



Research report

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Abstract

Five years ago, few would have expected China to become a pioneer in green finance. It had only one green financial product then: a modest-sized green credit. Today, it is one of the largest markets for green bonds as well as having an array of other green finance products, such as green funds, insurance products, ETFs and ABSs.

China's rapid transformation has drawn much attention from the international community with many people wondering what "secrets" powered China's progress. This article provides an overview of what China has achieved in developing its green finance system, highlights the key features of the Chinese approaches and explores areas of the Chinese green finance market that can be further improved.

研究报告

中国在绿色金融领域的开创性实践



Closing the green financing gap

The Paris Agreement and the UN 2030 Agenda set unprecedented global ambitions for sustainable development in the coming decade, while calling for cooperation among diverse actors, both public and private, and mobilization of massive financial resources. As much as USD2.5 trillion may be needed globally each year to finance the Sustainable Development Goals (SDGs).

As China pursues its economic priorities, it has also begun feeling the heavy toll of environment degradation. Some studies estimated that the economic losses that China suffers each year from pollution and shrinking biodiversity could be as much as 6% of its GDP. In the last five years, the government has placed preserving and restoring the environment at the forefront of its policy initiatives, including bold commitments to curbing greenhouse gas emissions in the coming decades.

However, fiscal resources alone are far from sufficient to address these environmental challenges. In 2015, I estimated that China would need RMB4 trillion annual green investment to achieve its environmental protection goals, and only 10%-15% of that could be met by public finance. To close this gap, the private sector would have to play a bigger role, thus the introduction of a green financial system is essential.

Introduction of a policy framework

In 2015, China kicked off its work on green finance by introducing a comprehensive policy framework. Led by the People's Bank of China (PBOC, the central bank), seven ministries devised the "Guidelines for Establishing the Green Financial System" over a year. The purpose was to enable the financial system to mobilize



trillions of yuan for sustainable investment in sectors such as renewable energy, energy efficiency, clean transportation, green buildings and environmental remediation. With 35 concrete policy measures, these guidelines laid out a clear roadmap and sent a strong signal to all stakeholders on the expected products and regulatory requirements.

Under the guidelines, green taxonomies were developed to differentiate green activities and assets from non-green ones, so that both regulators and investors knew where the green funds should go and avoid “green-washing.” To date, China has launched three different but complementary sets of taxonomies, covering green credit, green bonds, and green industries.

A major effort by the policymakers, including the PBOC and China Securities Regulatory Commission (CSRC), was setting up the regulatory regime for a green bond market. These included the definition of green bonds, verification requirements, reporting of the use of proceeds and environmental benefits, as well as incentives for green bond issuances. Regulators have also facilitated the development of the green bond verification market.

Meanwhile, to enhance the transparency of green financial activities, the CSRC released a timetable for introducing mandatory ESG disclosure requirements for all listed companies in China, as early as 2020. Companies will have to report environmental performance indicators and need to understand how ESG factors impact their financial performances. Such disclosure requirements, including those from the CSRC, banking and environmental regulators, have improved information flows that enable investors to identify green and non-green assets.



To promote the introduction of green financial products, various policy incentives were introduced at the national and local levels. For example, the PBOC included green finance performances in its Macro-Prudential Assessments of banks. The central bank also accepted green assets as eligible collaterals for re-lending facilities, providing low-cost funding through banks to green projects. Many local governments give interest subsidies and guarantees for green loans. In Jiangsu, the provincial government promotes green bonds by subsidizing 30% of the interest payments. These incentives significantly raised companies' and investors' interests in green financial products.

Proliferation of green finance products

Over the past five years, green credit rapidly expanded while innovative green financial products also mushroomed in China, including green bonds, insurance, funds, ETFs, ABSs, and various emission trading rights.

