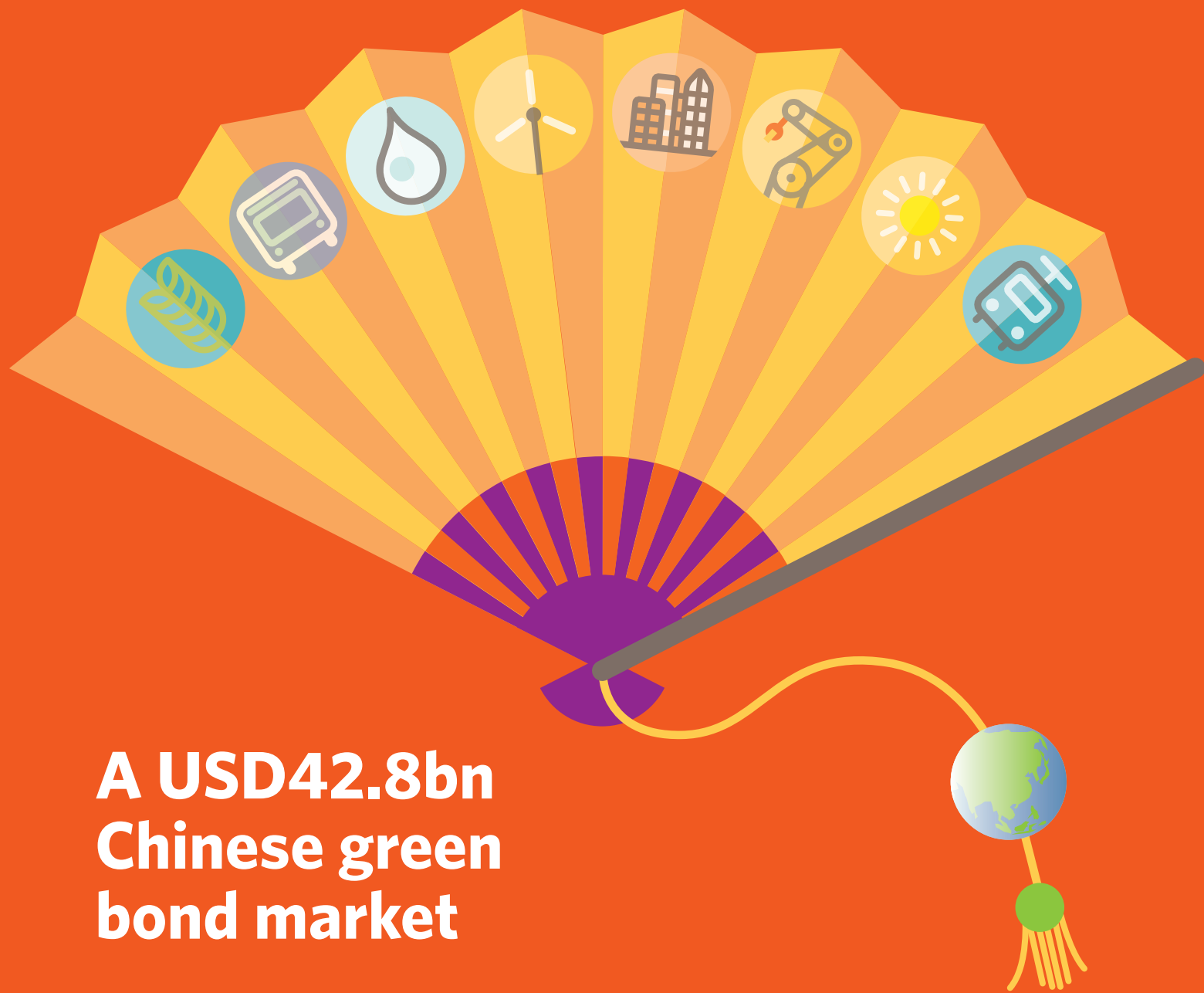


CHINA GREEN BOND MARKET 2018



**A USD42.8bn
Chinese green
bond market**

Climate Bonds INITIATIVE

中央国债登记结算有限责任公司
CHINA CENTRAL DEPOSITORY & CLEARING CO., LTD.


UK Government

 **HSBC**

Published jointly by the Climate Bonds Initiative and China Central Depository & Clearing Company (CCDC).
Funding for this publication was provided under a grant from the UK Government under its Partnering for
Accelerated Climate Transitions Programme (PACT) and HSBC as a supporting organisation.

GOLD PARTNER

Introduction

China has remained one of the leading players in the global green bond market, with a higher proportion of overall labelled Chinese green bond issuance aligned to international definitions. Chinese issuance in 2018 topped USD30bn, and Industrial Bank became the second largest issuer globally with USD9.6bn. Regulators continued to improve market integrity through a series of measures and to stimulate market growth through policy tools.

This is our third China Green Bond Market annual report, in association with China Central Depository & Clearing Company (CCDC). This report summarises the major developments that have taken place during 2018 focusing on issuance, policy development and wider market growth.

Funding for this publication was provided under a grant from the UK Government under its Partnering for Accelerated Climate Transitions Programme (PACT) and HSBC as a supporting organisation.

Understanding green bonds

Green bonds are issued in order to raise finance for climate change solutions. They can be issued by governments, banks, municipalities or corporations. The green bond label can be applied to any debt format, including private placement, loan, securitisation and sukuk. Labelled green loans are an option if they comply with the ICMA Green Bond Principles¹ or the LMA/APLMA Green Loan Principles.² The key is for the proceeds to go to "green" assets.

Green definitions

The Climate Bonds Initiative uses the *Climate Bonds Taxonomy*, which features eight sectors - energy, buildings, transport, water, waste, land use, industry and ICT - and various subsectors (see Appendix 3).

Climate Bonds Initiative also develops Sector Criteria with expert input from the international science community and industry professionals. Sector Criteria are used under the Climate Bonds Certification Scheme (see below).

Inclusion in CBI's green bond database

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 CBI's green bond database and figures. These bonds are referred to as *internationally-aligned green bonds* in this report.

Excluded green bonds

If the bond's use of proceeds is not aligned to the Climate Bonds Taxonomy, the bond

is not included from the 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 or assets that do not align to the Climate Bonds Taxonomy.

Lack of sufficient information to determine the alignment of use of proceeds also results in exclusion.

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 complies with the objective of capping global warming at 2°C.

Climate-aligned bonds

The term refers to bonds that are financing green/climate assets that help enable a low-carbon economy but have not been labelled as green by the issuing entity.

Climate-aligned bonds go beyond the green label and indicates a much larger set of bonds issued by entities who have at least 75% of revenue derived from 'green' business lines in at least one of 6 climate themes: clean energy, low-carbon transport, water management, low-carbon buildings, waste management and sustainable land use.

Contents

- 3 Executive summary**
- 4 China's green bond market in 2018**
- 16 Green bond policy development**
- 17 Trends to watch in 2019**
- 18 Appendix**

Climate Bonds Initiative

The Climate Bonds Initiative is an international investor-focused not for profit organisation working to mobilise 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 increased capital markets investment to meet climate goals.

The Climate Bonds Initiative carries out market analysis, policy research and market development; 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 like Switzerland and France.

The Climate Bonds Initiative is the lead partner in the Green Infrastructure Investment Coalition. Sean Kidney, Climate Bonds Initiative's 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, Refinitiv Eikon and Bloomberg, 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. Internationally aligned green bonds are those aligned with both local and international definitions.

Green panda bonds are stated separately.

A summary of the Hong Kong green bond market can be found on p.14. Climate Bonds prepared a green bond market briefing, which provides more details about the market and was supported by the Hong Kong Monetary Authority (HKMA).

Executive summary: A year of significant growth

Despite the bumpy debt market conditions in 2018, the green bond market in China forged ahead steadily. **Internationally-aligned green bond issuance from China reached USD31.2bn (CNY210.3bn) in 2018.** This figure includes USD30.9bn (CNY208.9bn) issued by Chinese issuers on both domestic and overseas markets, and USD208m (CNY1.4bn) green panda bonds issued by Hong Kong issuers. In addition, there was a CNY122m (USD17.7m) green loan aligned to the LMA/APLMA Green Loan Principles.

Internationally-aligned green bonds from Chinese issuers account for 18% of global issuance. 2018 issuance represents a 32% increase from the USD23.5bn (CNY245.6bn) reached in 2017. If bonds that align only with China's local definitions are factored in, total issuance in 2018 reached USD42.8bn (CNY282.6bn), representing a 12% increase year-on-year.

The proportion of green bonds that are in line with international green bond definitions has increased. In 2017, 38% of Chinese issuance failed to meet the international standards, which exclude coal and other fossil fuel-based technologies and limit the use of proceeds for working capital to 5%. In 2018, that figure fell to 26%. There is also a significant improvement in the transparency of Chinese green bonds, especially on the domestic market.

Nearly three quarters of domestic green bonds are issued on the China interbank bond market (CIBM). Overseen by PBoC, CIBM is used primarily by commercial banks and other financial institutions. In contrast, the markets on the Shanghai and Shenzhen stock exchanges feature green ABS and green bonds issued by listed and non-listed corporates. USD6.2bn (CNY42.3bn) worth of green bonds are listed on Shanghai Stock Exchange.

Fourteen issuers raised a total of USD9.5bn through offshore green bonds. Both the number of deals and the volume issued increased in 2018. The largest overseas deal is ICBC's USD1.58bn Certified Climate Bond, arranged by its London branch. The proceeds will finance onshore wind and solar farms in different provinces in China and in Pakistan, and an offshore wind farm in Scotland.

Ever since People's Bank of China (PBoC) released its green bond guidelines in 2015 to help launch the country's green bond market, the Chinese government and financial regulators have been stepping up efforts to encourage green bond issuance and support market integrity through a raft of policies.

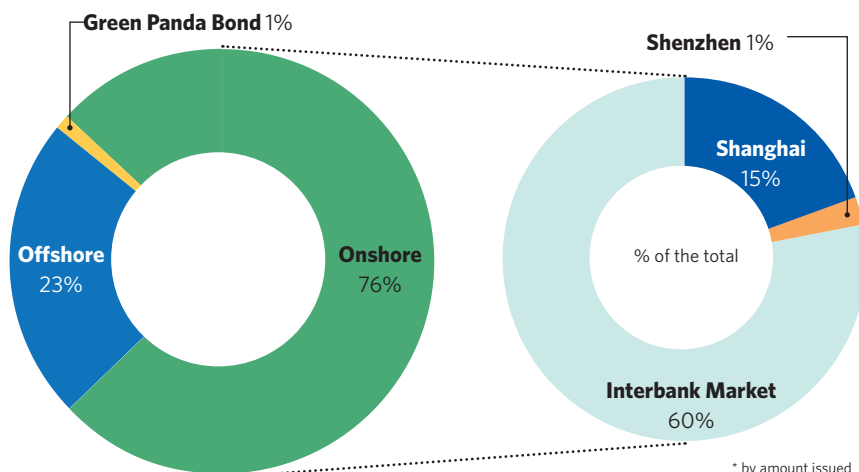
According to Dr. Ma Jun, Chairman of China's Green Finance Committee, there were 120 policy measures rolled out by the central and 167 sub-national governments to bolster the development of China's green bond market in 2018 alone. Policy support spans measures for both the supply (issuers) and demand (investors) side of the market. This demonstrates the commitment of Chinese policymakers to transforming the market into a full-fledged green finance system.

This report also sheds light on the post-issuance reporting of green bonds, which are aligned with international green definitions. The majority of Chinese issuers provided some degree of public information after issuance, with 85% of bonds complying

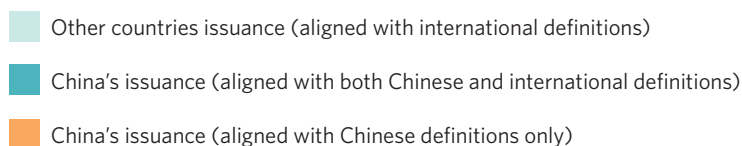
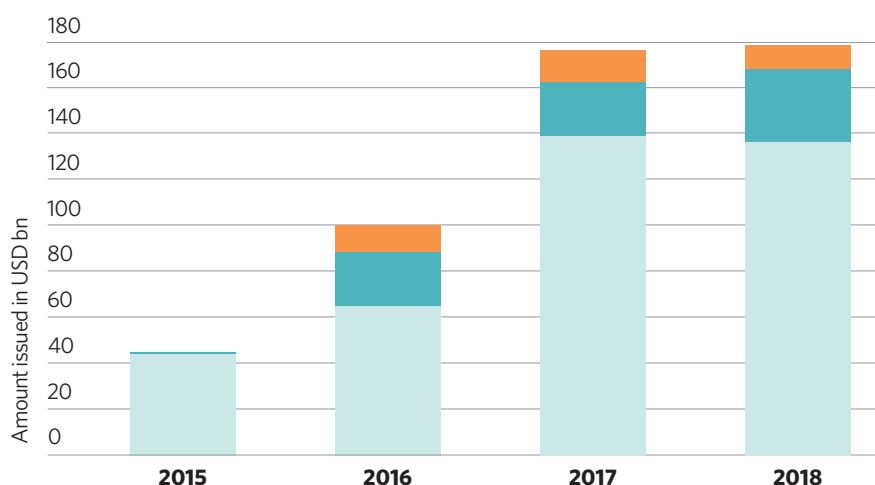
by number of bonds or 93% by value. Financial corporates provide frequent reporting, in line with PBoC requirements.

