



Green Banking in China – Emerging Trends

With a spotlight on the Industrial and Commercial Bank of China (ICBC)

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SECTOR

Climate Finance

REGION

China

KEYWORDS

Green banking, China, Sustainable investing, Green credit, Decarbonization and net-zero goals

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EXECUTIVE SUMMARY

This report provides an overview of the development of green banking practices in China, identifying major policies and practices, performance to date, as well as barriers to further expansion. It also explores green banking practices within one of China's largest banks—the Industrial and Commercial Bank of China (ICBC)—providing practical development and management examples of green banking practices. Through this work, policymakers can better understand green banking's successes to date, and what barriers need to be addressed to further scale green banking in China.

Green financial reform is especially important considering the scale of Chinese banks. China's four largest state-owned commercial banks, the "Big Four," are also the largest banks in the world, with combined total assets of RMB 103.6 trillion (USD 14.8 trillion).¹ Considering China is the largest source of CO₂ emissions globally, accounting for nearly one third of the global total, and that up to RMB 95.45 trillion (USD 14 trillion) will be needed over the next decade to support China's green transition, accelerating green practices within China's banking ecosystem is essential to meeting decarbonization targets.²

The impact of China's banking system goes beyond China's borders. Together the Big Four contributed USD 240 billion to the fossil fuel industry from 2016 to 2019.³ 44% of this contribution, or USD 106 billion, went towards coal mining and coal power, making the Big Four the top four financiers of coal globally.⁴ China is also expected to finance in excess of USD 1 trillion for foreign infrastructure over the next ten years through its Belt and Road Initiative.

This report also provides a first look at the performance of green credit portfolios of China's major banks. Our analysis indicates that green portfolios, to date, perform better than a benchmark of traditional portfolios in terms of non-performing loans. Although just one indicator, it suggests that expanding green banking in China could improve risk management. Taken together, the findings of this report show that a solid foundation for green banking is now established. Although the impact of green banking has been relatively small to date, there is significant potential to scale, which would have major impacts on the availability of financing for sustainable infrastructure around the world.

DEVELOPMENT OF GREEN FINANCING IN CHINA

Green finance has developed rapidly in China in recent years. Just like other elements of Chinese policymaking, the development has been top-down, with high-level directives guiding market development. Once there was high-level political buy-in, the market response was fast.

After the launch of the [Guidelines for Establishing the Green Financial System](#) in 2016, green credit policies proliferated across several ministries and regulators, including direct financial incentives provided to banks that expanded their green credit portfolios.

1 S&P Global (2020)

2 CCICED (2014)

3 RAN, et al. (2020)

4 Ibid.

For example, the People's Bank of China (PBoC) created green incentives in two ways under its re-lending policy. Green loans are now accepted as part of the standing lending facility (SLF), and green bonds at AA rating are accepted as collateral in its medium-term lending facility (MLF), both of which deliver favorable capitalization and interest rate benefits. In addition, the evaluation of banks' green performance is now included in PBoC's macroprudential assessment (MPA) framework, giving banks additional incentive to expand and report on their green portfolios.

These changes also expanded the range of green instruments used by Chinese banks, showing increasing diversity across specialized tools, collateral methods, asset-backed securities, and international green credit lines, as shown in Figure 1 below. The most important instruments are green loans and green bonds, but the market is broader and includes mechanisms of international green finance cooperation.

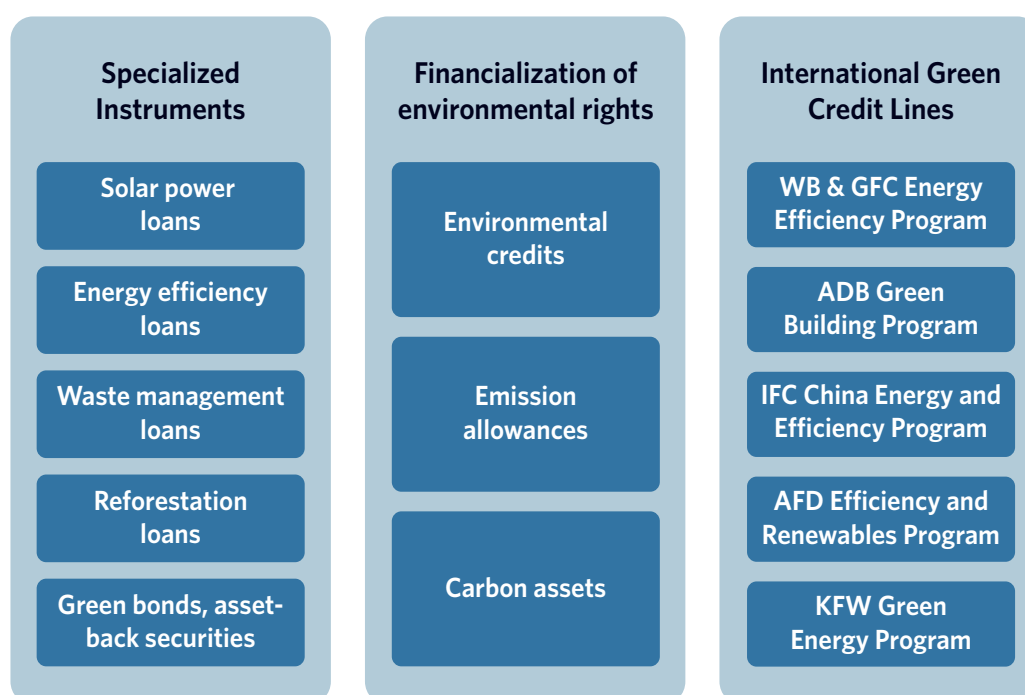


Figure ES1: Overview of the different types and examples of green credit tools

KEY STATISTICS

The total balance of green loans is growing as a share of the overall credit balance, expanding from 8.8% in 2013 to 10.4% at the end of 2019, to reach a cumulative total of over RMB 10.6 trillion (USD 1.5 trillion). The vast majority went to clean transport and clean energy, which made up 45% and 24% of green finance in 2019 respectively.

Green loans in China have performed better than conventional loans. As shown in Figure 2 below, **at the end of 2018, the non-performing Loan (NPL) ratio for green loans stood at 0.42%, while the overall credit NPL ratio stood at 1.83%**. This is significant, as it indicates that green loans are less risky and such evidence can be used to justify including green factors for financial system governance by regulators. However, it should be noted that factors other than “greenness” may be influencing the trend as well, such as the fact that many green loans are for infrastructure projects, which are already considered a relatively stable asset class.

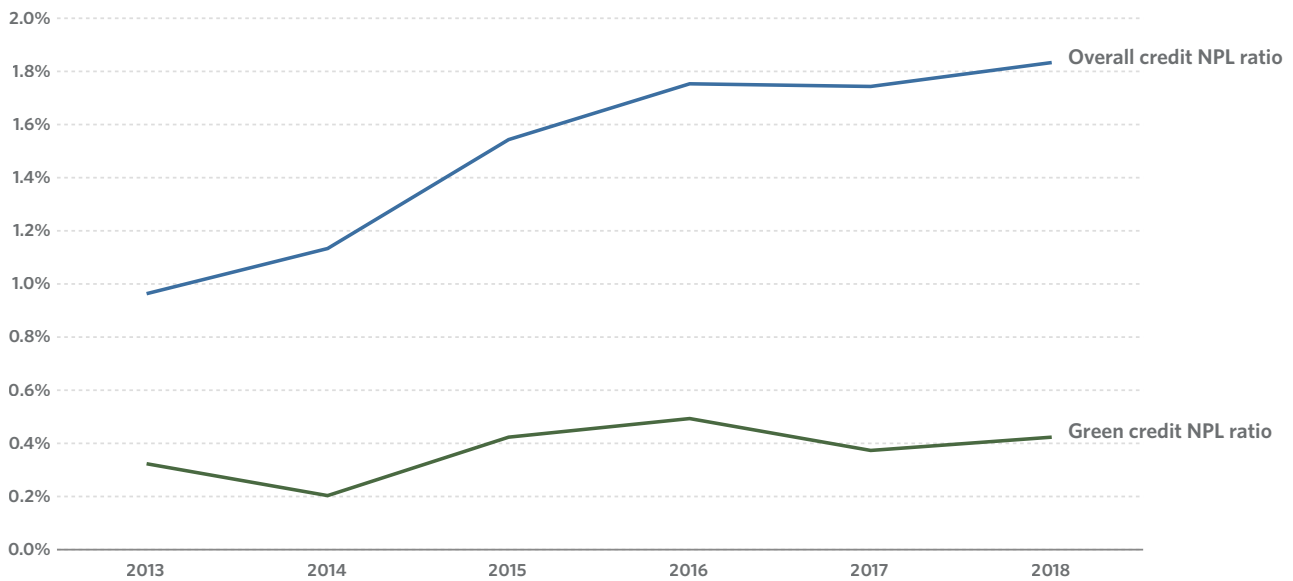


Figure ES2: Non-performing loan proportions of green and non-green loans⁵

IMPACTS ON THE FINANCIAL SYSTEM

The development of green bonds and green credit is starting to change the lending behavior and capitalization of Chinese banks. Due to regulatory pressure to increase financing for green activities, and the increasing understanding of the financial risks of high-carbon portfolios, banks are integrating green criteria into their lending decisions and credit risk analyses. Moreover, the decreasing size of customer deposits in China has driven banks to increasingly rely on **capital markets, raising capital through bond issuance in international and Chinese interbank markets and by listing on stock markets.**

The removal of the 75% loan-to-deposit ratio (LDR) requirement by the PBoC in 2015 paved the way for banks to issue more bonds, leading to a clear increase in LDRs across the banking sector.⁶ The average LDR of major banks reached 82% in 2018.⁷ This, however, adds pressure on banks as funding costs for deposits are approximately 1%, compared to bond issuance at 2.5% in the domestic interbank, and 3% in international capital markets.

The top green lenders by proportion are state-owned commercial banks such as Bank of China, China Construction Bank, and Agricultural Bank of China. Two banks out of the 21 main banks in China are developing into banks specialized in green finance, namely Industrial Bank and Shanghai Pudong Development Bank. Both were amongst China's first green bond issuers and have some of the highest green loan proportions.