Green credit was the first green financial product in China, dating back to 2012, when the term was defined by the Green Credit Guidelines of the China Banking Regulatory Commission (CBRC). Banks were also mandated to report their green credit on a biannual basis from the end of 2013. By the end of 2019, outstanding green loans of 21 major banks amounted RMB 10.6 trillion, more than doubling from the end of 2013. These loans supported many green projects such as transport, renewable energy, water treatment and solid waste treatment.

With the Green Bond Endorsed Project Catalogue and the PBOC's guidelines on green financial bonds coming into effect at the end of 2015, China's green bond market took off in 2016 with RMB 211 billion issued, accounting for 40% of the



global total, which made China the largest issuer of that year. Since then, China has remained a top green bond issuer. In 2019, Chinese companies and institutions issued more than 200 green bonds, raising RMB 350 billion in total. In 2016-2019, the total issuance of green bonds by Chinese issuers in both domestic and international markets exceeded RMB1.1tn.

Over 60% of the green bonds issued in China received third-party green verifications, a ratio consistent with the global average. The average maturity of green bonds issued in 2019 was 4.8 years, up from 4.3 years in 2018, suggesting that the green bond market was helping address the maturity-mismatch problem between medium- and long-term green projects and bank financing, typically of short duration.

Many other green instruments were developed over the past few years. By end-2019, 781 green funds had been set up in China to provide mainly equity investments in environment-related companies and projects. Some Chinese investors are now looking to launch green tech funds with foreign partners. Mandatory environmental pollution liability insurance schemes were introduced in many provinces on a pilot basis, covering over 20 industries with high environmental risks, including chemical, power, pharmaceutical, printing and dyeing. Insurance companies have also introduced policies that cover risks associated with the performance of green buildings and well as solar and wind power equipment. A growing number of green ETF products were launched to meet the demand from both institutional and individual investors. There were 32 securities/notes issued in 2019 backed by green assets such as receivables of solar and water treatment companies and green building operators.



China now has seven regional carbon markets and is preparing to launch a nationwide Emissions Trading System (ETS) covering 6 billion tons of emissions annually from around 8,000 large companies. The national ETS will start with the thermal power industry, responsible for about 3 billion tons of emissions each year. China's national ETS may become the world's largest carbon market in a few years and could be linked with other national and transnational markets. In Guangdong and Hong Kong, the Greater-Bay Area Green Finance Alliance is now contemplating a “carbon connect” scheme to enable foreign investors to access Guangdong-based carbon market with greater convenience.

Benefits of green finance in numbers

Green finance has proven to support China's economy, rather than restraining growth or job creation, which was a concern of some policymakers in the early days of the concept. This is also why a growing number of local governments in China are eager to promote green finance. Huzhou, a green finance pilot zone in Zhejiang province, reported that its outstanding green loans grew 31% per annum in the past three years, surpassing most other regions and other types of financing. In part due to its green finance innovation, Huzhou's GDP growth was among the top in Zhejiang while its energy intensity dropped rapidly.

According to CBIRC, in 2018, the environmental benefits of green loans extended by 21 major Chinese banks included cutting energy consumption equivalent to burning 247 million tons of standard coal, reducing carbon emission by 518 million tons, COD by 4.6 million tons, sulfur dioxide by 6.9 million tons, while saving one billion tons of water.



The development of green finance could also help contain financial risks. Statistics from the PBOC shows that by the end of 2018, the average rate of non-performing green loans was only 0.48%, which was 1.81 percentage points lower than average corporate loans. Some institutes, including ICBC and Tsinghua University, have developed models for environmental stress tests, enabling banks to quantify the credit risks arising from exposures to polluting and high-carbon sectors. These methodologies can help convince banks to reduce their “brown” exposure and increase lending to green sectors, limiting future financial risks while enhancing risk-adjusted returns. PBOC Deputy Governor Chen Yulu, while speaking at the recent China Finance Forum stated that the Chinese central bank “would analyze the impact of climate change on the financial industry and implications for prudential regulation”.