This report goes beyond the labelled green bond market and identifies a broader universe of bonds in China that are financing green/ climate assets, but have not been labelled as green. China is the largest climate aligned bond market globally. There was USD289bn outstanding on bonds from China-domiciled climate-aligned issuers as of mid-2018, and a further USD4.3bn from Hong Kong issuers. They present green bond issuance potential in the transport, energy and water sectors. With significant volumes maturing in the next 5 years, there is an immediate opportunity for labelling the unlabelled climate bonds.

Onshore, offshore and green panda bonds



China accounts 18% of global issuance



China's green bond market in 2018

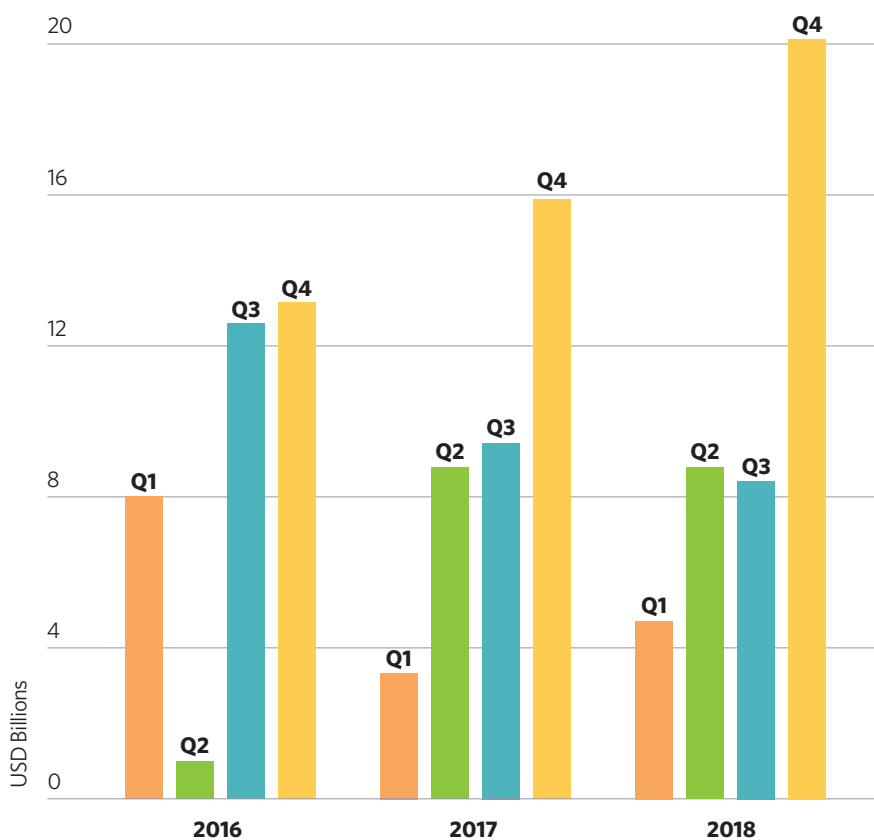
Internationally-aligned green bond issuance from China reached USD31.2bn (CNY210.3bn) in 2018

The figure includes USD30.9bn (CNY208.9) issued by Chinese issuers on both domestic and overseas markets, and USD208m (CNY1.4bn) green panda bonds issued in China. In addition, there was a CNY122m (USD17.7m) labelled green loan, the first Chinese loan under the LMA Green Loan Principles, introduced in March 2018.

Green bonds from Chinese issuers account for 18% of global issuance. 2018 volume represents a 32% increase from the USD23.5bn (CNY245.6bn) reached in 2017. If bonds that align only with China's local definitions are factored in, total issuance in 2018 reached at USD42.8bn (CNY282.6bn), representing a 12% increase year-on-year.

As in 2017, we observed that the last quarter usually has the most significant green bond issuance. Q4 2018 issuance was almost four times as large as that of Q1. Except for the first quarter in 2016 when China's market was fuelled by several demonstration issues from big banks following the announcement of PBoC's Green Bond Guidelines, the beginning of the year is comparatively quiet in China's green bond market - partly due to the holiday season around the Chinese New Year. It would be interesting to see if this pattern continues in 2019 and beyond.

Quarterly issuance volumes tend to pick up in Q4



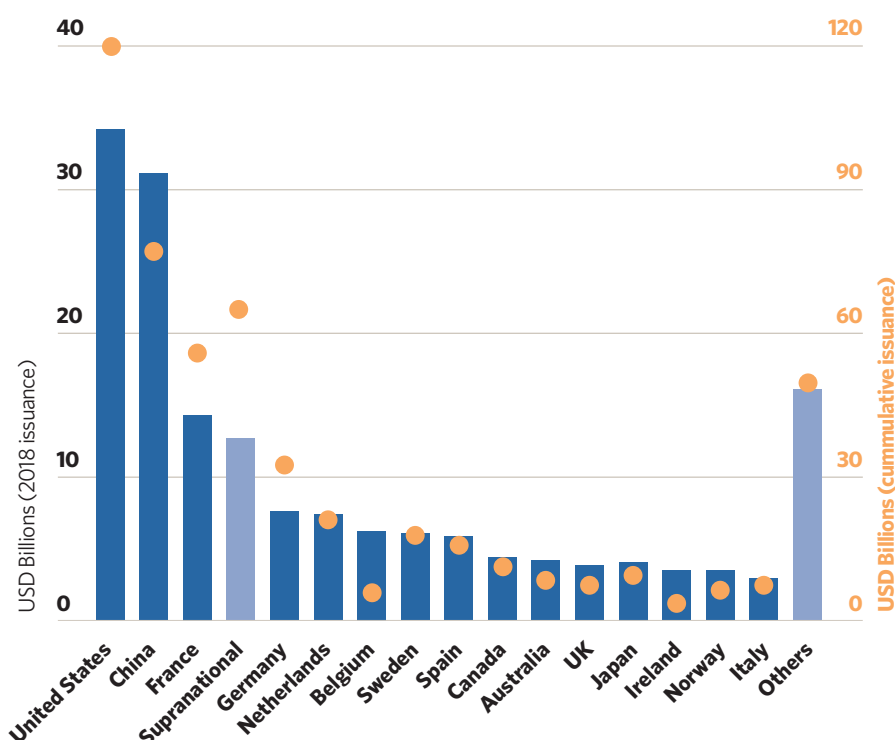
China remains the second largest green bond market globally

Globally, US issuers contributed USD34.1bn to the total volume of green bonds aligned with international definitions, while France ranked 3rd with USD14.2bn.

Fannie Mae remained the largest US and global issuer in 2018 with Green MBS deals totalling USD20.1bn. This is 27% below 2017 volume, but is still impressive against a backdrop of reduced US issuance, mainly from US Munis.

Industrial Bank is the second largest global issuer and the largest from China. Its USD9.6bn (CNY66.5) worth of issuance in 2018 includes two onshore issues totalling CNY60bn (USD8.6bn) and a dual tranche offshore issue of USD943m. The bank accounts for 23% of China's total in 2018. Cumulative issuance from Industrial Bank reached USD17.4bn (CNY119.2bn) (USD10bn is aligned with international definitions), making it the largest single issuer in China since the market started in 2016.

China's green bond issuance in the global context



The global context

Globally, labelled bond issuance grew 13% year on year, with increased volumes from sustainability and social bonds (also labelled as Sustainable Development Goals or SDG bonds). Green bonds aligned with the Climate Bonds Taxonomy and included in the CBI green bond database, experienced a growth of 3% reaching USD167.3bn, based on preliminary 2018 figures.

The more muted growth is in part related to the rise of sustainability and SDG bonds, which comprise both climate and social projects. It is also influenced by general market conditions. For example, in the US, changes to the tax law in December 2017 and subsequent softness in the wider bond market, have resulted in much lower issuance from US municipal issuers and Fannie Mae green ABS.

However, highlights of 2018 include 204 new issuers, 8 new countries, 6 new sovereign issues and a doubling of issuance from financial institutions. Over the year, many organisations published new guidelines and/or updated their taxonomies, including ICMA's new Social Bond Principles and Sustainability

2018 issuance including sustainability, social and excluded green bonds



Principles, the LMA's Green Loan Principles, a revised and expanded Climate Bonds Taxonomy and the consultation paper from EU TEG on the international green finance

taxonomy. Continued work on harmonising taxonomies and providing guidelines is expected to underpin the future growth of the green bond market.

Chinese green bonds that are not in line with international definitions, have decreased

China's local market context means some bonds considered green in China are not regarded as green by international investors. The problems are the lack of transparency, using green proceeds for general purposes, and financing for projects that are not accepted by international definitions.

Overall, USD10.8bn (CNY71.3bn) of green bonds are not in line with international green bond definitions, although these are aligned to the Chinese green bond catalogues and guidelines published by the PBoC and NDRC. This represents 26% of overall Chinese green bond issuance.

Climate Bonds Initiative screens bonds for alignment against the Climate Bonds Taxonomy (see p. 2 and Appendix 3).

Bonds without sufficient information to determine alignment are excluded

However, this category accounted for just 2% of all excluded bonds from Chinese issuers in 2018. This indicates a notable improvement in the transparency of Chinese green bonds, especially on the domestic market. This is also a reflection of the strengthened supervision of green bond proceeds allocation from regulators.

The updated eligibility criteria for hydro projects



Previously, Climate Bonds included run-of-river projects and small hydro facilities, that require small or no reservoirs, and existing large hydro projects. New large hydro projects with total capacity over 20MW were excluded. However, scientific discussion around hydro has evolved and the revised and expanded Climate Bonds Taxonomy, published in September 2018, reflects this.

Consequently, Climate Bonds has updated its green bond screening methodology and now the following hydropower assets will be included:

hydropower plants with no reservoir (e.g. run-of-river) or built without adding new reservoirs, as well as plants with new reservoirs which have a high power density (preferably 5W/sqm or higher) and low emissions of electricity generated (preferably up to 100gCO₂e/kWh), unless the project is controversial due to loss of habitat and/or biodiversity and/or due to the displacement of people, as well as projects with weak social and/or environmental impact assessments.

If there is insufficient information to determine alignment, the bond will not be included in the Climate Bonds green bond database.

Fewer bonds financing non-aligned projects

Projects that are not aligned to international definitions include retrofits of fossil fuel power stations, "clean" coal, coal efficiency improvements, controversial hydro projects or those without disclosure in power density, etc. Although it is still the largest

exclusion category, its proportion dropped from 83% of excluded Chinese green bonds in 2016 to 50% in 2018. This figure is expected to further decrease with the convergence of China's local green bond definition and international ones.

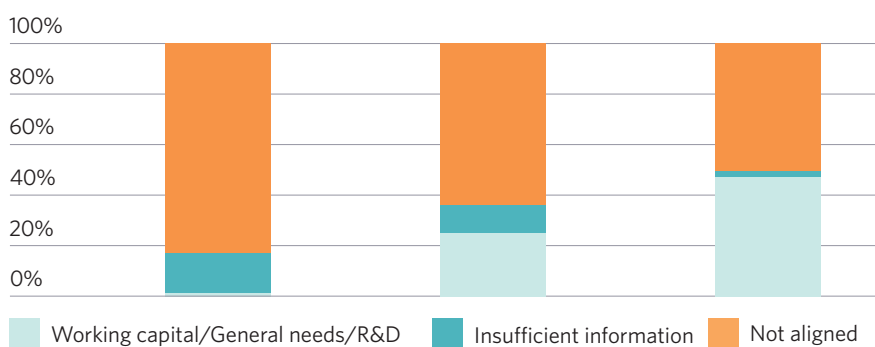
More bonds financing working capital

As an internationally accepted practice, at least 95% of green bond proceeds should be linked to green assets or projects. However, according to guidelines issued by the National Development and Reform Commission (NDRC) from 2016, bond issuers can use up to 50% of bond proceeds to raise general working capital.

