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MRV System Design: Recommendations for Chinese Green Bonds

Donovan Escalante

June Choi

Neil Chin

Ying Cui, IIGF

Mathias Lund Larsen, IIGF

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Contact	June Choi	june.choi@cpiclimatefinance.org
	Donovan Escalante	donovan.escalante@cpiclimatefinance.org

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Executive Summary

This report details findings from an in-depth review of Monitoring Reporting and Verification (MRV) practices in China comparing them to international practices. The aim is to identify approaches to enhance the tracking and reporting of results. This can increase trust in the market, helping speed its development and increase environmental and financial impacts.

Key findings

- **The quality of reporting varied across different bond types, highlighting differences in regulatory regimes.** A scoring system was used to assess key MRV criteria with the top score corresponding to the most stringent available standards. Financial bond issuances, on average, were accompanied by the highest average quality of reporting. Mid-term notes (the most common non-financial corporate debt instrument) had the second highest, while asset-backed securities (ABS) and corporate bonds displayed poor reporting quality. Enterprise bonds, which are not mandated to provide reporting, predictably showed lower quality of reporting.
- **Offshore green bonds generally demonstrate higher transparency and granularity of reporting than onshore issuances.** Average quality of reporting for offshore bonds was higher than onshore bonds. This suggests that Chinese issuers can increase the quality of reporting to meet the higher expectations of international investors.
- **Publicly available information is limited and difficult to access.** Of the 387 issuances reviewed, 38 (10%) did not have any publicly available information and only 32 out of 270 issuances prior to September 2018 provided both pre-issuance and post-issuance documents on the issuer's website. Gathering data for the remaining issuances was challenging, with the need to draw from multiple sources including China Central Depository and Clearing (CCDC), the Shanghai and Shenzhen Stock Exchanges, and the National Association of Financial Market Institutional Investors (NAFMII).

- **External reviews are not undertaken consistently across all issuance types.** Financial bonds have the highest rate of external review and enterprise bonds the lowest, reflecting differences in regulatory requirements. Overall, ex-post verification tends to be relatively limited. 73% of onshore green bonds by value received external review pre-issuance. Post-issuance verification was available for 59% by value.
- **There are many notable examples of best practice amongst Chinese issuers.** These include ICBC, China Development Bank, Industrial Bank Co. Ltd., and Poten Environment. Each of these issuers published pre- and post-issuance reporting on their company website, provided project-level financial and environmental impact reporting, and underwent external review prior to issuing and throughout the entire post-issuance reporting process.

Together, these findings indicate that there is a substantial opportunity to improve trust, transparency, and effectiveness in the market by improving the quality of MRV.

Recommendations for improvement

Regulatory authorities, including the People's Bank of China, China Securities Regulatory Commission, the National Development and Reform Commission, and the Ministry of Finance, could make several key improvements, including:

1. **Require mandatory environmental impact reporting and external and independent verification, both pre-issuance and post-issuance, for green bond issuers.** Currently, these measures are encouraged by some key regulatory authorities at a high-level but are not mandatory. Without environmental impact reporting and external verification, it is difficult to maintain investors' confidence in the quality of green bond issuances.
2. **Establish a standard template for detailed post-issuance reporting on use of proceeds and environmental impacts.** Final allocation of proceeds must be detailed at the project level, indicating not just the project's green bond category but also the status of the projects being financed, such as whether the project is new or existing. The template may also recommend common metrics and

methodologies for measuring impact in each sector.

3. **Fully implement an official accreditation model for green bond label verification** through the Green Bonds Standard Committee. This would harmonize the verification standards and raise the overall quality of third-party verifiers.
4. **Establish a central platform to share data publicly and increase access to issuance reporting.** The platform may serve as a depository of all bond information, including issuance amounts, use of proceeds and environmental impact reporting, as well as verification documents. China Central Depository & Clearing Co., Ltd. (CCDC) is a strong candidate for providing such a platform, given its position in the green bond market as provider of registration, depository, and settlement services for various financial products.
5. **Harmonize standards and procedures across regulatory bodies.** China's green bond market is segmented by different regulatory bodies providing oversight over different types of bonds and place of issuance. Financial bonds, enterprise bonds, corporate bonds, and municipal bonds are each regulated by separate entities with different reporting requirements.

Incentive structure recommendations

1. **Increase monetary incentives for issuers to reduce the cost burden of meeting MRV requirements.** Several local governments have introduced a range of incentive programs to reduce the issuance costs, including grants and subsidies for obtaining verification and certification. However, these programs cover only a small fraction of total issuance costs and are not enough to encourage issuers to meet higher quality reporting standards. Issuers additionally cite the lack of interest rate reduction and extra time burden of green bond reporting as a barrier.
2. **Provide technical assistance to issuers on how to meet MRV requirements.** In addition to monetary incentives that directly reduce issuance costs, local governments may create special technical assistance programs that can guide first-time issuers as well as attract smaller-scale issuers to the market. Networks such as the Green Finance Committee (GFC) or National Association of Financial Market Institutional Investors (NAFMII) may also facilitate such a program. This assistance may include identifying third party verification providers as well as support for measuring and reporting on environmental impacts.
3. **Develop a steady and diverse pipeline of eligible green projects for green bond issuers.** Identifying eligible projects for green bond issuance can be a challenge, especially for smaller-scale issuers. Local governments can take lead in supporting the development of eligible green projects, for example by identifying priority sectors for investment and ensuring that green investment criteria are compatible with the green bond project catalogue.