There is also significant potential for China's three policy banks—China Development Bank (CDB), China Export Import Bank (EXIM Bank), and the China Agricultural Development Bank (CADB)—to take a greater role in green finance. Given their size, for example CDB's USD 2.4 trillion in assets compared to the World Bank's USD 600 billion, they are large enough to substantially impact green credit markets. However, currently these three banks rank among the lowest in green credit scores.

5 CBIRC & PBoC (2019)

6 Helgi Analytics (2019)

7 Ibid.

TRENDS AND BARRIERS

All indications suggest the positive trends of green finance in China will continue. Fundamentally, the overarching policy direction of green finance is favorable and supported by both China's State Council and the Communist Party.

Despite recent pressures on the Chinese financial system, such as a lower GDP growth rate, a trade dispute with the US, and pressure to deleverage, green finance has continued to expand.

However, there are important barriers and limitations to further growth. These include:

Governance

- **Insufficient risk modeling and management.** As the Chinese banking system does not yet have a clear responsibility mechanism for environmental accidents and liabilities, banks are not yet including such concerns. Furthermore, most banks are not comprehensively conducting environmental stress testing.

Policy

- **Weakness of current direct financial incentives.** Despite the innovative nature of current approaches, financial incentives we reviewed are not strong enough to send a clear signal to banks.
- **Deleveraging pressure.** Chinese companies are currently under regulatory pressure to deleverage, making it difficult for banks to simultaneously increase the use of credit tools that could drive green transitions.
- **Too few high-emissions penalizing factors.** As reducing the profitability of high emission, or "dirty," projects directly increases the profitability of green projects in comparison, high-emissions penalizing factors are currently too limited to incentivize green credit.

Economic Environment

- **Perception of trade-offs between investing in green and making a profit.** With green projects often having high investment costs, long cycles, and low interest rates, banks perceive that they can make greater profits in the short term from traditional sectors of the economy, even though analysis demonstrates that those traditional sectors harbor increasing risk and lower overall returns.

Addressing these issues in the short term would foster the next phase of greening China's financial system.

SPOTLIGHT ON THE INDUSTRIAL AND COMMERCIAL BANK OF CHINA (ICBC)

ICBC is a major contributor of green financing in China. Its portfolio of green loans was worth an estimated USD 199 billion in 2019, reaching 8% of its total portfolio. ICBC is also a leading issuer and underwriter of green bonds, raising USD 9.8 billion across five offshore issuances since 2017. The majority of ICBC's green bond proceeds were earmarked for Belt and Road projects, successfully attracting a diverse base of foreign investors. The bank is also actively involved in domestic and international green finance initiatives, working in close partnership

with China's Green Finance Committee and UNEP to advance the green finance agenda globally.

The environmental impact achieved by ICBC's green credit portfolio is measured through a range of indicators as recommended by China's banking regulatory commission.⁸ The self-reported emissions reductions achieved by its portfolio was nearly 90 million tons of CO₂ as of 2018.⁹

The impact of green financing activities on ICBCs balance sheet has been small considering its relative size, but steadily growing. Given ICBC's early participation in green lending practices, its green credit balance has reached 15.8% of its corporate loan balance, or 8.5% of its total loan balance. This accounts for 13% of the total green credit balance in China, RMB 10.6 trillion, as of end 2019. As for green bond issuances, which remain only on ICBC's offshore issuances, these account for 6.5% of total debt.

CONCLUSIONS

Chinese banks hold tremendous potential to contribute to domestic and global decarbonization. China's Big Four state-owned banks are also the world's four largest banks, representing combined assets of USD 14.8 trillion, greater than the combined assets of the 11 largest banks in the US. Simultaneously, the Big Four are some of the largest contributors of both green and fossil fuel finance in the world. A green transition for Chinese banks would be enormously consequential.

Policymakers in China are at the forefront of innovation on green banking policies. After the launch of the *Guidelines for Establishing the Green Financial System* in 2016, innovation expanded rapidly, but there is potential for more. The positive performance indicators summarized in this report suggest that accelerating green banking could serve the dual purpose of addressing climate targets and mitigating some of the expected near-term economic pressures on the Chinese economy.

The ICBC case study shows how some financial institutions in China have embraced green finance, both in response to regulatory pressures and to seek new financial opportunities. The overall size of the green finance business of banks is still small but expected to continue growing.

Supported by continued policy reform, banks that embrace the growing trend of green finance in China will be rewarded with a new customer base, new sources of capital, potential benefits in terms of reducing risks from non-performing loans, and the monetary incentives provided by the PBoC. We expect these factors to continue driving growth in the sector.

The turning point, however, will be when Chinese banks' financing for green displaces financing for high-emissions activities, as China continues to pursue its goal for constructing an ecological civilization and leads global banking practices towards net-zero emissions goals.

8 PBoC (2018)
9 ICBC (2019)

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1. INTRODUCTION

This report focuses on understanding the current role of China's state banks in financing green projects and how a shift to capital markets, partly as a result of the growth in green bonds, will drive impacts and support a market transformation.

China's green financial system is especially important considering the scale of Chinese banks and their contribution to fossil fuel financing globally. The "Big Four" state-owned commercial banks in China—Industrial & Commercial Bank of China, the China Construction Bank, the Agricultural Bank of China, and the Bank of China—are the largest banks in the world, with combined total assets of USD 14.8 trillion.¹⁰ Together the Big Four contributed USD 240 billion to the fossil fuel sector from 2016 to 2019.¹¹ 44% of this contribution, or USD 106 billion, went towards coal mining and coal power, making them the world's largest financiers of coal.¹² The green transition of these major banks could significantly reduce the availability of fossil fuel financing in the world.

The report starts with an overview of the policy framework for green finance in China. Then it explores key instruments to explain how the banking sector is adapting to green finance requirements. It concludes with a case study of the Industrial and Commercial Bank of China (ICBC), a state-owned commercial bank and one of the largest providers of green finance in China.

10 S&P Global (2020)

11 RAN et al (2020)

12 Ibid.

2. THE DEVELOPMENT OF GREEN BANKING IN CHINA

The inclusion of environmental concerns in Chinese banking regulations started in 1995 and developed gradually but expanded quickly after 2015. With a top-down model of financial system governance, the market was quick to respond to the launch of green finance policies. To a large extent, such policies have been more influential than bottom-up demand from banks and their clients. This can be contrasted to a western model of financial system governance where central banks and regulators maintain a high degree of independence, working only towards mandates such as inflation, systemic risk, and employment.¹³ In such cases, green credit development consequently relies more on bottom-up market developments.

Since 1995, when the first green-related policy was launched, the process of greening Chinese banking has gone through several stages of development as highlighted in Table 1 below. The initiation took place with a People's Bank of China (PBoC) policy placing environmental concerns inside the realm of banking operations, by including environmental risks in banks' credit decisions.

While this was the only direct regulation on environmental issues for banks at the time, related policies on general environmental protection and development of green industries, such as the *Circular on Environmental Protection Verification of Enterprises Applying for Listing and Listed Enterprises Applying for Refinancing* (June 2003) and *Implementing the Scientific Outlook on Development and Enhancing Environmental Protection* (December 2005), continued to incentivize banks to increase green lending. Direct regulation was taken a step further in 2007, when the China Banking Regulatory Commission (CBRC) issued guidelines on how banks should operationalize and manage energy efficiency and emission reductions in credit decisions. The next major steps were in 2012, when the CBRC issued the Green Credit Guidelines and in 2013, with the launch of the CBRC green credit system, requiring the 21 'main banks' in China to report their green credit statistics.

Most recently, after the launch of the Guidelines for Establishing the Green Financial System in 2016, green credit policies have proliferated across several ministries and regulators, including by providing direct financial incentives through monetary policy, in terms of standing- and medium-term lending facilities, as well as through macroprudential assessments (MPAs).

13 Dikau, Simon and Ulrich Volz (2020)

Table 1. Selected policy milestones on green banking

Date of issuance	Issuing organization	Name of policy document	Main contents
1995	PBoC	Notice on Issues Relating to Improving Environmental Protection in Credit Policy	Guiding banks on how to better include environmental variables in credit decisions
2007	EPA, PBoC, CBRC	Opinions on Implementing Environmental Protection Policies and Rules and Preventing Credit Risks	Guidelines on environmental risks' impact on credit rating of clients. First mention of "green credit" term
2007	CBRC	Opinions on Energy Efficiency and Emission Reductions in Credit Extension	Specific guidance on how banks can contribute to national environment goals
2012	CBRC	Notice on Issuing Green Credit Guidelines	First comprehensive policy promoting greening of banks
2013	CBRC	Notice of Submission of Green Credit Statistics	Establishment of CBRC statistics system for 21 main banks
2014	CBRC	Notice of the Key Performance Indicators of Green Credit Implementation	Establishment of quantitative and qualitative indicators for assessing performance
2016	CBRC, PBoC, MEP, CSRC, CIRC, NDRC, MOF	Guidelines for Establishing the Green Financial System	Comprehensive policy on green financial system as a whole
2017	PBoC	Notice Regarding Promoting Credit Asset and Collateral in Central Bank Evaluation	Financial incentives for green banking in PBoC standing- and medium-term lending facility
2018	PBoC	Chinese Monetary Policy Implementation Report Q4 2017	Inclusion of banks' green performance into MPA
2019	CBIRC	Guidelines on High Quality Development of the Banking and Insurance Industries	Instructions on how to include environmental, social, and governance factors in credit

The CBIRC green credit statistics system

A key feature of the Chinese green credit policy is the CBIRC green credit statistics system. Under this system, China's 21 main banks report their green lending to the CBIRC (China Banking and Insurance Regulatory Commission). The reporting is based on CBIRC's definition which qualifies loans as green across 13 categories. It allows the CBIRC to continuously track green credit performance of banks individually as well as green credit provision to the economy as a whole. By including non-performing loan ratios, it further provides statistics to be used as justification for other regulators to include green factors in risk-oriented policies, such as in the PBoC MPA. In this regard, it should be noted that green credit statistics are not loans labelled as green by the bank or the debtor, but rather loans that qualify as green by CBIRC's standard. This statistics system is a unique and innovative feature of the Chinese green credit policy, which is so far not seen elsewhere in the world.