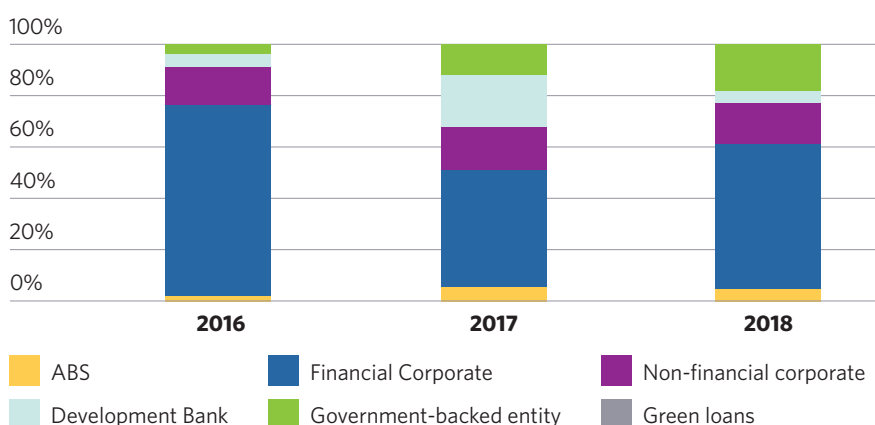
In August 2018, Shanghai Stock Exchange issued a Q&A explaining the regulatory requirements for green bonds and green ABS listed on its platform. The new rules allow issuers with more than 50% of operating revenue generated from defined green industries to issue green corporate bonds without specifying the underlying green projects, but require that at least 70% of the funds raised are used in green sectors.

The proportion of green bonds with large allocations to working capital surged from 1.4% of total non-aligned (excluded) volume in 2016 to 46% in 2018. In 2018, over USD4.9bn (CNY32.5bn) worth of green bonds failed to meet the 95% green asset threshold, USD684m (CNY4.7bn) of which is excluded due to the application of the Shanghai Stock Exchange's new rule.

Not-aligned bonds are decreasing



2018 volume by issuer types



2018 issuance is dominated by financial corporates

Development banks issued only USD1.6bn (CNY10.9bn) in 2018, all of which come from Agriculture Development Bank of China. Compared with the USD6.7bn (CNY45.2bn) issuance in 2017, of which China Development Bank was the main contributor, there was a sharp fall of 76% from policy bank issuers.

However, financial corporates more than plugged the shortfall. Financial corporates dominate issuance volumes for the third year in a row. The rise of 38% over 2017 volume is largely fuelled by Industrial Bank's one offshore and two onshore deals, totalling USD9.6bn (CNY66.5bn). The two onshore bonds of CNY30bn each were the largest bonds of 2018, globally, and made the bank the second largest issuer after Fannie Mae.

Note: Development bank is equivalent to Policy Banks in the local context. In China's banking system, policy banks are responsible for financing economic and trade development and state-invested projects. It only includes China Development Bank (CDB), the Export-Import Bank of China (also known as the China Exim Bank) and the Agricultural Development Bank of China (ADBC).

Sustainability and social impact bonds have appeared in China

Sustainability and social bonds have been around for a few years on the global market, and some have been issued in China too. This section provides examples of such bonds and how Climate Bonds assessed them.

Sustainability Bond - China Construction Bank

The Hong Kong branch of China Construction Bank issued a USD1bn sustainability bond in September 2018. In addition to financing for a railway project in Eastern China, it also raised funds for affordable housing, education and medical projects, as well as employment generation through the bank's lending to SME and microfinance.

Since the bank does not provide the specific proceeds allocation split in each category, we assume an equal split among listed categories. Given that only one out of four project categories will finance climate solutions, this bond fails to meet the required minimum threshold to be eligible for inclusion in the Climate Bonds green bond database.

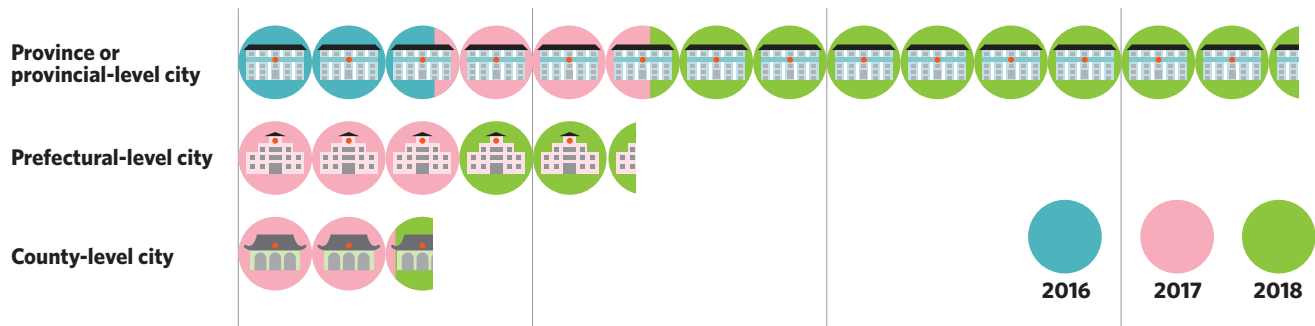
Social Impact Bond - Beijing Infrastructure Investment

The first Social Impact Bond in China was brought by Shandong Yi Nan County. The CNY5m deal from December 2016 targeted poverty alleviation.³

A more recent example is Beijing Infrastructure Investment's CNY5bn (USD736m) Social Impact Bond programme. The first bond of CNY3bn (USD442m) from December 2018 aims to finance two metro projects in Beijing. In addition to climate impact such as the reduction of CO2 and other pollutants, the projects will also deliver social impacts such as employment generation, travel-time saving, and land-use savings.

While Climate Bonds remains focused on green bonds, the additional social impact of a green project and positive externalities on the society as a whole are also acknowledged. We will monitor reporting to confirm that expenditures such as staff training and education, shop or property development are limited to 5%.

Issuance from local government financing vehicles reached USD5.9b in 2018



Local Government Financing Vehicles (LGFVs) achieved USD5.9bn issuance in 2018

and this volume was the main contributing factor to an overall 74% increase in issuance from government-backed entities. At the local level, incentives such as policy signals, supporting facilities, financial incentives and recognitions have been offered to encourage the development of green finance.

LGFVs are independent corporations with public-sector objectives set up by local government or government agencies, whereas other government-backed or state-owned enterprises are run primarily on a commercial basis.⁴ Therefore, the 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 LGFV green bonds varies significantly across provinces. The

more developed coastal provinces such as Guangdong, Jiangsu and Zhejiang, have the greatest volume of LGFV green bond issuance.

Provinces and provincial level cities started using their financing vehicles to issue green bonds in 2016, and have become the most important driver of LGFV green bond issuance.

In 2018, all county level LGFV green bonds came from Zhejiang Province. For instance, Yiwu State-Owned Capital issued a CNY700m (USD111m) green bond for Yiwu county's water projects.

Local governments' off-budget borrowing has continued to rise because the annual size of bond issuance in the budget is not large enough to accommodate local government spending needs. Consequently, we expect this constraint to lead to increased issuance from LGFVs, including in green bond format, to fund the development of green public infrastructure.

The first labelled green loan made to a Sino-French joint venture



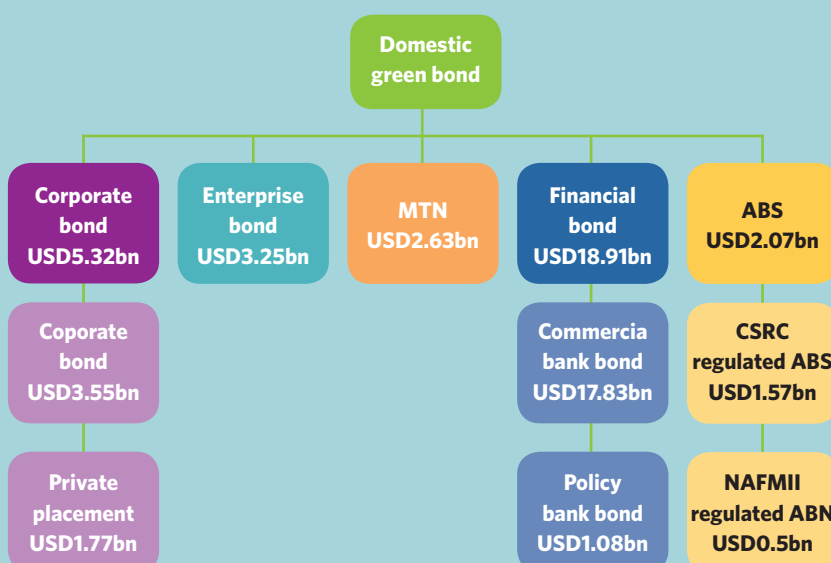
Green bonds are the most commonly used debt instrument in the labelled bond market, but other debt formats such as labelled green loans are emerging.



China's green loan policy was first issued in 2007, then revamped in 2012 as Green Credit Guidelines. In 2007, China's Ministry of Environmental Protection (MEP) and the China Banking Regulatory Commission jointly announced the Green Credit Initiative under which the environmental performance of loan applicants must be taken into account by the bank⁵. Loan applicants with poor compliance records are required to pay higher interest rates, and serious violators are denied credit. According to the China Banking Regulatory Commission (CBRC), green loans outstanding from 21 banks that had been researched reached CNY8.22tn (USD1.2tn) as of June 2017⁶.

The first green loan labelled against international principles was closed in December 2018 between Crédit Agricole CIB (China) Limited and EDF Lingbao, a joint venture between French electricity company EDF and the city of Lingbao. The CNY122m (USD17.7m) loan was made to replace inefficient coal boilers with a central heating system fuelled by biomass products, namely wood waste from neighbouring orchards and mushroom farms. According to Wind Financial Terminals, EDF holds a 65% stake in the joint venture, while Lingbao City Urban Renovation Investment Co., Ltd, a LGFV of Lingbao City, holds a 35% stake. This deal is in line with the LMA/APLMA Green Loan Principles, published in March 2018, making it the first deal labelled against GLP in mainland China.

Onshore green bond issuance according to China's local bond categories



Data source: WIND Financial Terminal

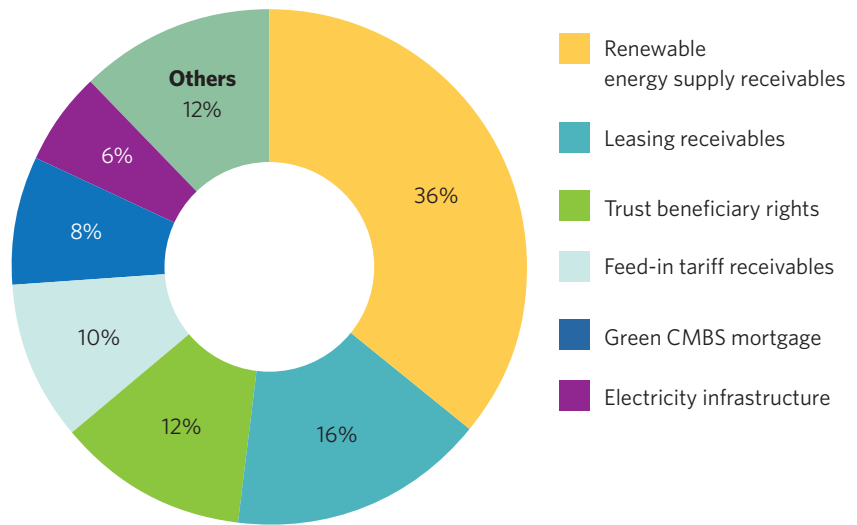
As China's overall securitisation market has scaled up, so has the green ABS market.

To date, there have been thirty ABS deals totalling USD4.7bn (CNY31.5bn). The 2018 green ABS volume of USD2.1bn (CNY13.8bn) marginally exceeds 2017's, while the number of deals increased from 10 to 17.

With proceeds raised to be allocated to renewables, low carbon buildings, water management and low carbon transport, Chinese green ABS deals are backed by a variety of collateral types. Most Chinese green ABS are secured by receivables such as renewable energy supply fees, equipment and electric vehicle leasing, feed-in tariff receivables, etc. For example, Huadian Fuxin's 12-tranche green ABS deal is backed by subsidized electricity revenue rights. Two CMBS deals, secured on commercial mortgages, have also been issued with a total of USD353m.

The proportion of green ABS increased from 1.7% of 2016 green bond issuance to 5% in 2018. However, green securitisations remain a small proportion of the Chinese green bond market, and the potential for growth is significant.

Chinese green ABS deals are backed by a variety of collateral types



Note: Other types include ABS secured on receivables from hydroelectricity, EV auto leasing, sewage treatment, public transport revenue and power & heat supply.