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1. Monitoring, Reporting and Verification of Green Bonds in China

Strong approaches to monitoring, reporting, and verification (MRV) can increase the trust and effectiveness of green bonds. This paper will first review the current regulations in place in China, comparing them to internationally accepted principles. Then it will provide a systematic review of the quality of reporting of Chinese green bond issuances to-date and finally, provide recommendations on how the design of the MRV system can be strengthened with the aim of increasing trust and effectiveness in the market.

1.1 Current MRV requirements

Monitoring, reporting, and verification (MRV) practices in China, and internationally, focus on two key areas: accounting for the **use of proceeds** and verifying **environmental and climate impacts**.

In general, in China, there are some requirements for reporting on environmental impacts and obtaining external verification is encouraged. There are stricter requirements around the management and reporting on use of proceeds. An overview of requirements is provided below:

One of the major barriers to transparency in China’s green bond market is the inconsistent requirements required by the regulatory authorities, which oversee different bond types in the market. Most notably, the National Development and Reform Commission (NDRC), which regulates enterprise bonds, has no requirement for issuers to report on use of proceeds and environmental impacts. The People’s Bank of China (PBoC) requires financial green bond issuers to report quarterly, whereas other regulators require reporting on an annual or biannual basis. All regulators encourage

Table 1: Overview of MRV practices in China for green bonds

Monitoring	Reporting	Verification
<p>Separate accounts (ringfencing) are required for all non-enterprise issuers (excluding government bonds) to manage and track green bond proceeds¹.</p> <p>There is no specific methodology pertaining to monitoring of environmental impacts. There are no KPIs, benchmarks, or recommended measurement methodologies</p>	<p>Annual reporting of use of proceeds is required for all non-enterprise issuers². Financial bond issuers are required to additionally provide quarterly reporting.³ Other debt-instruments including Medium-term Note issuers must report twice a year.</p> <p>Reporting of environmental impacts is required for CSRC-regulated corporate issuers and green projects that surpass a certain threshold amount among financial bonds.⁴ However there is no standard methodology for calculating impact.⁵</p>	<p>Third-party verification through external review is encouraged for all non-enterprise issuers.⁶</p> <ul style="list-style-type: none"> • Pre-issuance, issuers may obtain third party verification, or a green bond rating. Green bond frameworks from the issuer must disclose details on: project eligibility, project screening and decision-making procedures, use of proceeds management, information disclosure and reporting system, and expected environmental impacts (if reported).⁷ • Post-issuance, ongoing verification ensures compliance with rules for project eligibility, use of proceeds, informational disclosure and reporting, and that expected environmental benefits (if reported) are achieved.

1 PBoC Announcement No. 39 (中国人民银行公告 第39号). People’s Bank of China (2015); Guidelines for Supporting Green Bond Development (中国证监会关于支持绿色债券发展的指引意见). China Securities Regulatory Commission (2017).
 2 Guidelines for Supporting Green Bond Development (中国证监会关于支持绿色债券发展的指引意见). China Securities Regulatory Commission (2017).
 3 PBoC Notice on Strengthening the Supervision and Administration of the Continuation Period of Green Financial Bonds (中国人民银行关于加强绿色金融债券存续期监督管理有关事宜的通知). People’s Bank of China (2018).
 4 ibid
 5 Guidelines for Supporting Green Bond Development (中国证监会关于支持绿色债券发展的指引意见). China Securities Regulatory Commission (2017).
 6 ibid
 7 ibid

third-party verification for pre-issuance and post-issuance of bonds, while the NDRC has no verification requirement. A detailed overview showing requirements for each type of bond and the responsible regulatory entity is available below.

The lack of standardization in reporting requirements, inconsistent quality of green bond external review services, and the need for technical capabilities associated with monitoring environmental impacts all add to the time and cost of issuing green bonds. While local governments have introduced a variety of incentive

programs to reduce the costs associated with successful issuance, including grants and subsidies for obtaining verification, these are generally minimal and not enough to encourage issuers to meet high MRV standards. An overview of these incentives is available in the annex.

Table 2: Different MRV requirements by regulatory authority

	People's Bank of China (PBoC)	China Securities Regulatory Commission (CSRC)	National Association of Financial Market Institutional Investors (NAFMII)	National Development and Reform Commission (NDRC)
Bond Type	Financial bond	Corporate bond	Non-Financial Corporate Debt Instrument	Enterprise bond
Allocation of Proceeds	100% of proceeds are required to be invested in green projects	Issuers can use up to 30% of the bond proceeds to repay loans and invest in working capital.	100% of proceeds are required to be invested in green projects.	Issuers can use up to 50% of the bond proceeds to repay bank loans and invest in working capital.
Issuance Limits	N/A	N/A	N/A	Green bonds are exempt from quotas for bond issuance and granted special review process
Use of Proceeds Monitoring	Separate accounts	Separate accounts	Separate accounts	No requirement
Environmental Monitoring	Required for reporting	Required for reporting	Required for reporting	No requirement
Use of Proceeds Reporting	Quarterly disclosure	Annual disclosure	Biannual disclosure; Changes to use of proceeds announced publicly	No requirement
Environmental Reporting	Required for green projects above a certain threshold amount	Targets disclosed at issuance; reporting required	Targets disclosed at issuance; reporting encouraged	No requirement
Standardized Reporting	Template available	Not available	Not available	Not available
Pre-issuance Verification	Encouraged	Encouraged	Encouraged	No requirement
Post-issuance Verification	Encouraged	Encouraged	Encouraged	No requirement

1.2 Overview of internationally accepted standards

This section provides an overview of the leading international standards on green bond issuance and MRV. It is important to note that some of these standards are not yet legal requirements and are often voluntary. Nonetheless, they provide a useful comparison.

