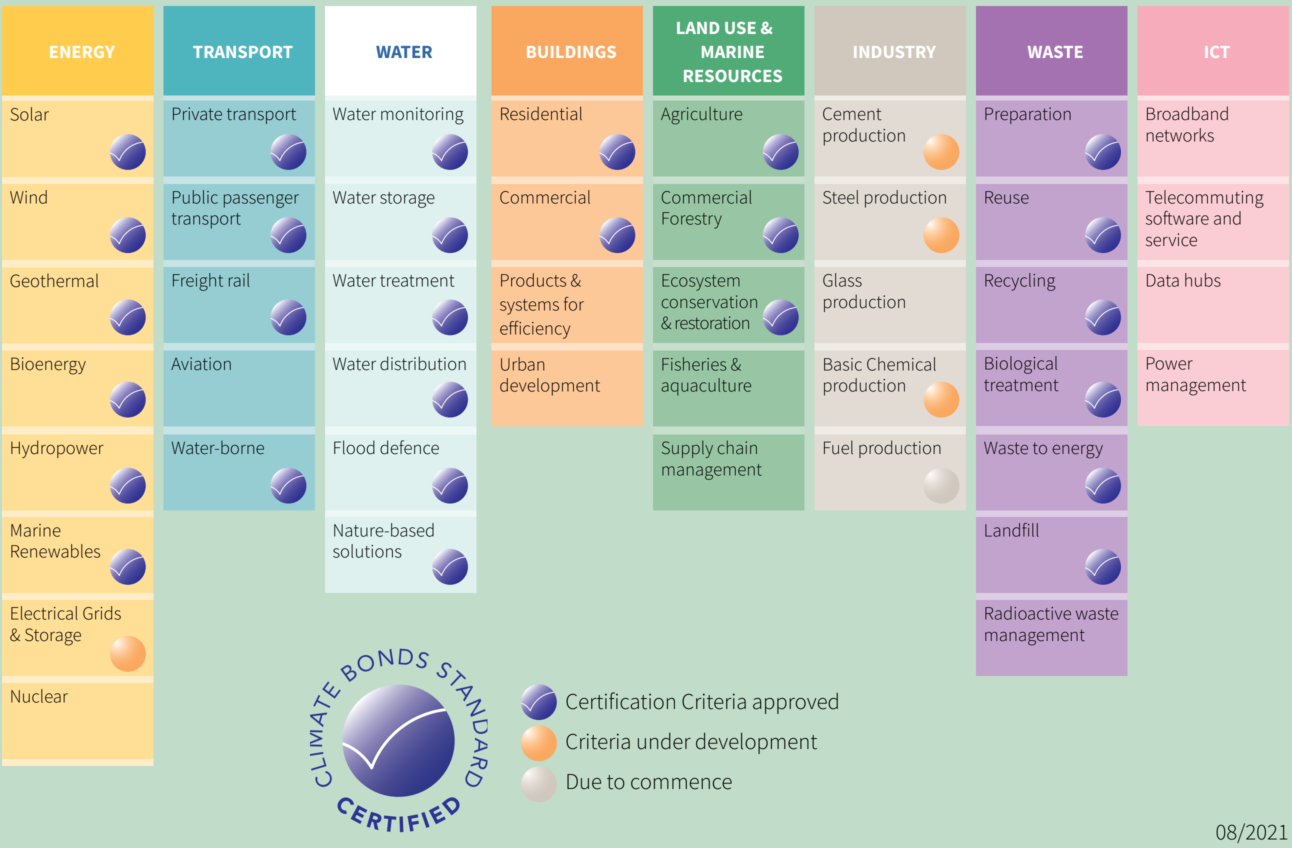
Unlabelled Climate-aligned bonds

The term refers to bonds that support the transition to a low carbon economy but have not been labelled as "green" by the issuing entity.