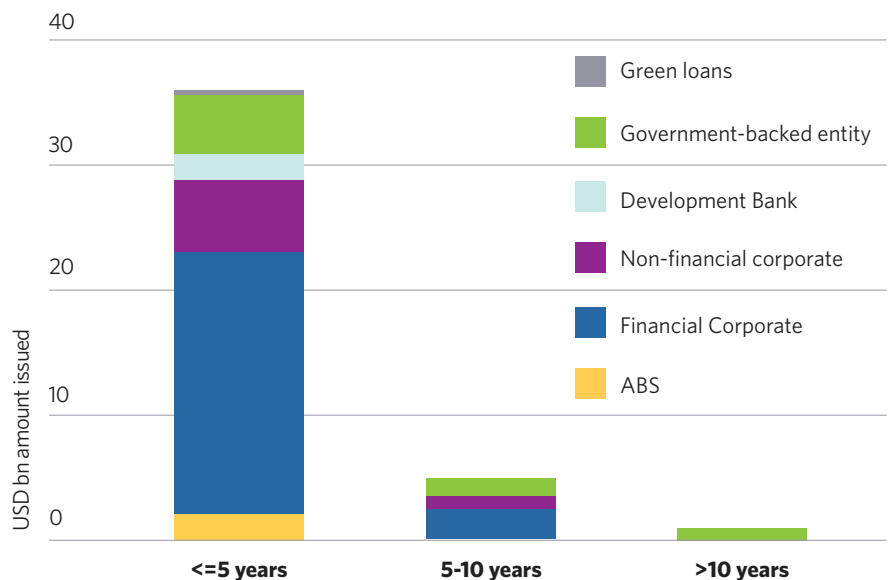
Most bonds are investment grade and issuers prefer shorter tenors

Shorter-dated bonds with a term of up to 5 years are primarily issued by financial corporates (59%). China's biggest banks are increasingly using short-term financing to meet demand for loans.⁷

Bonds with a tenor of 5-10 years make up 12% of the total, and financial corporates make up 49% in this bracket. All these bonds are issued on the overseas market, suggesting appetite for medium-term bonds from international investors.

Government-backed entities such as LGFVs tend to issue bonds with a longer maturity. The longest tenor is 15 years. All three issuances with a tenor longer than ten years come from government-backed entities, including Yichang High Tech Investment, which issued a CNY3bn (USD435m) bond to finance pollution control and remediation along the Yangtze River.

Bonds with shorter tenors dominate the market



Most green bonds are rated AAA by domestic agencies

All green bonds on China's domestic market received ratings at A or above from domestic rating agencies, except for the 5% that are not rated.

In the offshore market, the highest bond rating achieved is A, and almost all offshore issuance uses at least one international rating agency.

Offshore green bonds		Onshore green bonds	
	AAA		USD23.1bn
	AA		USD6.37bn
USD5.82bn	A		USD0.05bn
USD2.93bn	BBB		
USD0.7bn	BB		
	NA		USD2.66bn

Data source: Refinitiv Eikon, Bloomberg, WIND Financial Terminal

Chinese green bonds feature a broad range of use of proceeds

Low-carbon transport is the largest theme

Allocations to transport account for 33% of the total proceeds raised in 2018. A growing number of local transport companies drove the increase from USD6.2bn (CNY39.2bn) to USD10bn (CNY68.9bn). Wuhan Metro, Chengdu Rail Transit, Tianjin Rail Transit and Nanjing Metro, for example, issued green bonds to finance metro line construction or extension in their local cities. Kunshan Public Transport Group and Yangzhou Transportation Industrial Co used green ABS and green medium-term notes (MTN), respectively, to finance their public transport bus fleets.

Solar and wind remain the most common energy allocations

Energy represents the second largest sector. Solar and wind are the two most common energy types financed. Several wind power pureplay company issued green bonds in

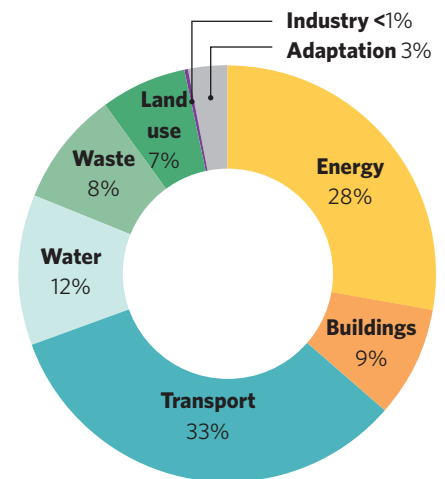
2018, including CECEP Wind-Power, Century Concord Wind Power and CGN Wind Energy.

Funds allocated to sustainable water infrastructure saw an increase

Beijing's commitment to extend its campaign to tackle pollution from air to water,⁸ could be a contributing factor. The administration is attempting to clean up polluted streams flowing through Chinese cities and improve the water quality of its natural reserves. President Xi sought to underline the importance of this when he said "Clear waters and lush mountains are invaluable assets".

This sector has seen several green ABS deals. For example, Chongqing Kangda securitised the next 15 years' worth of water treatment receivables from five subsidiaries. The proceeds will be used to construct new and to upgrade existing wastewater treatment stations for its subsidiaries.

Use of Proceeds - CBI definition



According to PBoC's Green Bond Guidelines and Green Bond Endorsed Project Catalogue, Clean Transport has also taken the largest share at 30%, followed by Clean Energy at 23%.

Use of Proceeds - PBoC definition



86% of green bonds benefit from at least one external review

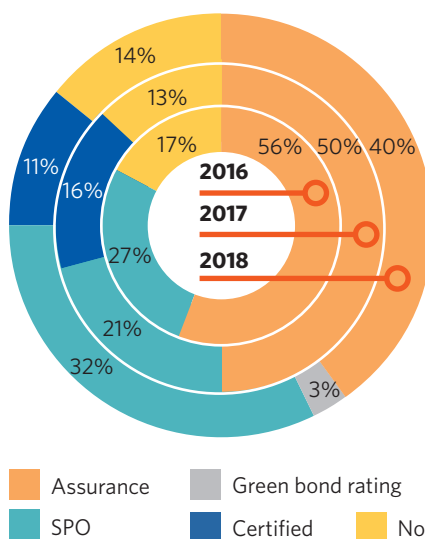
The use of Second Party Opinions is rising fast

In 2018, the share of green bond assurance decreased to 40%, as more issuers sought a second party opinion. Certified Climate Bonds made up 11% of issuance volume, and 3% obtained a green bond rating. 14% of green bonds do not have any external review and comprise primarily private placements, ABS deals and bonds approved by NDRC as its green bond guidelines do not require an external review.

The Big 4 accounting firms still dominate. Together, they are responsible for over 50% of external reviews by total amount. However, their share decreased by nearly 20% from last year's figure. This is largely due to the rise of SPO from a diverse set of environmental consultants.

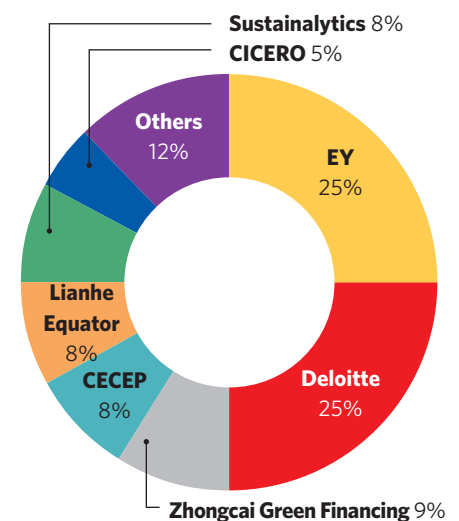
Deloitte caught up with EY as a result of the assurance that it provided to Industrial Bank's two CNY30bn (USD4.3bn) onshore bonds. Zhongcai Green Financing was the largest domestic green bond reviewer in 2018, followed by CECEP consulting.

External review types



Eleven deals obtained a green bond rating. CCX and China Bond Rating were the pioneers in developing green bond rating schemes in China. Wuhan Metro's

Rank of external reviewers



Note: Market share includes all external review types - SPO, assurance, green bond rating or approved verifier for Certification under the Climate Bonds Standard

benchmark-sized senior perpetual green bond received Green Bond Assessment (GBA) of GB1 (Excellent) from Moody's.

2018 featured five Certified Climate Bond deals

The number of Certified Climate Bond issues is on the rise, but the total market value of bonds is down year-on-year. All the Chinese issuers that sought Climate Bonds Certification issued bonds on overseas markets. Certification helps emphasize the environmental integrity of their green bonds to international investors.

Issuers	Date	Size (in issuance currency)	Size (USD)	Sector Criteria	Climate Bonds Approved Verifier
Bank of China (Tokyo Branch)	November 2018	JPY30bn CNY800m	379m	Transport, water	EY China
Industrial Bank Co., Ltd	November 2018	USD600m EUR300m	942m	Solar and wind energy, transport	Sustainalytics
China Construction Bank	September 2018	EUR500m	589m	Wind and marine energy, water, transport	EY China
ICBC (London Branch)	June 2018	USD1bn EUR500m	1.58bn	Solar, wind and marine energy, transport	Zhongcai Green Financing Consultant
Bank of China (London Branch)	June 2018	USD1bn	1bn	Wind and marine energy, transport, water	EY China

Bonds which are verified to conform with the Climate Bonds Standard are called Climate Bonds Certified Bonds. The Standard contains rigorous scientific criteria consistent with the 2 degrees Celsius warming limit as detailed in the 2015 Paris Agreement. The Climate Bond Standard allows Certification of a bond prior to its issue, enabling the issuer to use the Climate Bond Certification Mark in the bond marketing efforts and investor roadshows. After the bond has been issued and allocation of the bond proceeds has begun, the issuer must confirm the Certification by obtaining a post-issuance assurance report and providing that to the Climate Bonds Standard Board.

ICBC's second Certified Climate Bonds

ICBC London's deal includes a three-year floating rate dollar tranche of USD500m a five-year floating rate dollar tranche of USD500m and a three-year floating rate euro tranche of EUR500m. The bond priced at the tightest level ever achieved by ICBC in a USD and EUR comparable floating rate note format.

The green bonds are backed by a range of low carbon transport, wind, solar and marine renewables assets from China, Pakistan and the UK, and include:

- Three railway lines in China

- Multiple onshore wind and solar farms across different provinces in China and in Pakistan
- The Beatrice offshore wind farm project in Scotland

The renewable energy developments have a combined generation capacity of approximately 3.7GW.

The asset mix is reflective of ICBC's expanding green financing programme and its ongoing commitment to green credit, which amounted to over CNY1tn (USD174bn) at the end of 2017.

Post-issuance reporting is available from 94% of Chinese issuance

Based on a review of all green bonds issued prior to November 2017 and included in the Climate Bonds green bonds database, Climate Bonds Initiative has carried out its second study on green bond post-issuance reporting.

Market accountability not only rests on promises made at issue but also on how these are followed through during the life of the assets or projects financed. Post-issuance reporting provides issuers with a unique opportunity to engage with bondholders, potential investors and other market participants to showcase the positive climate impact that has been achieved through the green bond. In China, post-issuance reporting is required by domestic green bond guideline. For example, PBoC requires green bond issuers to disclose the use of proceeds to the market on a quarterly basis.⁹

Availability of post-issuance reporting

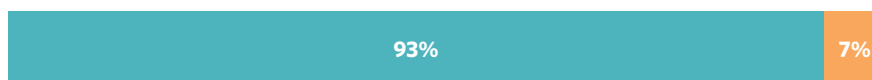
Total Number of issuers: 52 **Number of reporting issuers: 43**



Total Number of bonds: 94 **Number of reporting bonds: 80**



Total Amount issued: USD43bn **Amount of reporting issuers: USD40bn**



China ranks first by reporting percentage by amount issued and fourth by number of bonds. The majority of Chinese issuers provided publicly available information after issuance, with 85% of bonds complying by number of bonds or 93% by value.

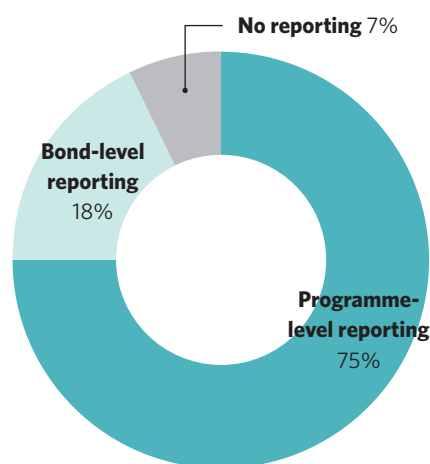
The majority of bonds reported at least quarterly. 60% of bonds had quarterly reporting, and most of them were issued by financial institutions. This is in line with expectations, given that PBoC guidelines require that financial institution issuers disclose the use of proceeds to the market on a quarterly basis.