Green Bond Principles (GBP)

The Green Bond Principles (GBP)⁸ developed by the International Capital Markets Association (ICMA) are considered the premier international guidelines for green bond issuance and MRV. The GBP recommends that issuers monitor and report the use of proceeds and environmental impacts on an ongoing basis. It also recommends that issuers receive external review (e.g. Second Party Opinion, Verification, Certification, or Green Bond rating) and publish results. However, the GBP are voluntary and thus issuers are responsible for incorporating these standards into their own green bond frameworks. Any issuer may self-label their bonds as green, citing adherence to the GBP.

To increase credibility, organizations such as Climate Bonds Initiative (CBI) provide a certification scheme. The Climate Bonds Standard certifies that green bonds comply with the GBP. It provides eligibility criteria for green projects and assets on a sector-by-sector basis, detailing the emission requirements for projects to be aligned with a two-degrees warming trajectory. CBI also provides a list of “CBI-certified verifiers” that issuers may go to for verification. Certification from CBI can help assure investors and fund managers of the underlying green quality of the green bonds they purchase.

EU Green Bond Standard (GBS)

In June 2019, the European Union’s Technical Expert Group (TEG) released its final report detailing the proposed framework for the EU’s Green Bond Standard (EU-GBS) and finalized the EU Taxonomy in March 2020,⁹ expanding on the GBP by increasing the stringency to determine eligibility and providing added structure. The EU Taxonomy provides details on sector-specific eligibility criteria and has four overarching requirements: (1) substantial contribution

to environmental objectives, (2) do-no-significant harm (3) comply with minimum social safeguards; (4) comply with technical screening criteria.¹⁰ The Report provides a technical annex with screening criteria for 70 climate change mitigation and 68 climate change adaptation activities.

These requirements point towards a trend of increasing ambition and expectations for the green bond market and its participants. Given that costs and administrative burden of reporting represent significant barriers to green bond market development, the EU-GBS streamlines mandatory reporting by offering standardized templates identifying information required in reporting and allowing disclosures to be made at either the project level or portfolio level.

The EU-GBS requires verification of reporting on both allocation of green bond proceeds and for environmental impacts. It is mandated that verification reports be published on the issuer’s website or any other communication channels for public reference.

Additionally, the EU-GBS proposes an accreditation model¹¹ for green bond external review to both reduce transaction costs to issuers by preventing potential issues in the verification process due to conflicts of interest, informational asymmetries, and varying quality of assessment, designating the European Securities and Market Authority (ESMA) as the supervisor of the scheme. Firms that wish to provide second party opinion, assurance, certification, or any other form of external review in the EU green bond market would be required to register with ESMA and to demonstrate their credentials, namely professional code of conduct, qualifications, quality control, and standard procedures for external review. The EU-GBS is meant to have global applicability beyond Europe.

While the EU-GBS proposal is pending adoption by European legislative bodies, similarly advanced schemes for green bond labeling have been implemented at regional and national levels.

8 Green Bond Principles (June 2018 edition). International Capital Markets Association.

9 EU TEG Final Report on the EU taxonomy (2020)

10 Detailed description in section 4.1 of the EU-GBS, Annex 1

11 EU TEG Report on EU Green Bond Standard (2020)

French National Green Bond Label (TEEC)

In France, the “Energy and Ecological Transition for the Climate” (TEEC)¹² national green bond label has been used since 2015. CBI¹³ considers green bond reporting in France to be the third-best quality among large green bond issuing countries. Like the EU-GBS, the TEEC details sector-specific impact metrics (e.g. GHG emissions levels for renewable energy projects) but further mandates that those metrics be compared to relevant environmental benchmarks. The TEEC also requests that third-party verifications include further environmental impact analysis, such as a description of three-year trends and life-cycle assessments when possible. Finally, the TEEC criteria requires that green financing funds disclose the resources deployed as a result of the investments, providing a more complete picture of projects’ environmental impacts, both positive and negative.

ASEAN Green Bond Standards

More recently, the ASEAN Green Bond Standards¹⁴ launched by the ASEAN Capital Markets Forum in November 2017 cemented the GBP into a concrete framework for green bond issuers in Southeast Asian countries. The ASEAN GBS specifically excludes fossil fuel power generation projects and expands on GBP standards by requiring issuers to send both reporting and external review results directly to investors throughout the duration of the bond period. The guidelines also push for comprehensive use of proceeds disclosures, asking for pre-issuance estimates of the share of refinancing and look-back periods of refinanced green projects, allowing potential investors to gauge the additionality of the green bonds. ASEAN members that helped to develop the new GBS, Singapore and the Philippines, are already considered examples of global best practice for green bond post-issuance reporting by CBI.¹⁵

International Financial Institutions (IFI) Harmonized Framework

Regarding environmental impact reporting specifically, the International Financial Institutions (IFI) Harmonized Framework¹⁶ provides a structured approach for green bond issuers to demonstrate environmental benefits. The IFI recommendations detail sector-specific core indicators of environmental performance and contend that reporting on a full-evaluation of the effects of green projects over their lifetime is valuable given that environmental outputs tend to vary over time. The framework further acknowledges that methodologies used to calculate environmental impacts differ in assumptions between organizations and suggests that accounting strategies be disclosed by green bond issuers to establish greater transparency.