MONETARY POLICY INSTRUMENTS

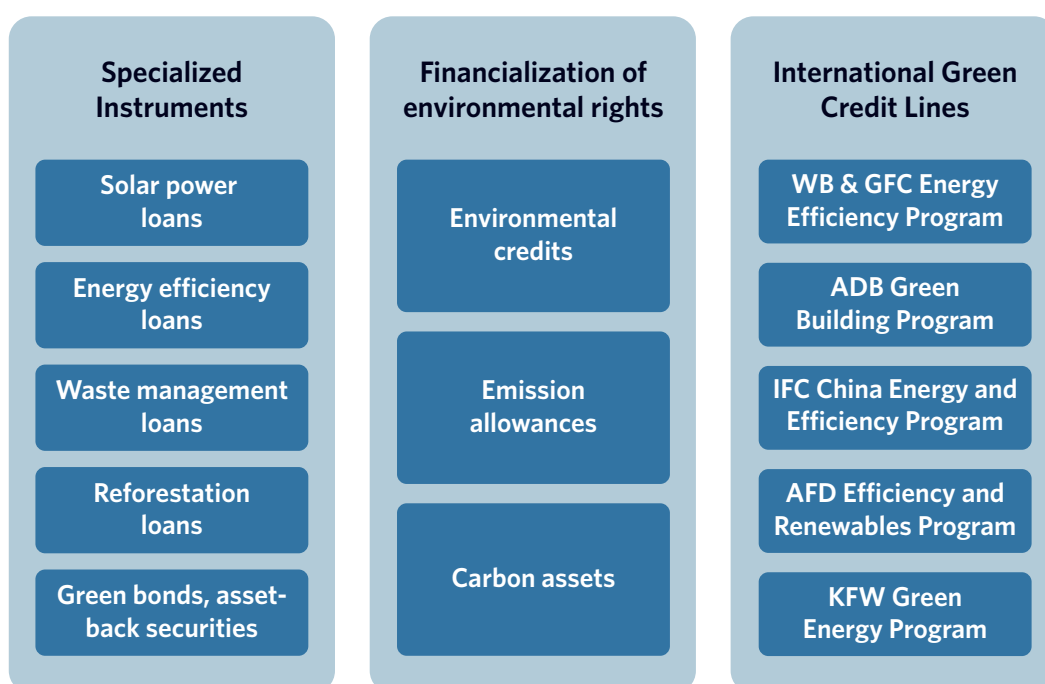
The PBoC provides financial incentives through monetary policy instruments for banks to provide green finance. This is done in two ways under PBoC re-lending policy: (1) accepting green credit within the scope of prioritized sectors as collateral in the short-term focused standing lending facility (SLF); and (2) by accepting green bonds with AA rating and above as collateral in its medium-term lending facility (MLF).

Furthermore, since 2018, banks' green performance is included as a factor in the PBoC MPA, by which the interest rate given to a bank on its required reserves by PBoC may be increased if the bank is assessed to be greener. Green performance is included in both quantitative and qualitative ways under 'credit policy implementation,' which is one of seven areas of the MPA framework. It includes 80% quantitative variables, such as green loan proportion, as well as 20% qualitative indicators, such as whether the bank has issued any green bonds. A third regulatory method currently under discussion for incentivizing green loans through monetary policy is changing the risk weighting of green assets. This measure would provide lower capital reserve requirements for banks with more green loans outstanding and green bonds issued and would be based on CBIRC's statistics on non-performing loan ratios on green and non-green loans.

BANK INSTRUMENTS

A broad range of green instruments are currently used by Chinese banks, having increased rapidly in recent years. While there are no comprehensive statistics showing the proportion of each, it is interesting to note their increasing diversity, spanning across specialized tools, collateral methods, asset-backed securities, and international green credit lines, as shown in Figure 1 below. This highlights how green banking goes beyond green loans, and further supports green bond markets and international green finance cooperation.

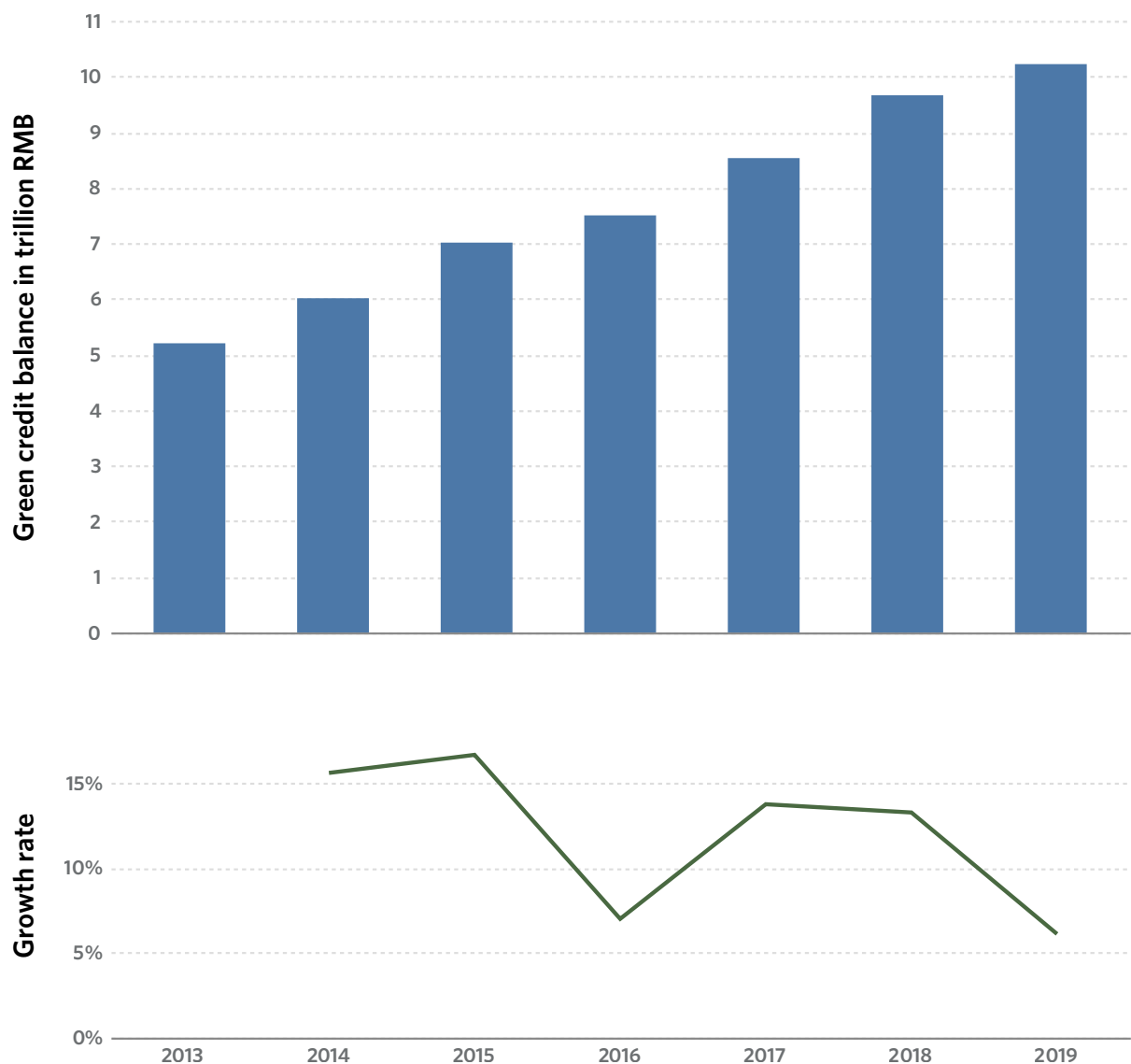
Figure 1: Overview of the different types and examples of green credit tools



3. KEY STATISTICS

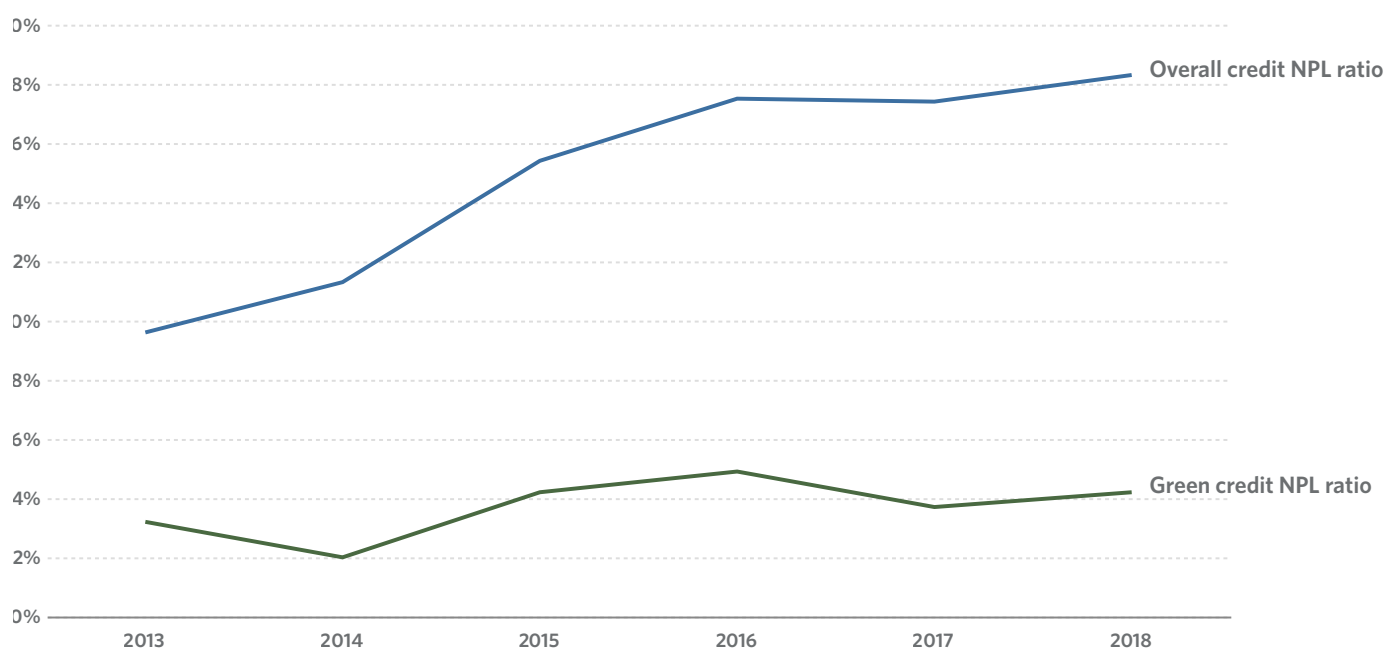
Green credit is growing as a share of overall credit, expanding from 8.8% in 2013 to 10.4% at the end of 2019 and reaching over RMB 10 trillion. Green credit in this context refers to all unlabeled bank credit dedicated to green activities and does not refer to loans specifically labelled as green.