There is high availability of reporting from financial corporates (primarily comprising commercial banks), development banks (i.e. policy banks in China's context) and government-backed entities. Reporting is lower from corporates and ABS deals.

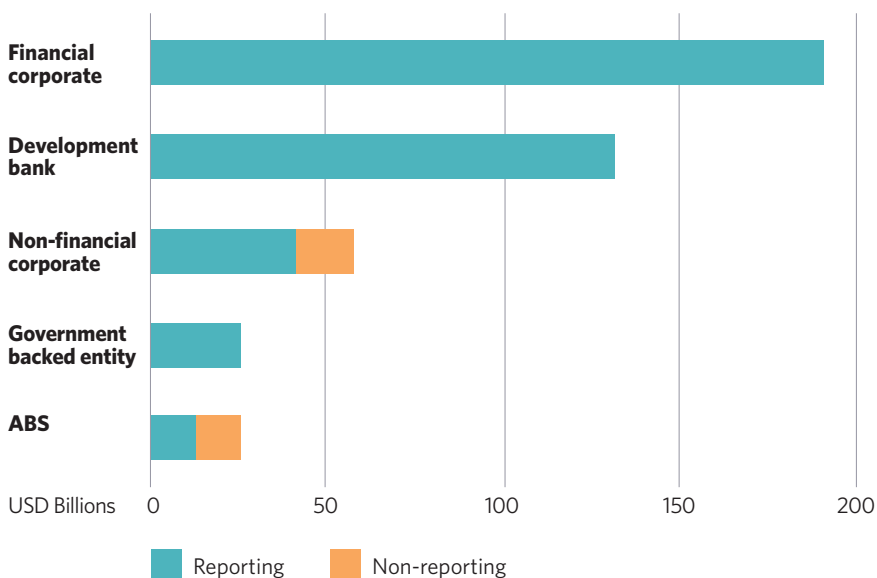
This echoes the findings in our global research, which revealed that development banks and financial corporates report the most. Issuers which fall under these categories tend to be larger organisations, usually frequent bond issuers, and generally have a more structured approach to proceeds management and reporting.

All bonds over USD1bn in size have reporting, while 85% bonds of USD100m-500m in size have reported. The lowest reporting percentage is for bonds of less than USD100m, but even for this group reporting exceeds 80%. The somewhat lower percentages for smaller issuers is not surprising, given that smaller issuers and bonds sizes may go hand in hand with fewer resources available to support reporting.

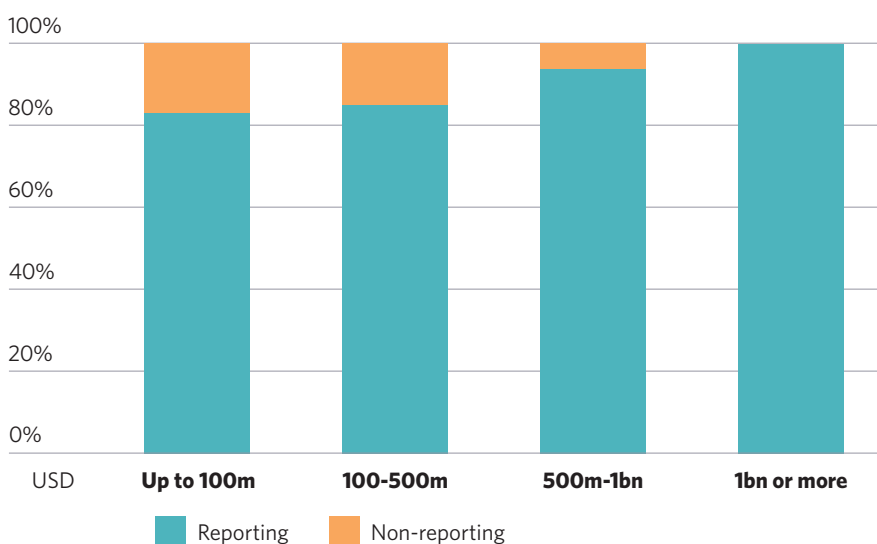
Programmatic reporting accounts for 75%. Reporting at an aggregated bond programme level or individual bond level are both acceptable as long as the issuer shows its issuance programme to date - number of bonds, amount issued etc. Since seasoned issuers represent the majority of China's green bond market and are



Availability of post-issuance reporting by issuer types



Reporting percentage by bond size



financial institutions, which tend to monitor exposures at portfolio level, programmatic reporting has become a feature of post-issuance reporting.

89% of Chinese green bonds by value report on climate and environmental impact. Globally, half the issuers report impact metrics and that covers 78% of bonds. Impact reporting can be very helpful to investors as they seek to measure the positive externalities through their investments. Impact reporting is gaining prominence in the green bond market. The most frequently used metrics by Chinese issuers include tons of coal equivalent avoided, tons of NOx avoided, and tons of SO2 avoided. Some other metrics, such as particulate matter avoided, are unique in China's local context, suggesting the issuers' dedication to address air pollution.

Methodology: Post-issuance reporting encompasses all the publicly available information on a green bond's use of proceeds and environmental impacts after the bond has closed. Information sources include bespoke green bond reports, aemissions reports, etc.

Post-issuance reporting on allocations is a core component of the ICMA Green Bond Principles and the LMA/APLMA Green Loan Principles. It is also recommended that issuers report on the environmental impacts of the funded projects. Post-issuance disclosure provides transparency, ensures accountability and underpins the credibility of green bonds and loans. As the market has grown, so has investor interest in use-of-proceeds and impact reporting to inform their decision-making process and analysis.

The domestic market accounts for 77% of total issuance

Most domestic green bonds are offered on the China interbank bond market

Nearly three quarters of domestic green bonds are issued on the China interbank bond market (CIBM). Overseen by PBoC, the China interbank bond market is primarily used by commercial banks and other financial institutions.

In contrast, the markets on the Shanghai and Shenzhen stock exchanges feature green ABS and green bonds issued by listed and non-listed corporate. USD6.2bn (CNY42.3bn) worth of green bonds are listed on Shanghai Stock Exchange, making it the 8th largest global green bond listing venue in 2018.

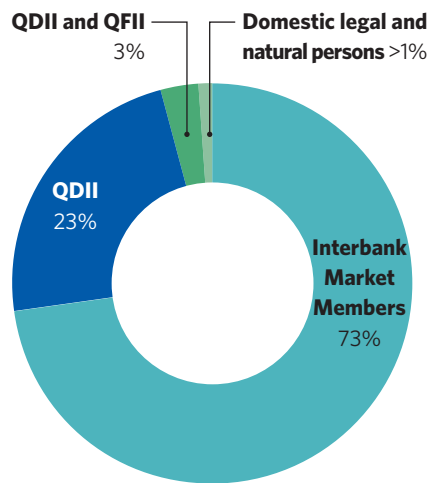
Access to the domestic market is improving for foreign investors

73% of domestic green bonds are offered to members of the China interbank bond market. International bond investors can choose from three access schemes:

- **QFII system** is a transitional institutional arrangement for introducing foreign capital and opening up China's capital market. It allows eligible overseas institutional investors to enter the domestic capital market for securities investment within the approved investment quota.¹⁰
- **Direct Access to CIBM** was introduced in 2016. It requires investors to register with the PBoC initially and then identify a qualified onshore agent bank through which to invest.¹¹
- **Bond Connect** provides a convenient channel for foreign investors to invest in China's onshore market by removing some investment hurdles. So far, Agricultural Development Bank of China, Export-Import Bank of China and Bank of Qilu have issued green bonds under the Bond Connect scheme.

The investment process and requirements arrangement for introducing foreign capital and opening up China's capital market. It allows eligible overseas institutional investors to enter the domestic capital market for securities investment within the approved investment quota.

Investor types on the domestic market



Data source: WIND Financial Terminal

Guotai Junan Securities is the top green bond underwriter on the domestic market

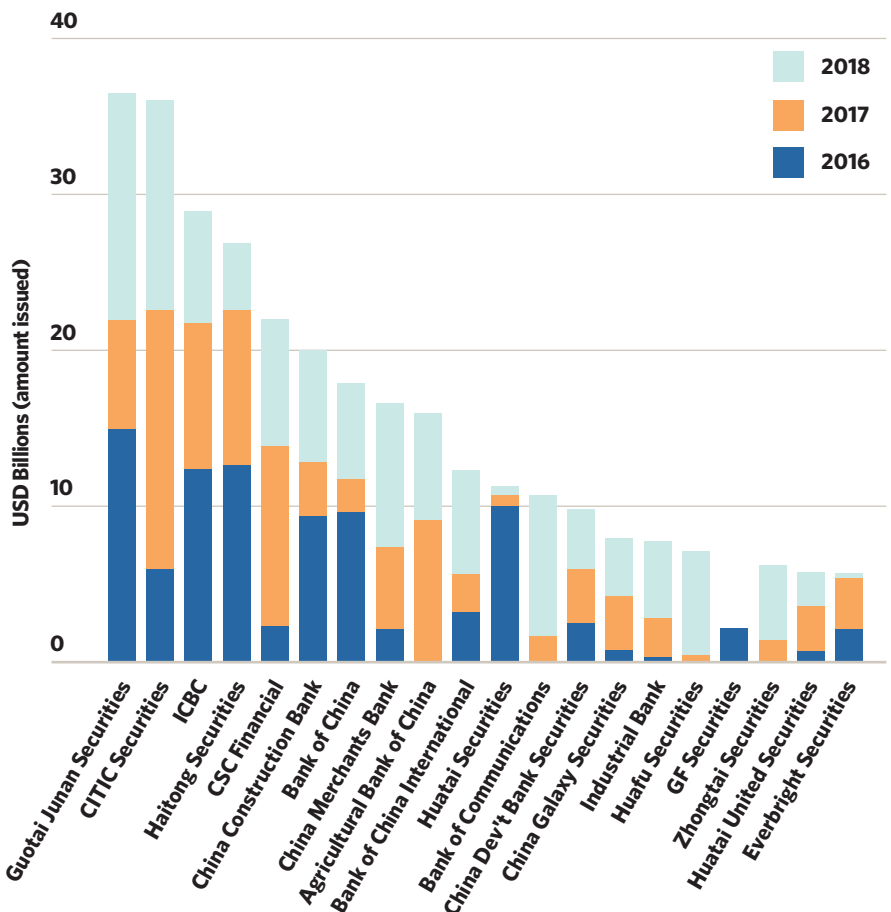
With USD2.9bn (CNY19.2bn) underwritten deals in 2018 and a total of USD7.3bn (CNY48.3bn) green bonds underwritten since the beginning of the market, Guotai Junan Securities has become the largest underwriter on the domestic green bond

market. The second largest is CITIC Securities with USD7.2bn (CNY47.7bn) in total, and ICBC comes third.

This is consistent with the underwriter ranks for overall domestic bond market in China, where the large securities companies such as Guotai Junan, CITIC and Haitong, and the Big Four banks – ICBC, Agricultural Bank of China, Bank of China, and China Construction Bank – top the rankings. New entrants into the top 20 underwriter league table are China Merchants Bank, Bank of Communications and Hua Fu Securities.

Methodology: The green bond underwriters league table for China's domestic green bond market is collated using data from Wind Financial Terminal. The data includes all labelled green bonds from China's onshore market, including those not aligned with international definitions. Therefore, the rank may be different from the global green bonds underwriters league table, prepared in collaboration between Refinitiv and Climate Bonds, where only deals which meet international definitions are included. Deal volumes allocated to each underwriter are calculated by taking the total deal size divided by the number of lead managers as is the general practice.

Underwriters league table for China's domestic green bond market



Data source: WIND Financial Terminal

Coupon rates for onshore green bonds in 2018

According to CCDC's analysis, green bond coupon rates on the domestic market rose slightly in 2018.

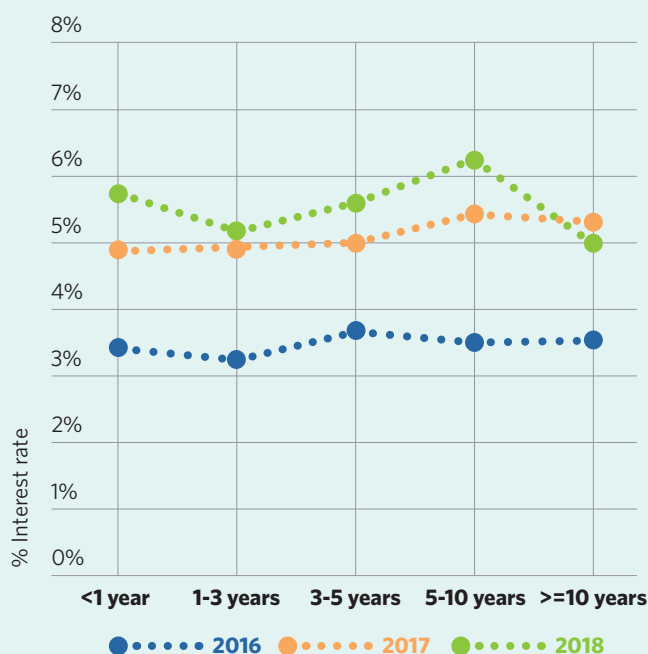
Fixed interest rates make up the majority, but there are also deals with step-up interest rates. Floating interest rates are mainly used in offshore issuance.