12 “Energy and Ecological Transition for the Climate” Label Criteria Guidelines. French Ministry of Ecology and Inclusive Transition. (2018)

13 Post-Issuance Reporting in the Green Bond Market (2019). Climate Bonds Initiative. p. 28 (Appendix 3).

14 ASEAN Green Bonds Standards. ASEAN Capital Markets Forum. (2017)

15 Post-Issuance Reporting in the Green Bond Market (2019). Climate Bonds Initiative. p. 28 (Appendix 3).

16 Harmonized Framework on Impact Reporting. International Finance Institutions et al. (2019)

1.3 Comparison of international practices to the Chinese system

Overall, the current system for MRV of green bonds in China compares favorably to international standards in terms of scope. However, international standards tend to demand greater detail in reporting. For example, the EU-GBS, and ASEAN GBS compel green bond issuers to disclose project refinancing details, a key factor for investors in determining the additionality of their bond holdings. The use of standard templates is another approach to assist in the reporting of use of proceeds and environmental impact. In the Chinese green bond market, regulators currently only provide financial bond issuers and not others with a standardized method of reporting. An overview of requirements is shown in Table 3.

Some international frameworks like the EU-GBS, TEEC (France), and IFI Harmonized Framework provide sector-by-sector breakdowns of suggested environmental performance indicators and require explanations of relevant tracking methodology in reporting. Furthermore, they offer useful methods for tracking environmental impact, through benchmarking, trend analysis, and project life-cycle assessments.

Table 3: Comparison of MRV for Green Bonds in China and international standards

Comparison of International MRV Requirements		China Current System	Climate Bonds Standard	ASEAN GBS	TEEC (France)	Proposed EU-GBS
Monitoring	Use of Proceeds	✓	✓	✓	✓	✓
	Environmental Impacts	✓	✓	*	✓	✓
Reporting	Use of Proceeds	✓	✓	✓	✓	✓
	Refinancing	X	✓	✓	X	✓
	Environmental Impacts	✓	✓	✓	✓	✓
	Benchmarking	X	X	X	✓	X
Verification	Pre-issuance External Review	*	✓	✓	✓	✓
	Post-issuance Verification	*	✓	✓	✓	✓
	Accreditation of Verifiers	*	✓	*	X	✓

✓ reflects requirement in place, * reflects non-binding or partial requirement, X reflects no requirement in place

1.3.1 ENVIRONMENTAL IMPACT MONITORING

Although many Chinese issuers report on environmental impacts,¹⁷ only PBoC has provided guidance on which specific environmental metrics should be disclosed. There is no standard methodology or guidance for calculating metrics. At present, the China Banking and Insurance Regulatory Commission (CBIRC) utilizes a common framework that provides standard metrics for reporting impact related to their green credit portfolios.¹⁸ A similar approach could potentially be applied for green bond frameworks that can be expanded to encapsulate metrics pertaining to green bond supported projects.

1.3.2 ACCREDITATION OF EXTERNAL REVIEWERS

The proposed EU-GBS adds an accreditation scheme for green bond external reviewers and has assigned regulatory supervision to these services. China is in the process of implementing a similar program. In China, the Green Bonds Standard Committee and the proposed EU-GBS, the ESMA, are assigned the task of accrediting and overseeing the activities of green bond verifiers. Similarly, CBI's Climate Bonds Standard and Certification Scheme licenses verifiers to carry out climate bonds certifications. In general, the criteria for accreditation between the three systems are similar, although both the China and EU-GBS accreditation systems are still in developmental stages. Both the

17 Post-Issuance Reporting in the Green Bond Market (2019). Climate Bonds Initiative

18 Guidelines for the Calculation of Energy Savings and Emissions Reduction for Green Credit Projects (绿色信贷节能减排量测算指引). CBIRC (2013); Green Credit Statistics Information Disclosure. CBIRC (2013).

verification procedures in China and EU-GBS requires verifiers to assess and comment on environmental impact reporting. The EU-GBS requires that verification reports be made publicly accessible online, which Chinese regulators have yet to require.

To summarize, the current MRV System in China is successful in identifying important areas for reporting by the green bond market but there are opportunities for improvement. The accreditation model being developed for Chinese green bond verifiers is consistent with international best practice and, when fully implemented, could be a global example for other green bond systems to follow.

With regards to reporting, however, the Chinese green bond market lacks standardization and depth, as well as stringent guidance with regards to environmental impacts and the use of verification. China’s regulators can use other green bond frameworks as reference and strive to set an example of international best practice as they continue to improve MRV practice within the Chinese green bond market.