Figure 2: Green credit balance and growth¹⁴



Green credit also has better financial performance. At the end of 2018, the non-performing Loan (NPL) ratio for green loans stood at 0.42%, while the overall credit NPL ratio stood at 1.83%, **suggesting that green loans are less risky than other loans**. Other factors than “greenness” can influence this trend, such as the fact that many green loans are for infrastructure projects, which are already considered a relatively stable asset class. However, as more detailed statistics are not made public, it is not possible to control how other variables could impact NPL ratios, such as debtors being state-owned companies, projects receiving public guarantees, or loans to sectors with heavy subsidies. Nonetheless, with green loans making up 10% of the market over a six-year period, the overarching evidence is strong. **Such evidence can be used to justify including green factors for financial system governance by financial system regulators whose mandates are to manage risks and maintain financial stability.**

Figure 3: Non-performing loan proportions of green and non-green loans ¹⁵

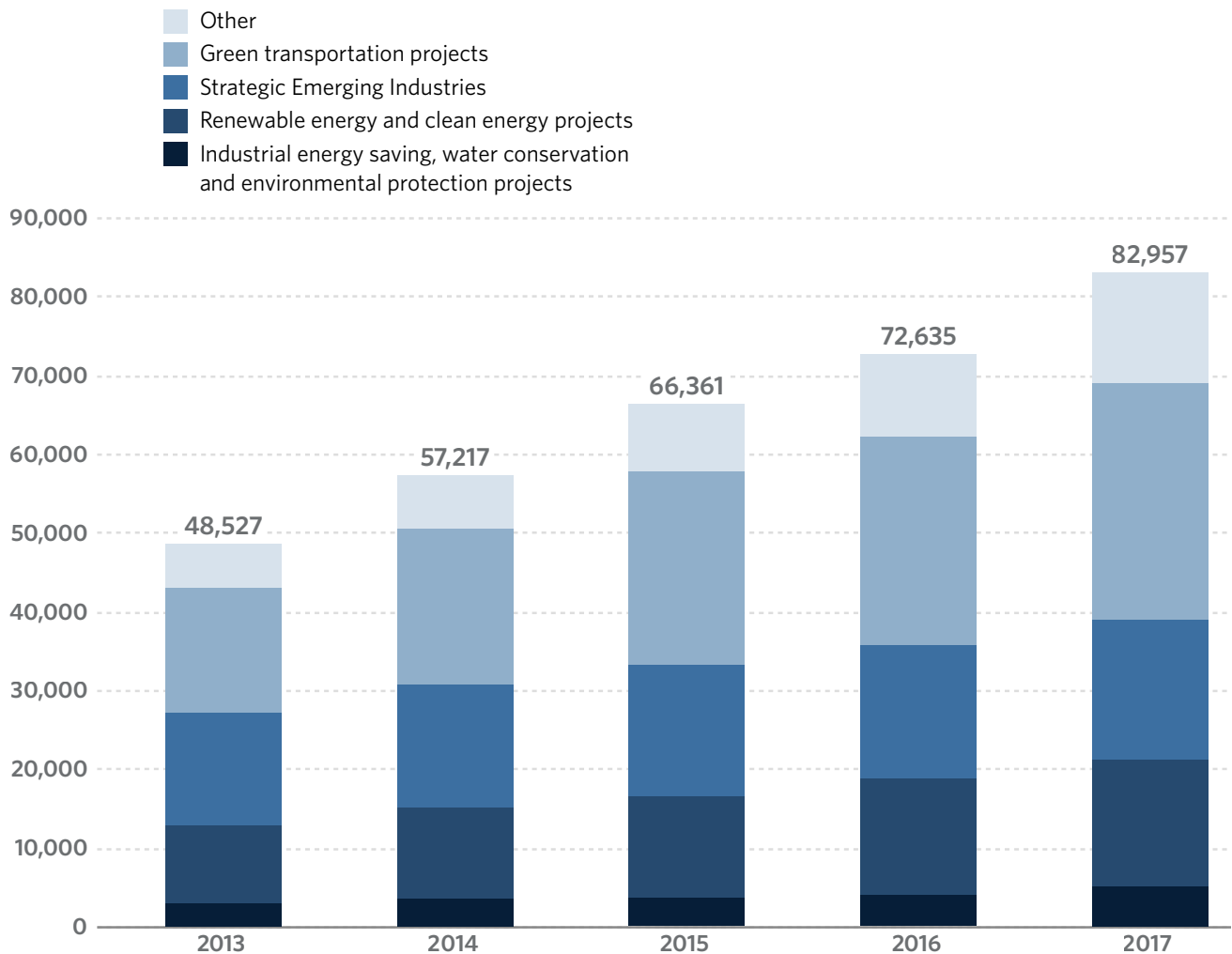


15 CBIRC & PBoC (2019)

3.1 ALLOCATION BY SECTORS

Figure 4 provides an overview of green credit provision by green sectors of the Chinese economy. Renewable energy and green transport together make up the majority of green credit sectors.

Figure 4: Green credit allocation by 13 CBIRC sectors (100 million RMB(亿元)), 2013-2017



The CBIRC collects green credit data on an annual basis, but not all data is made public at this frequency. The latest green credit breakdown by the 13 CBIRC categories is from mid-2017, while a simpler breakdown by green transport, renewable energy, and other sectors was released at the end of 2019. The green credit taxonomy is largely compatible with the green bond endorsed project catalogue released by the PBoC in 2015, and also includes other activities like drinking water safety, overseas projects, and “strategic emerging industries.” The “strategic emerging categories” include manufacturing of energy conservation, environmental protection, and new energy products. Data in future years will align with the NDRC’s Green Industry Catalogue, which was launched in February 2019 to serve as basis for all green policies inside and outside the financial system.¹⁶

3.2 IMPACT OF GREEN FINANCE ON BANK CAPITALIZATION

Banks' green financing activities have gone through several developments recently. The Chinese green bond market has developed rapidly since 2016 to become the world's second largest. Chinese banks have played a key role as both issuers and investors, and by developing a market for green asset-backed securities (ABS).

Furthermore, reserve requirements have been significantly reduced, freeing more capital in banks to incentivize lending. This is for all banking, but it also impacts green finance activities. As of mid-2020, Chinese reserve requirements ratio (RRR) stand at 12.5% for large banks, and 6% for small banks, which is higher than the US rate of 10% for larger banks and the recommendation of over 8% in Basel III.

The higher reserve requirement is used as a lever, when needed, to inject capital into the real economy via the banking system and boost growth. This is the case with the RRR reductions in 2020 as part of China's economic stimulus package.

Lastly, while banks used to rely on deposits to finance their lending activities, the growth of deposits is slowing. Banks have **consequently increased their activities in capital markets, growing their proportion of financing through bond issuance in international and Chinese interbank markets and by listing on stock markets.** When PBoC removed the maximum 75% loan-to-deposit ratio (LDR) requirement in 2015, this further paved the way for banks to issue bonds, leading to a clear increase in LDRs across the banking sector.¹⁷ This, however, adds pressure on banks, as funding costs from deposit are approximately 1%, compared to the cost of issuing bonds at 2.5% in the domestic interbank market and 3% in international capital markets. In the context of costs and ways of raising capital, it is important to note that the Big Four are all listed on exchanges, with the state holding majority ownership. In practice, they are listed on the Shanghai Stock Exchange as A-shares and simultaneously on the Hong Kong Stock Exchange as H-shares (a designated label for mainland companies listed in Hong Kong). The Chinese state then holds majority ownership of the shares primarily through Central Huijin Investment which, in turn, is a subsidiary of the Chinese Investment Corporation (China's sovereign wealth fund).