Coupon					
	Maturity	1-3 years	3-5 years	5-10 years	>=10 years
	<=1year				
AAA	5.71	5.18	5.60	6.26	5.07
AA+	-	5.02	5.73	7.02	7.31
AA	-	5.81	7.20	6.74	-
AA-	-	5.18	-	-	-
A+	-	6.1	5.6	-	-

Data source: CCDC, WIND Financial Terminal

AAA green bond coupon rates

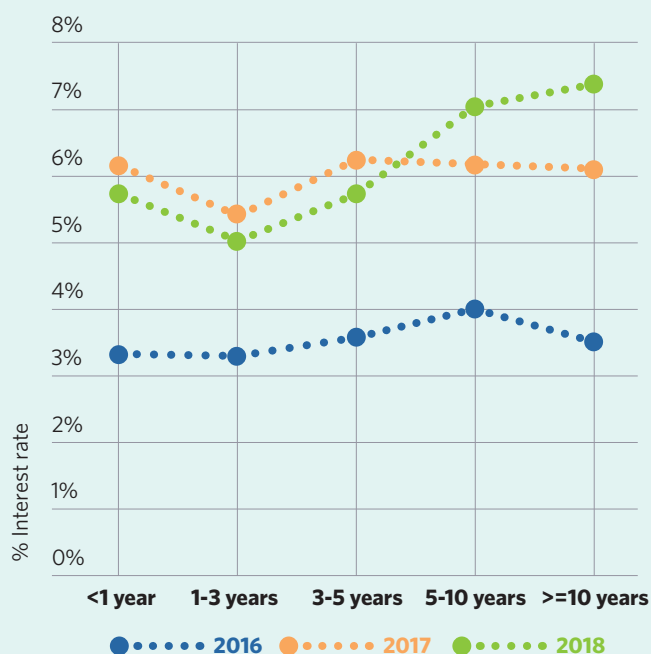
In 2018, the average coupon of AAA-rated bonds with a maturity between one to three years was 5.18%, which is 26bp higher than in 2017. The average rate for bonds with a maturity of between three to five-years was 5.60%, up 61bp from 2017.



Data source: CCDC, WIND Financial Terminal

AA+ green bond coupon rates

In 2018, the coupon rate of AA+ bonds dropped slightly. The average rate for bonds with maturity ranging from one to three-years is 5.02%, down 43bp from 2017. The average rate for bonds with a maturity of between three to five years is 5.73%, down 49bp from 2017.



Data source: CCDC, WIND Financial Terminal

Investors show an interest in domestic green bonds

According to CCDC's analysis on domestic green bonds,¹² labelled green bonds received higher over-subscription than vanilla bonds on the domestic market, suggesting a strong interest from investors.

Rating	Oversubscription Average	Median
Green Bonds	3.16	3.01
Vanilla Bonds	2.52	2.00

Data source: CCDC

About CCDC

China Central Depository & Clearing Co., Ltd. (CCDC) is a wholly state-owned financial institution approved and funded by the State Council of China. It, as an important national financial market infrastructure (FMI), provides central registration, depository and settlement services. Since its establishment, under the tremendous support of the Chinese regulatory authorities, CCDC started from the centralized depository of China government bond (CGB) and gradually developed into a Central Securities Depository (CSD) for various kinds of financial products. According to the regulation on government bond management released by the Ministry of Finance (MOF), CCDC is the only general depository for CGB authorized by MOF, responsible for the establishment and operation of the government bond depository system.

Offshore deals account for 23% of the total issuance from China

Fourteen issuers raised a total of USD9.5bn through offshore green bonds

Both the number of deals and the volume issued increased in 2018. In 2017, USD6.6bn was issued by five issuers. The largest overseas deal is ICBC's USD1.58bn Certified Climate Bond, arranged by its London branch. The proceeds will finance railway lines, onshore and offshore wind farms and solar farms in China, Pakistan and Scotland.

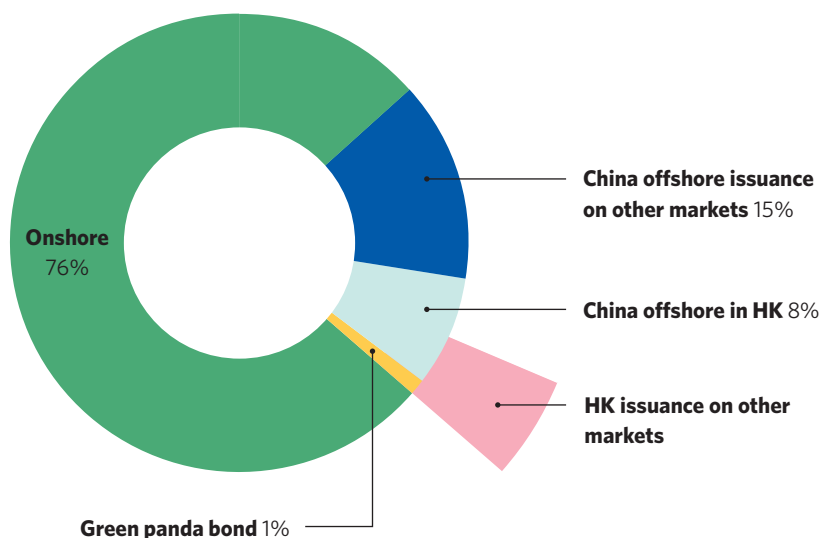
The diversity of issuer types on the overseas market deepened

Apart from large commercial banks such as ICBC, Bank of China, Industrial Bank and China Construction Bank, non-financial corporates and government-backed entities such as Tianjin Rail Transit, Wuhan Metro and Capital Environmental Holdings also issued inaugural offshore green bonds. Their deals total USD3.4bn.

Offshore bonds are listed on more venues

Compared to previous years, offshore bonds are listed on more venues, including eight stock exchanges and a cross-market trading platform. Hong Kong Stock Exchange (HKEX) has become the largest listing venue for offshore green bonds, and accounts for 37% of total offshore volume. With the USD3.5bn worth of listings from mainland

China's offshore issuance, green panda bonds and the Hong Kong market



China added to the momentum gained from Hong Kong's local market, and HKEX jumped to 5th largest green bond trading venue globally in 2018.

London Stock Exchange is the second largest offshore market for Chinese deals, and Luxembourg Green Exchange ranked in 3rd

place. In 2018, Luxembourg Stock Exchange signed a cooperation agreement with Shanghai Clearing House to facilitate access to Chinese green bonds for international investors, and set up a Green Bond Channel with Shanghai Stock Exchange to display China's onshore green bonds on its platform.

Hong Kong exhibited strong growth in 2018

In 2018, there were 9 Hong Kong issuers.

They brought USD2.3bn worth of green bonds and green loans to market, or 4.6 times the 2017 volume. Eight of the issuers are private sector companies, all of which are non-financial corporates. MTR also continued to tap the market with green bonds, but it only accounted for a very small fraction (c.3%) in terms of market share.

MTR is the largest and most frequent green bond issuer with eight green bond deals since 2016, for a total of USD1.1bn. Property entities Link REIT and Swire Properties are also among the top issuers, and both have issued benchmark-sized deal of USD500m.

Green loans became a strong feature in the Hong Kong market in 2018, making up 22% of the annual issuance. Green loans made to Leo Paper Group Finance and New World Development. Both received external reviews from HKQAA.

A total of USD351m green panda bonds were issued by three Hong Kong issuers: Beijing Enterprises Clean Energy Group Limited, China Everbright Water and Hang Lung Properties. Proceeds are allocated to water, low carbon building and renewables. Two of the deals are in line with international green bond definitions, and they total USD207m.

Allocations to buildings dominate at 37%

In addition to property companies such as Hang Lung Properties, Landsea Green Group and New World Development, MTR - a pioneer of financing public transit through real estate and the value capture model - has also contributed to the green building sector through its green bond programme. MTR bonds finance sustainable transit stations and real estate properties, that have received or expects to receive LEED, BREEAM or other equivalent certifications.

The next largest allocations are to water (21%) and renewable energy (14%). However, the sector mix is diversified and includes low-carbon transport (12%), climate adaptation measures (8%), sustainable waste management (5%) and sustainable land use (3%).

Use of external reviews is prevalent

90% of the bonds by value benefit from at least one external review. Three-quarters have a second party opinion. Sustainalytics is the dominant SPO provider, having reviewed 53% of the bonds by value. SynTao Green Finance (19%) and CICERO (4%) also provide SPOs.

For more details, please see the Hong Kong green bond market briefing prepared by Climate Bonds Initiative and supported by the Hong Kong Monetary Authority (HKMA).

Chinese firsts in 2018

Last year, China's green bond market saw further innovation in products and distribution channels, backed by strong policy push and motivation in the market.

First offshore green bond from rail transit company

Most rail and metro transport deals from China have been placed domestically. In April, Tianjin Rail Transit Group listed its EUR400m green bond on Luxembourg Stock Exchange. The proceeds will be used to finance the Beijing-Tianjin-Hebei integrated

green development, including allocations to pollution prevention, transport system energy efficiency and renewable energy.

First green corporate bond in railway sector

Most rail sector deals from China have been by public-sector entities and raised financing for metro systems. In October, Sichuan Railway Industry Investment Group issued a CNY1bn, five-year green bond. The proceeds will finance the construction of the inter-city railway in southern Sichuan.

First green ABS deal backed by feed-in-tariffs linked to renewable energy

State Power Investment Corporation, one of the five major electricity generation companies in China, issued a CNY1.9bn (USD259m) green ABS in November. In its media release, the company claimed that this is China's first green ABS deal, which uses feed-in-tariffs in renewable energy as collateral. Creating a collateral pool fully linked to renewable energy revenue streams is a positive market development.

China is the largest source of climate-aligned bonds

Climate Bonds conducts research into unlabelled bond issuance from companies that operate in climate-friendly sectors. Data as of mid-2018, shows that there was USD289bn outstanding on bonds from China-domiciled climate-aligned issuers.

In **China**, climate-aligned issuers represent green bond issuance potential in the transport, energy and water sectors. Maturing bonds from these issuers provide a green labelling opportunity at refinancing. With significant volumes maturing in the next 5 years, there is an immediate opportunity for labelling the unlabelled climate bonds.

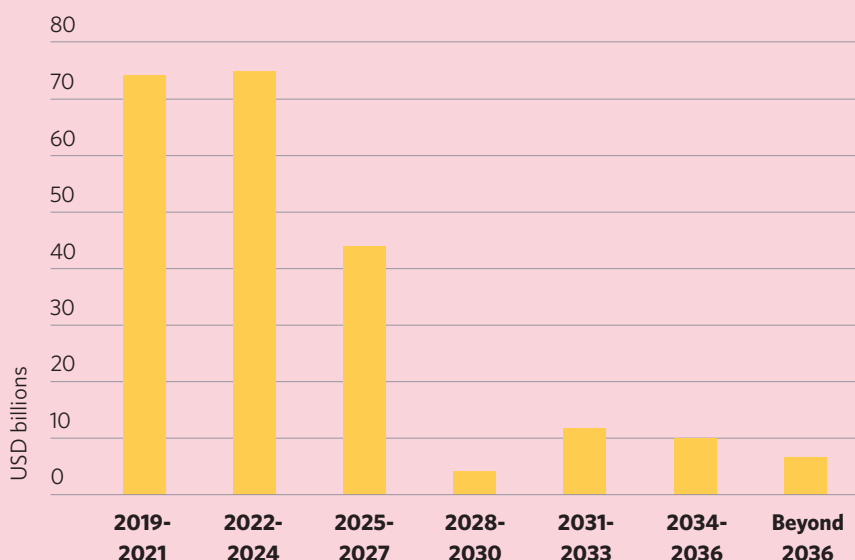
Transport-themed climate aligned bonds dominate the universe. China Railway Corporation retains the top spot on the list with a total of USD172bn outstanding. In China, a clear national target has been set to extend the country's high-speed railway network to 30,000km by 2020. As the developer and operator of China's massive high-speed railway networks, China Railway is expected to retain its leading position.

