

# GREENING CHINA'S FINANCIAL SYSTEM

## CHAPTER 10:

# GREENING CHINA'S BOND MARKET

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# EXECUTIVE SUMMARY

This chapter provides an overview of the green bonds theme, innovative structures in the international market and potential application in China. A key message is that green finance, in addition to providing a green benefit, can assist in implementing and enforcing financial reforms that address imbalances in China's financial system. Another message is that providing support to kick-start a green bond market can allow China to assume a global leadership role in capital markets that are financing green growth.

## Why Green Bonds?

The size of the investments required for the low-carbon economy requires action from the bond market and institutional investors. The USD 100 trillion—and growing—global debt capital markets are the dominant global source of capital and the core-refinancing component of the capital pipeline.

The proceeds of green bonds are earmarked for green projects. They can be issued by corporate entities, national or local governments and development banks, and bought by institutional investors or retail investors. They are a means of easily identifying and marketing green investments.

The Climate Bonds Initiative (2014) identifies some USD 503 billion in bonds outstanding relating to climate change solutions in 2014. Some USD 50 billion have been marketed as green or climate bonds, with half those issued to date from development banks (Climate Bonds Initiative, 2014).

## Why Green Bonds for China?

**China's low-carbon/green economy transition needs huge amounts of funding.** China's financial markets can and should play a key role in this transition. As financial markets mature, bonds will become an increasingly important financing instrument in China.

**Financial changes are also needed to meet non-environmental policy objectives.** In addition to increasing environmental investments, large investments are needed to: maintain satisfactory economic growth; improve the efficiency of public investments by crowding in more private investment; introduce greater transparency into financial markets; provide more financing options for non-state entities and improve economic stability; and tap into the country's huge pools of domestic savings. There are several issues and trends that China should consider that will affect what financial regulatory changes are suitable to meet these policy objectives, such as urbanization, reducing the financial sector's reliance on bank lending and the need to reduce high levels of potential unstable short-term debt, as well as to shift to more long-term finance.

**As a part for its financial reforms, China is committed to greening its financial system.** For example, the Green Credit Guidelines require banks to integrate environmental assessments in their lending processes and a Green Credit Statistics System integrates environmental ratings into national credit ratings for companies. However, it has proven challenging to implement these green credit initiatives in practice, due to a lack of common, operable definitions of green, disclosure and enforcement mechanisms.

**China is also committed to reforming its bond market and introducing green bonds.** China's leaders have explicitly recognized that green bonds can help address some of the financial system issues by boosting bank lending, providing longer-term capital and becoming more efficient with public capital. Importantly, green bond development can dovetail with the deep reforms and increased transparency required for rapid bond market growth, rather than rely on existing structures. China's experiences with developing and implementing the Green Credit Guidelines can provide useful lessons for growing a green bonds market in China.

## Emerging International Practice on Green Bonds

### Policy Frameworks

Governments can leverage the bond markets to meet their public low-carbon and green development targets by pulling two specific levers:

1. Putting in place policy and *regulatory frameworks* that reduce underlying project risks. This includes a broad range of policies from green credit directives to long-term price signals (e.g., feed-in-tariffs).
2. Employing *public finance instruments and tools* to provide the scale, liquidity and risk/return profile necessary for investors. These instruments and tools include government and development bank demonstration issuance, policy support for green revenue bonds, dual recourse bonds, as well as support in establishing green definitions. It also includes the use of tax incentives and de-risking instruments like guarantees and first-loss provisions. Lastly, there is potential for government to set green mandates for public funds (e.g., sovereign wealth funds).

Policy support examples highlighted include:

- *Public demonstration issuance.* Particularly in the form of green municipal bonds, but also national development bank bonds, this can kick-start the market by increasing supply and providing a model for replication by other issuers.
- *Dual recourse structure for green municipal bond issuance with investors having recourse to underlying assets, as well as government balance sheets.* Such structures will improve transparency for investors without increasing their risk. A dual recourse structure therefore provides a useful bridge from fully entity-backed green bond issuance and green asset-backed securities.
- *Green warehousing and credit enhancement.* The small scale of many green projects requires aggregation to reach the scale required by bond markets. Warehouse entities that aggregate green loans from a range of banks are a useful tool to enable scale, particularly in the initial stages of a Chinese green bond market. Moreover, as China increasingly moves away from implicit government guarantees for all bonds, explicit credit enhancement might be needed for the bonds issued by such a warehousing entity initially to get a deal flow of green bonds that fit investor preferences in terms of risk-return.
- *Tax credits for interest earned on green bonds from state-owned enterprises (SOEs) and corporations.* Allowing tax-free interest, as per municipal bonds in the United States and government bonds in China, would drive taxable investors to support green bond issuance from SOEs and corporates.
- *Providing a price differential for green loans* compared to “brown” loans. This can be done by supporting differential (e.g., 25 basis points) interest rates for green bonds through investor mandates and through development bank issuance, or by having different bank capital ratio requirements for green debt products. Green lending developments are important for green bonds as they facilitate a larger pool of loans suitable to be refinanced with green bond issuance through green securitization.

### Current Trends in the Green Bonds Market Globally

**Market expansion is expected to continue:** The labelled green bonds market is growing rapidly, from USD 11 billion in issuance in 2013 to almost USD 40 billion in 2014. A total USD 100 billion of issuance is expected in 2015.

**New green bond issuers:** There has been a shift in the market from development banks dominating issuance, to *corporate earmarked green bond issuance* accounting for the majority of issuance. *City and municipal bonds* have also entered the green bond market in the last year. This is an important area for future growth,

as cities and subsovereign entities raise financing to meet green infrastructure requirements. Development banks are also increasingly issuing green bonds to kick-start domestic markets—the International Financial Corporation of the World Bank (IFC) has recently explicitly done so in Peru, and KfW, the German development bank, has provided demonstration issuance at a national level. China’s development bank could do the same to kick-start a domestic green bond market.

**New types of green bonds:** The majority of green bonds issued to date have been asset-linked, not asset-backed, meaning the bonds give investors recourse to the issuing entity, but proceeds are *linked* to green assets. However, asset-backed green bonds backed directly by the performance of green assets are emerging as the market matures. Asset-backed securitization in particular will be important to aggregate fragmented renewable-energy and energy-efficiency markets to the scale bond markets require.

**Standards around reporting rules and definitions of green investments are developing:** The Climate Bond Standards Scheme is developing standardized, science-referenced definitions of what constitutes green investments. This will be important to the next stage of growth as the market expands beyond large and trusted banks and organizations to smaller institutions and regional issuance. The Green Bond Principles, a set of voluntary guidelines around the design and reporting characteristics of green bonds, were launched in January 2014. There is a broad array of policy areas under China’s 12th Five-Year Plan (FYP) where the labelling of green bonds could act as a performance metric of allocated capital and environmental benefit.

## **An Action Plan for China**

### **Providing the Foundation for a Green Bonds Market: Green Standards, Verification and Enforcement**

Most fundamentally, developing a robust green bond market requires clear definitions for investments linked to bonds that will qualify as green, along with a government-*endorsed* system of providing assurance for both investors and regulators about the green claims of corporate, bank and local government bond issuers. China already has relevant experience to develop such clear definitions.

Green standards for the bond market can build on the definitions developed under the Green Credit Guidelines. A Green Bonds Market Development Committee, which would include regulatory representatives, would review and adjust the existing definitions for Green Credit to be suitable to the bond market. The bond-market-relevant definitions should be consistent with the FYP.