Secrets of the Chinese approach

China has clearly grown more aggressively than most other countries in developing a green financial system, albeit starting from a low base with limited capacity. Many friends from abroad have asked me the “secrets” that made China a global green finance leader in only a few years. I reason that China’s achievements were enabled by these five main factors:

First, China started its green finance agenda by building a political consensus.

In many countries, green finance is pro



Ecological Civilization” issued by the CPC Central Committee and the State Council, the highest decision-making bodies in China. The political backing by China’s president and premier carried enormous weight in mobilizing policies and resources and facilitating inter-departmental consensus on green finance.

en financial system was top-down and not purely market-led. The successful development of green finance requires essential ingredients including:

- green taxonomies and definition of green activities
- environmental information disclosure by corporations and financial institutions
- rules and standards for green finance products
- incentives to corporations and financial institutions.

Due to the many deficiencies of the market, such as its inability to account for environmental externalities, asymmetrical access to information, and market participants’ lack of analytical capacities, the market, and the private sector are often unable to effectively organize or produce those essential ingredients, certainly not in a short period of time. For example, if developing green taxonomy is left to the market, financial institutions may produce many competing versions without a common language. Indeed, the lack of such a common language has constrained the development of green finance in many markets. Recognizing the need for the government or regulator to address the market’s deficiencies, China took the top-down approach – its Guidelines on Establishing a Green Financial System (2016) spelled out 35 actions on how these ingredients should be developed and coordinated.

Third, coordination among key ministries, the division of labor and an implementation timetable are keys to success. China recognized at the policy-



design stage that green finance was not merely the responsibility of the central bank or a financial regulator. Rather it requires policy support and resources from many other government agencies and regulators, including fiscal support, environmental regulation, and industrial policies. That is why seven ministries, namely the PBOC, the Ministry of Finance, the National Development and Reform Commission, the Ministry of Environmental Protection (now Ministry of Ecology and Environment), the CSRC, the China Banking Regulatory Commission and the China Insurance Regulatory Commission (now collectively known as China Banking and Insurance Regulatory Commission), jointly developed the green finance guidelines in 2016. More importantly, to ensure the policy documents receive more than just cursory note or lip service, these guidelines were followed by a policy document on “Division of Labor (DOL) for Implementing the Guidelines.” This DOL laid out the specific tasks of each of the seven ministries and deadlines for delivering the several dozen specific policy actions promised in the guidelines. Due in part to this DOL, the implementation of the green finance guidelines has been one of the most effective undertaking compared to other policies.

Fourth, China defined roles of industrial bodies such as national and local Green Finance Committees. In 2015, the PBOC launched the Green Finance Committee (GFC) of China Society for Finance and Banking. The GFC, with 240 financial institutions, environment-related companies and research bodies as members, quickly became the main disseminator of green finance knowledge, the organizer of green finance product innovation, the key source of policy recommendations, and the coordinator for capacity-building and international collaboration. Each year, the GFC Annual Meeting recognizes nearly 20 innovations in green finance research, products or tools. The WeChat news portal maintained by GFC, with daily publications, is now the most important information platform for



green finance policies, product innovations, and business opportunities. At the local level, about 20 regional GFCs play similar roles promoting green finance market development.

Fifth, China encourages regional innovation in green finance. Since China's economy has vast regional differences, it is imperative to encourage local players to innovate in their approaches. In June 2017, the State Council approved pilot programs on green finance reform and innovation in five provinces and eight cities. In the last two years, many valuable experiences and innovations were identified. For example, Huzhou, one of the pilot cities, launched a Green Credit Online Service Platform providing instant e-matching of green projects with green funds from banks (including over 100 green credit products) and investors. The PBOC organizes annual meetings of these pilot cities, summarizes the best practices and promotes them throughout the country.