Other potential issuers in the transport sector include Guangzhou Metro Group (USD6bn debt outstanding) and Nanjing Metro Group (USD1bn). They are already green bond issuers, but could pursue explicit green labelling for all their bonds.

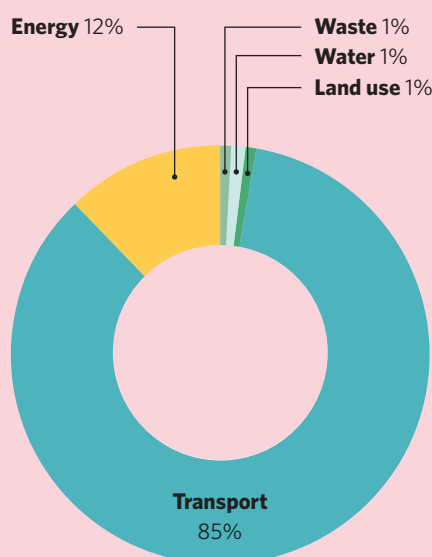
Climate-aligned issuers in the Energy sector include solar and wind companies such as Mingyang Smart Energy, Titan Wind Energy and LongGi Green Energy Technology.

In **Hong Kong**, we identified a further 13 issuers, with USD4.3bn outstanding. The largest issuer, MTR, is already a green bond issuer, but there is potential from transport, solar and water companies. Electric vehicles are an interesting opportunity.

Most climate-aligned bonds mature within 5 years



Transport is the largest climate theme



Methodology: Companies were first identified by industry sub-sector and key words, or through previous climate-aligned issuer lists. Issuers were considered for inclusion if they derived at least 75% of revenue from 'green' business lines in at least one of 6 climate themes: clean energy, low-carbon transport, water management, low-carbon buildings, waste management and sustainable land use.

Information on issuer revenues and debt outstanding was obtained from Bloomberg, Refinitiv EIKON and company websites (particularly annual accounts), and cross checked against other sources, including FTSE Russell Green Revenues.

Green bond policy development



PBoC continued to improve green finance framework for banks

Financial institutions are the largest issuers of Chinese green bonds. The regulations of green bond issuance are fragmented in China, with different segments under the oversight of different regulators. As the regulator of bond issued by financial institutions, People's Bank of China (PBoC) released a series of policy measures to stimulate green growth.

Strengthened supervision of green bond allocations

In March, the PBoC issued a circular on strengthening the supervision of green bonds issued by financial institutions. The focus is on issuers' operating status, authentication and progress in allocating the proceeds to green projects, compliance with screening and decision-making procedures, and impact reporting. The circular comes with regulations on information disclosure, which require regular reporting from green bond issuers on use of proceeds and prescribe templates for quarterly and annual reporting.¹³

Inclusion of green bonds and green loans as eligible MLF collateral

In June, the PBoC announced that it would expand the scope of the Medium Term Lending Facilitation (MLF) to include green bonds and green loans as eligible collateral. MLF operations already accept treasury bonds, central bank bills, bonds issued by China Development Bank and other policy banks, local government bonds, as well as corporate bonds with AAA credit rating as collateral. According to the PBoC, the expansion of the scope of MLF collateral will help guide financial institutions to step up their support for the green economy¹⁴.

Inclusions of Green Credit Performance evaluation results in banks' MPA

In June, the PBoC issued the "Notice on Launching the Evaluation of Green Credit Performance of Deposit-Type Financial Institutions in the Banking Industry". The Macro Prudential Assessment (MPA) mechanism introduced in 2016 to address the challenge of potential systemic risk in the financial system¹⁵. According to the PBoC's requirements, the evaluation of green credit performance is conducted quarterly. The quantitative indicators of green credit performance evaluation include the proportions of green loan balance, green loan balance market share and green loan

increment, the growth rate of green loan balance, and the green loan non-performing rate. The results of the green credit performance evaluation are included in the bank's macro-prudential assessment.



Guidelines aimed at improving environmental disclosure

To ensure robust market oversight and promote market integrity, the China Securities Regulatory Commission (CSRC), the regulator that presides over the bond issuance of listed companies, issued its revised "Guidelines for Corporate Governance of Listed Companies" in September 2018¹⁶.

The revision sets out the basic framework for environmental, social and governance (ESG) information disclosure. The guidelines require listed companies to actively put the green development concept into practice and integrate ecological and environmental protection requirements into development strategies and corporate governance.

Further, China has started looking into the disclosure of green bond environmental impact. The CCDC and the CECEP Consulting were entrusted by the China Green Finance Committee to conduct a research project on "Green Bond Environmental Information Disclosure System". Seminars were held in late 2018 to gather views from the government, regulators, policy banks, financial institutions and international organisations.



Efforts to boost corporate green bond issuance

SSE further enhanced supervision for bond financing, including green bonds

In late July, the Shanghai Stock Exchange (SSE) issued guidelines for optimised supervision of corporate bond financing and guidelines for supervision of continuous financing. To allow quality issuers to be more easily financed through the corporate bond market, the SSE has implemented a simplified review process. Eligible issuers may submit one single set of documents for different bond types such as green bonds, poverty alleviation bonds and exchangeable bonds, and then declare later the specific bond type, issuance approach, use of proceeds for each issue at the issuance filing stage. As such, the uncertainty of the issuance window caused by challenges around use of proceeds could be mitigated¹⁷.

SSE clarified its requirements for green corporate bonds and green ABS

In August, the SSE issued a Q&A explaining the regulatory requirements for green corporate bonds and green asset-backed securities. The SSE allows issuers with more than 50% of operating revenue generated from green industry to issue green corporate bonds without specifying the underlying green projects¹⁸.

That said, the SSE also stipulates that at least 70% of the funds raised by green corporate bonds should be used primarily for business development within the issuer's green industry¹⁹. For green asset-backed securities, the SSE requires that the underlying green industry assets should account for no less than 70% of the total assets pool. The change is important, as in mainland China, enterprise bonds (mainly issued by state-owned enterprises) and corporate bonds are regulated by National Development and Reform Commission (NDRC) and the stock exchanges respectively.

According to international guidelines, practically all proceeds from green bonds should be linked to green assets or projects. However, according to the "Guidelines on Green Bond Issuance" issued by NDRC, bond issuers can use up to 50% of the bond proceeds to raise general working capital. So at present, some Chinese green bonds are considered non-compliant with international definitions. Climate Bonds will monitor if the bond issuers under SSE requirements are in line with the international definition in terms of use of proceeds.



Closer international collaboration to promote green initiatives

Apart from working towards harmonisation of green definitions and aligning the with international best practice, China has been actively leading on a number of green initiatives such as Greening Belt & Road.

In November 2018, the China Green Finance Committee (GFC) and the City of London jointly issued the Green Investment Principles for the Belt and Road in London, calling upon signatories – large financial institutions and companies in many countries – to adopt them²⁰.

The GIP Secretariat, plans to develop a range of methods and tools to provide capacity building services to institutions involved in. Planned work includes the development of carbon emissions and other environmental

Trends to watch in 2019

impact assessment tools for investment projects, the “Belt and Road” green project portal as well as the “Belt and Road” green investment case studies.

Further, PBoC Shanghai supported the launch of the “Green Panda Bond Handbook”, prepared by Climate Bonds Initiative with sponsorship from the Inter-American Development Bank (IDB), to support and facilitate international issuers’ entry into the Chinese green bonds market.



Linking Chinese investors with green action

The upward trend of Chinese green bond issuance would not be sustainable without the support of investors, particularly those with ESG mandates. In July 2018, the Asset Management Association of China (AMAC) launched a consultation on “Green Investment Guidelines”.

AMAC suggests that fund managers should provide financial services to support environmental improvement and which address climate change, resource conservation and efficient resource use. The guidelines also recommend that fund managers should, as a matter of principle, prioritise allocations to green industry and corporates in the investment process.

AMAC further encourages fund managers to voluntarily comply with published green criteria when screening investment opportunities. On top of the existing guidelines and standards in China, investors may also refer to international principles and standards including the Green Bond Principles and the Climate Bonds Standard²¹.

The development of China’s green bond market in 2018 centred around two main themes – further enhancement of regulatory frameworks and diversification of green finance products and issuer types. Looking ahead, we envisage China will continue to grow along these avenues with the following catalysts:

Deepening of the green securitisation market

Since the emergence of the first green ABS product packaged by Industrial Bank in 2016, there have been a growing number of green securitisation products available to the market. The China Securities Regulatory Commission issued Q&As on asset backed securitization in May 2016 and December 2018 respectively, which encourage green environmental protection industry related projects to finance through securitization, and indicate that government subsidies can be used for ABS underlying assets in renewable energy, green buildings and electrical vehicle sectors. This is supportive of further growth in the market^{22,23}.

Growing green bond issuance at the local level

The first green bond from a Local Government Financing Vehicle (LGFV) was issued in early 2017. Since then, a rising number of LGFV green bonds have come to the market. Local governments have been gearing up to support green finance development.

In June 2017, the State Council approved the overall plan for the development of green finance and innovation pilot zones in five provinces, namely Guangdong, Guizhou, Jiangxi, Zhejiang and Xinjiang. These pilot zones will each focus on different aspects of green financing, including growing green bond issuance.

According to Chen Yulu, Deputy Governor of the PBoC, in the first year since the five green financial reform and innovation pilot zones were established in June 2017, more than

85% of the tasks in the overall pilot program have been kickstarted²⁴. Increased issuance from LGFVs helps drive the financing of the global low carbon transition at the local level.

Local governments, national and regional development banks, and government-backed entities have been a strong driver for the global green bond market, and account for over a quarter of total global issuance.

Further opening up of China’s green bond market

China’s government is sending signals of further opening up of its capital market, which is expected to facilitate access of foreign investors and direct some of the inward capital flows to green assets and projects in the country²⁵.

Pan Gongsheng, Deputy Governor of PBoC, said publicly in January 2019 that the central bank is looking at ways to further open up China’s bond market, including the issuance of new index products such as bond ETFs and improve connectivity between central custodian institutions.

The CSRC is also seeking public opinion on its plan to merge the two foreign investment schemes – i.e the Qualified Foreign Institutional Investors (QFII) and RMB Qualified Foreign Institutional Investors (RQFII) programmes, as well as to lower the applicant requirements and streamline approval procedures, in order to attract more foreign capitals into China’s market²⁶.

In 2018, China recorded USD100bn worth of net foreign capital inflow into the domestic bond market, accounting for 80% of the foreign capital inflows in emerging markets. With the phased inclusion of Chinese government bonds and policy bank securities in the USD54tn Bloomberg Barclays Global Aggregate index starting from this April, it is expected to boost the foreign ownership of the China interbank bond market from the current level of 2.3%.

Endnotes

1. Green Bond Principles [Online]. Available at <https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles/gbp/>
2. Green Loan Principles [Online]. Available at <https://www.lma.eu.com/news-publications/press-releases?id=146>
3. The Ministry of Finance of People’s Republic of China (2018) [Online]. Available at <https://bit.ly/2Elc5vi>
4. W. Raphael Lam, Jingsen Wang. IMF Working Paper, China’s Local Government Bond Market (2018).
5. China’s Ministry of Environmental Protection (MEP) (2007). [Online]. Available at <https://bit.ly/2Bl4ogE>
6. China Banking Regulatory Commission (2017). [Online]. Available at <https://bit.ly/2Xec6sj>
7. China’s biggest banks are turning to short-term financing. (2018). [Online]. Available at <https://bloom.bg/2q6mWRn>
8. China hails improved water quality (2019). [Online]. Available at <https://www.straitstimes.com/asia/east-asia/china-hails-improved-water-quality-but-some-rivers-more-polluted>

9. PBoC Announcement No. 39 [2015]
10. PBoC and the State Administration of Foreign Exchange (SAFE) (2018). [Online]. Available at <https://bit.ly/2lsm8T9>
11. Facilitating CrossBorder Capital Flows to Grow the China Green Bond Market (2017). [Online]. Available at <https://bit.ly/2lsmj0L>
12. China Central Depository & Clearing Company (CCDC), Green Bond Market Development in China (2018).
13. China Financial Information Network. (2018). [Online]. Available at <https://bit.ly/2NenKP4>
14. China Financial Information Network. (2018). [Online]. Available at <https://bit.ly/2T4slZC>
15. PBoC issues the “Notice on Launching the Evaluation of Green Credit Performance of Deposit-Type Financial Institutions in the Banking Industry” (2018). [Online]. Available at <https://bit.ly/2Elksaa>
16. China Securities Regulatory Commission (2018). [Online]. Available at <https://bit.ly/2XdDFSn>
17. Shanghai Stock Exchange (2018). [Online]. Available at <https://bit.ly/2NgPT8i>