1.4 Third party review of green bonds in China

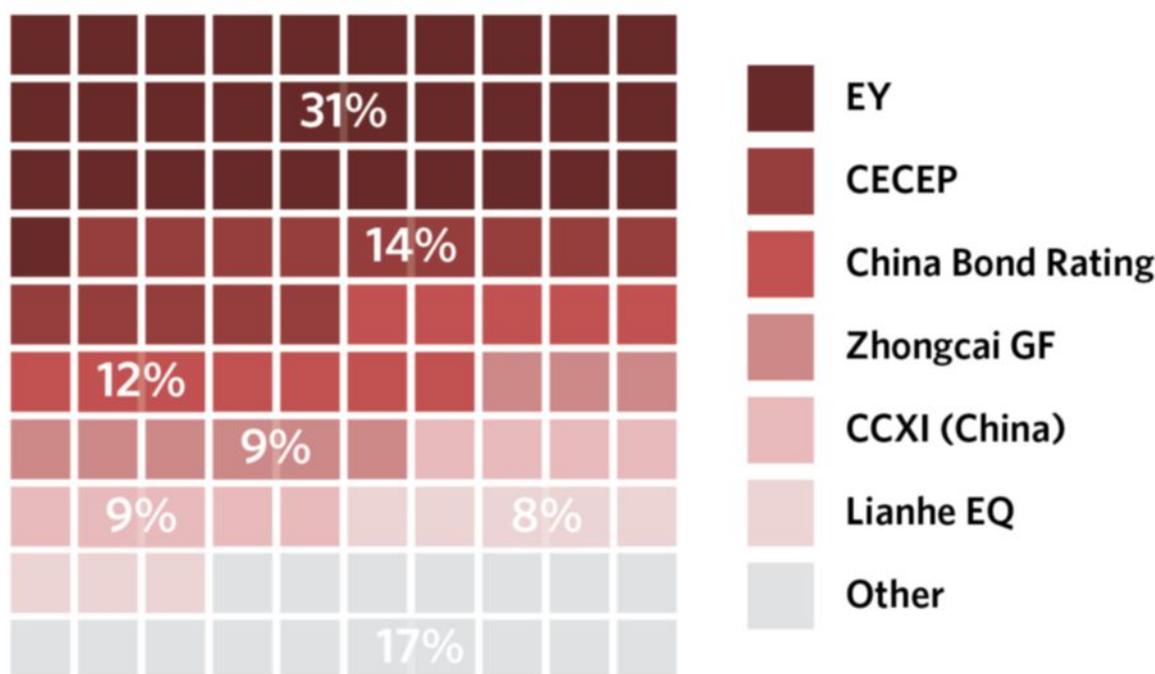
Currently, international firms have a large portion of market share in external review services for green bond issuance and reporting. 98 out of 248 onshore issuers (39.5%) with verification obtained through the “Big

Four” accounting firms (KPMG, EY, PwC, Deloitte), accounting for 59% of all bonds with verification by amount (USD 53 bn). Other notable international external review providers operating in China include Sustainalytics, DNV GL, and CICERO. Leading domestic verifiers include CECEP, Zhongcai Green Finance, and China Bond Rating. The increasing number of verification providers may drive down future costs of obtaining verification services.

In China’s green bond market, organizations that provide verification services are closely linked to credit ratings agencies (CRAs). Three major Chinese credit agencies, China Chengxin, China Lianhe, and Shanghai Brilliance, offer verification services to green bond issuers either directly or through subsidiaries. Additionally, less well-known CRAs, such as Golden Credit Rating International and Peng Yuan Credit, also act as third-party verifiers in the green bond market. This trend is likely due to the high proportion of green bonds issued by financial institutions in China, which already have close working relationships with CRAs.

The share of issuances receiving external verification varies widely depending on the type of issuance. Financial bonds and bonds issued offshore demonstrated a high level of verification, whereas enterprise bonds were much less likely to have attained verification. These trends are in line with existing green bond guidelines that do not require external verification to be obtained for enterprise bonds.

Figure 1: Market share of external verification providers in China



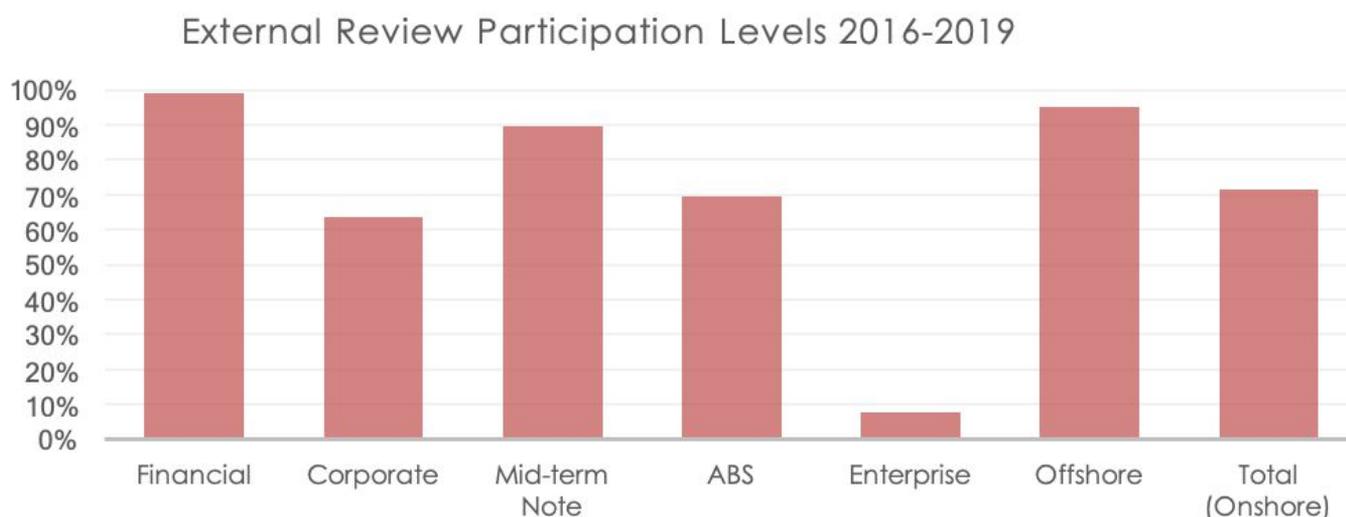
Regulators have made significant progress towards a unified standard for verification services. In late 2017, the People’s Bank of China (PBoC) and China Securities Regulatory Commission (CSRC) issued guidance¹⁹ providing step-by-step instructions for compliance checks carried out by green bond verifiers.

Regulators of China’s green bond market have also moved towards increased oversight of external review and an accreditation scheme for verification organizations. The same policy released by PBoC and CSRC requires external reviewers to register with the newly established Green Bonds Standard Committee and to provide evidence of credentials such as relevant expertise, established internal governing procedures, clean legal record, professional liability insurance, etc.