A self-funding and self-policing verification and enforcement system is needed to ensure that green bond issuers’ comply with the common standards and criteria set at a central level by the Market Development Committee.<sup>1</sup> This could take the form of an independent non-governmental, non-profit entity established specifically to verify the green performance of bond issuances at the asset level against these standards.

### **Actions for China’s Policy-Makers to Grow a Green Bonds Market**

In addition to supporting the development of definitions, standards, certification, verification and enforcement systems, kick-starting any new bond market requires government support on both the supply and demand sides. It is worth stressing that several of the proposed policies rely on standards, certification and verification systems being developed first, to ensure that the policy support is going to investments that are aligned with robust environmental progress. Actions for the following policies are proposed:

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<sup>1</sup> An international model exists in the Climate Bonds Certification Scheme.

- **Public demonstration issuance:** *Allowing selected SOEs and local governments to issue green bonds to initially develop the market.* “Demonstration programs” of green bond issuance can illustrate the concept and create trading volume and liquidity at a superior investment grade. Government can set targets and quotas for green bond issuance by development banks, selected SOEs and local governments.
- **A program of government support for other entities’ green bond issuance:** Priorities include providing preferential loan terms for green and tax incentives for green bonds. Making green assets eligible for dual recourse bonds issuance is another opportunity, particularly for green municipal bonds.
- **Warehousing and credit enhancement:** A key recommendation is aggregating green assets—for example, regional bank loans—in a separate entity and bundling them together in asset-backed securities to get to the scale necessary for the capital market. Credit enhancement of the asset-backed securities might be necessary to achieve the risk-return required by investors.
- **Helping build a domestic investor base** by instituting a system of green bond certification against clear and transparent criteria for green investments.
- **Opening a Foreign Direct Investment (FDI) window specifically for green bonds** as part of China’s gradual enlargement of the Qualified Foreign Institutional Investor program.

**Other green finance measures can also support a green bond market.** First, the growing *carbon markets* in China are an example of a strong price signal, although they still need a stronger track record and greater stability. The monitoring, reporting and verification mechanisms developed for the carbon markets can also provide valuable input for the verification and enforcement of green commitments for green bonds. Secondly, *green banks* facilitate supply by supporting standardization, credit enhancement and issuance. Green banks can also provide a warehousing role.

# INTRODUCTION

This paper provides an overview of the green bonds theme, innovative structures in the international market and potential applications for green bonds in China. The introduction will set out why green bonds are suitable for China. Section 2 will set out emerging international practices China can learn from. Section 3 sets out the current trends in the green bond market globally and how they apply to China. Finally, section 4 provides an action plan for China.

## 1.1 WHY GREEN BONDS?

The size of the investments required for the low-carbon economy requires action from the bond market and institutional investors. The USD 100 trillion—and growing—debt capital markets are the dominant global source of capital, and the core refinancing component of the capital pipeline. Institutional investors provide a large amount of capital for the bond market, with bonds accounting for a dominant and growing share of institutional investors' portfolios (50–60 per cent of their assets).

As well as having the capital, institutional investors have long-term liabilities that provide a good fit with green infrastructure investments. Demand from institutional investors for fixed income instruments is set to rise, to the detriment of capital appreciation securities such as equities or high volatility securities, for example, private equity and venture capital. There are two main reasons:

- First, the aging membership of rich country pension regimes requires a shift to more predictable investments for shorter-term payouts.
- Second, simply because bonds have inbuilt maturities, they will need to be replaced continuously, which is not needed with an equity portfolio held long term. In other words, there is a steady stream of reinvestment to be tapped with green or climate assets structured as debt instruments if the project base and demand for financing are forthcoming.

The increased maturity of low-carbon technologies, business models and companies means the risk is falling and becoming more appropriate to the risk-return profiles of institutional investors. Lastly, institutional investors are increasingly incorporating sustainability into their investment decisions.

In response, over the past 10 years, a range of programs have been developed around the world to use bonds to channel capital into investments that are important for addressing environmental challenges such as climate change. The Climate Bonds Initiative (2014) identifies some USD 503 billion of outstanding bonds relating to climate change solutions in 2014. Some USD 50 billion has been marketed as green or climate bonds, with around half of issuance from development banks (Climate Bonds Initiative, 2014). Put simply, the proceeds of these green bonds are earmarked for green projects. To date, green projects financed by green bonds include renewable energy development, energy-efficient buildings, environmental investments that improve water supply and low-carbon transport. A key point is that the green credentials of the bond are based on the *projects* or *assets* linked to the bond issuance, not the green credentials of the entity issuing the green bond. This allows a wide range of issuers to be eligible for green bond issuance. Issuers can be national or local governments, multi-national development banks, commercial banks or corporations.

In practice, green bonds are structured no differently from normal bonds in the wider market—the issuing entity guarantees to repay the bond over a certain period of time, plus either a fixed or variable rate of return. The difference is that proceeds are transparently channelled for green purposes. How this is done is elaborated in Table 1, as it would correspond to standard asset classes in the fixed income market.



TABLE 1: TYPES OF GREEN BONDS

Asset Class	Issuer	Description
Sovereign bonds	National government	A country could issue a green bond with the proceeds earmarked for a specific green program, or even for their contribution to an international initiative like the UN Green Climate Fund.
Subsovereign bonds	Local government / municipality	Muni bonds can follow several forms, such as general obligation (similar to sovereign) or revenue bonds where cash flows are ring-fenced from a program or project to repay the bond. Both types of bonds may be linked specifically with green infrastructure or services provision.  Examples: French city sustainability bonds; Massachusetts State; Johannesburg
	Agency bonds	Government-related agencies are often focused on environmental or social purposes. In the United States, it is possible to purchase affordable housing bonds through agencies. National development finance institutions and Green Banks are also public sector issuers that could ring-fence bonds for green purposes. Finally, state-backed agencies in infrastructure such as railways and waters could also fit this category.  Examples: NRW Bank, Nordic Investment Bank, Eurofima
	Supranationals	These are essentially the same as sovereign bonds: general obligation bonds where proceeds are allocated to qualifying investments.  Examples: World Bank and International Finance Corporation green bonds; European Investment Bank Climate Bond
Financial Institution (FI) bonds	Commercial banks	A bank can issue a bond linked to a pool of qualifying loans: wind and solar energy, rail, green buildings.  Examples: Bank of America
Non-FI corporate bonds	Corporations	These are issued by companies with substantial green assets on their balance sheets  Examples: EDF, GDF Suez, Abengoa
	Special Project Vehicles (SPVs)	These are issued by a project development company or SPV on a green project  Examples: Hannon Armstrong
Covered bonds	Commercial bank	Covered bonds are typically issued by banks under specific legislation or by using contractual documentation. Investors in covered bonds have dual recourse to the financial institution behind the covered bond program (the covered bond issuer) and to the assets in the cover pool. The asset cover pool typically includes residential or commercial mortgage loans, or public-sector assets.  Examples: Munchner Hypo
Structured finance and securitization	Corporations	Utilities could issue structured covered bonds secured against renewable energy assets as a way to reduce their cost of capital.
	Warehouse facilities/ finance companies	Companies seeking to refinance a mature (low-return, low-risk) portfolio of loans or assets so they can recycle funds into new lending or developments that have higher returns.  Examples: Toyota low emission loans; SolarCity solar rooftop securitization.

## 1.2 WHY GREEN BONDS FOR CHINA?

### 1.2.1 CHINA'S LOW-CARBON/GREEN ECONOMY TRANSITION NEEDS HUGE AMOUNTS OF FUNDING.

Under its 12th Five-Year Plan (FYP) (2011–2015), China has ambitious plans to improve energy intensity, grow environmental industries and reduce environmental stress. This will require the mobilization of huge amounts of capital.