These go beyond the green label and indicates a much larger set of bonds issued by entities that have at least 75% of revenue derived from "green" business lines in at least one of the climate themes defined by Climate Bonds Taxonomy.

Appendix 3 Climate Bonds Taxonomy

Climate Bonds Taxonomy



Appendix 4 Index performance

With regard to the identification method of index sample bonds, CCDC made three innovations. Firstly, the index goes beyond the labelled green bond and identified non-labelled bonds that are actually financing green assets. It encourages and guides investment in broader green sectors.

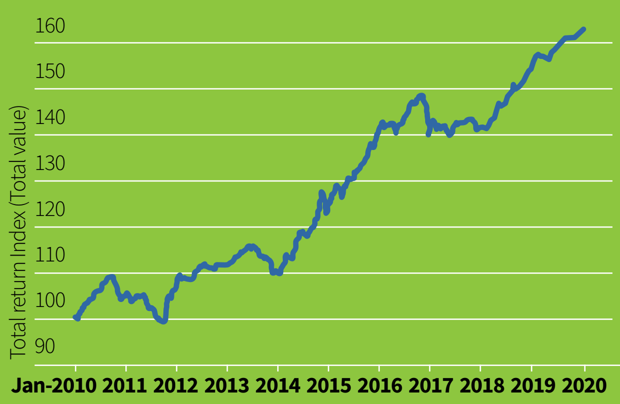
Secondly, is to propose solutions to the differences in the identification of clean fossil energy projects and pollution prevention projects among the four green bond standards prevailing at home and abroad, that is, to fully consider the positive effects of these projects on the current environmental benefits.

The third is to dig deep into the green information of stock financial bonds, define the scope of "green loans" and other factors based on loan investment projects, and calculate the proportion of bonds raised to green project loans in the funds raised from bonds, thus achieving the identification and classification of green financial bonds purpose.

ChinaBond China Climate Aligned Bond Index

As of 31 December 2020, there were 394 constituent bonds included in the ChinaBond China Climate-aligned Bond Index with a total outstanding amount of RMB1.27tn. The average duration is 3.58 years and the 1-year total return of the index was 3.83%. 99.98% of the proceeds of index constituents were allocated to green projects.

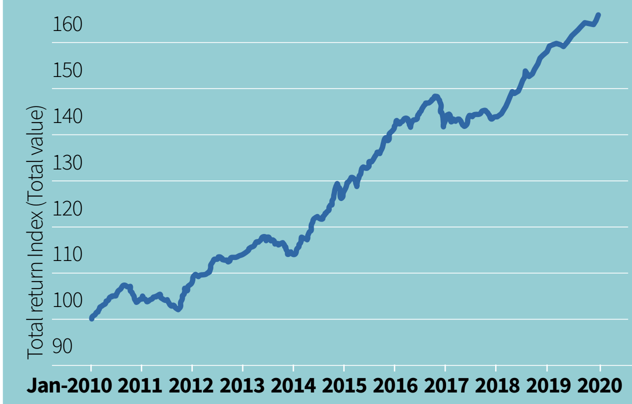
Total return: Chinabond China Climate-aligned Bond Index



ChinaBond China Green Bond Index

As of 31 December 2020, there were 2009 constituent bonds included in the ChinaBond China Green Bond Index with a total outstanding amount of RMB4.01tn. The average duration is 4.72 years and the 1-year total return of the index was 3.44%. 86.85% of the proceeds of index constituents were allocated to green projects.