The Green Bonds Standard Committee also serves in a supervisory role, ensuring that verifiers maintain their professional credentials after approval, establish independence from issuers, and engage in fair pricing.²⁰

The Committee is granted the authority to conduct spot checks of verifier reports, to exact penalties for breach of conduct, and to revoke the green bond label of issuers that fail to correct instances of non-compliance highlighted in verification reports. The Committee’s authority has great to minimize any potential conflicts of interest where verification service providers are related to the green bond issuers. While the practice is not widespread, regulators should ensure that the appropriate firewalls are in place to guarantee independence of verification activities. Implementing an accreditation program and publishing a list of accredited verifiers should minimize any potential for conflicts of interest, and the Committee has already made significant progress towards this end.

Figure 2: Use of external review by bond type



*Note: Mid-term Notes are the most common non-corporate financial debt instrument. Only mid-term notes are analyzed here

19 Guidelines for Assessment and Verification of Green Bonds (绿色债券评估认证行为指引). Peoples Bank of China and China Securities Regulatory Commission. (2017).

20 “Chinese regulators introduce supervisory scheme for green bond verifiers - Further step in building market frameworks.”. Climate Bonds Initiative. <https://www.climatebonds.net/2018/01/chinese-regulators-introduce-supervisory-scheme-green-bond-verifiers-further-step-building> (January 15th, 2018).

2. Assessing Quality of Reporting

To determine the quality of reporting of existing issuers, a total of 387 issuances (347 onshore and 40 offshore)²¹ were assessed using criteria across five dimensions as shown in Table 5. Each dimension was scored on a 3-point scale, generating a total score between 0 and 15 for each issuance. The scale is generated based on an ideal scenario for reporting and verification practices and is not based on currently adopted practices in the global market. The dimensions we considered included:

1. Ease of finding information and clarity
2. Granularity
3. Environmental impact reporting
4. Third-party verification: Use of pre- and post-issuance external review
5. Third-party verification: Reliability and Robustness

We observed the following:²²

- Of the 387 issuances, 38 (10%) did not have a publicly available green bond framework, external review documentation, or follow-up reporting.
- Only 32 of the 261 bonds issued prior to September 2018²³ provided reporting for both pre-issuance and post-issuance on the issuer's website, while only the pre-issuance documents were available for 68 issuances. Materials for the remaining issuances and post-issuance documents were gathered through publicly available external sources.
- 49 of the 261 issuances (18%) prior to September 2018 did not show evidence of obtaining external verification of green bond frameworks or reporting, at either pre- or post-issuance stages.
- Financial bond issuances, on average, had the highest quality of reporting, followed by mid-term notes with the second-highest average reporting quality, while asset-backed securities and corporate bonds typically displayed poor reporting quality. The

lower scores of corporate bonds are partly due to privately placed corporate bonds, which typically have less publicly available information.

- Enterprise bonds, which are not mandated to provide reporting, predictably showed a low average quality of reporting, but most issuances had at least a green bond framework publicly available.
- Average quality of reporting for bonds issued in CNY, was lower than offshore bonds (40 total issuances in USD, EUR, JPY and HKD).
- Some notable examples of best practice in green bond reporting include ICBC, China Development Bank, Industrial Bank Co. Ltd., and Poten Environment. These issuers published ex-post and ex-ante green bond disclosures on their company website, provided project-level financial and environmental impact reporting, and underwent external review at issuance and throughout the post-issuance reporting.

Together, these findings support the conclusion that, while publicly available reporting is commonplace in the Chinese green bond market, the quality of transparency could be improved. The reporting quality varies widely across bond types, as well as between onshore bonds versus offshore. While most issuers (both financial institutions and corporates) make detailed financial reporting available on their own company websites, including information disclosures for issued conventional bonds, both pre-issuance and post-issuance reports were available only for 32 of the 261 green bond issuances we reviewed. Most issuers' documents were found on the CCDC website or the websites of stock exchanges. Availability of ex-post verification remained at around 31% overall largely due to the lack of verification obtained by corporate and enterprise issuers, while availability of environmental reporting was higher at around 54%.

²¹ Offshore data from CBI

²² Analysis is based on all available reporting as of September 2019.

²³ Availability of post-issuance documents were considered only for bonds issued at least one year prior.

In the global context, China is among the best performers in terms of availability of reporting, with larger green bond markets generally showing reporting levels of 90% and above.²⁴ This is partly driven by larger size deals, which tend to come from experienced larger issuers and benefit from a comprehensive monitoring system established within the institution. However, high frequency or availability of reporting does not necessarily correlate with higher quality of reporting. The scoring criteria in Table 5 outlines some of the ideal reporting and verification practices recommended for adoption by global green bond markets, while Table 4 shows how the Chinese bond market performs against the criteria. A similar exercise undertaken by Climate Bonds Initiative reveals that the quality of reporting globally falls below these ideal best practices.²⁵

Table 4: Transparency scores across bond types

	信息易准确查找程度	EASE OF FINDING INFO AND CLARIT	EASE OF FINDING INFO AND CLARIT	PRE-, POST-ISSUANCE, OR BOTH (3RD PARTY)	RELIABILITY AND ROBUSTNESS (3RD PARTY)	TOTAL
Financial	High	High	High	High	Medium	High
Corporate	Medium	Medium	Medium	Medium	Medium	Medium
Enterprise	Medium	High	Medium	Medium	Medium	Medium
M Note	Medium	High	Medium	Medium	Medium	Medium

COLOR SCALE			
PER CRITERIA		OVERALL SCORE	
0-1 points	Low	0-5 points	Low
1-2 points	Medium	5-10 points	Medium
2-3 points	High	10-15 points	High