The Development for Emerging New Industries, for example, requires CNY 5 trillion (USD 817 billion) in investment up until 2020 (People's Daily Online, 2010). China has also announced that CNY 1.7 trillion (USD 275



billion)—twice the amount of the total defence budget for the same period—will be invested in improving air quality in the next five years (The Economist, 2013). China’s financial markets can and should play a key role in this transition.

### 1.2.2 FINANCIAL CHANGES ARE NEEDED TO MEET NON-ENVIRONMENTAL POLICY OBJECTIVES.

A policy report from July 2014 suggested that China is facing an “investment trilemma” (Amin, Ng, & Holmes, 2014). In addition to increasing environmental investments, large investments are needed to maintain satisfactory economic growth. The third main objective is improving the efficiency of public investments by crowding in more private investment. The government also aims to:

- a. *Introduce greater transparency into financial markets and improve economic stability.*
- b. *Provide more financing options for non-state entities.* The new major contributors to economic growth, particularly small and medium-sized enterprises (SMEs) and private companies, are increasingly unable to access financing, as lending is prioritized for state-owned enterprises (SOEs) and local government investment companies.
- c. *Tap into the country’s huge pools of domestic savings.* They are the world’s largest (20 per cent of GDP), that at present have limited opportunities for investment, which leads to a leakage of savings into unregulated investments (EDHEC Risk Institute, 2013).<sup>2</sup>

China should consider several issues and trends that will affect which financial regulatory changes are suitable for meeting the above policy objectives, including:

- Urbanization is a macro trend leading to major requirements for investments in green public infrastructure. By 2030, over a billion people in China will live in cities, the development of which will require an infrastructure spend of CNY 41.6 trillion (USD 6.8 trillion).
- China’s finance sector is heavily dependent on banks, and financial instruments are relatively limited in availability. Bank loans represent 132 per cent of GDP, higher than the advanced economy average of 123 per cent; however, the bond market is relatively underdeveloped compared to those of advanced economies at RMB 22 trillion (USD 3.6 trillion), 47 per cent of GDP in 2012 compared to global average of 138 per cent of GDP (Dobbs, Leung, & Lund, 2013).
- Longer-term finance is in short supply. Moreover, Chinese listed firms have the largest short-term debt ratio in the world with 78 per cent of debt in tenors of one year or under, compared to 28 per cent for U.S. firms (Sorge, Zhang, & Koufopoulos, 2013). The reliance on short-term debt is a risk factor for stable economic development.
- Foreign investor demand for Chinese debt investment is high, but their ability to invest is restricted by China’s quota system. However, the government is responding to this. In the last two years, the China Securities and Regulatory Commission has increased the quota five-fold from USD 30 billion to USD 150 billion in order “to attract more long-term foreign investment institutions to China’s market and promote the development of the capital market” (Ye & Lim, 2013).

### 1.2.3 CHINA IS COMMITTED TO GREENING ITS FINANCIAL SYSTEM.

In 2012 the China Banking and Regulatory Commission (CBRC) introduced its Green Credit Guidelines, requiring banks to ensure environmental assessments are in place for projects using bank loans and requiring banks to develop green credit products that support the country’s environmental protection goals. This development was a response to the lack of compliance with a Green Credit Policy launched in 2007. This seems to have had a positive effect, with public disclosure on the guidelines by financial institutions and a sanction system under the CBRC (Matisoff & Chan, 2008; Xu, 2013). State-owned banks, for example, are

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<sup>2</sup> For more detail see Kidney and Oliver (2014).

actively responding by creating lists of firms identified as environmentally unfriendly and penalizing them in case of loan applications.

Additionally, in March 2014, CRBC launched the Green Credit Statistics System. This system integrates environmental ratings into national credit ratings for companies in 12 industries with heavy pollution or overcapacity based on their efforts to protect the environment (Bloomberg News, 2014; Amin, Ng, & Holmes, 2014). This will have a direct impact on their bond issuance. There are plans to issue qualitative and quantitative performance indicators to facilitate banks to assess their green credit performance.

However, although the guidelines and statistics system have been somewhat successful, the lack of common, operable definitions for what is “green,” combined with lack of common disclosure guidelines for the banks and a limited legal framework for green finance, have limited the enforceability of the initiatives. These are useful lessons for developing a green bond market in China.

#### **1.2.4 CHINA IS ALSO COMMITTED TO REFORMING ITS BOND MARKET AND INTRODUCING GREEN BONDS.**

In the 12th FYP, the Chinese government signalled its intention to reform and broaden the domestic bond market as part of a series of measures to improve the financial system (China Securities Regulatory Commission, 2012). This objective has been reinforced in more recent government announcements. In May 2014, the State Council issued guidelines on financial market reforms that would help deliver a “multilevel capital markets system” by 2020. These overarching guidelines complement more recent detailed notices on pilot issuance of municipal bonds and corporate SOE bonds by the NDRC (State Council, 2014).

The bond market has started to change already, with Chinese bond markets beginning to attract significant amounts of capital. The corporate bond market has grown 45 per cent year-on-year since 2007, albeit from a low base, and bonds from financial institutions have grown 23 per cent (Dobbs, Leung, & Lund, 2013). The offshore RMB bond market located in Hong Kong, where domestic and international issuers may issue RMB-denominated bonds for the international market, has grown from RMB 69 billion in 2010 to RMB 405 billion by the end of January 2013 (HSBC, 2013).

In August 2013 the State Council reiterated the call for reform with a focus on the corporate bond market, in particular as part of meeting the objectives of the 12th FYP (State Council, 2013b). A key departure is that this call not only occurred in an announcement targeted at the financial sector (State Council, 2013a), but also in a strategy on accelerating the development of green industries to twice that of GDP growth targets (State Council, 2013b).

China’s leaders are also explicitly recognizing the opportunity of green bonds. In July 2014 the Chief Economist of the People’s Bank of China reiterated the importance of green bonds for China and added, “to distinguish green bonds from other bonds [...] they should have lower financing costs and greater support from the government, such as tax exemptions” (Ma, 2014). The options for governments to provide such policy support for green bonds are set out in Section 2.

Importantly, there is an opportunity for green bonds to dovetail with the deep reforms and increased transparency required for rapid bond market growth rather than rely on existing structures. For example, the State Council has announced guidelines to improve disclosure for bond issuers to reduce reliance on external credit ratings and improve the ability of investors to identify risks. This policy development provides an opportunity to disclose information on the green credentials of bonds and issuers. Disclosure guidelines for green bonds should specify the green or low-carbon assets and the activities for which the funds raised will be allocated.

### 1.2.5 GREEN BONDS CAN ADDRESS SOME OF THE FINANCIAL SYSTEM ISSUES: BOOSTING BANK LENDING, PROVIDING LONGER-TERM CAPITAL AND BECOMING MORE EFFICIENT WITH PUBLIC CAPITAL.<sup>3</sup>

A prominent issue for China's financial system is the high reliance on bank lending and the high level of short-term, rather than long-term, debt. Shifting from bank debt to bonds provides the opportunity for greater transparency and liquidity and frees space on banks' balance sheets, allowing them to recycle their capital to new projects. International green bond buyers have characteristically been longer-term holders of debt with an appetite for longer dated bonds; shifting to green bonds provides an opportunity to shift from shorter-term to longer-term funding.

Applied to state banks, bonds generally, and green bonds specifically, would contribute to China's aim of becoming more efficient with public capital, as publicly supported loans would have an exit strategy, as the publicly originated loans can be sold to private investors as bonds.