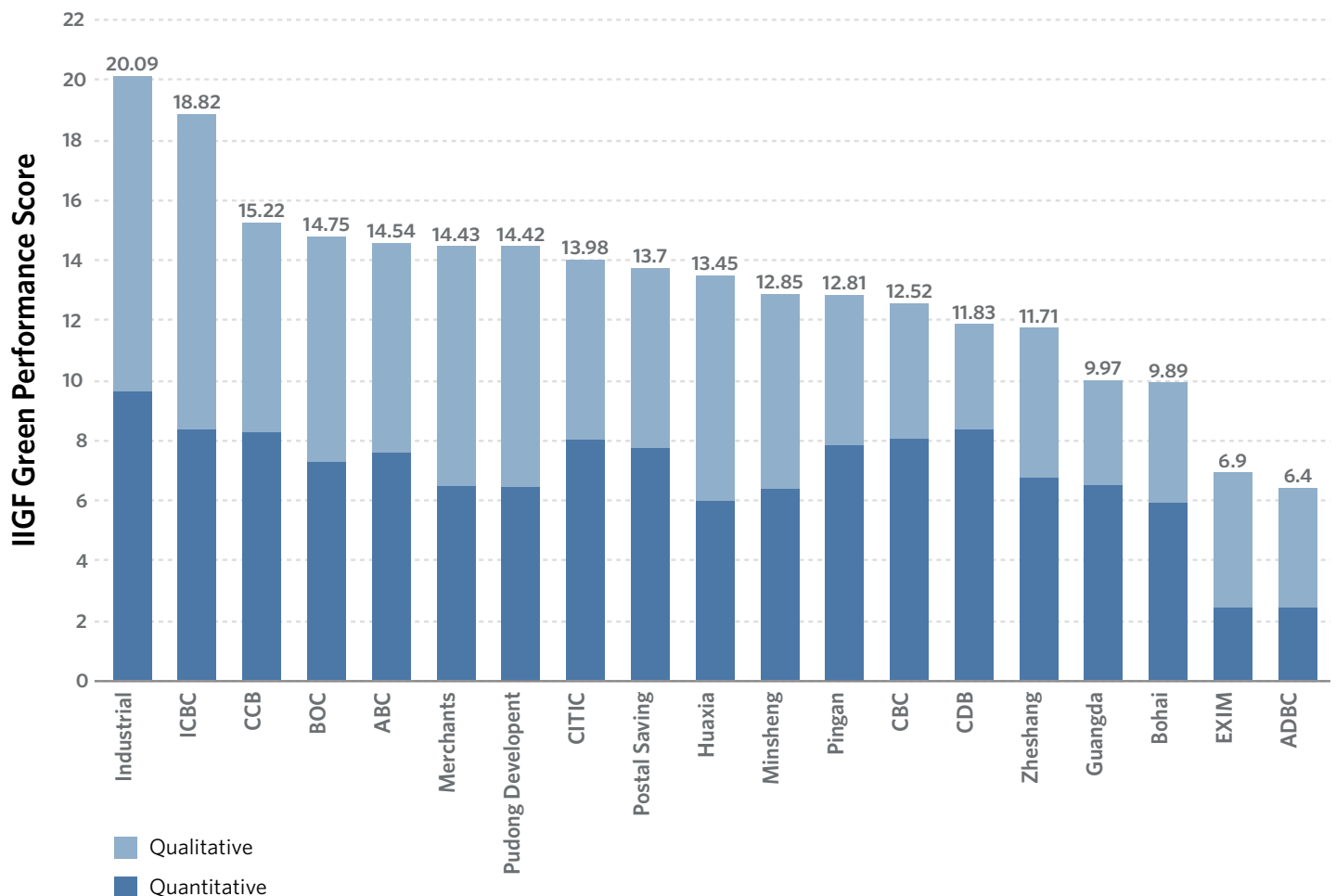
This means that, while state-owned, the banks operate on the same market terms as other banks domestically and internationally. While being state-owned implies closer alignment with government policy goals than to pure commercial goals, it also implies a higher credit rating and lower cost of capital due to implicit state guarantees behind the banks.

The combination of increasing reliance on capital markets and high credit standing backed by implicit state guarantees has led Chinese banks to become some of the most active players in the Chinese green bond market. It furthermore forms the prerequisite for scaling up green asset-backed securities, as banks have enough green credit outstanding and are looking to remove this from their books and onto the capital markets.

3.3 STANDARDIZING GREEN PERFORMANCE

Figure 5 shows an assessment of the overall performance of the 21 main banks based on the CBIRC green credit statistics, as well as on material published by and about the banks concerned. The quantitative assessment is based on metrics used by CBIRC, while the qualitative assessment is based on those used by PBoC. The scoring itself is done by IIGF's data collection and methodology (see appendix 1 and 2 for breakdown of evaluation). The quantitative component is focused on green credit, while the qualitative component is focused on organizational and strategic commitments. The PBoC evaluation of banks for MPA purposes mentioned above uses largely the same framework and assessment, though the complete methodology is not publicly disclosed. The latest comprehensive and comparable data includes the year 2017, while the overall situation remains largely similar today. The 21 main banks comprise different categories of banks, including primarily policy banks, the Big Four, specialized green banks, as well as non-national level banks. Each type of bank plays a different role in developing green credit according to its unique characteristics.

Figure 5: Overall green performance of the 21 main banks



The scoring is based on a maximum total score of 22, made up of 10 for the quantitative and 12 for the qualitative components. The top green lenders by proportion are state-owned commercial banks such as Bank of China, China Construction Bank, and Agricultural Bank of China. Two banks are developing into specialized green finance banks, namely Industrial Bank and Shanghai Pudong Development Bank. Both were amongst China's first green bond issuers and have some of the highest green loan proportions. Industrial Bank remains the only one of

China's major banks signed up to the Equator Principles. Both banks are active participants in research projects at the national and local level. While Shanghai Pudong Development Bank does not score much better than the average amongst the 21 main banks, their public rhetoric and strategic documents suggest an ongoing green transition of the bank as a whole.

State-owned commercial banks play a key role in demonstrating the business case for green lending. ICBC, the largest bank in the world, has the second highest green credit score in China at 18.82. The following chapter will provide additional details on ICBC through a case study that assesses its green finance operations.

Non-national level banks are generally owned by local governments and play a role tailored to local development needs. It is consequently the regions and cities with the highest green ambitions whose local banks have the highest green loan proportion, although such banks are not part of the 21 main banks due to their smaller size. Examples of non-national banks with particular green ambitions include Bank of Nanjing, Maanshan Rural Commercial Bank, and Jiujiang Bank, whom all aim to support local governments' ambitions to green the local economy in different ways such as renewables, electric vehicle manufacturing, or eco-tourism.

There is significant potential for China's policy banks to take a greater role in green finance. Three policy banks—China Development Bank (CDB), China Export Import Bank (EXIM Bank), and the China Agricultural Development Bank (CADB)—were established in the 1990s to take development-oriented loans off the balance sheet of commercial banks. This development mandate makes them particularly suitable to take on the higher risk of developing certain green technologies. Given their size, for example the CDB's USD 2.4 trillion in assets compared to the World Bank's USD 600 billion, they are large enough to substantially impact green credit markets. However, today all three banks are amongst those with the lowest green credit scores.

3.4 TRENDS AND BARRIERS

It is expected that investment needs for green industries will continue to expand. As 80-85% of financing in China originate from banks, **it is expected that the green credit trend identified in Figure 3 will continue to grow not only with the financial system as a whole, but also increase in proportion to non-green credit.** An expanding amount of green credit lines and technical assistance provided from international development finance institutions is expected to further increase green credit proportions of overall credit (Figure 3). Despite pressures on the Chinese financial system—COVID-19, lower GDP growth rate, a trade dispute with the US, pressure to deleverage—green finance has continued to expand.

However, there are important barriers and limitations to further growth. These include:

Governance

- **Insufficient risk modeling and management.** As the Chinese banking system does not yet have a clear responsibility mechanism for environmental accidents and liabilities, banks are not yet including such concerns. Furthermore, most banks are not comprehensively conducting environmental stress testing.

Policy

- **Weakness of current direct financial incentives.** Despite the innovativeness of the SLF, MLF and MPA measures in monetary policy, the direct financial incentives are not strong enough to send a clear signal to banks. For example, green aspects of MPA assessment only make up 1.4% of the overall score.
- **Deleveraging pressure across the economy.** As Chinese companies are under regulatory pressure to deleverage, it is difficult to simultaneously increase investments that could drive green transitions of such companies. As refinancing loans become less possible for companies, it becomes harder for banks to find clients for green loans compared to what would otherwise have been the case.
- **Too few high-emissions penalizing factors.** As reducing the profitability of high emission, or “dirty,” projects directly increases the profitability of green projects in comparison, high-emissions penalizing factors are currently too limited to incentivize green credit. The most direct high-emissions penalizing factors in China are the pilot carbon markets, which trade at levels too low to have a strong discouraging impact. While the 2019 average price of carbon was RMB 83.27 /ton in Beijing, and RMB 6.91/tonCO₂e in Chongqing, the majority of carbon trade took place in the Guangdong market where the price was RMB 18.96/ton CO₂e.¹⁸ This is significantly lower than prices in the EU market, which averaged approximately RMB 203/tonCO₂e in 2019.¹⁹

Economic Environment

- **Perception of trade-offs between investing in green and making a profit.** With green projects often having high investment costs, long cycles, and low interest rates, banks perceive that they can make greater profits in the short term from traditional sectors of the economy, even though analysis demonstrates that those traditional sectors harbor increasing risk and lower overall returns.

18 IIGF (2020)

19 World Bank (2020)

4 CASE STUDY - GREEN FINANCE AT ICBC

The Industrial and Commercial Bank of China (ICBC) is one of China's Big Four commercial banks and the largest bank in the world, with an estimated USD 4.3 trillion assets in its balance sheet. A case study on ICBC was undertaken to better understand how its green financing activities have evolved over time and how the bank's increasing engagement with green capital markets has impacted its portfolio.

As a dominant player in China's financial system and with a close relationship to the state, ICBC plays an important role in accelerating the adoption of green practices across the entire banking sector. For one, ICBC is a top contributor of green finance in China. Its portfolio of green loans was an estimated USD 199 billion in 2019, one of the highest green-to-total loan ratios in China at 8% and second in size only to China Development Bank.

In addition to embracing an institution-wide green governance system, the bank is actively involved in domestic and international green finance initiatives, including as a member of UNEP's Green Finance Working Group and the Principles of Responsible Banking. The active involvement of ICBC in green initiatives and related research outputs sets an example for more Chinese financial institutions to follow.

The green leadership of ICBC is particularly notable due to its large role financing the fossil fuel industry, totaling around USD 239 billion during the period from 2016-2019.²⁰ For coal specifically, China's Big Four were the world's largest contributors over the same time period with USD 70 billion, of which ICBC accounted for 30%.²¹ ICBC's increasing adoption of green policies and lending practices could signal a shift away from fossil fuels with important implications for the climate.