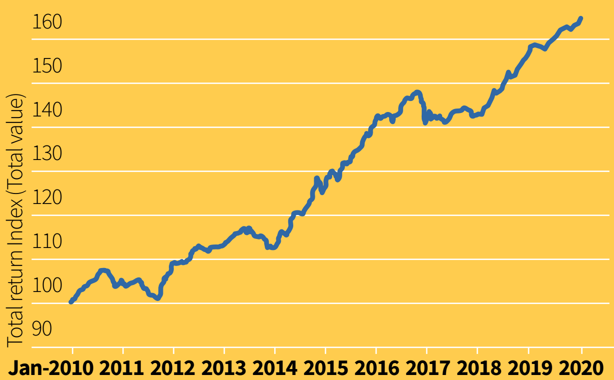
Total return: ChinaBond China Green Bond Index



ChinaBond China Green Bond Select Index

As of 31 December 2020, there were 1834 constituent bonds included in the ChinaBond China Green Bond Select Index with a total outstanding amount of RMB3.77tn. The average duration is 4.89 years and the 1-year total return of the index was 3.44%. 87.28% of the proceeds of index constituents were allocated to green projects.

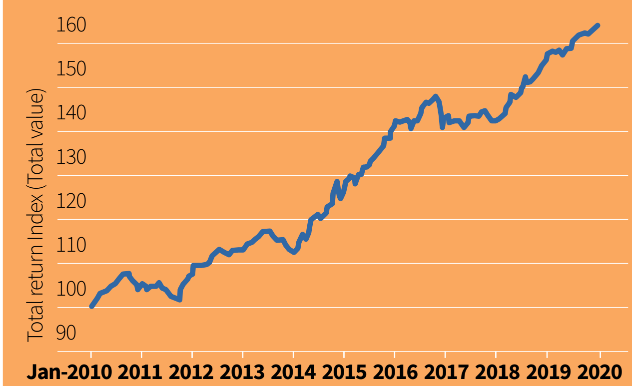
Total return: Chinabond China Green Bond Select Index



ChinaBond CIB Green Bond Index

The index was launched jointly by CCDC and China Industrial Bank. Eligible projects have to be confirmed by China Industrial Bank's Green Finance Criteria (2016). As of 31 December 2020, there were 471 constituent bonds with a total outstanding amount of RMB805.4bn. The average duration is 1.75 years and the 1-year total return of the index was 3.38%. 90.23% of the proceeds of index constituents were allocated to green projects.

Total return: ChinaBond CIB Green Bond Index



Data source: all index performance data is provided by CCDC

Note: all the four indices are Fortune Indices

Appendix 5 External review types

Type of review	What it covers	Service Providers
Third party Assurance	Assurance reports state whether the green issuance is aligned with the Green Bond Principles and the Climate Bonds Standard	Audit firms
Second Party Opinion	Provide an assessment of the issuer's green bond framework, analysing the "greenness" of eligible projects/assets. Some second party opinions also provide a sustainability rating, giving a qualitative indication	Environmental Social Governance (ESG) service providers (such as Oekom, Sustainalytics, Vigeo Eiris, DNV GL) and scientific experts (such as CICERO, CECEP Consulting). Other environmental consultants and assessment organisations.
Green Bond Rating	A number of rating agencies assess the bond's alignment with the Green Bond Principles and the integrity of its green credentials	Rating agencies such as Moody's, S&P Global Ratings, JCRA, R&I, RAM Holdings
Pre-issuance verification of the Climate Bonds Certification according to the Climate Bonds Standard	The Climate Bonds Standard is the only Paris Agreement aligned standard available in the market. Independent verification confirms that the use of proceeds adhere to the Climate Bonds Standard and sector specific criteria (e.g. Low Carbon Transport)	Verifiers approved by the Climate Bonds Standard and Certification Scheme

Appendix 6 A CCDC Study on Information Disclosure on Environmental Benefits by Chinese Green Bonds

China's labeled green bond market has grown fast in recent years. Meanwhile, there are also a large number of bonds that are not labeled but actually financing green projects, which provide substantial support for green development.