The potential for longer tenor offered by green bonds can also help local government financing platforms deal with the problem of short-term debt: average bank loan duration is around three years, yet it may require more than 10 years to service debt. This sort of mismatch suggests significant volatility risk in China's financial markets. As bonds provide an instrument for banks to refinance the loans into longer-dated green bonds, this will help mitigate the volatility risk arising from short-term debt. In July 2014 the Chief Economist of the People's Bank of China stated his agreement with this beneficial function of green bonds for China's financial system.

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<sup>3</sup> For more detail see Kidney and Oliver (2014)

# 2

## EMERGING INTERNATIONAL PRACTICE ON GREEN BONDS

### 2.1 POLICY FRAMEWORKS

Governments have, for a long time, used a variety of policy tools to enable economic transformation to provide growth and stability. Many of these tools can also allow governments to leverage the bond markets to meet their public low-carbon and green-development targets. The policy tools pull two specific levers:

1. The first lever involves putting in place *policy and regulatory frameworks* that reduce underlying project risks in the real economy. Green bonds go hand-in-hand with other regulations and green credit instruments in channelling finance rather than replacing such initiatives.
2. The second lever involves employing *public finance instruments and tools* that support private issuance in the scale, liquidity and risk/return profile necessary to allow the market to grow, and mandates demand from public funds.

This section presents an overview of the policy tools and highlights best practice examples for China.

TABLE 2: POLICY FRAMEWORKS AND PUBLIC FINANCE INSTRUMENTS TO SUPPORT GREEN BOND MARKETS<sup>4</sup>

Policy category	Policy	Description	Example
Policy to reduce underlying risks	Green policy frameworks	Long-term price signals for projects reduce risk for investors, e.g., feed-in tariffs, carbon pricing.	Power purchase agreements underpin several green bond issuances in the U.S., e.g., Topaz solar farm bond issuance, California
Public policies targeting bond issuance	Government bonds issuance	Raising funds directly through general obligation bonds, at the sovereign or municipal level, earmarking portion of funds for green. Bonds backed by taxes.	Municipal green bond issuance, to date, includes Gothenburg and Stockholm (Sweden); Ile de France, Provence and Pays Nord (France); California (US), Massachusetts (US), New York (US), Washington DC (US); Johannesburg (South Africa), Ontario (Canada)
	Revenue bonds support	Raising funds for specific projects. Bonds backed by cash flows from those projects.	In Hawaii, the government has passed legislation to enable the issuance of USD 100 million green infrastructure revenue bonds to finance local clean-energy upgrades. The revenue bonds will be repaid by a surcharge on electricity bills for households and businesses and excluded from the state's debt limitations and general obligation guarantee.
	Support for dual recourse bonds	Raise funds for priority areas. Dual-recourse bonds that are backed by both general creditworthiness of the issuer and the cash flow from the specific projects for which funds are raised. They typically attract higher ratings than the issuers themselves.	In September 2014, Overseas Private Investment Corporation (OPIC), a U.S. government development finance institution issued a bond for a solar project in Chile where returns are coming from project revenue streams, giving investors exposure to asset performance, but also backed by OPIC to keep risk low.
	Green definitions support	Public sector support for commoditizable definitions and policing/verification mechanisms makes it easier for issuers to know what qualifies, for buyers to compare green claims from issuers and for investors to know that proceeds will be used as promised.	China has developed performance standards and regulations for resource-efficient and green infrastructure goods and services for several sectors. China has also developed green assurance and verification systems through, for example, the adoption of the CDM and in the development of local emission trading systems.
	Green banks bond issuance	Raising money through public sector banks and infrastructure funds established to provide finance to green projects.	The Connecticut Energy Finance and Investment Authority (CEFIA) has issued USD 50 million in bonds backed by a ring-fenced account in the state's Special Capital Reserve Fund
Financial instruments supporting issuance	Tax-based incentives	Tax credits or equivalent direct subsidies for bondholders can both attract capital and reduce financing costs for issuers.	In the United States, Clean Renewable Energy Bonds (CREBs) and Qualified Energy Conservation Bonds (QERBs) give tax credits to bond holders or direct subsidies for interest payments to issuers to reduce interest payment burden for issuers.
	Guarantees	Partial loan guarantees, performance guarantees, insurance products and bond wraps that are introduced for a period to develop a stronger credit history.	In August 2014, the U.K. government's Infrastructure Fund (part of the Treasury department) provided loan guarantees for a GBP 48.5 million bond issuance to finance the green biomass power project Speyside.
	First loss provisions	Public agencies take subordinated debt positions.	In 2013 EU's Project Bond Initiative, where the European Investment Bank takes first-loss positions in bond issuances, was used to finance the Greater Gabbard transmission project to connect offshore wind to the grid in the United Kingdom.
Directives supporting demand	Green mandates for public sector investment institutions	Directing pension, social security and other state funds to allocate a percentage of their fixed income budgets to green bonds.	N/A. In spring 2014, Norway's Sovereign Wealth Fund stated it might mandate a certain allocation to green investment.

<sup>4</sup> For more details, see Kidney and Oliver (2014).

To use public capital efficiently, credit support measures like guarantees should be selective, so that the government only absorbs certain risks that the market is not placed to deal with, such as policy risk. Blanket guarantees that cover all risks of green investments and skew the market significantly or pick winners should be avoided. The aim is to kick-start a green bonds market by providing the green investment opportunities that fit the risk-return profile of investors.

It is worth noting that explicit credit enhancement mechanisms and guarantees have not been actively used in the Chinese onshore bond market. Instead, there has been a general consensus of implicit government credit backing, as the government has been actively involved in backing bond issuance from government entities and big financial institutions. Defaults in China were non-existent until 2014, when a solar technology company became the first onshore issuer to fail coupon payments. As China seeks to move to a more market-based financial system, there have been calls for a move away from implicit guarantees. For example, the State Council announced in October 2014 that the central government would not provide guarantees for local debt in the future (Tu, 2014a). A reduction in implicit guarantees means explicit credit enhancement can be necessary, especially at the initial state of the market, for green bond issuance to have acceptable risk levels.

Traditionally, such explicit credit enhancements and guarantees in China have only been applied to the offshore (Dim Sum) bond market. The most frequently used enhancement tools in the offshore market have been letters of support issued by third party financial institutions and keep-well agreements signed between offshore subsidiaries and onshore parent companies (Prakash & Collins, 2013). However, general investor concerns about these mechanisms emerged, and, in response, a new regulatory framework for guarantees and credit enhancements was issued to make it easier for companies to guarantee offshore debt offerings and boost bond issuance (Allen & Overy, 2014). The set of measures became effective in June 2013 and allowed onshore debt issuers to offer bundled packages of bonds with cross-border guarantees. The new guidelines are expected to encourage new debt issuance, especially for public and private companies seeking to fund overseas projects and perform mergers and acquisitions. Still, the main drawback is that guarantees will only be offered for debt issuance for overseas projects, leaving behind developers who usually raise funds for mainland projects. Understanding the landscape of credit enhancement and guarantees in the general bond markets in China is important to develop mechanisms that specifically can support green bonds, as policy support is important to boost a nascent market (for example see Nguy et al, 2014; Moody's, 2013).

## 2.2 PUBLIC DEMONSTRATION ISSUANCE: MUNICIPAL BONDS AND DEVELOPMENT BANKS

Public demonstration issuance is key to growing a green bond market; it provides liquidity and scale to the market, as well as providing a model to other issuers by establishing issuance processes and frameworks. In the bond markets, the main entities to play this role are local governments and development banks. There is room for green bond issuance through both these channels in the Chinese market. There are several examples of public demonstration issuance from other countries. For example, KfW, the German development bank, has issued two green bonds to grow the domestic market. On the city level, Gothenburg in Sweden and Johannesburg in South Africa are examples of cities that have embarked on green bonds programs.