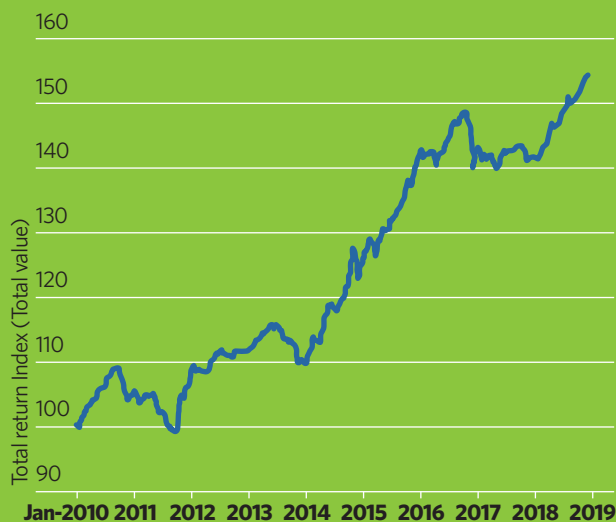
18. Shanghai Stock Exchange (2018) [Online]. Available at <https://bit.ly/2EjLX4>
19. Shanghai Stock Exchange (2018). [Online]. Available at <https://bit.ly/2GUKRwT>
20. China Green Finance Committee (2019). [Online]. Available at <https://bit.ly/2TVBBMM>
21. China Financial Information Network (2018). [Online]. Available at <https://bit.ly/2NgRV8q>
22. China Securities Regulatory Commission (2016). [Online]. Available at <https://bit.ly/2GA6L9B>
23. China Securities Regulatory Commission (2018). [Online]. Available at <https://bit.ly/2XcNEY9>
24. 85% of the tasks in the green financial reform and innovation pilot zone have started (2018). [Online]. Available at <https://bit.ly/2Ei4rko>
25. China Pledges to Further Open Bond Market to Foreign Investors (2019). [Online]. Available at <https://bloom.bg/2tthM3T>
26. China to merge foreign investment schemes in new move to open markets (2019). [Online]. Available at <https://bit.ly/2NeAPYV>

Appendix 1 Index performance

ChinaBond China Climate-aligned Bond Index

As of 31 December 2018, there were 337 constituent bonds included in the ChinaBond China Climate-aligned Bond Index with a total outstanding amount of RMB1.35tn (USD199bn). The average duration is 4.04 years and the 1-year total return of the index was 9.82%. 99.99% of the proceeds of index constituents were allocated to green projects.

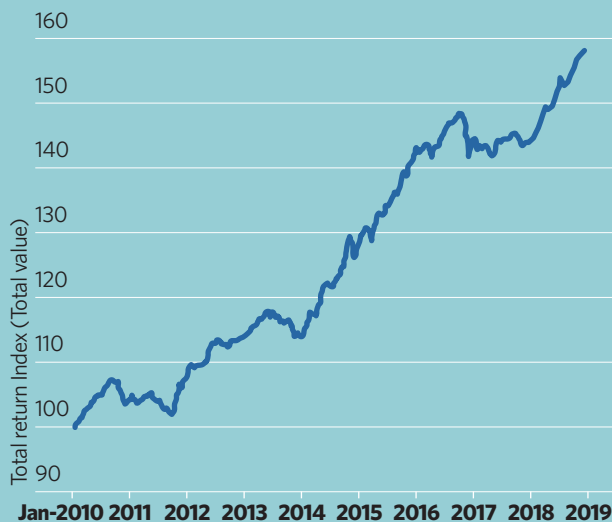
Total return: Chinabond China Climate-aligned Bond Index



ChinaBond China Green Bond Index

As of 31 December 2018, there were 1044 constituent bonds included in the ChinaBond China Green Bond Index with a total outstanding amount of RMB2.82tn (USD416bn). The average duration is 3.77 years and the 1-year total return of the index was 9.43%. 92.25% of the proceeds of index constituents were allocated to green projects.

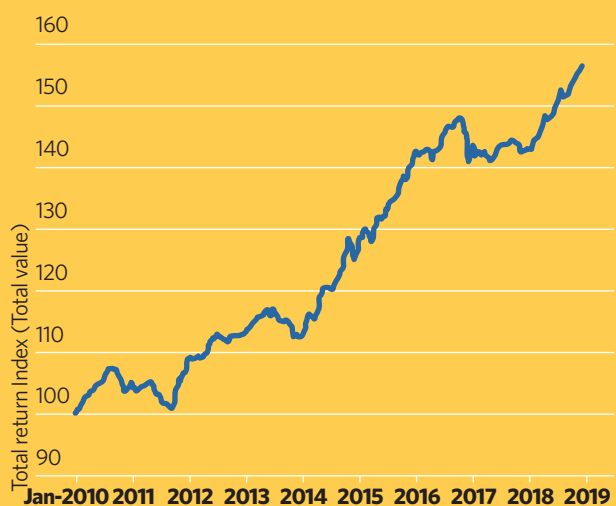
Total return: ChinaBond China Green Bond Index



ChinaBond China Green Bond Select Index

As of 31 December 2018, there were 900 constituent bonds included in the ChinaBond China Green Bond Select Index with a total outstanding amount of RMB2.64tn (USD389bn). The average duration is 3.88 years and the 1-year total return of the index was 9.55%. 93.11% of the proceeds of index constituents were allocated to green projects.

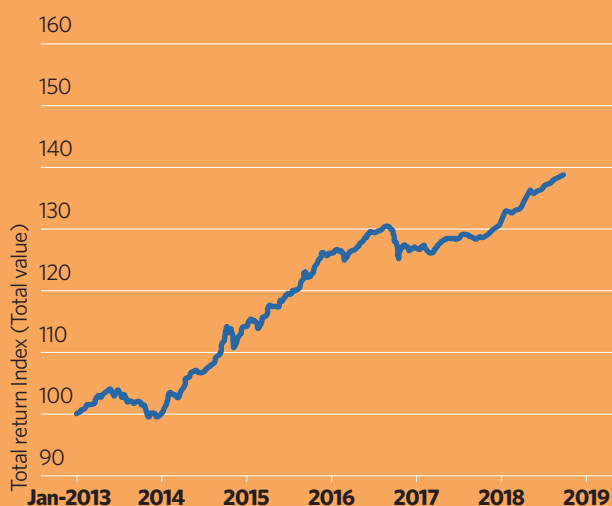
Total return: Chinabond China Green Bond Select Index



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 2018, there were 159 constituent bonds with a total outstanding amount of RMB525.4bn (USD775bn). The average duration is 1.75 years and the 1-year total return of the index was 7.77%. 95.87% 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

Appendix 2 External review types

Pre-issuance review	Scope	Providers
Assurance	Positive or negative assurance on compliance with the Green Bond Principles (GBP) or the Green Loan Principles (GLP)	EY, Deloitte, KPMG, etc
Second Party	Confirm compliance with GBP / GLP. Provide assessment of issuer's green bond framework, analysing the "greenness" of eligible assets	CICERO, Sustainalytics, Zhongcai Green Financing, SynTao Green Finance, CECEP Consulting, Lianhe Equator, etc
Green bond rating	Rating agencies assess the bond's alignment with the Green Bond Principles and the integrity of its green credentials	Moody's, S&P, CCX (China), ChinaBond Rating, etc
Pre-issuance verification	Third party verification confirms that the use of proceeds adhere to the Climate Bonds Standard and sector specific criteria	Approved verifiers under the Climate Bonds Standard scheme
Post-issuance review	Scope	Providers
Assurance or SPO	Assurance of allocation of proceeds to eligible green projects	Audit firms, ESG service providers, scientific experts
Impact report	Reporting that seeks to quantify the climate or environmental impact of a project/asset numerically	As above
Post-issuance verification	Assurance against the Climate Bonds Standard, including allocation of proceeds to eligible green projects and types of green projects	Approved verifiers

Appendix 3 Climate Bonds Taxonomy

Climate Bonds Taxonomy

The Climate Bonds Taxonomy identifies the assets and projects needed to deliver a low carbon economy and gives GHG emissions screening criteria consistent with the 2-degree global warming target set by the COP 21 Paris Agreement. More information is available at <https://standard.climatebonds.net/taxonomy>.



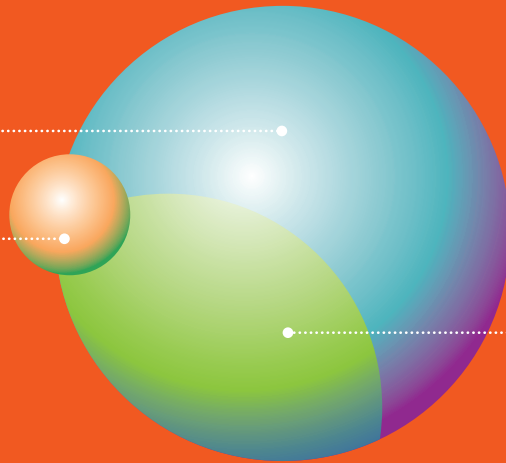
ENERGY	TRANSPORT	WATER	BUILDINGS	LAND USE & MARINE RESOURCES	INDUSTRY	WASTE	ICT
Solar	Private transport	Water monitoring	Residential	Agriculture	Cement production	Preparation	Broadband networks
Wind	Public passenger transport	Water storage	Commercial	Commercial Forestry	Steel, iron & aluminium production	Reuse	Telecommuting software and service
Geothermal	Freight rail	Water treatment	Products & systems for efficiency	Ecosystem conservation & restoration	Glass production	Recycling	Data hubs
Bioenergy	Aviation	Water distribution	Urban development	Fisheries & aquaculture	Chemical production	Biological treatment	Power management
Hydropower	Water-borne	Flood defence		Supply chain management	Fuel production	Waste to energy	
Marine Renewables		Nature-based solutions				Landfill	
Transmission & distribution						Radioactive waste management	
Storage							

Certification Criteria approved
 Criteria under development
 Due to commence

Chinese issuance 2018

ONSHORE

- China interbank market is the largest market
- Shanghai stock exchange ranks 8th in global green bond listing venue league table
- Green panda bonds are all from Hong Kong issuers



HONG KONG

- USD2.3bn worth of green bonds and green loans issued in 2018
- Hong Kong Stock Exchange ranks 5th in global green bond listing venue league table

CHINA IS THE LARGEST SOURCE OF CLIMATE-ALIGNED BONDS

- Climate-aligned bonds finance green assets but have not been labelled as green by the issuing entity
- Climate-aligned issuers from mainland China had USD289bn bonds outstanding as of mid-2018
- Climate-aligned issuers from Hong Kong had USD4.3bn bonds outstanding as of mid-2018
- Transport is the largest theme

OFFSHORE

- 8 stock exchanges and 1 cross market platform
- Hong Kong Stock Exchange is the largest offshore green bond market, followed by London Stock Exchange and Luxembourg Green Exchange
- All Certified Climate Bonds are issued offshore

Authors:

Alan Xiangrui Meng, Monica Filkova, CFA, Ivy Lau, Sherry Shangguan, Climate Bonds Initiative with the help from Shang Jin and Chen Xiaopeng China Central Depository & Clearing Company

Design: Godfrey Design

Source data from Climate Bonds Initiative, Refinitiv Eikon, CCDC, Wind, Bloomberg and other parties. All figures are rounded.

www.climatebonds.net

Climate Bonds Initiative © February 2019

Disclaimer: The information contained in this communication does not constitute investment advice in any form and the Climate Bonds Initiative is not an investment adviser. Any reference to a financial organisation or debt instrument or investment product is for information purposes only. Links to external websites are for information purposes only. The Climate Bonds Initiative accepts no responsibility for content on external websites. The Climate Bonds Initiative is not endorsing, recommending or advising on the financial merits or otherwise of any debt instrument or investment product and no information within this communication should be taken as such, nor should any information in this communication be relied upon in making any investment decision. Certification under the Climate Bond Standard only reflects the climate attributes of the use of proceeds of a designated debt instrument. It does not reflect the credit worthiness of the designated debt instrument, nor its compliance with national or international laws. A decision to invest in anything is solely yours. The Climate Bonds Initiative accepts no liability of any kind, for any investment an individual or organisation makes, nor for any investment made by third parties on behalf of an individual or organisation, based in whole or in part on any information contained within this, or any other Climate Bonds Initiative public communication.

Climate Bonds INITIATIVE

中央国债登记结算有限责任公司
CHINA CENTRAL DEPOSITORY & CLEARING CO., LTD.

UK Government

HSBC

Published jointly by the Climate Bonds Initiative and China Central Depository & Clearing Company (CCDC). Funding for this publication was provided under a grant from the UK Government under its Partnering for Accelerated Climate Transitions Programme (PACT) and HSBC as a supporting organisation.

GOLD PARTNER