Figure 6: Key ICBC statistics

Institutional reach	Operating in 48 countries and regions with 428 branches
Net profit (2019)	RMB 313 billion (USD 45 billion), 5% increase YoY
Total assets (2019)	RMB 30 trillion (USD 4.3 trillion), 9% increase YoY
Total loans (2019)	RMB 16.8 trillion (USD 2.5 trillion), 9% increase YoY NPL Ratio: 1.43% (2019)
Green credit balance (2019)	RMB 1.35 trillion (USD 199 billion), 9% increase YoY As of end 2018, clean energy-related loans were 60% of total loans to the power industry, 6 percentage points increase from 2014 77% of new electricity loans issued from 2016-2018 were for clean energy
Green bond issuance	USD 9.8 billion issued in offshore green bonds
Key rankings	1 st place in the 2019 Top 1000 World Banks in terms of tier-1 capital 26 th in the 2019 Fortune Global 500; 1 st place in the sub-list for commercial banks

20 RAN et al (2020)

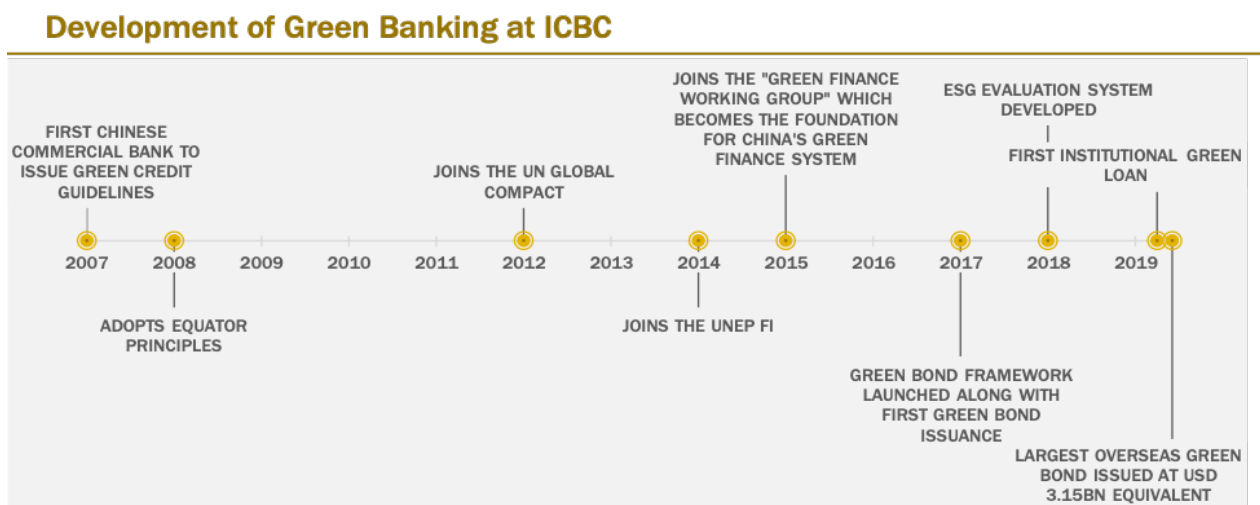
21 Ibid.

4.1 HISTORY OF GREEN BANKING AT ICBC

In 2007, ICBC was the first Chinese commercial bank to implement the Green Credit Policy of the PBoC, opening the door for the expansion of green lending. The following year it adopted the Equator Principles and the IFC Performance Standards.²² In 2012, it became the first Chinese bank to join the UN Global Compact and in 2014 the UN Environment Programme Financial Initiative (UNEP FI). In 2015, it worked with other banks as part of the Green Finance Working Group in China, putting forth 14 proposals that became the foundation for China's green finance system. During this time, its green financing activities steadily expanded and by early 2016 it was a major lender for green projects, reaching over RMB 700 billion in outstanding loans.²³

Green bonds came into play in 2017 with the launch of ICBC's Green Bond Framework and the issuance of its first green bond. In 2018, ICBC launched the "CSI 180 ESG Index," jointly developed with the China Securities Index (CSI) Research Institute, the first evaluation system of its kind among Chinese commercial banks. More recently, it has worked to expand its green portfolio with a USD 370 million institutional green loan and has continued to increase its issuance and innovation around green bonds with the first "Green Belt and Road Bond" denominated in RMB, USD and EUR with a total equivalent amount of USD 2.2 billion. The bond will support green financing activities in China's domestic provinces and foreign countries that are part of the Belt and Road Initiative (BRI).

Figure 7: Development of green banking at ICBC



22 Note: ICBC makes reference to the Equator Principles, but is not a member
 23 Clean Technica (2016)

4.2 GREEN FINANCE GOVERNANCE STRUCTURE

ICBC's activities in green finance are supported by a governance structure that embeds green finance across the Bank's strategic and operational levels. Multiple committees, including the Board of Directors and senior management, are involved in the formulation and implementation of green finance strategies. The evaluation of green activities is incorporated into the performance assessment of senior managers and ICBC branches.

Overall green finance development is overseen by the Board of Directors' Strategy Committee, Audit Committee, and Compensation Committee. These committees are respectively responsible for approving and supervising ICBC's green finance development strategy, auditing environmental and social risks, and evaluating senior management's implementation of green finance measures. Senior management is responsible for establishing ICBC's green finance development strategy and allocating resources. The Credit Risk Committee oversees the implementation of green credit policy, while a Green Bond Working Group, comprised of representatives from various departments, oversees green bond issuances.

Green considerations are streamlined throughout the Bank's entire lending process, from due diligence, review and approval, contract signing, fund appropriation through post-lending management. All corporate loan customers are subject to an additional layer of review and categorization based on their level of greenness, which is accompanied by appropriate management measures.

ICBC cites the following factors as its incentives for promoting green finance,²⁴ including regulatory pressure and business opportunities related to green sectors:

External drivers	Internal drivers
Environment and Resource Constraint	Social Responsibility
Rising Standard of Environmental Protection	Foster New Growth Areas in Business
Growing Social Awareness of Environment Protection and related benefits	Control Against Environment and Social Risk
Regulation	Promoting Credit Structure Towards a Greener Style
	Operation Transformation and Sustainable Development

4.3 GREEN FINANCING ACTIVITIES

4.3.1 GREEN CREDIT

ICBC holds one of the largest green credit portfolios among Chinese commercial banks at RMB 1.35 trillion (USD 199 billion), nearly 8% of its total credit portfolio in 2019. This was an RMB 113 billion increase from the past year, achieving 9.1% growth rate YoY and 2.3 percentage points higher than the growth rate of domestic corporate loans.²⁵ While banks' green credit portfolios aren't really tracked outside of China, labeled green loan issuance of

²⁴ ICBC (2019)

²⁵ ICBC (2019)

USD 60 billion was tracked in the global sustainability loan market as of July 2018, to serve as a comparison.²⁶

ICBC's green credit portfolio is supported by its Administrative Measures for Green Credit Classification, launched in 2014 and most recently updated in 2017. With reference to the Equator Principles and IFC Performance Standards, these measures classify all domestic corporate loan customers and projects into 4 categories and 12 sub-categories, based on their degree of greenness:

Table 2. ICBC Administrative Measures for Green Credit Classification

Environmentally friendly category	Ecological protection Clean energy Energy-savings and emissions reduction Resource utilization
Environmentally qualified category ("Pass")	3 sub-categories
Under observation category	2 sub-categories
Rectification Category	3 sub-categories

Loans in each category are accompanied by different standards and management measures. The overarching management principle is the "green credit one-vote veto system," which requires strict adherence to specific requirements for monitoring, identification, control, and mitigation of environmental and social risks. For instance, a client faced with an environmental penalty would see their loan downgraded to the Rectification category. The client then needs to address the environmental breach immediately or comply with an early loan repayment request. Quantitative indicators for green credit are directly incorporated into the quarterly performance assessment of branches.

In addition, ICBC has been refining its Industrial (Green) Credit Policy since 2003, which details entry and exit criteria at the project level. Entry criteria include scale, energy efficiency, and technology. Exit criteria concern projects in high-polluting and energy-intensive industries, as well as industries with excess capacity. Further guidance on how to direct green credit is provided through detailed policies such as the *Guidelines on Credits for Energy Saving Fields*, *Opinions on Prioritizing Credit Support for Key Fields of Advanced Manufacturing*, and *Opinions on Expanding Environmental Protection Industry*. ICBC's green credit policy now covers over 60 industries, which are updated annually.

While the majority of ICBC's green credit policies are primarily geared towards domestic markets, ICBC has started to expand its green credit activity abroad. ICBC's London branch announced the closing of its inaugural green loan, worth USD 370 million, in September 2019, supported by BNP Paribas, HSBC, Bank of America, and Standard Chartered as the mandated lead arrangers and bookrunners.²⁷ This marked the first time an emerging market bank secured a green loan compliant with the Green Loan Principles.²⁸ Under the green loan framework, funds raised will go towards green projects such as renewable energy, energy efficiency, pollution prevention and control, sustainable management of resources,

26 World Bank (2019)

27 The Asset (2019)

28 The GLP was jointly established in 2018 by the European and Asia Pacific Loan Market Associations.

clean transportation, green buildings, access to essential services, affordable housing, and employment through SME financing/microfinance.

The environmental impact achieved by ICBC's green credit portfolio is measured through a range of indicators as recommended by China's banking regulatory commission. For instance, ICBC's self-reporting shows that its green credit portfolio has reduced nearly 90 million tons of CO2 emissions by 2018. Table 3 below details the full range of environmental impacts achieved in aggregate form. As of end 2018, clean energy-related loans accounted for 60% of its total loans to the power industry, and 77% of its loans to the electricity industry during the period 2016-2018. Thermal power-related loans were directed to projects for improving the efficiency of large-scale coal-fired and natural gas power plants, as well as closing some smaller-scale power units operating at low efficiency.

ICBC has also decreased financing for clients with excess, or "backward" production capacity. In 2018, the bank decreased loans to five industries with excess capacity, such as steel, by RMB 8.4 billion.