24 CBI (2019)

25 Appendix 3, CBI (2019)

Table 5: Scoring criteria for quality of MRV

Dimensions	Description	Criteria	Points System
Ease of Finding Information and clarity	Issuer has a dedicated green bond webpage containing relevant material (GB Framework, pre- and post-issuance reporting, verification documents, etc.), clear descriptions and links for the documents, and separate sections within Annual or Sustainability Reports	<p>Is the green bond framework available on the issuer’s website?</p> <p>Is reporting easy to find on the issuer’s website?</p> <p>Is GB information included in the issuer’s CSR/Sustainability or annual report?</p> <p>Is it readily provided on a third party platform (CCDC, NAFMII, SSE, SZSE)?</p> <p>Is it easily searchable on financial data platforms?</p>	<p>3- GB information (BOTH pre- and post-issuance) is readily available on the issuer’s website</p> <p>2- GB information (ONLY pre-issuance docs) can be found on issuer website, evidence of ex-post reporting/verification found through external sources (e.g. CBI, China Bonds, Exchanges, Shanghai Clearing)</p> <p>1- GB information (pre-issuance) found, but no evidence of ex-post documents anywhere</p> <p>0- No GB information can be found</p>
Granularity	Issuer provides information on: 1) project versus portfolio level reporting for each bond; 2) bond versus project-level reporting when multiple bonds are issued	<p>Are project-level details available?</p> <p>Are the GB investors composition available? (Investor disclosure is rare) (UoP/impact details may be provided in issuer’s own reports or in third party verifier reports)</p>	<p>3- Project level details with allocation amounts available</p> <p>2- Sector-level details with allocation amounts available</p> <p>1- Project- or sector-level details available, but no allocation amounts</p> <p>0- No indication of reporting</p>
Environmental Impact Reporting	Issuer has reported on the environmental impacts of the projects/assets funded by the bond	<p>Is there reporting on environmental impacts?</p> <p>Are the impact metrics detailed and appropriate for the type of projects?</p>	<p>3- Project level details on environmental impacts available</p> <p>2- Bond-level details on environmental impacts available</p> <p>1- Commitment to environmental impact reporting and metrics identified, but ex-post assessment not found</p> <p>0- No indication nor commitment to reporting</p>
Third Party Verification: Pre-, Post- issuance, or Both	Third party provides reporting on pre- and post-issuance, and regular reporting on management of use of proceeds	<p>When and how often is the third party assurance/verification provided?</p> <p>Is it provided both pre- and post-issuance?</p>	<p>3- Third party assurance/verification covers both pre-and post-issuance</p> <p>2- Third party assurance/verification covers only pre-issuance</p> <p>1- Evidence of commitment to reporting, but not found</p> <p>0- No indication of reporting</p>
Third Party Verification: Reliability and Robustness	Post-issuance verification and/or auditing is provided (usually provided by a third party, but sometimes internally, which is less robust)	<p>Is the bond certified green?</p> <p>Is there a third-party assurance/verification provider?</p> <p>Is the methodology behind the assurance/verification clearly defined?</p>	<p>3- Bond is certified (verifier checks that the bond contributes substantially to climate objectives)</p> <p>2- Bond has a second party opinion and/or has obtained a green bond rating (more detailed assessment than assurance)</p> <p>1- Bond has received assurance</p> <p>0- No third party verification</p>

3. Conclusions and Recommendations

While current MRV compliance is strong in China, the transparency and quality of reporting falls short of international standards. Without detailed reporting and verification, the resulting data gaps make it difficult for investors and policymakers to determine if they are meeting financial and environmental goals.

Reporting gaps are largely due to inconsistent MRV requirements that depend on the type of issuer and relevant regulatory agency. The greatest gaps in reporting are due to NDRC-regulated enterprise bond issuers that face minimal reporting responsibilities and are not required to undertake external review. A lack of harmonization in regulatory practice can create inefficiencies and distortions in the market and reduce transparency.

The following recommendations detail specific actions that key regulatory authorities, information providers, and local governments can take to improve transparency and efficiency in the market. The first section focuses on overarching regulatory improvements that can raise the quality of MRV practices. The second section describes more detailed targeted incentives that can encourage issuers to comply with higher MRV requirements.

3.1 Recommendations for improvement

Key regulatory authorities, including the People's Bank of China, China Securities Regulatory Commission, the National Development and Reform Commission and Ministry of Finance could undertake the following measures to strengthen MRV in the market:

1. Require mandatory environmental impact monitoring/reporting and external and independent verification, both pre-issuance and post-issuance, for green bond issuers.

- Mandate issuers to provide expected targets for environmental performance along with disclosing the methodology used prior to issuance and undergo external review to assess whether those estimates are reasonable. This should be included as part of issuers' usual reporting and verification on management of proceeds and project eligibility.

- Issuers should be required to provide clear details regarding refinancing, such as estimated share of refinancing and a look-back period of refinanced projects, shedding light on the additionality of green bond funding for investors and policymakers.
- Require issuers to continue to report on environmental performance and undergo third-party verification checks on standards compliance on a regular basis until the end of the bond duration.
- For more robust environmental reporting, encourage issuers to undertake pre-issuance projections of project life-cycle environmental impacts to account for variation in performance over time and to provide estimates of any possible negative environmental effects the projects may have.
- Reporting and verification results should be provided directly to both regulators and investors to demonstrate compliance and increase transparency.
- Encourage the use of a standardized template to meet the above reporting requirements (See Recommendation 2).