In China, development banks play a large role in domestic bond issuance, providing a great opportunity for green bond issuance.

For green city bonds, the rapid rate of urbanization in China increases the role of cities, both in the low-carbon transition and in terms of financial power. These trends and the Spring 2014 regulatory changes allowing 10 municipalities to issue bonds directly mean there is significant potential for green bonds at the city level in China. It has been estimated that China's municipal bond market can grow to RMB 1 trillion (USD 164 billion) in 2015 (Tu, 2014a). Green City Bonds can be used to finance a wide range of green projects, key categories for cities in China being rail transport, renewable energy, green buildings and clean water. Green



City Bonds in China can be issued on the domestic markets, or denominated in RMB in the offshore bond market, to attract a wider range of investors and display to the global investment community that China is taking a leading role in growing a green bonds market.

## 2.3 POLICY SUPPORT EXAMPLE: DUAL RECOURSE BOND STRUCTURES FOR GREEN BONDS

Government entities can issue green dual recourse bonds to bridge the gap between earmarked bonds backed by issuing entities, as set out above, and green asset-backed securities (see Section 2.3 below), where performance is based on the underlying green assets. Dual recourse bonds would primarily give investors recourse to the issuing entity, as with green general obligation bonds. However, investors would also have recourse to an underlying pool of green assets, in the event of the default of the issuing entity. Dual recourse bonds improve transparency, as they give investors insight to the performance of the underlying green assets without taking the risk of basing their returns directly on these assets' performance.

Green dual recourse bonds would be a means of improving the transparency of provincial debt in China by rolling over debt into new dual recourse vehicles. The primary function of such green dual recourse bonds is to give investors experience in analyzing the performance of green assets without exposing them to higher risks. The reduced risk and improved transparency offered by dual recourse bonds fit well with recent policy developments for municipal bonds in China. Transparency in provincial debt was improved to a certain extent by the NDRC's move in 2014 to require municipal bond issuances in China to disclose the use of proceeds (Tu, 2014b); green dual recourse bonds further improve transparency by also providing insight for investors into the financial and green performance of the underlying assets. The reduced risk of dual recourse bonds can be more attractive to investors in China's municipal bond market following the announcement from the State Council in October 2014 that China's central government will no longer provide full guarantees for local debt (Tu, 2014a).

Making green assets eligible for dual recourse bonds will provide an option for a *transition* from publicly backed loans to public-private partnerships. Metro system loans, for example, could be re-financed with dual recourse bonds, where the investor receives a provincial guarantee, as well as recourse to an asset pool.<sup>5</sup> As investors become familiar with the green assets' performance, the recourse to the entity will no longer be needed, and the market can move to green asset-backed securities. Enabling issuance of asset-backed securities would be beneficial to debt-laden municipalities, as issuance of asset-backed securities allows the municipalities to take the debt off their balance sheet.

Munchner Hypo's recent "social" Pfandbrief (covered bond) in Germany provides a clear template for issuing green dual recourse bonds.

## 2.4 POLICY SUPPORT EXAMPLE: GREEN WAREHOUSING AND CREDIT ENHANCEMENTS

Tapping bond markets for green projects requires a certain deal size in order to be taken up by the mainstream market. Smaller loans and assets, including from SMEs, need to be aggregated and packaged appropriately. This is particularly relevant for green investments, as many renewable energy and energy-efficiency investments are smaller scale. Banks could, in theory, fulfil this aggregator role. However, in practice there is typically a lack of sufficient loan volume for a given type of green investment, which prevents any individual bank in China from aggregating to the necessary level for repeat issuance of green bonds at the size the bond market demands. This means that cooperative warehousing arrangements aggregating assets across several banks may be needed. Having a cooperative, independent warehousing entity for green loans also provides the additional benefit of driving standardization of green loan agreements across banks by setting certain requirements for loans to qualify for aggregation. China's experience with the Green Credit Guidelines shows the importance of having common standards to ensure robust implementation of green finance innovations.

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<sup>5</sup> For more details see Kidney and Oliver (2014).



A warehouse entity for green assets in China can come in several forms, as illustrated by examples of successful warehousing entities from other countries, both for green and for other assets. First, existing development banks could host a green warehousing entity—the European Investment Bank (EIB) has been developing such a model, called Renewable Energy Private Investment Platform (REPIN), which could be used as a template for some of China’s main development banks. Second, provincial governments could support setting up a new entity for green warehousing. A good example is the Warehouse for Energy Efficiency Loans (WHEEL) in the United States, which aggregates residential energy-efficiency loans from selected state and local energy loan programs in a warehouse. Once the total pool of loans is large enough to meet the investment demand from institutional investors, WHEEL issues a bond to recapitalize the facility, allowing them to buy a new round of loans. WHEEL is set up as a public-private partnership, where state governments provided initial capital and developed the program in collaboration with a non-profit organization, but the arranging bank and the conduit entity are both private. Third, green banks can provide a warehouse for green loans from other commercial banks.

In addition to aggregating and standardizing green loans, such a publicly supported warehousing facility could provide selective credit enhancements to fit the risk profile of the market for the green bonds that do not have high enough credit rating to be attractive to institutional investors. As an example, junior or mezzanine debt from a development institution can enable green bond issuance from investors at a suitable investment grade to attract private capital. The proposed REPIN-vehicle of the EIB is an example of a facility that would combine aggregation, standardization and credit enhancement for green projects. Another example illustrating how credit enhancement can be used for green projects is the EIB’s Project Bonds Initiative, where the EIB takes a first-loss position in the financing structure.

## 2.5 POLICY SUPPORT EXAMPLE: TAX INCENTIVES FOR GREEN INVESTMENTS

There is scope to support investment in green bonds by allowing tax incentives for green bond investments. Tax incentive schemes have been an important part of the development of bond markets in the United States. They have been put in place there for renewable energy and energy-efficiency bonds, and examples in the U.S. market show that tax incentives for bonds can be put in place in different ways:

- 1. Tax credit bonds:** Bond investors receive tax credits instead of interest payments, so issuers do not have to pay interest on their green bond issuances. An example in the area of clean energy is the U.S. Clean Renewable Energy Bonds (CREBs) and Qualified Energy Conservation Bonds (QECBs) program (Energy Programs Consortium, 2012). The program allows for the issuance of taxable bonds by municipalities for the purposes of clean energy and energy conservation, where 70 per cent of the coupon from the municipal bond is provided by a tax credit or subsidy to the bondholder from the federal government. This structure would be suitable for green bonds in China.
- 2. Direct subsidy bonds:** Bond issuers receive cash rebates from the government to subsidize their net interest payments. This structure is also used under the CREB and QECB programs in the United States. This structure is suitable for all potential green bond issuers in China.
- 3. Tax-exempt bonds:** Bond investors do not have to pay income tax on interest from the green bonds they hold (so the issuer can get a lower interest rate). This type of tax incentive is relevant for non-government bond issuance in China, where domestic investors’ interest income is typically subject to a 25 per cent tax (Liu, 2014). This type of tax incentive is typically applied to municipal bonds in the U.S. market. In the green bond space specifically, an example to highlight is tax-exempt bond issuance for financing of wind projects in Brazil.