Table 3. Environmental Impact of Investment and Financing Activities (Equivalent to Scope 3)

Indicator		2018	2017	2016	2015
Green Credit Balance and Proportion	Green credit balance (RMB thousand)	1,237,758	1,099,199	978,560	914,603
	Green credit proportion	8.03%	7.72%	7.49%	7.66%
Equivalent emissions reduction due to green credit (tons)	Equivalent reduction of CO2 emissions	89,587,900	75,618,700	73,336,400	70,327,400
	Equivalent reduction of ammonia and nitrogen	39,300	16,100	23,000	40,100
	Equivalent reduction of sulfur dioxide	43,300	124,300	383,100	1,007,700
	Equivalent volume of saved water	42,904,200	32,864,500	61,264,900	53,508,400

4.3.2 GREEN BONDS

CBC has been a major player in China's green bond market, as the largest issuer of green bonds offshore and the largest underwriter of onshore green bonds. Since 2017, ICBC has issued nearly USD 10 billion across five green bond issuances offshore, the first to issue a BRI-themed green bond, as well as the first to issue a green bond for the "Greater Bay Area" encompassing Guangdong, Hong Kong, and Macao regions. As an underwriter, ICBC participated in underwriting more than USD 24 billion across 33 domestic and overseas green bonds during the period 2017-2018.²⁹ Finally, as a green bond investor, ICBC's total investment balance was RMB 30.18 billion in RMB-denominated bonds and USD 95.7 million in foreign currency bonds as of end 2018.³⁰

Table 4. ICBC green bond issuances

Name	Place	Date of issuance	Currency	USD equivalent	Proceeds	Notes
First BRI green climate bond	Luxembourg	9/28/2017	USD	850 million	Wind generation and electrified railway projects in China, solar power projects in several other countries	Received Dark Green rating from CICERO
	Luxembourg	9/28/2017	EUR	1.3 billion		
Second BRI green bond	London	6/5/2018	USD	1 billion	Clean transportation, renewable energy, and offshore wind	Largest green bond listed on the London Stock Exchange, "Largest Emerging Market Certified Bond" by CBI
	London	6/5/2018	EUR	578 million		
	Hong Kong	6/13/2018	HKD	330 million		
	Hong Kong	6/13/2018	USD	400 million		
1 BRBR	Singapore	Apr-19	SGD	2.2 billion		
"Greater Bay Area" green bond	Hong Kong	Sep-19	USD, HKD, CNH	3.15 billion		Largest overseas green bond issued by a Chinese FI

The majority of ICBC's green bond proceeds were earmarked for BRI projects, successfully attracting a diverse base of foreign investors. Collectively, ICBC raised USD 6.7 billion for BRI green projects in three consecutive years.³¹ The first BRI green bond issued in Luxembourg, September 2017 was oversubscribed by global investors, half of which were socially responsible investors. The second BRI green bond, issued in June 2018, was issued through the London branch and Hong Kong branch, marking it the largest green bond among those listed on the London Stock Exchange, and the first green bond issued by a licensed bank in Hong Kong. The third BRI green bond, issued in 2019, was issued through the Singapore branch, and was the first to be issued under the Belt and Road Regular Interbank Cooperation Mechanism. The bond was underwritten by 22 institutions across more than 10 countries and regions along the Belt and Road.³²

Unlike its green credit portfolio, ICBC's green bond framework explicitly excludes fossil fuel-related assets from its list of eligible green assets. Other excluded assets included large scale hydropower plants and any nuclear-related assets.³³ Once eligible green assets are identified and proposed by ICBC's global business units, a Green Bond Working Group, comprised of nominated representatives from various departments, approve or veto assets on the final list. The Working Group also provides annual review on the allocation of proceeds

29 ICBC (2017, 2018)

30 ICBC (2019b)

31 Calculated based on ICBC Annual green bond reports and press release (2017, 2018, 2019a)

32 ICBC (2019a)

33 ICBC (2017a)

against the eligible green asset list and decides whether any updates to the list are necessary to maintain green standards.

Green bonds have become an important financing tool for ICBC. Green bond issuance has increased each consecutive year and, as the amount of eligible green assets and projects increase, green bonds are expected to play an increasingly larger role.

4.4 IMPACTS OF GREEN FINANCE ON THE BALANCE SHEET

The impact of green financing activities is relatively small, but steadily growing. Given ICBC's early participation in green lending practices, its green credit balance has now reached 15.8% of the total corporate loan balance, or 8.5% of total loans. This accounts for 13% of the total green credit balance in China, RMB 10.6 trillion, as of end 2019. As for green bond issuances, which remain only on ICBC's offshore issuances, these account for 6.5% of total debt.

Table 5. Impact of green financing activities at the portfolio-level³⁴

Portfolio level indicators	Percentage	
Share of green credit in corporate loans	15.8%	RMB 1.35 trillion (USD 199 billion) out of RMB 8.57 trillion (USD 1.26 trillion)
Share of green credit in total loans	8.5%	RMB 1.35 trillion (USD 199 billion) out of RMB 15.9 trillion (USD 2.3 trillion), 9.1% growth rate YoY
Share of green bonds in total debt	6.5%	USD 9.8 billion out of RMB 1 trillion (USD 152 billion)
Share of green bond investments in total debt securities investments	< 0.5%	USD 4.5 billion out of RMB 6.86 trillion (USD 1 trillion)

There are several financial incentives driving ICBC to increase its green financing activities.

Research indicates that allocating more green loans to the total loan portfolio can reduce a bank's overall NPL ratio.³⁵ ICBC's NPL ratio for its green credit portfolio is not publicly available, but is lower than the total NPL ratio, which is currently 1.42%.³⁶ Furthermore, regulatory authorities are considering the reduction of risk weighting of green assets based on their better financial performance. This would mean that increasing green assets would make it easier for ICBC to fulfill its capital adequacy ratio.

PBoC and CBIRC have announced specific regulations for advancing green finance measures affecting all banks in China, most notably regarding MPA, MLF, and the establishment of a comprehensive statistics system for gathering data on green credit.

Green credit performance was included in MPA for the first time in 2018, evaluated through quantitative indicators weighted at 80%, and qualitative indicators weighted at 20%.³⁷ Quantitative indicators include the year-on-year growth of the green loan balance and the non-performing green loan ratio, while qualitative indicators include implementation of

³⁴ Calculations based on ICBC's 2019 Annual Report and Reuters

³⁵ Cui et al. "The Impact of Green Lending on Credit Risk in China." Sustainability (2018)

³⁶ ICBC (2020)

³⁷ PBoC (2018)

national green development policies. Furthermore, PBoC decided to accept green loans with AA ratings as collateral in their MLF in June 2018. Such regulatory measures incentivized banks to strengthen statistical and reporting systems on green credit, as well as increase their green business activities overall.

Finally, ICBC has led various climate stress-tests to understand and prepare for the impact of climate transition risks and related policies on its portfolio. Since 2016, ICBC has conducted stress-tests for its thermal power, cement, aluminum, water, iron, and steel sectors, in cooperation with partners such as Trucost, GLZ, and Lianhe Equator. ICBC's latest climate stress test evaluated the potential impact of carbon markets on the credit risk of commercial banks. The results from these stress tests contributed to a shift in the overall direction of ICBC's lending decision, such as reducing fossil fuel sector exposure.

ICBC's leadership has played a central role in driving China's green financial reform. The bank's early participation in green policy formulation at the national level and ongoing partnerships with foreign and domestic institutions continues to raise the bar for green standards in China. Its practices, such as incorporating green performance into KPIs, disclosing environmental impact metrics, and assessing climate risks, are in line with international best practice. Furthermore, ICBC's green credit and green bond portfolios are one of the largest in the world, setting an example for other Chinese banks to follow.

Meanwhile, the impact of green practices on ICBC's overall balance sheet remains marginal. ICBC's green financing achievements must be understood in the context of its fossil fuel financing activities, estimated to be as large as 14% of its total financing and the eighteenth largest in the world by size.³⁸ So far, there is no clear indication that green practices have reduced ICBC's fossil fuel financing in a significant way. Green loans are around 8% of its total loan portfolio, while green bonds represent about 6.5% of total debt. Green lending criteria exclude high pollution and overcapacity sectors yet allow room for projects that improve the efficiency of large-scale coal-fired and natural gas power plants. For ICBC to maintain its position as a leader in green finance, the next step should be to concretely demonstrate how it plans to reduce exposure to high emission sectors.

CONCLUSIONS

Chinese banks hold tremendous potential to contribute to decarbonization, not only for China's economy but also on a global scale. China's "Big Four" state-owned banks are also the world's four largest banks, representing combined assets of USD 14.8 trillion, greater than the combined assets of the 11 largest banks in the US. Simultaneously, the Big Four are some of the largest contributors of green finance and fossil fuel finance in the world. Accelerating the green transition of Chinese banks would be enormously consequential.

Policymakers in China are at the forefront of innovation on green banking policies. After the launch of the Guidelines for Establishing the Green Financial System in 2016, innovation expanded rapidly, but there is potential for more. Innovation and ambition to continue this leadership in green banking will be especially important when considering the context of severe economic pressures on the Chinese economy. Without continued prioritization of green banking, the broad drive towards deleveraging, headwinds from a US-China trade war, and the yet-to-be seen impacts from COVID-19 could forestall or even regress the green banking advancements made to date.

A broad range of green instruments are being used by Chinese banks, showing increasing diversity and spanning across specialized tools, collateral methods, asset-backed securities, and international green credit lines. The ICBC case study showed that some financial institutions in China have embraced green finance, both in response to regulatory pressures and to seek new financial opportunities.

Banks that can embrace the growing trend of green finance in China will be rewarded with a new customer base, new sources of capital, potential benefits in terms of reducing risks from non-performing loans, and the monetary incentives provided by the PBoC. Although the overall size of the green finance business of banks is still small, we expect these factors to continue driving growth in the sector.

The turning point, however, will be when Chinese banks' financing for green displaces financing for high-emissions activities, as China continues to pursue its goal for constructing an ecological civilization and leads global banking practices towards net-zero emissions goals.