In conclusion, green finance aims to use financial resources to address the market's salient failure to account for environmental and climate externalities in today's economy. The development of the green financial system itself can also be hindered by the limitations of the market. For example, the taxonomies, product guidelines, and disclosure requirements for green finance are largely public goods, and the technical capacities for analyzing environmental and climate risks are also semi-public goods in nature. These features of the green financial system imply that governments and regulators must take a proactive role in leading the design of the system and mobilize resources to develop the green finance market. A bottom-up approach with the government "hands-off", until recently preferred in many countries, may ultimately work as the private sector gains more environmental awareness and willingness to assume responsibilities, but the world doesn't have the



luxury to wait another 5-10 years given today's growing climate crisis, perhaps the biggest in human history.

Looking into the future

Despite the notable progress China has made in the past few years, the green finance capacity within its financial system remains grossly insufficient to meet the huge demand for green and low-carbon investment. According to a recent study we conducted for Chongqing municipality, a provincial-level region with a population of 30 mn, its demand for green and low-carbon investment amounts to RMB300bn per year. Applying this estimate to the entire country, it implies that China will need to invest at least RMB10tn per year in green and low-carbon projects, three times the green finance demand that I estimated five years ago. China needs to, and will very likely, take more aggressive measures to further promote green finance in the following areas:

First, greening institutional investors. Many institutional investors have not yet developed strong preferences for green investments for the lack of both awareness and capacity. Regulators, research institutions, NGOs, and institutional investors should work together to raise the awareness of the benefits of ESG investing, encourage ESG disclosure on investments, develop ESG products, and educate investors.

Second, mainstreaming environmental risk analysis. The Central Banks and Supervisors Network for Greening the Financial System (NGFS) is planning to publish a handbook (with a collection of methodologies) to promote the use of Environmental Risk Analysis (ERA) by financial institutions. China should make full use of these technical resources and local research capacities to enable banks,



asset managers and insurance companies to conduct stress tests and scenario analysis. The Chinese central bank and financial regulators, as well as the green finance committee, could play a key role in mainstreaming the ERA.

Third, introducing stronger incentives for green finance. Chinese regulators could encourage large Chinese banks, which are authorized to use internal risk models, to learn from Natixis' experience in introducing differentiated risk weights for green and brown assets (lower for green and higher for brown assets) without altering the overall regulatory risk weights. Once a few banks' pilot programs prove successful and data issues are largely resolved, this practice could be applied to the rest of the Chinese banking system.

Fourth, greening investments under the Belt & Road Initiative. In 2018, China Green Finance Committee and the City of London jointly launched the Green Investment Principles (GIP) for the Belt & Road, with 36 global institutions signed up to date. The GIP's three working groups are taking specific actions to promote environmental impact assessment tools, disclosure mechanisms and innovative green finance products. Further, we suggest the China authorities to consider setting up a "green light system" for outbound investments, i.e., introducing a mandatory requirement for environmental impact assessment for overseas investments.

Fifth, promoting the harmonization of green finance standards in China and Europe. Both China and the EU have developed their green or sustainable finance taxonomies, and the world's green finance community is concerned about the transaction costs and risks of greenwashing associated with a proliferation of inconsistent and incomparable taxonomies. Many smaller markets are mulling whether to develop their own taxonomies. We believe that China and the EU should



take the lead in exploring ways to harmonize their taxonomies, initially for facilitating cross-board green capital flows. In the longer run, such joint work may also serve as the basis for developing harmonized global standards.

Sixth, supporting green finance innovation in new sectors. In the past, most green finance activities took place in sectors such as renewable energy, waste treatment, and green transportation involving typically large banks and project owners. The vast potential of greening SMEs, consumption, agriculture, and buildings haven't been tapped into. Regulators, financial institutions, research bodies and NGOs should devote more resources to innovating green products in these areas. In particular, the application of digital technologies to labeling and verifying green consumer goods, green SMEs and sustainable agricultural products may significantly reduce the costs of offering green finance services and rapidly expand the market.