## 2.6 POLICY SUPPORT EXAMPLE: PRICE DIFFERENTIAL IN LOANS BASED ON ENVIRONMENTAL PERFORMANCE

Green lending developments are important for green bonds, as a significant flow of green loans is needed to create the necessary deal flow for a mainstream green bond market. The high reliance on bank loans in China's financial landscape provides a significant opportunity, as the potential for refinancing loans into bonds is very large. However, green securitization or bond issuance from the banks means that a substantial green loan flow is needed. It follows that a policy to boost green bonds would be to increase the amount of green loans originating in banks. While the Green Credit Guidelines are an initial step to do so in China, providing a price differential for green loans compared to “brown” loans is a policy option to boost green lending further.

This can be done by supporting differential (e.g., 25 basis points) interest rates for green bonds through investor mandates and through development bank issuance, to having different bank capital ratio requirements for green debt products. To ensure preferential treatment is only given when it is warranted on environmental grounds, a verification and standardization system<sup>6</sup> should be put in place. Verification and certification of green criteria could be a requirement for issuers to receive preferential lending rates. The scheme should be set up so that the lower interest rate fully covers the cost to issuers (c3–5 basis points) of this certification process, as well as leaving sufficient cost savings with issuers (c20–22 basis point), making it attractive to lend to green. The importance of a strong verification process and common standards is illustrated by the fact that ensuring compliance with the Green Credit Guidelines has been problematic—for example, compliance for this policy has lacked clearly defined standards for banks to implement the guidelines.

A preferential loan process for green could be achieved by different policies. A green preferential lending policy would fit with environmental risk disclosure developments already occurring in China. In March 2014, an environmental credit rating was implemented and companies will be ranked based on a four-colour scale, and companies marked as red (the worst rating) will face credit constraints from banks (Bloomberg News, 2014). A similar development has been seen in Brazil, where they have been integrating green criteria in the credit-awarding process since the 1990s (BNDES, 2011). However, both in Brazil and China, the green policies are not yet designed to provide systematic price differentials in lending. Disclosure around green performance should align with the general guidelines for disclosure in China's financial markets. It is, however, worth noting that regulatory changes to interest rate subsidies might be required to provide subsidies for green loans at the necessary scale. Currently, there are limits to the subsidy rate that can be provided, with the maximum set to the central bank benchmark rate, the real interest rate of the current year or 3 per cent. Further, interest subsidies can only be provided for up to 3 years. This restriction on tenor is particularly problematic considering the long-term investment horizons of many green investments.

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<sup>6</sup> For more details, see Kidney and Oliver (2014).

## CURRENT TRENDS IN THE GREEN BONDS MARKET

The key developments at the end of 2013 and in 2014 are: general market expansion, new types of issuers entering the market, new types of green bonds, and developments around reporting and definitions of what classifies as green.

### 3.1 CONTINUED MARKET EXPANSION

The green bonds market is growing rapidly, as is illustrated by issuance in 2013 (USD 11 billion) and 2014 (USD 36 billion), accounting for over 85 per cent of the total USD 50 billion outstanding in the labelled green bond market (Climate Bonds Initiative, 2014). The big growth area in green bonds issuance in the past year has come from non-pure play companies issuing bonds with proceeds earmarked for green or climate-related investments. The growth is expected to continue, with USD 100 billion in issuance expected in 2015.

### 3.2 NEW GREEN BOND ISSUERS

**There has been a shift in the market to corporate earmarked green bonds**, with these now accounting for the majority of labelled issuance. Additionally, the size of individual green bonds issued has increased: the largest corporate bond to date was issued in 2014 by GDF Suez at EUR 2.5 billion (USD 3.44 billion). Corporate green bonds have expanded also to Asia: the first Asian labelled corporate green bond was issued in July 2014. While no labelled green corporate bonds have been issued in China yet, the potential exists: USD 164 billion in bonds aligned with the low-carbon economy were identified in China as of June 2014 (Climate Bonds Initiative, 2014). This is the potential from pure-play companies only, meaning the full potential is much larger, as the majority of growth in green bonds is from non-pure play issuers who issue bonds earmarked for green or climate projects.

**City and municipal bonds have also entered the green bond market.** In 2013 and 2014, green city and muni bonds were issued, with bonds from, among others, Ile de France (Paris), Massachusetts, Gothenburg, Stockholm and Johannesburg. This is an important area for future growth, as cities and subsovereign entities (especially in emerging markets) raise financing to meet climate infrastructure requirements. Green City Bonds can be issued by various entities with various structures. To date, most green city and municipal bonds have been general obligation bonds issued by the city or municipality. However, bonds can also be issued by city entities, such as transportation bodies, or by approved corporations' public-private partnerships with the city, either as general obligation bonds or revenue bonds. Moreover, where cities do not have bond-issuing powers, as is the case for the majority of cities and municipalities in China currently, central government and development banks can issue general obligation green city bonds that funds earmarked for green projects in a given city.

As discussed in Section 1, there is a large scope for municipal green bonds in China; current urbanization trends mean cities and municipalities play an increasing economic role, and recent regulatory changes are opening up opportunities to realize this potential for the bond space, as certain municipalities will be allowed to issue bonds (The Economist, 2014). Green city bonds can also be issued by municipal utilities, public-private partnerships and private corporations that are building green assets for city governments.

**Domestic development banks are also increasingly issuing green bonds to kick-start domestic markets.** Most recently, in July 2014, the German development bank KfW issued its first green bond, a EUR 1.5 billion bond earmarked for financing renewable energy. This issuance was followed by a second green bond issuance in October 2014 for USD 1.5 billion. Scandinavian development banks have also issued green bonds for their domestic markets; and the IFC has stated that issuing green bonds for their domestic markets is a new objective for its green bond issuance, and has issued a USD 15 million Peruvian currency green bond. China's development banks could follow these developments to kick-start a domestic green bond market.

### 3.3 NEW TYPES OF GREEN BONDS

Green bonds backed directly by the performance of green assets are emerging in the United States and the United Kingdom; as the market matures, moving to more risky structures is becoming possible. Issuance of asset-backed securities is particularly useful for green assets, as it helps aggregate fragmented renewable energy and energy-efficiency markets to the scale bond markets require. There is market potential for green bonds from asset-backed securities in China in the energy-efficiency installation for business, rooftop solar and other sectors. In particular, banks with portfolios of loans to small business and householders could use securitization to recycle limited lending allocations (see Box 1).

#### **Box 1: Green securitization: SolarCity's bonds backed by solar leases and power purchase agreements**

SolarCity, the largest solar rooftop installer and financing company in the United States, provides an example of successful green securitization issuance. They issued their first asset-backed securities (ABS) in 2013, with USD 54.4 million in bonds backed by a pool of 5,000 rooftop solar leases and power purchase agreements. In 2014, they have followed with two more ABS issuances, the most recent an issuance of USD 201.5 million, backed by 16,000 rooftop solar leases and agreements.

*Source: Greentech Solar (2014).*

### 3.4 DEVELOPING STANDARD REPORTING RULES AND DEFINITIONS OF GREEN INVESTMENTS

To date, green bonds have relied on differing definitions of use of proceeds, depending on the issuer of the bonds. There is not yet a standardized approach for the issuance of a green bond. A principle of using expert and independent review of inclusion criteria to ensure credibility has therefore emerged.

The Green Bond Principles, a set of voluntary guidelines developed by four major banks (Citibank, Bank of America Merrill Lynch, JP Morgan and Credit Agricole) around the design and reporting characteristics of green bonds, were launched in January 2014. The principles promote the idea of green bonds being about the use of proceeds for green assets—rather than for green entities—and the use of independent reviewers of both environmental credentials and financial ring fencing. Some 50 organizations, the majority banks, are now signatories to the principles. However, they do not try to promote any one set of criteria to define “green projects,” instead relying on those already available in the market.