REFERENCES

- CBIRC (China Banking and Insurance Regulatory Commission) and PBoC (People's Bank of China). 2019. "China Green Finance Development Report 2018."
- CCICED (China Council for International Cooperation on Environment and Development). 2015. "Report on Green Finance Reform and Promotion of Green Transformation."
- Clean Technica. 2016. "Industrial & Commercial Bank of China to Launch Green Bonds Soon." <https://cleantechnica.com/2016/02/29/industrial-commercial-bank-china-launch-green-bonds-soon/>
- Dikau, Simon and Ulrich Volz. 2020. "Central Bank Mandates, Sustainability Objectives and the Promotion of Green Finance." SOAS University of London.
- Helgi Analytics. 2019. "What Banks in China Had the Lowest Loan to Deposit Ratio in 2018?" <https://www.helgilibrary.com/charts/what-banks-in-china-had-the-lowest-loan-to-deposit-ratio-in-2018/>
- ICBC (Industrial and Commercial Bank of China). 2019. "Special Report on Green Finance." <http://v.icbc.com.cn/userfiles/Resources/ICBCLTD/download/2019/2019EN20191114.pdf>
- ICBC (Industrial and Commercial Bank of China). 2020. "Annual Report 2019." <http://v.icbc.com.cn/userfiles/Resources/ICBCLTD/download/2020/2019AnnualReport.pdf>
- ICBC (Industrial and Commercial Bank of China). 2017b. "Annual Green Bond Report." http://v.icbc.com.cn/userfiles/Resources/ICBCLTD/download/2018/2017lvzhainiandubaogao_en.pdf
- ICBC (Industrial and Commercial Bank of China). 2018. "Annual Green Bond Report." <http://v.icbc.com.cn/userfiles/Resources/ICBCLTD/download/2019/GreenBondReport20191031.pdf>
- ICBC. 2019b. "Green Finance Implementation Progress."
- ICBC. 2019a. "ICBC Successfully Issued the World's First Green BRBR Bond." <https://www.icbc.com.cn/icbc/en/newsupdates/icbc%20news/ICBCTransactionSuccessfullyIssuedtheWorldsFirstGreenBRBRBond.htm>
- ICBC. 2017a. "Green Bond Framework for ICBC." <http://v.icbc.com.cn/userfiles/Resources/ICBCLTD/download/2017/ICBCGreenBondFramework.pdf>
- IEA (International Energy Agency). 2019. "Global Energy & CO2 Status Report 2019." <https://www.iea.org/reports/global-energy-co2-status-report-2019/emissions>
- IIGF (International Institute of Green Finance). 2019. "Chinese Environmental Rights Trading Market Report."
- NDRC (National Development and Reform Commission). 2019. "NDRC Q&A on the "Green Industry Guidance Catalogue" http://www.gov.cn/fuwu/2019-03/08/content_5371892.htm
- PBoC (People's Bank of China). 2018. "Notice on Establishing a Special Statistical System for Green Loans 《关于建立绿色贷款专项统计制度的通知》（银发【2018】10号）." <https://www.banklaw.com/laws/98b018e92e7a11e98eae00163e1f2fe.html>
- PBoC (People's Bank of China). 2018. "Notice of the People's Bank of China on Conducting Green Credit Performance Evaluation of Banking Depository Financial Institutions." https://www.pkulaw.com/en_law/f89b9c0e05312e2ebdfb.html
- RAN (Rainforest Action Network) et al. 2020. "Banking on Climate Change Fossil Fuel Finance Report 2020." https://www.ran.org/wp-content/uploads/2020/03/Banking_on_Climate_Change_2020_vF.pdf

S&P Global. 2020. "The world's 100 largest banks, 2020." <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/the-world-s-100-largest-banks-2020-57854079>

Sustainability. 2018. "The Impact of Green Lending on Credit Risk in China." <https://www.mdpi.com/2071-1050/10/6/2008>

The Asset. 2019. "ICBC announces closing of US\$370 million equivalent green loan." <https://www.theasset.com/europe/38839/icbc-announces-closing-of-us370-million-equivalent-green-loan>

World Bank. 2020. "State and Trends of Carbon Pricing 2020." <https://openknowledge.worldbank.org/bitstream/handle/10986/33809/9781464815867.pdf?sequence=4&isAllowed=y>

World Bank. 2020. "Green loans: Financing the transition to a low-carbon economy." <https://blogs.worldbank.org/climatechange/green-loans-financing-transition-low-carbon-economy>

APPENDIX

Appendix 1: 2017 green credit statistics by 21 main banks: Quantitative Indicators³⁹

Bank name	2017 green credit balance (million RMB)	2016 green credit balance (million RMB)	2017 total credit balance (million RMB)	2016 total credit balance (million RMB)	Green proportion of lending of bank	Score	Given bank's proportion of total green lending across all banks	Score	Green credit growth proportion of total credit growth	Score	Green credit year-on-year increase	Rating	Total score
ICBC	1,099,199	978,560	7,589,729	7,077,009	14.48%	1.91	16.11%	2.85	23.53%	1.80	12.33%	1.77	8.32
ABC	747,625	649,432	6,147,584	5,368,250	12.16%	1.74	10.95%	2.32	12.60%	1.69	15.12%	1.78	7.54
BOC	538,799	467,342	5,100,253	4,833,182	10.56%	1.63	7.89%	2.01	26.76%	1.83	15.29%	1.79	7.25
CCB	1,002,521	889,221	6,443,524	5,864,895	15.56%	1.99	14.69%	2.71	19.58%	1.76	12.74%	1.77	8.22
CBC	277,108	161,105	2,632,790	2,528,778	10.53%	1.62	4.06%	1.61	111.53%	2.63	72.00%	2.16	8.02
Merchants	157,103	143,664	1,663,861	1,566,570	9.44%	1.55	2.30%	1.43	13.81%	1.71	9.35%	1.75	6.43
Pudong Development	181,369	173,812	1,817,860	1,731,314	9.98%	1.59	2.66%	1.47	8.73%	1.66	4.35%	1.71	6.42
CITIC	60,358	25,478	1,857,847	1,846,274	3.25%	1.10	0.88%	1.29	301.39%	3.00	136.90%	2.59	7.98
Guangda	74,900	49,376	1,179,663	1,075,974	6.35%	1.32	1.10%	1.31	24.62%	1.81	51.69%	2.03	6.47
Huaxia	53,248	45,350	1,054,428	943,537	5.05%	1.23	0.78%	1.28	7.12%	1.64	17.42%	1.80	5.95
Minsheng	30,020	13,823	1,615,830	1,394,864	1.86%	1.00	0.44%	1.24	7.33%	1.64	117.17%	2.46	6.35
Guangdong Development	Not disclosed	8,519	502,411	444,820	NA	0.60	NA	0.60	NA	0.60	NA	0.60	2.40
Industrial	680,600	490,000	1,482,362	1,271,347	45.91%	3.00	9.97%	2.22	90.33%	2.43	38.90%	1.94	9.59
Pingan	80,839	59,034	840,439	920,011	9.62%	1.56	1.18%	1.32	-27.40%	3.00	36.94%	1.93	7.81
Hengfeng	Not disclosed	Not disclosed	Not disclosed	364,598	NA	0.60	NA	0.60	NA	0.60	NA	0.60	2.40
Zheshang	3,662	663	518,597	353,200	0.71%	0.92	0.05%	1.20	1.81%	1.59	452.34%	3.00	6.71
Bohai	18,420	15,553	343,351	268,268	5.36%	1.25	0.27%	1.22	3.82%	1.61	18.43%	1.81	5.89
Postal Saving	176,631	75,231	1,391,901	1,079,392	12.69%	1.78	2.59%	1.46	32.45%	1.88	134.78%	2.58	7.70
CDB	1,642,300	1,571,600	10,933,412	10,225,793	15.02%	1.95	24.06%	3.00	9.99%	1.67	4.50%	1.71	8.33
EXIM	Not disclosed	Not disclosed	Not disclosed	Not disclosed	NA	0.60	NA	0.60	NA	0.60	NA	0.60	2.40
ADBC	Not disclosed	Not disclosed	Not disclosed	Not disclosed	NA	0.60	NA	0.60	NA	0.60	NA	0.60	2.40

39 Calculated by IIGF using the CBIRC assessment framework, with data from annual reports, corporate social responsibility reports, WIND.
资料来源：各银行年报、社会责任报告及Wind数据库

Appendix 2: 2017 CBIRC scorecard for 21 main banks: Qualitative Indicators⁴⁰

	Participation in international initiatives				Green banking deviation	Green credit system	Green credit research	International green credit participation	Green credit related fines	Green credit disclosure	"Two high, one excess" disclosure situation	Green credit innovation	Total score
	Equator Principles	UN Global Compact	UNEP FI	UNEP Statement of Commitment by Financial Institutions (FI) on Sustainable Development									
ICBC		0.5	0.5		0.5		1	1		2	2	2	10.5
ABC					1	1		1	-1	2	1	2	7
BOC					0.5	1	1	1		2		2	7.5
SCCB					1	1				2	1	2	7
CBC						1				1	1	1.5	4.5
Merchants			0.5	0.5	0.5	1				2	2	1.5	8
Pudong Development					0.5	1		1		2	2	1.5	8
CITIC					0.5	1				1	2	1.5	6
Guangda					0.5	1				1		1	3.5
Huaxia					0.5	1		1		2	1	2	7.5
Minsheng		0.5				1		1		1	2	1	6.5
Guangdong Development						1					1	1	3
Industrial	0.5		0.5	0.5	1	1	1	1		1	2	2	10.5
Pingan			0.5		0.5	1		1	-1	1	1	1	5
Hengfeng						1						1	2
Zheshang										1	2	1	5
Bohai						1				2		1	4
Postal Saving					0.5	1		1		2		1.5	6
CDB						1				1		1.5	3.5
EXIM						1	1	1				1.5	4.5
ADBC						1		1				2	4

40 Calculated by IIGF using the CBIRC using the PBoC assessment framework, with data from annual reports and corporate social responsibility reports 各银行年报、社会责任报告及网络新闻

GHG emissions and natural resource consumption due to ICBC operations

Indicator		Unit	2018	2017	2016	2015
Direct GHG emissions	Oil consumption of official cars (Head Office)	Liter	76,699	86,109	86,532	94,186
	Water consumption in offices (Head Office)	Ton	172,377	170,196	156,324	150,450
Indirect GHG emissions	Power consumption in offices (Head Office)	KWh	18,394,080	19,408,280	19,867,300	19,825,712
	Paper consumption in offices (Head Office)	one million pieces	8.7	8.7	7.7	8.4
Environmental protection measures	Proportion of domestic e-banking business volume	%	97.7	94.9	92.0	90.2
	Voluntary Afforestation fee of the Head Office	RMB 10,000	6.6	6.6		
	Green food enterprises settled in ICBC Mall	Number		943.0		
	IT application in procurement file management			Among 28 categories, 21 available online		
	Other environmental protection measures		Developing new modes of energy saving and emissions reduction; paperless counter operation; responsible procurement			

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