In 2018, China Central Depository & Clearing Co., Ltd. (CCDC) and China Energy Conservation and Environmental Protection Group Co., Ltd. (CECEP) accomplished a research project entrusted by the Green Finance Committee (GFC), where they created a practical set of indicators for environmental benefits disclosure of green bonds, as well as a method for identification of unlabeled green bonds. According to this method, a bond can identified as substantively green if the use of its proceeds meets one of the four major green bond standards (Green Bond Endorsed Projects Catalog (2015) by People's Bank of China, Guidelines for Issuance of Green Bonds by the National Development and Reform Commission, Climate Bonds Taxonomy by the Climate Bond Initiative and Green Bond Principles (2015) by the International Capital Market Association) and at least 50% of the proceeds are invested in green projects (or at least 50% of the issuer's principal business revenue is green).

Over the past three years, CCDC and CECEP have identified 2,017 substantively green bonds. The results of identification are published on www.chinabond.com.cn and updated on an ongoing basis.

With a growing base of market participants, the Chinese green bond market has made steady progress. As of December 31, 2020, the outstanding amount of all green bonds had hit RMB3,968.954 billion, of which RMB847.55 billion was labeled.

ChinaBond Green Bond Environmental Benefit Disclosure Indicator System

To facilitate the goal of "peaking carbon emissions before 2030 and achieving carbon neutrality by 2060" and consolidate the green bond market, CCDC R&D Center and Shenzhen Customer Service Center released in April 2021 the ChinaBond Green Bond Environmental Benefit Disclosure Indicator System (Exposure Draft) ("the Indicator System") as well as the data disclosed on environmental benefits by green credit bond samples in 2020 for public consultation.

It is in line with Green Bond Endorsed Projects Catalog (2021 Edition) (the "2021 Catalog") and also compatible with the 2015 Catalog.

The Indicator System, comprising 30 general indicators and 13 sector-specific indicators, covers all 203 green sub-sectors of 6 industries set out in the 2021 Catalog. Given actual green contributions made by bonds, it extends the scope to include green local government bonds and green railway bonds.

The Indicator System presents China's first quantitative indicators for sub-sector-level data in line with the 2021 Catalog. This set of measurable and verifiable indicators on environmental benefits will provide reliable reference for regulators in their statistics of carbon neutrality data.

2.2 Information disclosed on environmental benefits

With the assistance of the Indicator System, we studied information disclosed on environmental benefits by outstanding green bonds. Excluding green financial bonds and local government bonds due to insufficient disclosure, the study focuses on 917 substantively green credit bonds .

Endnotes

1. Note that in this report 'Chinese green bonds' ferefer to any green bonds issued by an entity with China as its country of risk as designated by Bloomberg. Bonds may be issued in any currency.
2. http://www.sse.com.cn/assortment/bonds/corporatebond/latest/c/4694310.pdf
3. Xinhua News, The Fourteenth Five-Year Plan for the National Economic and Social Development of the People's Republic of China and the Outline of Long-Term Goals for 2035, March 12, 2021 http://www.xinhuanet.com/2021-03/13/c_1127205564.htm.
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5. SSE, Notice on the issuance of the "Shanghai Stock Exchange No. 2 Guidelines for the Application of the Review Rules for the Issuance and Listing of Corporate Bonds-Specific Types of Corporate Bonds", November 27, 2020, http://www.sse.com.cn/lawandrules/sserules/main/issue/c/c_20201127_5268003.shtml.
6. CSRC, Guidelines for Investor Relations Management of Listed Companies (Draft for Solicitation of Comments), February 5, 2021, http://www.csrc.gov.cn/pub/zjhpublic/zjh/202102/t20210205_392304.htm.
7. MEE, Interim Regulations for the Management of Carbon Emissions Trading, March 30, 2021, http://www.mee.gov.cn/xxgk2018/xxgk/xxgk06/202103/t20210330_826642.html.
8. ICAP, China publishes new draft national ETS legislation, https://icapcarbonaction.com/fr/news-archive/766-china-publishes-new-draft-national-ets-legislation.
9. We review all green debt instruments to ensure their green credentials.

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