The Climate Bond Standards Scheme is developing standardized, science-referenced definitions of green investments in the global bond market. This will be particularly important to the next stage of growth as the market expands beyond large and trusted banks and organizations to smaller and regional issuance. The Climate Bonds Standard involves a wide coalition of academic and industry experts preparing open-access guidelines for which climate-related investments can be associated with green bonds.

This work feeds into the Climate Bonds Initiative's certification and verification scheme that certifies bonds and includes reporting requirements for bond issuers to verify the use of proceeds based on eligible green project areas.<sup>7</sup> The scheme is tailored to the needs of corporate and bank green bond issuance, where investors consider assurance about the use of funds as important as the assets to which they get allocated. Under the scheme, bonds are certified after a straightforward third-party verification. Costs are born by issuers. A spot audit scheme sits above the program, policing correct verifier behaviour.

<sup>7</sup> More details around what is eligible as green bonds are available from Kidney and Oliver (2014).

Certifying and labelling green bonds in China could be useful as a performance metric of allocated capital and environmental benefit (e.g., in kilowatt hours or tons of carbon dioxide equivalent) related to China's 12th FYP targets assigned to local governments and SOEs. Under the appropriate common definitions, monitoring and reporting standards, there is potential for many different bonds, such as government, financial and corporate bonds, to be recognized within the green bond thematic asset class. It is possible for policy frameworks and regulations to spur on these investments through some innovative structuring and incentives that will be discussed in the next section.



#### 4.1 PROVIDING THE FOUNDATION FOR A GREEN BONDS MARKET: GREEN STANDARDS, VERIFICATION AND ENFORCEMENT

Developing a robust green bond market requires clear definitions of which investments linked to bonds will qualify as green, along with a government-endorsed system of providing assurance for investors and regulators about the green claims of corporate, bank and local government bond issuers. China's policy-makers recognize the importance of developing standards and definitions at a level that is practical for financial market participants, especially following their experience with banks' limited adherence to the Green Credit Guidelines due to the lack of clear, operable definitions of "green." China already has relevant experience to develop clear definitions, grounded in their performance standards and regulations for resource-efficient and green infrastructure, goods and services. In some areas, China's green definitions and standards surpass the equivalents in developed markets. China has also had experience in developing green assurance and verification systems through, for example, the adoption of the CDM and in the development of local emission trading systems. These experiences can be leveraged in establishing verification and enforcement mechanisms for green bonds.

For green bonds, definitions, standards and certifications around green credentials should be developed. This can be done using the China Banking Regulatory Commission's (CBRC, 2013) definitions for green credit as a starting point. These definitions provide a solid foundation for standards suitable for a robust green bond market in China, and their use would avoid duplication, simplifying the process of green standardization for regulators, issuers, investors and other market actors. Further, ensuring consistency with the definitions and key policy areas set out under the Five-Year Plan is crucial.

A Green Bond Market Development Committee is leading the expansion of the CBRC's Green Credit definitions. The committee will consist of regulators and other market actors and will review the existing definitions included in CBRC's Notice for Green Credit Statistical Report. This review would particularly consider how the current standards would need to change to be tailored to China's bond markets, and how to ensure consistency across different types of bonds and bond markets. While its focus in developing definitions for green bonds would be the green credit definitions, it is recommended that the committee collaborate with the international and global process already in place to develop green bond definitions, organized by the Climate Bonds Initiative through their Standards and Certification Scheme.

The committee would collaborate closely with CBRC to ensure that commentary from the review would feed back to CBRC. Moreover, the bond regulators (People's Bank of China, Ministry of Finance, National Development and Reform Commission and China Securities Regulatory Commission) should partake in this collaborative review process. The Green Bond Market Development Committee would provide an informal complementary working group to the high-level formal working groups on green finance and green bonds already established in the DRC and PBOC.

Once green bond standards are developed, support is required for CBRC to communicate the standards to financial market actors to ensure broad uptake. This would also be within the remit of the Green Bond Market Development Committee.

Robust implementation of these definitions and standards in the market will require a verification and enforcement system. Lack of verification and enforcement processes, and a legal framework around these, are limitations to the implementation of existing green finance initiatives, such as the Green Credit Guidelines. The verification process for green bonds could be designed as follows, combining the structure

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<sup>8</sup> For more details see Kidney and Oliver (2014).



used for the National Energy Savings scheme and the structure proposed for verification under China's Social Credit System:

- A range of government-approved third-party verifiers undertakes verification and certification against the proposed green bonds standards. These could be specialist green bond verification entities or existing entities. For example, credit rating agencies, whose role is improving with the proposed reforms, could take on green verifier roles to check compliance with green bond standards. Technical auditors could also take on this role, as what is needed is verifying and auditing against set standards of what is green; not making ad hoc decisions about what is green.
- An independent, non-governmental, non-profit entity set up explicitly for this purpose to supervise the verifiers.
- The bond market regulators can play a role in the development of this verification system; however, their main role in the process is to mandate the use of the verification platform to ensure its wide use in the market.

The costs of verification should be low enough that the cost to issuers should be recoverable by the additional marketing benefits achieved by marketing a bond as green. The labelling of bonds as green would be consumer-focused, providing a fair-trade-like label for the bonds signalling their green credentials. This is beneficial in China's move to a market-led economy, as current standards are typically complex and not signalled with easily understood labels. The costs to issuers could also be further compensated by preferential policy support for green bonds—for example, preferential tax exemptions, as proposed above, which would be made conditional on verification. However, relying on preferential policies for green verified bonds for issuers to recover costs would limit the initial growth of the market; keeping the costs lower should therefore be a priority.

While the verification process will be different in China than in other countries, it is recommended that regulators look to the global green bond markets for the key components to include in their verification process:

- Review the green assets linked to the green bond proceeds, rather than reviewing the green credentials of the bond issuer at the entity level. This is an important feature in that it enables a much larger market than if the green credentials are established at the entity level, which would exclude the potential issuers that are not pure play.
- Review whether commitments have been made to regular (annual) confirmation of the use of green bond proceeds and the performance of green bond proceeds and assets. Due to the lifespan of a bond, ensuring that the green credentials are guaranteed over time is important.

## 4.2 ACTIONS FOR CHINA'S POLICY-MAKERS TO GROW A GREEN BOND MARKET

In addition to supporting the development of definitions, standards, certification, verification and enforcement systems, kick-starting any new bond market requires public sector support on both the supply and demand sides. On the supply side, governments can provide initial liquidity and trading volume from government-backed bond issuance, as well as forms of credit support, until investors become familiar with opportunities. Developing a green bond market in China will need the same. Following the policy support examples set out in Section 2, five actions for China's policy-makers are proposed. It is worth stressing that several of these rely first on the development of standards, certification, verification and enforcement systems, to ensure that policy support is going toward investments that are aligned with robust environmental progress.



## 1. Public demonstration issuance

Bond market regulators (PBoC, MoF, NRDC, CSRC) should:

- Allow state-owned corporations and state entities to develop “demonstration programs” of green bond issuance that serve to illustrate the concept and, most importantly, to create trading volume and liquidity at a superior investment grade.
- Set targets and quotas for green bond issuance by development banks, SOEs and local governments to issue green bonds to initially develop the market. The potential of green city bonds is particularly exciting, considering the increasing importance of urban centres in China’s economy. Green quotas for municipal bond issuance would promote transparency and the development of local economies if allowances were made for green municipal bonds. This can be done by MoF allowing:
  - a. A top-up on the municipal bond quota for green municipal bonds, clearly linked to sustainable development plans or infrastructure.
  - b. Mandating a proportion of current quotas for green bonds.