2. Establish a standard template for detailed post-issuance reporting on use of proceeds and environmental impacts.

- Require issuers to disclose the proportion of allocated and unallocated funds, (along with intended temporary placements for unallocated funds), and give public notice if the use of proceeds has changed in any significant way. Utilize the green project taxonomy as a framework for selecting sector-specific environmental metrics and benchmarks for MRV disclosures.
- Project-level reporting should be as detailed as possible, although issues around confidentiality and competitive advantage must also be considered. At minimum, it should include the status of funded projects and the specific activities.

- Increase standardization of reporting to reduce the burden for both issuers and regulators, and to simplify post-issuance verification checks. This could also lower the costs of these services to green bond issuers.

3. Fully implement an official accreditation model for green bond label verification through the Green Bonds Standard Committee.

- Regulators should circulate the list of verifiers approved by the Green Bond Standards Committee that issuers can choose from, raising overall quality of verification in the green bond market.

4. Establish a central platform to share data publicly and increase access to issuance reporting.

- » China Central Depository & Clearing Co., Ltd. (CCDC) is a strong candidate for providing this platform, as it is a leading provider of registration, depository, and settlement services for China's finance industry.
- » All regulators should require green bond issuers to publish their green bond framework, ongoing reporting and verification documentation on their company website, similar to practices suggested by the IFI Harmonized Framework and the ASEAN GBS.
- » Wider availability of reporting data raises the profile of the green bond market and makes green bonds attractive to potential investors who use that information to select bonds that align with their financial and ESG objectives.

5. Harmonize standards and procedures across regulatory bodies

- Create a single national taxonomy for green bond supported projects that is supplemented by detailed technical criteria for eligibility and follows science-based targets for climate change mitigation.
- Establish the same MRV requirements across all issuer types to ensure maximum transparency and credibility in the green bond system.
- A unified standard, similar to the EU-GBS, will make the green bond market easier to manage as it continues to scale and ensures that there are no regulatory discrepancies that can be exploited.

3.2 Incentive structure recommendations

1. Increase monetary incentives for issuers to reduce the cost burden of meeting MRV requirements.

- Build on the successes of existing local government programs that reduce issuance costs, including grants and subsidies for obtaining verification and certification. The share of subsidies and caps on subsidies should be raised to substantially increase participation.
- Target weaknesses of the green bond market, such as the cost of MRV, especially for first-time, smaller-scale issuers.
- Enduring support from policymakers provides positive signaling to key players in the green bond market, ensuring their continued engagement.

2. Provide initial information and technical assistance to issuers on how to meet MRV requirements.

- » Assistance from regulators, third-party consultants, and networks such as the Green Finance Committee and National Association of Financial Market Institutional Investors can help reduce the cost barrier that MRV poses to green bond market development. This assistance may include identifying third party verification providers, as well as support for assessing environmental impacts.
- » Provide green bond issuers with the relevant benchmarking procedures for understanding environmental impacts and relevant methodologies for producing environmental metrics.
- » Local governments can establish a technical assistance fund to complement their green bond support funds and other incentive programs.
- » Ultimately, technical assistance should make regulatory practice easier as regulators will exhaust fewer resources tracking down non-compliant issuers.
- » The Green Bonds Standards Committee, which currently oversees verification activities, should carry out site-specific checks and other quality assurance steps to ensure that verifiers are equipped to undertake independent and robust review.

3. Facilitate the progression of the green bond market by raising the profile of green investments and ensuring a steady and diverse pipeline of eligible green projects.

- » Local governments can take the lead in supporting the development of eligible green projects, for example by identifying priority sectors for investment and ensuring that green investment criteria are compatible with the green bond project catalogue.
- » Financial regulators such as the People's Bank of China should encourage banks to hold green bond portfolios and integrate environmental and climate factors into financial risk assessments to stimulate market demand for green bonds.

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5. Annex

Local monetary incentives for green bond market development (As of July 2019)

	Reducing cost of issuance	Interest rate discounts	Other incentives:
Beijing		Zhongguancun: 40% subsidy on green debt interest for 3 years, annual cap at CNY1mn	
Guangdong	Shenzhen Futian District: 1% cost assistance to financial institutions and intermediaries, capped at CNY 1 mn Guangzhou: Grant of 20% of issuance cost to issuer, capped at CNY1mn	Shenzhen Futian District: Offers 2% interest subsidy for successfully issued corporate green bonds, capped at CNY 2 mn	
Guangxi	Nanning: grant of 1-3% of issuance costs to issuer, capped at CNY1mn Baise: grant of 1.5% of issuance costs to issuer, 0.01% to underwriter, capped at CNY1mn		
Guizhou			Certification Subsidies: Gui'an New Area: CNY5,000 grant for certifying fee of green bonds
Hebei	Monetary reward of up to 1% of the issuance amount for any issuance as part of a special asset support program. Additional monetary reward for the top five underwriting institutions for the largest asset securitization product issued.		
Jiangsu	Up to CNY 300000 in support for obtaining third party verification for non-financial issuers (same verification party may receive up to CNY 6 mn)	30% subsidy of interest for 2 years, annual cap at CNY2mn (non-financial issuers only)	Credit Enhancement: Compensates up to 30% of risk for SMEs, capped at CNY 3 mn
Qinghai			Tax benefits: Tax exemption for green bonds mentioned in its "Implementing Opinions for Green Finance Development"
Sichuan	1% subsidy of cost to issuers, capped at CNY5mn		Tax benefits: Tax benefits for active participants in green finance mentioned in its "General Office Notice on Program to Develop Green Finance in Sichuan Province"
Zhejiang	Anji: grant of 0.5% of issuance cost to issuer Huzhou: 1% grant to green bonds issuers, capped at CNY500,000		