## 2. Dual recourse green municipal bonds

- Develop a program for green dual recourse bonds at the local government level by providing government guarantees for bonds that also have exposure to the underlying green assets. This will bridge a market made up of bonds that are explicitly or implicitly government-backed to one that first introduces recourse to underlying assets, and then moves away from government guarantees to full revenue-backed bonds.
- Develop legislation to ensure the high quality of the assets eligible in the recourse of the bond pool.

## 3. Warehousing and credit enhancement

- Set up a green warehousing facility within existing development banks, or as a separate entity modelled on the U.K. Green Deal Finance Warehouse or on the U.S. WHEEL program, or as part of a green bank.
- Allow development banks to provide credit enhancement for green bond issuances in priority areas.

## 4. Tax incentives

- Change fiscal policy to make green commercial bonds tax exempt, provide tax credits to investors or direct subsidy for interest payments to green bond issuers, after first undertaking a study of which would be most effective in China.

## 5. Price differentials for green

- Change lending policies of development banks to give lower interest rates to green projects, conditional on a certification process of the borrowers.

**Beyond these actions inspired by global policy examples of green finance, there are opportunities for China’s policy-makers to grow green bonds that are unique to the Chinese context:**

- a. *Helping build a domestic investor base by instituting a system of green bond certification against clear and transparent criteria for green investments.* This will support integrity within a green bonds market by setting targets for green bond purchasing targets for public funds such as the National Social Security Fund (NSSF) and by encouraging green bond trading markets. Definitional work is already being done in Europe and could be adapted for China's special situation.
- b. *Opening a Foreign Direct Investment (FDI) window specifically for green bonds* as part of China's gradual enlargement of the Qualified Foreign Institutional Investor (QFII) and Renminbi QFII (RQFII) programs. These programs are important channels to expose international investors to China's green bonds, as the total quota of these programs is significantly larger than the offshore RMB bond market (Liu, 2014). This regulatory change can be made by the CSRC, who regulates the foreign investor quota programs. The window should be tailored to meet the needs of long-term institutional investors such as pension funds, sovereign wealth funds and insurance funds. These actors will help improve risk management practices and governance in the investment system and increase liquidity by introducing more buyers to secondary markets. To ensure a smooth process of uptake, this window would initially focus on offering green bonds from SOEs, gradually allowing more offerings from corporate issuers. Similar to quotas on municipal bonds, special consideration could be afforded to investments in green bonds to top up or channel investor quotas.

Underpinning the specific policy actions is an understanding that coordinating regulatory measures to promote a green bond market is important to ensure smooth growth.

#### 4.3 OTHER GREEN FINANCE MEASURES TO SUPPORT A GREEN BOND MARKET

In July 2014, the Chief Economist of the PBC, in addition to reiterating the support for green bonds, outlined additional measures to push green finance in China, several of which play important roles in facilitating a green bond market. These measures come in addition to green financial products that are already in place, such as the Green Credit Guidelines in the banking sector.

Measures relevant to growing a green bond market in China:

1. *Carbon markets – an example of providing a strong price signal:* Carbon markets can provide a strong price signal for investors, as seen in other sectors. For essential public services, the regulation of assets and revenues through prices is integral to the ability of those operators, either private or public, to access bond markets. In services for clean water and wastewater provision, transportation, education, electricity, waste management, etc., there are minimum guaranteed payments to operators for the provision of an essential public service.

Carbon pricing has the potential to provide this certainty. However, recent carbon market experiences have failed to reassure investors because of price volatility and the market's reliance on policy-driven demand signals in the form of artificial caps, as opposed to the provision of essential services. Until such demand signals can be copper-fastened, carbon pricing will not provide the necessary track record and stability required of bond investors.

Carbon pricing could, however, provide certain revenues for investors similar to feed-in tariffs, which have successfully facilitated green bond issuance. Expanding feed-in-tariffs as well as the carbon market, would help grow a green bond market in China's power sector, as the key instrument, power purchase agreements, provide a "bankable" asset to allow bond issuance.

## Box 2: Feed-in Tariffs

Topaz solar farm in California, a 550-megawatt project, raised over USD 1.2 billion from the bond market in debt capital at a BBB investment grade rating and a 5.75 per cent coupon. As stated by credit-rating agencies, the key determinants of the success of this bond issue were the 20-year power purchase agreement from an A-rated utility and the contracting of First Solar, a proven technology manufacturer and systems installer, to implement the project (Oliver, 2013)

Additionally, the methodologies, monitoring, reporting and verification systems established under pilot emissions trading systems may be co-opted by green bond market players. Recent guidelines outline priorities on futures trading in carbon commodities and asset-backed securitizations. As corporate green bond issuers may also act as key participants in emissions trading platforms, the verification agents and reporting platforms may be cost-effectively co-opted to perform the same duties for the green bonds market.

2. *Greening development banks – facilitating supply by standardization, credit enhancement and issuance:* Incorporating green criteria into existing institutions is important to ensure the mainstreaming of green projects throughout the market. Public sector finance institutions can play a variety of roles in supporting a green bonds market. They can be:
  - Issuers of green bonds. These can provide initial market product pipelines and liquidity, engaging investors and educating them about the asset class.
  - Sponsors of or investors in warehouses/conduit entities, as set out in Section 2.
  - Credit enhancers. A wide range of guarantee and credit enhancement tools is available. For example, the EIB's Project Bonds Initiative provides credit enhancements for bond issuance addressing the policy objectives of the EU's Connect Europe program.

## Box 3: Raising capital through bonds and warehousing green assets

The Connecticut Energy Finance and Investment Authority (CEFIA) was established in September 2011 as a clean energy bank. It has begun implementing multiple finance programs aimed at attracting private capital such as a commercial PACE program and a solar leasing program for households and businesses. Supplemental legislation passed in June 2012 allows CEFIA to issue USD 50 million in bonds backed by a ring-fenced account in the state's Special Capital Reserve Fund.

Source: Berlin, Hundt, Muro, & Saha (2012)

# 5

## CONCLUSION

There is a significant opportunity to grow a green bond market in China. In addition to the growth of the green bond market internationally, the opportunity for green bonds has grown as China's general bond markets have grown impressively over the last decade. In addition to providing a way to finance the massive environmental investments required in China, a green bond market is aligned with China's other policy priorities, in terms of developing the country's financial markets and ensuring continued economic growth. A green finance shift in China, including growing a green bonds market, can assist in implementing and enforcing financial reforms that address imbalances in the financial system as much as they provide green benefits.

There is a wide range of tools available to China's policy-makers to support the growth of a robust green bond market in China. This paper has highlighted the fundamental need for the government to support the adjustment of the existing definitions and standards for green projects, as developed by the CBRC for the Green Credit Guidelines. Moreover, regulators should support the establishment of an independent non-governmental, non-profit verification entity, and mandate that issuers of green bonds use it. Additionally, regulators must establish enforcement systems to ensure compliance by issuers over the bond term with their green commitments. The paper has also highlighted that policy support can be provided by: public demonstration issuance of green bonds, particularly at the municipal level; dual recourse green municipal bonds; green warehousing and credit enhancement; tax incentives for green bonds; and providing a price differential for green loans. In addition to these policies with a direct positive impact on the green bonds market, establishing a carbon price and greening development banks, issues already on Chinese policy-makers' agendas, will also have a positive impact on a green bond market in China.

Providing the support to kick-start a green bond market outlined in this paper at this early stage in the global green bonds market can allow China to assume a global leadership role in developing capital market financing for green growth.

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